

1609 354-0068
2134-9



CONSTRUCTION PERMIT APPLICATION

MAY 31 1991

Applicant Completes: Sections I, II, III (optional), IV, VI and VII

BUILDING

1. Proposed Work-site at: 425 Jack Martin Blvd. & Route #88

2. Name of Owner in Fee: Medical Center of Ocean Cty. Tel. (908) 840-3344

Address 2121 Edgewater Place, Point Pleasant, NJ 08742

13. Ownership in Fee: Public _____ Private X

4. Principal Contractor: Fitzpatrick & Associates, Inc. Tel. (908) 542-6100

Address 1115 Pine Brook Road, Tinton Falls, N.J. 07724

License No. OR, if new home, Builder Reg. No. 7068 Exp. Date 4/22/92

Federal Emp. No. 22-2013709

Federal Emp. No. _____ Social Security No. _____

5. Architect or Engineer Ewing Cole Cherry Parsky Tel. (215) 923-2020

Address 100 North 6th St., Philadelphia, PA 19106

6. Responsible Person Michael Hintz 908 542-6100
In Charge of Work _____ Tel. (____) _____

II. PROPOSED WORK

1. ☐ Minor Work
(single trade)
2. ☐ Small Job (\$5,000
and no prior
approvals)
3. ☐ New Building
4. ☒ Addition
5. ☒ Alteration
6. ☒ Fire Protection
7. ☒ Plumbing
8. ☒ Electrical
9. ☐ Asbestos Abatement
10. ☐ Demolition

TOTAL COSTS	28,376,008
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Est. Cost

ADDITION (Comm.)

OPTIONAL (for office use only)

Plans Rec'd By	Date Rec'd	Rejection Date	Approval Date	Re- viewer	Resubmission Dates		Re- viewer
					Approval	Rejection	
WD	5/31/91		10/17/91	OK	4/1/95		
			10/17/91	OK	4/5 flow & 10/12, 3 flow only		
			9/25/91	OK	10/12, 3 flow only		
					OK elec all floors		
ENG.			11/15/91	AWD			

IV. DOES OR WILL YOUR BUILDING CONTAIN ANY OF THE FOLLOWING?

1. ☒ Elevators/Escalators/Lifts/
Dumbwaiters/Moving Walks

2. ☒ High Pressure Boilers

3. ☐ Pressure Vessels

4. ☐ Refrigeration Systems

5. ☒ Cross-Connections/Backflow
Preventers

6. ☐ Hazardous Uses/Places of Assembly

7. ☒ Sprinklers

8. ☒ Smoke Control Systems in Open Wells

9. ☒ Underground Storage Tanks

V. FEE SUMMARY¹¹ (for office use only)

	Update	Update
1. Building	\$ 15,736.14	
2. Electrical		
3. Plumbing	3905.00	
4. Fire Protection	1574.00	1659.00
5. Other <i>mccplmg</i>	1568.00	
6. Subtotal	\$ 22,780.00	
7. Less 20% for State Plan Review	2278.00	
8. Subtotal	\$ 20,502.00	
9. DCA Training Fee	2797.00	
10. Subtotal	\$ 23,299.00	
11. Cert. of Occupancy	3417.00	
12. Other		
13. TOTAL	\$ 31,716.00	31,160.00

VI. BUILDING/SITE CHARACTERISTICS

1. Number of Stories five

2. Height of Structure 63 ft.

3. Area—Largest Floor 31,000 sq. ft.

4. Building Area—All Floors 151,700 sq. ft.

5. Volume of Structure 1748400 cu. ft.

6. Construction Classification I-2

7. Total Land Area Disturbed 120,000 sq. ft.

8. Flood Hazard Zone No

9. Base Flood Elevation N/A ft.

10. Wetlands yes no x sq. ft.

11. Fire Grading I-2

12. Max. Live Load 100

13. Max. Occupancy Load 850

VII. DESCRIPTION OF BUILDING USE

A. RESIDENTIAL:

1. ☐ Hotels (R-1)
2. ☐ Multi-Family (R-2)
3. ☐ Two-Family (R-3) BOCA
4. ☐ Two-Family (R-4) CABO
5. ☒ One-Family (R-3) BOCA
6. ☐ One-Family (R-4) CABO

No of dwelling units:
Before Construction _____
After Construction _____
Net gain or loss _____

B. NON-RESIDENTIAL

1. State Specific Use: **HOSPITAL**
2. Use Group: **HIS ID**
3. Change in Use Group: **Indicate Former:**

LDS BR 10315024

CERTIFICATION IN LIEU OF OATH

I. OWNER SECTION (to be completed if the applicant is the owner in fee)

I hereby certify that I am the owner in fee of the property listed on Page 1.

Mark the following applicable boxes:

- A. ☐ I further certify that a new home (private residence) will be constructed on this property for my own use and occupancy. This dwelling is to be occupied by myself and is not to be used for any purpose other than single family residential use. I attest that all construction, plumbing, or electrical work will be done, in whole or in part, by me or by subcontractors under my supervision, in accordance with all applicable laws; and, I further acknowledge that said new home is not covered under the New Home Warranty and Builders Registration Act (N.J.S.A. 46:3B-1 et seq.) and that such fact shall be disclosed to any person purchasing this property within ten years of the date of issuance of a certificate of occupancy.

I UNDERSTAND THAT IN MARKING BOX A, I ACKNOWLEDGE THAT I AM ASSUMING RESPONSIBILITY FOR THE WORK DONE ON SAID PROPERTY, THE CONDITION OF THE PROPERTY PRIOR TO, DURING, AND AFTER ANY WORK PERFORMED, AND FOR THE PERFORMANCE OF THE SUBCONTRACTORS I HIRE, EMPLOY, OR OTHERWISE CONTRACT OR WITH WHOM I MAKE AGREEMENTS TO PERFORM WORK. I AM VOLUNTARILY AND KNOWINGLY ASSUMING THIS RESPONSIBILITY.

- B. ☐ I further certify the following as required by the New Jersey Uniform Construction Code, N.J.A.C. 5:23-2.15(e)1.vii:

I personally prepared the plans submitted for: 1) the new home referred to in A.; or, 2) an addition, alteration, renovation, or repair to an existing single family residence owned and occupied by myself and located on the property listed on Page 1; or, 3) a new structure that will be physically separate from, but that will be deemed part of, an existing single family residence that is owned and occupied by myself and located on the property listed on Page 1.

- C. ☐ I further certify that I will perform or supervise the following work:

C.1. ☐ Building C.2. ☐ Fire Protection

I further certify that I will perform the following work:

C.3. ☐ Electrical C.4. ☐ Plumbing

- D. ☐ I agree to advise all contractors on this project that they are required to be registered with the New Jersey Division of Taxation and to comply with all New Jersey tax laws.

I further certify the following as required by the Uniform Construction Code, N.J.A.C. 5:23-2.15(a)5: All required State, county, and local prior approvals have been given, including such certification as the construction official may require.

I understand that if any of the above statements are willfully false, I am subject to punishment.

Signature _____ Date _____

II. AGENT SECTION

(to be completed if the applicant is not the owner in fee)

I hereby certify the following as required by the New Jersey Uniform Construction Code, N.J.A.C. 5:32-2.15(d): the proposed work is authorized by the owner in fee; and I have been authorized by the owner in fee to make this application as his agent.

I further certify the following as required by the Uniform Construction Code, N.J.A.C. 5:23-2.15(a)5: All required State, county, and local prior approvals have been given, including such certification as the construction official may require.

I agree to advise all contractors on this project that they are required to be registered with the New Jersey Division of Taxation and to comply with all New Jersey tax laws.

I understand that if any of the above statements are willfully false, I am subject to punishment.

☒ Check if contractor.

Agent Name Fitzpatrick & Associates, Inc.

Address 1115 Pine Brook Road, Tinton Falls, N.J. 07724

Telephone (908) 542-6100

Signature Michael Fitzpatrick Date May 28, 1991

OFFICE DATE RECEIVED: _____

VIII. PRIOR APPROVALS CHECKLIST (office use only)	LOCAL APPROVAL		COUNTY APPROVAL		REGIONAL APPROVAL		STATE APPROVAL	
	Prelimin. Initial	Final Date	Prelimin. Initial	Final Date	Prelimin. Initial	Final Date	Prelimin. Initial	Final Date
☐ Planning Board								
☐ Zoning Board								
☐ Sewer Authority								
☐ Water Authority								
☐ Fire Department								
☐ Police Department								
☐ Health Department								
☐ Soil Conservation								
☐ N.J. Dept. of Community Affairs								
☐ N.J. Department of Transportation								
☐ N.J. Dept. of Environmental Protect.								
☐ Utility Dig No.								
☒ Other <i>zones</i>	<i>Site</i>	<i>6/12/91</i>	<i>add.</i>					
☐								
☐								
☐								

COMMENTS

*2nd amendment to
hit for building
No. C.O. 11-15-91
needs resolution compliance
prior to C.O. the
amended site plan.*

IX. SUBCODES AND SPECIAL REGULATIONS APPLICABLE (office use only—optional)

Name of Code & Edition	Name of Code & Edition	Other
Building _____	Energy _____	
Electrical _____	Barrier Free _____	
Plumbing _____	Flood Hazard _____	
Fire Protection _____	As Built Elevation Cert _____	
Mechanical _____	Other _____	

X CERTIFICATES ISSUED

(office use only)

(Amended sit plan) (for parking)



CERTIFICATE

Date Issued 7-17-97
Control #
Permit # 2134-91

IDENTIFICATION

Block 1170 Lot 19, 19.2, 19.3
Work Site Location 435 Teal Martin Blvd.
Owner in Fee Medical Center of Ocean County
Address 2121 Edgewater Place
Point Pleasant, NJ 08742
Tele. ()
Contractor Fitzpatrick & Associates, Inc.
Address 1115 Pine Brook Rd.
Tinton Falls, NJ 07724
Tele. ()
Lic. No. or Bids. Reg. No.
Federal Emp. No.
or Social Security No.

Home Warranty No. N/A
Use Group T-2 2 hours
Maximum Live Load
Description of Work/Use:
Addition to Medical
Center of Ocean Co.
1st floor - Lab & ER room
2nd floor - Entire floor
3rd floor - Med/Surg Patient Care
4th floor - Med/Surg Patient Care
5th floor - Med/Surg Patient Care
Type of Warranty Plan: [] State [] Private only
Construction Classification
Maximum Occupancy Load

CERTIFICATE OF OCCUPANCY/APPROVAL

☒ CERTIFICATE OF OCCUPANCY

This serves notice that said building, structure, or equipment has been constructed or installed in accordance with the New Jersey Uniform Construction Code, and is approved for use and/or occupancy. (In accordance with Letter from Meridian Health System.)

☐ CERTIFICATE OF CONTINUED OCCUPANCY

This serves notice that based on a general inspection of the visible parts of the building there are no imminent hazards and the building is approved for continued occupancy.

☐ TEMPORARY CERTIFICATE OF OCCUPANCY

If this is a Temporary Certificate of Occupancy the following conditions must be met no later than , 19 or the owner will be subject to a fine or order to vacate:

☐ CERTIFICATE OF APPROVAL

Fee \$
Paid [] Check No.
Collected by:

CONSTRUCTION OFFICIAL



CERTIFICATE

Date Issued 4-27-93
Control # _____
Permit # 2134-91

IDENTIFICATION

Block 1170 Lot 18, 18.2, 18.3
Work Site Location 425 Jack Martin Blvd.
Owner in Fee Medical Center of Ocean County
Address 2121 Edgewater Place
Point Pleasant, NJ 08742
Tele. ()
Contractor Fitzpatrick & Associates, Inc.
Address 1115 Pine Brook Rd.
Tinton Falls, NJ 07724
Tele. ()
Lic. No. or Bldgs. Reg. No.
Federal Emp. No.
or Social Security No.

CERTIFICATE OF OCCUPANCY/APPROVAL

☐ CERTIFICATE OF OCCUPANCY

This serves notice that said building, structure, or equipment has been constructed or installed in accordance with the New Jersey Uniform Construction Code, and is approved for use and/or occupancy.

☐ CERTIFICATE OF APPROVAL

This serves notice that based on a general inspection of the visible parts of the building there are no imminent hazards and the building is approved for continued occupancy.

XXXX ☒ TEMPORARY CERTIFICATE OF OCCUPANCY

If this is a Temporary Certificate of Occupancy the following conditions must be met no later than May 30, 1993 or the owner will be subject to a fine or order to vacate: Pending compliance with Plumbing, Engineering and O.C. Soil (4-30-93) Engineering temp. is valid until July 1, 1993.

Fee \$ _____
Paid [☐] Check No. _____
Collected by: _____

CONSTRUCTION OFFICIAL
Arthur J. George
(wp)

Call
5/19/94
840-8380
M. Rump



CONSTRUCTION PERMIT

Date Issued

Control #

Permit #

5/22/91

831-91

IDENTIFICATION Block 1170 Lot 18, 18-1

Work Site Location

Contractor

Address

Tele. ()

Lic. No. or Bldrs. Reg. No.

Exp. Date

Federal Emp. No.

or Social Security No.

425 Jackman Blvd
Medical Center of Ocean City
same
Fitzpatrick & Assoc.
Box 1408
Eatontown NJ 07724
07724

is hereby granted permission to perform the following work:

☒ BUILDING ☐ PLUMBING ☐ OTHER
☐ ELECTRICAL ☐ FIRE PROTECTION

DESCRIPTION OF WORK:

Addition (51600)
Tie in Link / Trash Compactor

NOTE: If construction does not commence within one (1) year of date of issuance, or if construction ceases for a period of six (6) months, this permit is void.

Estimated Cost of Work \$

230,800

CONSTRUCTION OFFICIAL

PAYMENTS (Office Use Only)

Building

Plumbing

Electrical

Fire Protection

Other

Other

DCA Training Fee

Cert. of Occ.

Other

Total

Check No.

Cash

Collected By:

600

464.40

106.44

22.24

159.66

1402.74

290378



PERMIT UPDATE

Date Update Issued 9-20-93
Control #
Permit #
Date Permit Issued 91-2134

IDENTIFICATION Block 1170 Lot 18.18.02 & 18.03
Work Site Location 425 Yorkminster Blvd Contractor Alvin Fire & Safety
Address 517 Yorkminster Blvd. N.W.
Owner in Fee Medicaid Ctr of D.C.
Address same
Tele. () none in
Lic. No. or Bldrs. Reg. No. 922-03399
Federal Emp. No. _____
or Social Security No. 22-1904287

is hereby granted permission to perform the following work:

☐ BUILDING ☐ PLUMBING ☐ Other _____
☐ ELECTRICAL ☒ FIRE PROTECTION

DESCRIPTION OF WORK:

Basement Sprinkler

Estimated Cost of Work \$ 15000

A. J. Craig
CONSTRUCTION OFFICIAL

PAYMENTS (Office Use Only)

Building	***0002**	
Plumbing	2154**	0.00
Electrical	DCA	
Fire Protection	163- 1110 #	0.00
Other	LOI	
Other	ID #	
DCA Training Fee	FIRE	3.00
Cert. of Occ.	TOTAL	3.00
Other	CHECK	3.00
Total	163	0.00
Check No.	07/20/93 NO. 5 00119955	5:29
Cash		
Collected By:		



PERMIT UPDATE

Date Update Issued 9-4-92
 Control #
 Permit # 2134-91
 Date Permit Issued 11-15-91

IDENTIFICATION Block 1170 Lot 18, 18.2, 18.3
 Work Site Location BRICK hospital Contractor Garit Contracting
425 JACK MARTIN BLVD BRICK Address 908 MONTAGUE AVE.
 Owner in Fee Fitzpatrick & Assoc. Iselin NJ. 08830
 Address P.O. Box 1408 Paterson NJ. Tele. (908) 424-0661
07724 Lic. No. or Bldrs. Reg. No. 60000647
 Tele. (908) 840-3315 (TRAILER) Federal Emp. No. 151 482 086
 or Social Security No. _____

is hereby granted permission to perform the following work:

☒ BUILDING [] PLUMBING [] Other _____
 [] ELECTRICAL ☒ FIRE PROTECTION

DESCRIPTION OF WORK:

Install Oil Tank

Estimated Cost of Work \$ 10,000.

G. J. [Signature]
 CONSTRUCTION OFFICIAL

PAYMENTS (Office Use Only)		
Building	<u>50</u>	
Plumbing		<u>**0005**</u>
Electrical		<u>2174**</u>
Fire Protection	<u>46</u>	<u>BLOCK</u> 0.00
Other		<u>1170</u> "
Other		<u>LOT</u> 0.00
DCA Training Fee		<u>10-10-2-18</u>
Cert. of Occ.		<u>13</u> "
Other		<u>BUILDING</u> 50.00
Total	<u>96</u>	<u>FIRE</u> 46.00
Check No. <u>1305</u>		<u>TOTAL</u> 96.00
Cash		
Collected By: <u>[Signature]</u>		



Date Received
Date Issued
Control #
Permit #
9-4-82
2134-91

A. IDENTIFICATION—APPLICANT: COMPLETE ALL APPLICABLE INFORMATION. WHEN CHANGING CONTRACTORS, NOTIFY THIS OFFICE. CALL UTILITY DIG NO. 1-800-272-1000.

Block 1170 Lot 18 18.2 18.3
Work Site Location Beckhesville, Md. Back No
425 Jack Martin + Associates, Inc.
Owner in Fee P.O. Box 1408, Catonsville, Md.
Address 07224
Tele. (908) 840-3315 (Hearon)
Contractor GAIK CONTRACTING, INC.
Address 908 Montross Ave.
15212 N.J. 08830
Tele. (908) 424-0661
Lic. No. or Bids. Reg. No. 6000647
Federal Emp. No. 151482086 or Social Security No. _____

JOB SUMMARY (Office Use Only)

PLAN REVIEW	Date	INSPECTIONS	Dates (Month/Day)	Initial
☐ No Plans Req.	<u>9/4/82</u>	Footings		
☐ All		Foundation		
☐ Footing		Slab		
☐ Foundation		Frame		
☐ Frame		Insulation		
☐ Other		Finishes:		
Joint Plan Review Required:		Energy		
☐ Elec. ☐ Plumb. ☐ Fire		Mechanical		
SUBCODE APPROVAL		TCO		
☐ CO ☐ SCO ☐ CA		Other		
Date: <u>9/4/82</u>		Final		
Approved By: <u>[Signature]</u>				

B. BUILDING CHARACTERISTICS

Use Group Present _____ Proposed _____
Constr. Class Present _____ Proposed _____
No. of Stories _____
Height of Structure _____ Ft.
Area—Largest Floor _____ Sq. Ft.
Total Bldg. Area/All Floors _____ Sq. Ft.
Volume of Structure _____ Cu. Ft.
Total Land Area Disturbed _____ Sq. Ft.

Est. Cost of Bldg. Work: 7
1. New Bldg. \$ _____
2. Alteration \$ _____
3. Total (1+2) \$ _____

C. CERTIFICATION IN LIEU OF OATH

I hereby certify that I am the (agent of) owner of record and am authorized to make this application.

Signature [Signature]

D. TECHNICAL SITE DATA

DESCRIPTION OF WORK

Full back. Double wall.

TYPE OF WORK:

- ☐ New Building
- ☐ Addition
- ☐ Alteration
- ☐ Roofing
- ☐ Siding
- ☐ Other _____
- ☐ Demolition
- ☐ Miscellaneous
- ☐ Fence _____ Height _____
- ☐ Sign _____ Sq. Ft. _____
- ☐ Pool _____
- ☐ Elevator _____
- ☐ Asbestos Abatement _____
- ☐ Other _____

(Office Use Only)

FEE

Administrative Surcharge \$ _____
Paid ☐ Check # _____ Minimum Fee \$ _____
Collected by: _____ TOTAL FEE \$ _____



BUILDING SUBCODE TECHNICAL SECTION



Date Received
Date Issued
Control #
Permit #

11-15-91
2134-91

A. IDENTIFICATION—APPLICANT: COMPLETE ALL APPLICABLE INFORMATION. WHEN CHANGING CONTRACTORS, NOTIFY THIS OFFICE. CALL UTILITY DIG NO: 1-800-272-1000.

Block 1170 Lot 18, 18.2 & 18.3
Work Site Location 425 Jack Martin Blvd & Route #88

Owner in Fee Medical Center of Ocean County
Address 2121 Edgewater Place, Point Pleasant, NJ 08742

Tele. (908) 840-3344

Contractor Fitzpatrick & Associates, Inc.

Address 1115 Pine Brook Road, Tinton Falls, N.J. 07724

Tele. (908) 542-6100

Lic. No. or Bldrs. Reg. No. 7068

Federal Emp. No. 22-2013709 or Social Security No.

JOB SUMMARY (Office Use Only)

PLAN REVIEW	Date	Initial	INSPECTIONS	Dates (Month/Day)	Failure	Failure	Approval	Initial
☐ No Plans Req.			Type:					
☒ All	10/17/91	AL	Footing	8/27/91	OK			
☐ Footing			Foundation	8/27/91	OK			
☐ Foundation			Slab					
☐ Frame			Frame	10/29/91	OK			
☐ Other			Insulation	11/1/94	OK			
Joint Plan Review Required:			Finishes:					
☐ Elec. ☐ Plumb. ☐ Fire			Energy					
SUBCODE APPROVAL			Mechanical					
☒ CO ☐ CA			TCO					
Date: 10/17/91			Other					
Approved By: [Signature]			Final					

B. BUILDING CHARACTERISTICS

Use Group Present I2 Proposed I2
Constr. Class Present I2 Proposed I2
No. of Stories five
Height of Structure 63 Ft.
Area—Largest Floor 31,000 Sq. Ft.
Total Bldg. Area/All Floors 151,700 Sq. Ft.
Volume of Structure 1,748,400 Cu. Ft.
Total Land Area Disturbed 120,000 Sq. Ft.

Est. Cost of Bldg. Work:

1. New Bldg. \$ 25,876,000.
2. Alteration \$ 2,500,000.
3. Total (1+2) \$ 28,376,000.

C. CERTIFICATION IN LIEU OF OATH

I hereby certify that I am the (agent of) owner of record and am authorized to make this application.

Signature [Signature]

D. TECHNICAL SITE DATA

DESCRIPTION OF WORK

New 151,000 square foot addition for expanded E.R., Laboratory, Radiology, S.D.S., IDRP and Obstetrics unit and Medical/Surgical Patient Bedrooms.

TYPE OF WORK:

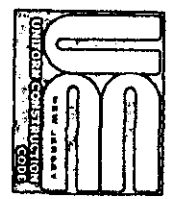
- ☐ New Building
- ☒ Addition
- ☒ Alteration
- ☐ Roofing
- ☐ Siding
- ☐ Other
- ☐ Demolition
- ☐ Miscellaneous
- ☐ Fence
- ☐ Sign
- ☐ Pool
- ☒ Elevator
- ☐ Asbestos Abatement
- ☐ Other

(Office Use Only)

FEE

Paid ☐ Check # _____ Administrative Surcharge \$ _____
Collected by: _____ Minimum Fee \$ _____
TOTAL FEE \$ _____

14 year calculator



**FIRE
SUBCODE
TECHNICAL SECTION**



Date Received
Date Issued
Control #
Permit #

Spurlock Head

A. IDENTIFICATION - APPLICANT: COMPLETE ALL APPLICABLE INFORMATION. WHEN CHANGING CONTRACTORS, NOTIFY THIS OFFICE. CALL UTILITY DIG NO: 1-800-272-1000.

Block 1170 Lot 18 18.2 18.03

Work Site Location Medical Center of Ocean County Back House

Owner in Fee Medical Center of Ocean County

Address Medical Center of Ocean County

Contractor Atkins Fire & Safety Equipment Co. Inc.

Address 517 Garden Grove Road

Tele. (903) 334-3344

Lic. No. 2201-9034-0037

Federal Emp. No. 3-24-404-0827 or Social Security No.

B. FIRE PROTECTION CHARACTERISTICS

Use Group Present Proposed Complete 2008

Constr. Class. Present Proposed for 2008

Heating Systems Existing

Type: ☐ Gas ☐ Oil ☐ Electrical ☐ Solar

Location:

Total Est. Cost of Fire Prot. Work \$ ☐ Other

JOB SUMMARY (Office Use Only)

PLAN REVIEW: ☐ No Plans Required ☐ Inspections: 1st 2nd 3rd Dates (Month/Day) 8/15/08

Joint Plan Review Required: Type: Final Approval Initial

☐ Bldg. ☐ Plumb. ☐ Elec. ☒ Fire Pls. Approved

Date: 8/15/08 Suppression Test 1-25-08 Fire Alarm Test 1-25-08 Smoke Test 1-25-08

Approved by: Mechanical 1-25-08 TCO 1-25-08 Other 1-25-08

SUBCODE APPROVAL: ☐ CO ☐ CCO ☐ CA

Date: Other 1-25-08 Other 1-25-08

Approved by: Other 1-25-08

C. CERTIFICATION IN LIEU OF OATH

I hereby certify that I am the (agent of) owner of record and am authorized to make this application.

SIGNATURE

D. TECHNICAL SITE DATA

Description of Work

Water Supply Source Utility

Method of Valve Supervision Fire Switch

Local Alarm Supervision BY OTHERS

Central Supervision BY OTHERS

Proprietary Supervision BY OTHERS

Flammable Liquid Storage Tanks () Capacity Fuel

Combustible Liquid Storage Tanks () Capacity Fuel

L.P.G. Storage Tanks () Capacity Fuel

L.N.G. Storage Tanks () Capacity Fuel

Wet Sprinkler Heads 1554

Dry Sprinkler Heads 0

TOTAL 1554

Smoke Detectors

Heat Detectors

TOTAL

Stand Pipes 3

Kitchen Hood Exhaust Systems

Pre-Engineered Systems

CO₂ Suppression

Halon Suppression

Foam Suppression

Dry Chemical

Wet Chemical

Gas or Oil Fired Appliance

OTHER

FEE (Office Use Only)

1170

489

Paid ☐ Check # Administrative Surcharge \$ 1150

Collected by Minimum Fee \$ 1150

TOTAL FEE \$ 1150

UCC Form F-14DA 1 Write Inspector Copy 2 Canary Office Copy 3 Bank Office Copy 4 Good Applicant Copy PRO 105



FIRE PROTECTION SUBCODE TECHNICAL SECTION



Date Received
Date Issued 9-4-92
Control #
Permit # 83339 + 2134-91

A. IDENTIFICATION—APPLICANT: COMPLETE ALL APPLICABLE INFORMATION. WHEN CHANG-
ING CONTRACTORS, NOTIFY THIS OFFICE. CALL UTILITY DIG NO: 1-800-272-1000.

Block 1170 Lot 18, 18.2, 18.3
Work Site Location BRICK HOSPITAL
425 JACK MANTIN BLVD. BRICK NJ
Owner in Fee FITZPATRICK ASSOCIATES
Address P.O. Box 1408, MANTON NJ
07734
Tele. (908) 840-3315 (THRU)
Contractor GARILS CONTRACTING
Address 908 MORTAIRE AVE. ISLAIN NJ
08830
Tele. (908) 424-0661
Lic. No. 50000647
Federal Emp. No. 151 482 086 or Social Security No.

B. FIRE PROTECTION CHARACTERISTICS

Use Group Present Proposed
Constr. Class. Present Proposed
Heating Systems [] New [] Existing
Type: [] Gas [] Oil [] Electrical [] Solar
[] Other
Location:
Total Est. Cost of Fire Prot. Work \$ [] Other

JOB SUMMARY (Office Use Only)

PLAN REVIEW:	INSPECTIONS:	Dates (Month/Day)
[] No Plans Required	Type:	Failure Failure Approval Initial
Joint Plan Review Required:		
[] Bldg. [] Plumb. [] Elec.	Suppression Test	
[] Fire Plans Approved	Fire Alarm Test	
Date: 9/16/92	Smoke Test	
Approved by: [Signature]	Mechanical	
SUBCODE APPROVAL:	TCO	
[] CO [] CCO [X] SA	Other [Signature]	9/14/92
Date: 9/16/92	Other [Signature]	
Approved by: [Signature]	Other	

C. CERTIFICATION IN LIEU OF OATH

I hereby certify that I am the (agent of) owner of
record and am authorized to make this application.

SIGNATURE

D. TECHNICAL SITE DATA

Description of Work

Fire and Smoke Alarm

Water Supply Source
Method of Valve Supervision
Local Alarm Supervision
Central Supervision
Proprietary Supervision

Flammable Liquid Storage Tanks
Combustible Liquid Storage Tanks
L.P.G. Storage Tanks
L.N.G. Storage Tanks

Wet Sprinkler Heads
Dry Sprinkler Heads
TOTAL

Smoke Detectors
Heat Detectors
TOTAL

Stand Pipes
Kitchen Hood Exhaust Systems

Pre-Engineered Systems
CO₂ Suppression
Halon Suppression
Foam Suppression
Dry Chemical
Wet Chemical

Gas or Oil Fired Appliance
OTHER

Number

FEE (Office Use Only)

() Capacity Fuel
() Capacity Fuel 4000 Fuel Diesel
() Capacity Fuel
() Capacity Fuel

Paid [] Check #
Collected by
Administrative Surcharge \$
Minimum Fee \$
TOTAL FEE \$

U.C.C. Form F-140A

1 White = Inspector Copy
2 Canary = Office Copy
3 Pink = Office Copy
4 Gold = Applicant Copy



**FIRE PROTECTION
SUBCODE
TECHNICAL SECTION**

A. IDENTIFICATION—APPLICANT: COMPLETE ALL APPLICABLE INFORMATION, WHEN CHANGING CONTRACTORS, NOTIFY THIS OFFICE. CALL UTILITY DIG NO. 1-800-872-1000.

Block 1170 Lot 18-18-02 & 18.03
Work Site Location 425 JACK MORTON BLVD

Owner In Fee MEYER CENTER OF OCEAN CITY.
Address 425 JACK MORTON BLVD
BLACK HILLS

Tele. () ALLIED FIRE & SAFETY EQUIPMENT CO. INC
Contractor 517 GREEN GROVE ROAD
Address NEEDHAM MA 01754

Tele. 908 922-3399

Lic. No. 22-1904087 or Social Security No. _____

B. FIRE PROTECTION CHARACTERISTICS

Use Group Present Proposed _____
Constr. Class. Present Proposed _____
Heating Systems Present New Existing
Type: Gas Oil Electrical Solar
Other _____

Location: _____
Total Est. Cost of Fire Prot. Work \$ 15000.00 [] Other _____

JOB SUMMARY (Office Use Only)

PLAN REVIEW:	INSPECTIONS:	Dates (Month/Day)
[] No Plans Required	Type:	Failure Failure Approval Initial
Joint Plan Review Required:	Suppression Test	_____ 1-4-84 _____
[] Bldg. [] Plumb.	Fire Alarm Test	_____ _____
[] Elec. [] Elevator	Smoke Test	_____ _____
[X] Fire Plans Approved	Mechanical	_____ _____
Date: <u>9-10-93</u>	TCO	_____ _____
Approved by: _____	Other	_____ _____
SUBCODE APPROVAL:	Other	_____ _____
[] CO [] CCO [X] CA	Other	_____ _____
Date: <u>1-4-94</u>	Other	_____ _____
Approved by: _____	Other	_____ _____

C. CERTIFICATION IN LIEU OF OATH

I hereby certify that I am the (agent of) owner of _____
record and am authorized to make this application: _____
SIGNATURE

D. TECHNICAL SITE DATA

Description of Work BASEMENT SPARKLER

Water Supply Source _____

Method of Valve Supervision _____

Local Alarm Supervision _____

Central Supervision _____

Proprietary Supervision _____

Flammable Liquid Storage Tanks _____

Combustible Liquid Storage Tanks _____

L.P.G. Storage Tanks _____

L.N.G. Storage Tanks _____

Wet Sprinkler Heads _____

Dry Sprinkler Heads _____

TOTAL _____

Smoke Detectors _____

Heat Detectors _____

TOTAL _____

Stand Pipes _____

Kitchen Hood Exhaust Systems _____

Pre-Engineered Systems _____

CO₂ Suppression _____

Halon Suppression _____

Foam Suppression _____

Dry Chemical _____

Wet Chemical _____

Gas or Oil Fired Appliance _____

OTHER _____

Paid [] Check # _____

Collected by: _____

FEE (Office Use Only)

Number 164
163

Administrative Surcharge \$ 163-

Minimum Fee \$ _____

DCA Training Fee \$ _____

TOTAL FEE \$ _____



**FIRE PROTECTION
SUBCODE
TECHNICAL SECTION**



Date Received _____
Date Issued 11-15-91
Control # _____
Permit # 2134-91

A. IDENTIFICATION—APPLICANT: COMPLETE ALL APPLICABLE INFORMATION, WHEN CHANGING CONTRACTORS, NOTIFY THIS OFFICE. CALL UTILITY DIG NO. 1-800-272-1000.

Block 1170 Lot 18, 18.2 & 18.3
Work Site Location 425 JACK MATEL BLVD PT 88

Owner in Fee MEDICAL CENTER OF OCEAN COUNTY
Address 3121 BODEWATER PL.
PT. PLEASANT, N.J. 08742

Tele. () _____
Contractor LEITCH PATRICK ASSOCIATES INC.
Address 1115 PINE BLVD
FAIRVIEW, N.J. 07724

Tele. () _____
Lic. No. _____
Federal Emp. No. _____ or Social Security No. _____

B. FIRE PROTECTION CHARACTERISTICS

Use Group Present Proposed _____
Constr. Class. Present Proposed _____
Heating Systems [] New [] Existing
Type: [] Gas [] Oil [] Electrical [] Solar
[] Other _____

Location: _____
Total Est. Cost of Fire Prot. Work \$ _____ [] Other _____

JOB SUMMARY (Office Use Only)

PLAN REVIEW:	INSPECTIONS:	Dates (Month/Day)
[] No Plans Required	Type:	Failure Failure Approval Initial
Joint Plan Review Required:		
[] Bldg. [] Plumb. [] Elec.	Suppression Test	
[] Fire Plans Approved	Fire Alarm Test	
Date: <u>10/17/88</u>	Smoke Test	
Approved by: <u>[Signature]</u>	Mechanical	
SUBCODE APPROVAL:	TCO <u>44577</u>	
[] CO [] CCO [] CA	Other <u>NO CO. ALL SUPPLY ARE</u>	
Date: _____	Other <u>NO CO. ALL SUPPLY ARE</u>	
Approved by: _____	Other _____	

C. CERTIFICATION IN LIEU OF OATH

I hereby certify that I am the (agent of) owner of record and am authorized to make this application.

SIGNATURE _____

D. TECHNICAL SITE DATA

Description of Work

Water Supply Source _____
Method of Valve Supervision _____
Local Alarm Supervision _____
Central Supervision _____
Proprietary Supervision _____

Flammable Liquid Storage Tanks _____
Combustible Liquid Storage Tanks _____
L.P.G. Storage Tanks _____
L.N.G. Storage Tanks _____

Wet Sprinkler Heads _____
Dry Sprinkler Heads _____
TOTAL _____

Smoke Detectors _____
Heat Detectors _____
TOTAL _____

Stand Pipes _____
Kitchen Hood Exhaust Systems _____

Pre-Engineered Systems _____
CO₂ Suppression _____
Halon Suppression _____
Foam Suppression _____
Dry Chemical _____
Wet Chemical _____

Gas or Oil Fired Appliance _____
OTHER _____

Paid [] Check # _____ Minimum Fee \$ _____
Collected by _____ TOTAL FEE \$ 1574

Administrative Surcharge \$ _____
Minimum Fee \$ _____
TOTAL FEE \$ 1574

FEE (Office Use Only)

102100010
Bob Gourley



PLUMBING
SUBCODE
TECHNICAL SECTION



Date Received 11-15-91
Date Issued
Control #
Permit # 2134-91

A. IDENTIFICATION—APPLICANT: COMPLETE ALL APPLICABLE INFORMATION. WHEN CHANGING CONTRACTORS, NOTIFY THIS OFFICE. CALL UTILITY DIG NO: 1-800-272-1000.

Block 1170 Lot 18-18-1
Work Site Location Brick Hospital, Jack Martin Blvd.
Bricktown, N.J.
Owner in Fee Medical Center of Ocean County
Jack Martin Blvd.
Bricktown, N.J.
Tele. (908) 840-2200
Contractor Three G's Plumbing & Heating, Inc.
Address P.O. Box 1310-514 Arnold Avenue
Pt. Pleasant Beach, N.J. 08742
Tele. (908) 899-5999
Lic. No. BI-05451
Federal Emp. No. 22-2200741 or Social Security No.

B. PLUMBING CHARACTERISTICS

Use Group Present 12 Proposed
Building Sewer Size 6" C.L.
Water Service Size 6" C.L.
Estimated Cost of Plumbing Work \$ 1,800,000.00

JOB SUMMARY (Office Use Only)			
PLAN REVIEW:	INSPECTIONS:		
	Type: Failure Failure Approval Initial		
☐ No Plans Required	Slab <i>OK</i>		
☐ Joint Plan Review Required:	Rough <i>OK</i>		1-16-92 <i>OK</i>
☒ Bldg. ☐ Elec. ☐ Fire	Water		10-28-92 <i>OK</i>
☒ Plumb. Plans Approved	Sewer		
Date: 4/25/91	Fixtures		
Approved by: <i>OK</i>	Gas Equipment		
	Gas Final		
	Solar		
	TCO		
SUBCODE APPROVAL:			
114 CO 1 1 CC 0 1 CA			
Approved by: <i>OK</i>			
Date: <i>OK</i>			

C. CERTIFICATION IN LIEU OF OATH

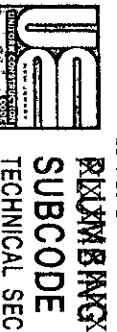
I hereby certify that I am the (agent of) owner of record and am authorized to make this application and perform the work listed on this application.

[X] Licensed Plumbing Contractor [] Exempt Applicant
Signature-Contractor Seal
Eugene Gourley

D. TECHNICAL SITE DATA (List all fixtures.)

2	Emergency Showers	10.00
12	Mop Receptors	6.00
FIXTURE/EQUIPMENT		
142	Water Closet	71.00
3	Urinal/Bidet	15.00
9	Bath Tub	45.00
262	Lavatory	3.10
79	Shower	3.95
77	Floor Drain	3.85
131	Sink	6.55
14	Dishwasher	7.00
	Drinking Fountain	
	Washing Machine	
	Hose Bibb	
1	Gas Piping	15.00
	Fuel Oil Piping	
	Water Heater	
	Steam Boiler	
	Hot Water Boiler	
2	Sewer Pump	50.00
1	Interceptor/Separator	25.00
4	Backflow Preventer	10.00
	Greasetrap	
	Water Cooled A/C	
	or Refrigeration Unit	
	Sewer Connection	
	Water Service Connection	
	Gas Service Connection	
	Active Solar System	
10	Other <i>Cement-Floored</i>	60.00
		10.00

Paid [] Check #	Administrative Surcharge	\$
Collected by: TOTAL	Minimum Fee	\$ 3,000.00



Date Received
Date Issued 11-15-91
Control #
Permit # 2134-91

A. IDENTIFICATION—APPLICANT: COMPLETE ALL APPLICABLE INFORMATION. WHEN CHANGING CONTRACTORS, NOTIFY THIS OFFICE. CALL UTILITY DIG NO: 1-800-272-1000.

Block 1170 Lot 18, 18.1
Work Site Location Brick Hospital/Medical Center of Ocean County
425 Jack Martin Blvd Brick NJ
Owner in Fee Medical Center of Ocean County
Address 2121 Edgewater Place
Point Pleasant NJ 08742
Tele. ()
Contractor AIR CON inc
1148 Route 22
Mountainside NJ 07092
Tele. (908) 789-6840
Lic. No. B104492
Federal Emp. No. 221 448 381 or Social Security No. _____

B. PLUMBING CHARACTERISTICS

Use Group Present Proposed _____
Building Sewer Size _____
Water Service Size _____
Estimated Cost of Plumbing Work \$ 555,000.00

JB SUMMARY (Office Use Only)

PLAN REVIEW:		INSPECTIONS:	
Joint Plan Review Required:	Type:	Failure	Dates (Month/Day)
			Failure Approval Initial
☐ No Plans Required	Slab		
☐ Bidg. [] Elec. [] Fire	Rough		
☐ Plumb. Plans Approved	Water		
Date: <u>9/25/91</u>	Sewer		
Approved by: <u>[Signature]</u>	Fixtures		
	Gas Equipment		
	Gas Final		
	Solar		
	TCO		
SUBCODE APPROVAL:			
☐ CO ☐ CC ☐ CA			
Approved by: <u>[Signature]</u>			
Date: _____			

C. CERTIFICATION IN LIEU OF OATH

I hereby certify that I am the (agent of) owner of record and am authorized to make this application and perform the work listed on this application.

[Signature]
Signature-Contractor Seal

☐ Licensed Plumbing Contractor ☐ Exempt Applicant

D. TECHNICAL SITE DATA (List all fixtures.)

NO.	FIXTURE/EQUIPMENT	FEE (Office Use Only)
1	xxxxxxx Boiler	15.
13	xxxxxxx Air Handlers	19.5
1	xxxxxxx Cooling Tower	15
2	xxxxxxx Chillers	30
7	xxxxxxx Hot Water H/E	35
78	xxxxxxx Pkgd Terminal	1,170.
1	xxxxxxx Room A/C Units	15.
2	xxxxxxx Diesel Oil Tank	15.
2	xxxxxxx Computer Room Units	15.
	xxxxxxx Diesel Oil	15.
	xxxxxxx Fuel Oil	15.
	Steam Boiler	
	Hot Water Boiler	
	Sewer Pump	
	Interceptor/Separator	
2	Backflow Preventer	50
	Greasetrap	
	Water Cooled A/C or Refrigeration Unit	
	Sewer Connection	
	Water Service Connection	
	Gas Service Connection	
	Active Solar System	
1	Other	10
	Administrative Surcharge	150.00
	Paid ☐ Check # _____ Minimum Fee	1565.00
	Collected by: _____ TOTAL	1565.



FITZPATRICK & ASSOCIATES, INC.
BUILDERS AND CONSTRUCTION MANAGERS

FAX COVER SHEET

DATE SENT: 5/15/91 TIME SENT: 10:45 AM

FROM: MICHAEL HINTZ

TO: TOWNSHIP OF BRICK

FAX PHONE # 920-4850

ATTENTION: RAY KORUKOWSKI

MESSAGE: CUBIC FOOTINGS FOR:
DUMPSIDE AREA
BRIDGE LINK

NUMBER OF PAGES FOLLOWING THIS COVER SHEET: 1

IF ANY PROBLEMS OCCUR DURING THIS TRANSMISSION, PLEASE CALL
(201) 542-6100

FITZPATRICK & ASSOCIATES, INC. FAX PHONE # IS (201) 542-8772

OPERATOR: MAN



FITZPATRICK & ASSOCIATES, INC.
BUILDERS AND CONSTRUCTION MANAGERS

May 15, 1991

Mr. Ray Korkowski
Brick Township Hall
401 Chambers Bridge Road
Brick Township, New Jersey 08723

RE: Addition & Alterations to Brick
Hospital
Our Job #8909

Gentlemen:

In accordance with your request, we are pleased to provide you with the following information in connection with the above referenced project.

Cubic footage of Dumpster Area	12,000 Cubic Feet
--------------------------------	-------------------

Cubic footage of Bridge Link	51,600 Cubic Feet
------------------------------	-------------------

We trust that this will enable you to issue permits for these two portions of the project.

If any additional information is required, please contact me at 542-6100.

Vary truly yours,

FITZPATRICK & ASSOCIATES, INC.

Michael Hintz
Executive Vice President

MH/rr

cc: Mr. John Rauner - MCOG

CC: AJ Cingio
R. J. Lavery
H. P. Lavery
[Signature]

GEORGE R. GILMORE
THOMAS E. MONAHAN*
TERRY F. BRADY*
* Certified Civil Trial Attorney
* Member N.J. & FLA. Bars

GILMORE & MONAHAN

A PROFESSIONAL CORPORATION
COUNSELLORS AT LAW
ALLEN STREET PROFESSIONAL CENTER
TEN ALLEN STREET
P.O. BOX 1540
TOMS RIVER, NEW JERSEY 08754
(908) 240-6000
TELECOPIER NO. 244-1840

RECEIVED

FEB 14 1991

ENGINEERING

CHARLES W. HUTCHINSON
MICHAEL B. LAVERY**
FEB 15 1991
**Member N.J. & PA. Bars

February 12, 1991

Mr. Charles R. Henning, Vice President
Corporate Finance
The Medical Center Of Ocean County
2121 Edgewater Place
Point Pleasant, NJ 08742-2290

Re: Medical Center of Ocean County 1990 Expansion
Case # 1281
Block 1170, Lots 18, 18.2, 18.03

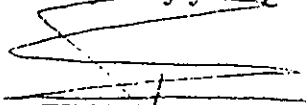
Dear Mr. Henning:

Concerning the above matter, Mr. MacFadden has asked me to respond to your letter of January 29, 1991 wherein you inquire as to whether or not Brick Township can waive the Performance Bonds for this project.

This matter was previously discussed by the Brick Township Council at one of its caucus meetings. It was concluded that the Performance Bonds could not be waived because the Brick Township Ordinance required that those Bonds be posted for all projects within the Township. The fact that the Bond Trustee will retain funds until the project has been completed, does not nullify the requirements of the Ordinance.

Accordingly, the Performance Bonds must be posted before the development permit can be issued.

Very truly yours,


THOMAS E. MONAHAN
For the Firm

TEM:pd

cc: Honorable Stevan Zboyan, Mayor
✓ Scott MacFadden, Administrator

Ewing Cole Cherry

RECEIVED

NOV 14 1991

Architects
Engineers
Interior Designers

One Centennial Square
Suite 301
Haddonfield, New Jersey
08033

609.354.0060
Fax 429.5817

DIV. OF INSPECTION

Date: 11/11/91 To: BRICK TWP. CONSTR. DEPT.

Transmittal

Project: HED. CTR OF Ocean County
Project No: 80056

Attn: MR ART CIERZO

Re: Addition & Alterations

We are sending you: ☒ Attached

☐ Under separate cover via:

☐ Copy of letter ☐ Submittals ☐ Change order
☐ Originals ☐ Product data ☐ Specifications
☐ Prints ☐ Samples

Drawing number:

Prepared by

Description

Code No. of copies

PG1

INSPECTION REPORTS
DATED: 10/7/91,
10/24/91, 10/25/91, 10/29/91
(9 reports included)

JL 1 ea

A Reviewed D No further submission required G Provide ____ copies for distribution J For your records
B Reviewed as noted E Resubmit H For review K For your use
C Rejected—see remarks F Resubmit for record purposes I For approval L As requested

Remarks:

Copies to:

J. Hopler (TRANS. ONLY)

By:

BACBane



Professional Service Industries, Inc.
American Engineering Division

REPORT OF CONCRETE COMPRESSION TEST

TESTED FOR: Medical Center of Ocean County
2121 Edgewater Place
Point Pleasant, NJ 08742-2290

PROJECT: Brick Hospital Expansion

DATE: October 7, 1991

OUR REPORT NO 096-10001-087A

FIELD DATA

LOCATION OF POUR: Grade beam East side of building foundation

DATE POURED 10-7-91

TIME

SLUMP, IN. 2½-6

AIR CONTENT, % 5

AIR TEMPERATURE, °F 60

CONCRETE TEMPERATURE, °F 68

DATE RECEIVED IN LAB 10-8-91

FIELD DATA SUBMITTED BY M. Mygrant

MIX DATA SUBMITTED BY Clayton

SUPPLIER

Clayton

DELIVERY TICKET NO.

329308

MIX NUMBER AND PROPORTIONS

CEMENT

Truck #67

WATER

Total (6)

FINE AGGREGATE

COARSE AGGREGATE

ADMIXTURE

COMPRESSION TEST RESULTS
(NOMINAL CYLINDER SIZE 6" x 12")

LAB. NO.	CUSTOMER NO.	TYPE CURING	DATE TESTED	AGE DAYS	COMPRESSIVE STRENGTH, PSI
101-051A		Lab	10/14	7	4790
101-051B			10/14	7	5080
101-051C			11/5	28	6220
101-051D			11/5	28	6080
101-051E		Hold	11/5	28	
Specifications				28	4000

REMARKS

☒ Cylinders made by PSI representative.

☐ Cylinders made by Architect's or Contractor's representative.

☒ Cylinders picked up by PSI representative.

☒ Cylinders delivered to PSI laboratory.

☒ Test results comply with applicable specifications.

☐ Test results do not comply with applicable specifications.

TYPE OF FRACTURE, IF OTHER THAN CONICAL _____

Super P added

Respectfully submitted,
Professional Service Industries, Inc.



Professional Service Industries, Inc.
American Engineering Division

DAILY FIELD REPORT

TESTED FOR: Medical Center of Ocean County
2121 Edgewater Place
Point Pleasant, NJ 08742-2290

PROJECT: Brick Hospital Expansion

DATE: October 24, 1991

OUR REPORT NO. 096-10001-091

WEATHER: Foggy
TEMPERATURE RANGE: 50 TO: 70
INSPECTOR: M. Mygrant

TYPE OF INSPECTION BEING PERFORMED

____ SOILS

____ FOUNDATIONS

____ CONTROLLED FILL (COMPACTION)

____ ASPHALT

____ BATCH PLANT

____ PLACEMENT (JOB SITE)

____ CONCRETE

____ BATCH PLANT

____ PLACEMENT (JOB SITE)

 X OTHER

 X Structural steel

BRIEF RESUME OF WORK ACCOMPLISHED THIS DATE:

Performed visual inspection of fillet welds and bolted connections under first slab placement. This is a follow-up re-inspection. All required welding has been performed as per drawings. All bolting has been completed and accepted except one (1) connection at Col. 1.9 & D El. 30.54 where the bolts still have not been tightened.

Respectfully submitted,
Professional Service Industries, Inc.



Professional Service Industries, Inc.
American Engineering Division

RECEIVED

NOV 8 1991

EWING COLE CHERRY

DAILY FIELD REPORT

TESTED FOR: Medical Center of Ocean County
2121 Edgewater Place
Point Pleasant, NJ 08742-2290

PROJECT: Brick Hospital Expansion

DATE: October 25, 1991

OUR REPORT NO: 096-10001-092

WEATHER:

TEMPERATURE RANGE:

TO:

INSPECTOR:

M. Mygrant

TYPE OF INSPECTION BEING PERFORMED

____ SOILS

____ FOUNDATIONS

____ CONTROLLED FILL (COMPACTION)

____ ASPHALT

____ BATCH PLANT

____ PLACEMENT (JOB SITE)

____ CONCRETE

____ BATCH PLANT

____ PLACEMENT (JOB SITE)

☒ OTHER

☒ Structural steel

BRIEF RESUME OF WORK ACCOMPLISHED THIS DATE:

Performed final inspection of structural steel prior to placement of slab. Verified all bolting completed in area between Cols. 5&0.6 and A&G.8 at El. 30.54 1st floor. All discrepancies for the above areas have been corrected.

Respectfully submitted,
Professional Service Industries, Inc.



Professional Service Industries, Inc.
American Engineering Division

REPORT OF CONCRETE COMPRESSION TEST

TESTED FOR Medical Center of Ocean County
2121 Edgewater Place
Point Pleasant, NJ 08742-2290

PROJECT: Brick Hospital Expansion

DATE: October 25, 1991

OUR REPORT NO 96-10001-092

FIELD DATA

LOCATION OF POUR: Three (3) bays between col. lines .6 & 1.9 from G.8 to E

DATE POURED 10-25-91 SUPPLIER Clayton
TIME 10:45 DELIVERY TICKET NO. 336458
SLUMP, IN. >12 MIX NUMBER AND PROPORTIONS
AIR CONTENT, % N/A CEMENT
AIR TEMPERATURE, °F N/A WATER
CONCRETE TEMPERATURE, °F N/A FINE AGGREGATE
DATE RECEIVED IN LAB 10-28-91 COARSE AGGREGATE
FIELD DATA SUBMITTED BY J. Vastardis ADMIXTURE
MIX DATA SUBMITTED BY Clayton

COMPRESSION TEST RESULTS
(NOMINAL CYLINDER SIZE 8" x 12")

LAB. NO.	CUSTOMER NO.	TYPE CURING	DATE TESTED	AGE DAYS	COMPRESSIVE STRENGTH, PSI
101-057A 101-057B 101-057C		Lab	11/1 11/22 11/22	7 28 28	1450
Specifications				28	3000

REMARKS

- ☒ Cylinders made by PSI representative.
- ☐ Cylinders made by Architect's or Contractor's representative.
- ☒ Cylinders picked up by PSI representative.
- ☐ Cylinders delivered to PSI laboratory.
- ☐ Test results comply with applicable specifications.
- ☐ Test results do not comply with applicable specifications.

TYPE OF FRACTURE, IF OTHER THAN CONICAL _____

NOTE: Cylinder compressed approximately 1/2" before failure.

4000 psi Structural lightweight concrete with plastisizer used.
Extra cylinders fabricated due to non-conformity of slump and concrete being improperly mixed.

Respectfully submitted,
Professional Service Industries, Inc.



Professional Service Industries, Inc.
American Engineering Division

REPORT OF CONCRETE COMPRESSION TEST

TESTED FOR: Medical Center of Ocean County
2121 Edgewater Place
Point Pleasant, NJ 08742-2290

PROJECT: Brick Hospital Expansion

DATE: October 25, 1991

OUR REPORT NO 096-10001-092

FIELD DATA

LOCATION OF POUR: Level - Basement

DATE POURED 10-25-91

TIME

SLUMP, IN. 2 - 5

AIR CONTENT, % 5.0

AIR TEMPERATURE, °F 70

CONCRETE TEMPERATURE, °F 70

DATE RECEIVED IN LAB 10-28-91

FIELD DATA SUBMITTED BY J. Vastardis

MIX DATA SUBMITTED BY Clayton

SUPPLIER

Clayton

DELIVERY TICKET NO.

336471

MIX NUMBER AND PROPORTIONS

CEMENT

WATER

FINE AGGREGATE

COARSE AGGREGATE

ADMIXTURE

COMPRESSION TEST RESULTS
(NOMINAL CYLINDER SIZE 6" x 12")

LAB. NO.	CUSTOMER NO.	TYPE CURING	DATE TESTED	AGE DAYS	COMPRESSIVE STRENGTH, PSI
101-056A		Lab	11/1	7	4830
101-056B			11/1	7	4950
101-056C			11/22	28	
101-056D			11/22	28	
101-056E			11/22	28	
Specifications				28	4000

REMARKS

☒ Cylinders made by PSI representative

☐ Cylinders made by Architect's or Contractor's representative.

☒ Cylinders picked up by PSI representative.

☐ Cylinders delivered to PSI laboratory.

☐ Test results comply with applicable specifications.

☐ Test results do not comply with applicable specifications.

TYPE OF FRACTURE, IF OTHER THAN CONICAL _____

Respectfully submitted,
Professional Service Industries, Inc.



Professional Service Industries, Inc.
American Engineering Division

REPORT OF CONCRETE COMPRESSION TEST

TESTED FOR: Medical Center of Ocean County
2121 Edgewater Place
Point Pleasant, NJ 08742-2290

PROJECT: Brick Hospital Expansion

DATE: October 25, 1991

OUR REPORT NO 96-10001-092

FIELD DATA

LOCATION OF POUR: Level - Basement

DATE POURED 10-25-91

TIME

SLUMP, IN. 2 - 5

AIR CONTENT, % 4.5

AIR TEMPERATURE, °F 70

CONCRETE TEMPERATURE, °F 72

DATE RECEIVED IN LAB 10-28-91

FIELD DATA SUBMITTED BY J. Vastardis

MIX DATA SUBMITTED BY Clayton

SUPPLIER

Clayton

DELIVERY TICKET NO.

336461

MIX NUMBER AND PROPORTIONS

CEMENT

WATER

FINE AGGREGATE

COARSE AGGREGATE

ADMIXTURE

COMPRESSION TEST RESULTS
(NOMINAL CYLINDER SIZE 6" x 12")

REMARKS

LAB. NO.	CUSTOMER NO.	TYPE CURING	DATE TESTED	AGE DAYS	COMPRESSIVE STRENGTH, PSI
101-055A		Lab	11/1	7	6030
101-055B			11/1	7	5550
101-055C			11/22	28	
101-055D			11/22	28	
101-055E			11/22	28	
		Hold			
Specifications				28	4000

☒ Cylinders made by PSI representative.

☐ Cylinders made by Architect's or Contractor's representative.

☒ Cylinders picked up by PSI representative.

☐ Cylinders delivered to PSI laboratory.

☐ Test results comply with applicable specifications.

☐ Test results do not comply with applicable specifications.

TYPE OF FRACTURE, IF OTHER THAN CONICAL _____

Respectfully submitted,
Professional Service Industries, Inc.



Professional Service Industries, Inc.
American Engineering Division

REPORT OF CONCRETE COMPRESSION TEST

TESTED FOR: Medical Center of Ocean County
2121 Edgewater Place
Point Pleasant, NJ 08742-2290

PROJECT: Brick Hospital Expansion

DATE: October 25, 1991

OUR REPORT NO.096-10001-092

FIELD DATA

LOCATION OF POUR: Level 1 - bay surrounded by col. lines 4.3 & 1.9 from G.8 to F

DATE POURED 10-28-91 SUPPLIER Clayton
TIME DELIVERY TICKET NO. 320626
SLUMP, IN. 3 - 7.5 MIX NUMBER AND PROPORTIONS
AIR CONTENT, % 5.5 CEMENT 4000 lightweight
AIR TEMPERATURE, °F 70 WATER
CONCRETE TEMPERATURE, °F 68 FINE AGGREGATE
DATE RECEIVED IN LAB 10-28-91 COARSE AGGREGATE
FIELD DATA SUBMITTED BY J. Vastardis ADMIXTURE
MIX DATA SUBMITTED BY Clayton

COMPRESSION TEST RESULTS
(NOMINAL CYLINDER SIZE 6" x 12")

LAB. NO.	CUSTOMER NO.	TYPE CURING	DATE TESTED	AGE DAYS	COMPRESSIVE STRENGTH, PSI
101-054A		Lab	11/1	7	3700
101-054B			11/1	7	3590
101-054C			11/22	28	
101-054D			11/22	28	
101-054E			11/22	28	
		Hold			
Specifications				28	4000

REMARKS

- ☒ Cylinders made by PSI representative.
☐ Cylinders made by Architect's or Contractor's representative.
☒ Cylinders picked up by PSI representative.
☐ Cylinders delivered to PSI laboratory.
☐ Test results comply with applicable specifications.
☐ Test results do not comply with applicable specifications.

TYPE OF FRACTURE, IF OTHER THAN CONICAL _____

Sample taken from end of pump
Unit weight=122.2

Respectfully submitted,
Professional Service Industries, Inc.



Professional Service Industries, Inc.
American Engineering Division

REPORT OF CONCRETE COMPRESSION TEST

TESTED FOR Medical Center of Ocean County
2121 Edgewater Place
Point Pleasant, NJ 08742-2290

PROJECT: Brick Hospital Expansion

DATE: October 25, 1991

OUR REPORT NO.: 096-10001-092

FIELD DATA

LOCATION OF POUR: Level 1 - bay surrounded by col. line 6.1 & 4.3 from B.2-D

DATE POURED 10-25-91 SUPPLIER Clayton
TIME DELIVERY TICKET NO. 336446
SLUMP, IN. 3.5 - 8.5 MIX NUMBER AND PROPORTIONS
AIR CONTENT, % 5.5 CEMENT
AIR TEMPERATURE, °F 70 WATER
CONCRETE TEMPERATURE, °F 70 FINE AGGREGATE
DATE RECEIVED IN LAB 10-28-91 COARSE AGGREGATE
FIELD DATA SUBMITTED BY J. Vastardis ADMIXTURE
MIX DATA SUBMITTED BY Clayton

COMPRESSION TEST RESULTS
(NOMINAL CYLINDER SIZE 6" x 12")

LAB. NO.	CUSTOMER NO.	TYPE CURING	DATE TESTED	AGE DAYS	COMPRESSIVE STRENGTH, PSI
101-053A		Lab	11/1	7	3150
101-053B			11/1	7	3400
101-053C			11/22	28	
101-053D			11/22	28	
101-053E			11/22	28	
		Hold			
Specifications				28	4000

REMARKS

- ☒ Cylinders made by PSI representative.
Cylinders made by Architect's or Contractor's representative.
☒ Cylinders picked up by PSI representative.
Cylinders delivered to PSI laboratory.
Test results comply with applicable specifications.
Test results do not comply with applicable specifications.

TYPE OF FRACTURE, IF OTHER THAN CONICAL _____

Sample taken from end of pump
Unit weight=118.4

Respectfully submitted,
Professional Service Industries, Inc.



Professional Service Industries, Inc.
American Engineering Division

REPORT OF CONCRETE COMPRESSION TEST

TESTED FOR: Medical Center of Ocean County
2121 Edgewater Place
Point Pleasant, NJ 08742-2290

PROJECT: Brick Hospital Expansion

DATE: October 29, 1991

OUR REPORT NO.: 096-10001-093

FIELD DATA

LOCATION OF POUR: Col. B.6-14, Grade beam #2 between E&F lines & 14.3 line, also D-4.3
(slab finish around col. base) Anchor bolts covered @ E-4.3, F-4.3, F-5.5, G-5.5,
DATE POURED 10-29-91 SUPPLIER Clayton G-7, F-7
TIME 9:15 DELIVERY TICKET NO. 336556
SLUMP, IN. 2.5 - 6.5 MIX NUMBER AND PROPORTIONS
AIR CONTENT, % N/A CEMENT Approx. 5 yds.
AIR TEMPERATURE, °F 45-66 WATER
CONCRETE TEMPERATURE, °F 60 FINE AGGREGATE
DATE RECEIVED IN LAB 10-30-91 COARSE AGGREGATE
FIELD DATA SUBMITTED BY R. Coveleski ADMIXTURE
MIX DATA SUBMITTED BY Clayton

COMPRESSION TEST RESULTS
(NOMINAL CYLINDER SIZE 6" x 12")

LAB. NO.	CUSTOMER NO.	TYPE CURING	DATE TESTED	AGE DAYS	COMPRESSIVE STRENGTH, PSI
101-058 A		Lab	11/5	7	4790
101-058 B			11/5	7	4720
101-058 C			11/26	28	
101-058 D			11/26	28	
101-058 E			11/26	28	
		Hold			
Specifications				28	4000

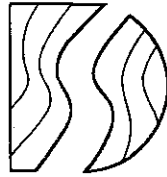
REMARKS

- ☒ Cylinders made by PSI representative.
Cylinders made by Architect's or Contractor's representative.
☒ Cylinders picked up by PSI representative.
Cylinders delivered to PSI laboratory.
Test results comply with applicable specifications.
Test results do not comply with applicable specifications.

TYPE OF FRACTURE, IF OTHER THAN CONICAL _____

Super P added

Respectfully submitted,
Professional Service Industries, Inc.



**D.W. SMITH
ASSOCIATES, P.A.**

Consulting Engineers • Planners • Surveyors • Landscape Architects

May 6, 1991

Medical Center of Ocean County
425 Jack Martin Boulevard
Brick, New Jersey 08724

Attn: Mr. John Rauner

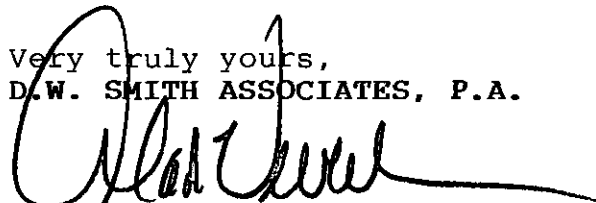
RE: Brick Hospital Expansion
Our Ref. No.: 89-152.00

Dear Mr. Rauner:

This to certify that the attached plans for the Brick Hospital Expansion include a detail for the trash enclosure area and trash enclosure ramp which may be utilized for the purpose of applying for a Building Permit. Enclosed herewith are two (2) signed and sealed copies of the plans for your use in acquiring such a permit.

If we can be of further assistance, please call.

Very truly yours,
D.W. SMITH ASSOCIATES, P.A.



Alan R. Veverka, P.E.

ARV/me
Enclosure

BRICK HOSPITAL
JERSEY SHORE MEDICAL CENTER
POINT PLEASANT HOSPITAL
RIVERVIEW MEDICAL CENTER



Tel 732 840-2200

Meridian Health System
Brick Hospital
425 Jack Martin Boulevard
Brick, NJ 08724

July 17, 1997

Brick Township Municipal
401 Chambers Bridge Rd.
Brick, NJ 08723

Attn: Joe Curiazza, Construction Official

Dear Mr. Curiazza:

We recognize that you and your staff were not the supervising or inspecting staff for the Brick Hospital expansion completed in 1993. We furthermore acknowledge that accountability or responsibility for the completeness or accuracy of those inspections should be attributable to those employed in the Brick Township ~~Billing~~ Department at that time.

*BUILDING
BT*

Sincerely,

John Rauner, RS

John Rauner
Associate Executive Director
Operations

JR:rs

Ewing Cole Cherry Brott • *Architects*
• *Engineers*
• *Interior Designers*
• *Planners*

Federal Reserve Bank Building
Independence Mall West
100 North 6th Street
Philadelphia, Pennsylvania
19106-1590

215.923.2020
Fax 215.574.9163

July 17, 1997

Brick Township Building Department
Brick Township Municipal Offices
Brick, New Jersey 08724

TO WHOM IT MAY CONCERN:

**Re: Meridian Health System
Brick Hospital
Project No. 89056**

Ewing Cole Cherry Brott was the Architect of record for the 1991 expansion to Brick Hospital. To the best of our knowledge, the project was designed in accordance with and meets all of the requirements of both Brick Township and the New Jersey Department of Health. We see no reason that a permanent Certificate of Occupancy for this building should not be issued.

Very truly yours,

EWING COLE CHERRY BROTT


Richard A. Delaney
Direct Dial 215.625.4424

RAD:emm

cc: Messrs. Jarvis, Kamp and Rauner - Meridian Health System

Addition to The Medical Center of Ocean County

This is a temporary Certificate of Occupancy for the following areas:

1st floor (Lab and ER room)

2nd Floor Entire Floor

3rd Floor Med/Surg Patient Care Only

4th Floor Med/Surg Patient Care Only

5th Floor Med/Surg Patient Care Only

THREE G's PLUMBING & HEATING, INC.

P.O. Box 1310 - 514 Arnold Avenue
POINT PLEASANT BEACH, NEW JERSEY 08742

(908) 899-5999
License No. 5451

BRICKTOWN MUNICIPAL BLDG.
401 CHAMBERS BRIDGE ROAD.
BRICK, N.J. 08723

LETTER OF TRANSMITTAL

DATE	7-24-91	JOB NO.
ATTENTION	ART CIERZO	
RE:	BRICK HOSPITAL	

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via _____ the following items:

- ☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
1			FIXTURE COUNT (2 PAGES)
1			FIXTURE SPECS SECTION 15450 (16 PAGES)
1			Bulletin 4 - sink change in Room A3-62
1			ADDENDUM #1 - change LAV-E

THESE ARE TRANSMITTED as checked below:

- ☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval
☒ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution
☒ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS: ART - THE FIXTURE COUNT DOES NOT INCLUDE
RENOVATION WORK AT POINT PLEASANT HOSPITAL.
IF YOU NEED INFO ON THAT LET ME KNOW.

COPY TO _____ SIGNED: BOB LOCKWARD.

BRICK HOSPITAL
FIXTURE COUNT

PG 1

Fixture Type	Floors					Brick Hosp. Existing Bldg.	TOTAL
	1	2	3	4	5		
WC-A	17	10	9	4	1	4	45
WC-B		1		36	24	1	62
WC-C		10				2	12
WC-D			23				23
UR-A	1		1				2
UR-B	1						1
LAV-A	24	15	21	77	48	11	196
LAV-B							-0-
LAV-C	3		16				19
LAV-D	14	2	7	1			24
LAV-E			23				23
CTS-A	21	23	14	12	8	10	88
CTS-B	1	2				2	5
CTS-C		3					3
CTS-D			5	1			6
CTS-E							-0-
CTS-F		2					2
CTS-G	1						1
MR-A	2	2	4	1	1	2	12
SH-A			5	21	19		45
SH-B			16		1		17
SH-C		1	5	7	4		17

BRICK HOSPITAL
FIXTURE COUNT

Pg 2

Fixture Type	FLOORS					Brick Hosp. EXISTING Bldg.	TOTAL
	1	2	3	4	5		
Emergency TOWER - A	1						1
YE/FACE WASH - A	1						1
BT-A				9			9
CLS-A	1	2	4	2	1	2	12
SS-A					1		1
SS-B		1					1
SSS-A	1	1	2			3	7
SSS-B			4		1		5
EWL-A	1	2	1	1	1		6
EWL-B	3	2	1	1	1		8

I.

SPECIFICATION CHANGES

SECTION 08700 - HARDWARE

Page 08700-6, Paragraph D; Item 301; change to read, "Ives Stop 441B-M9."

Page 08700-7, Paragraph H, omit the words "NOT REQUIRED" and add the following:

701	Rockwood - Kickplate 8 x W.O.D.	1-1/2 inch
702	Rockwood - Kickplate 8 x W.O.D.	1 inch
703	Rockwood - Kickplate 8 x W.O.D.	1-1/2 inch, BHMA 630 Note 1 & 2

Note 1: Bottom of plate is bent at 45 degree angle with 1/2 inch projection.

Note 2: Material is .050 inch stainless steel.

II.

DRAWING CHANGES

Drawing No. P2.4.2

→ Room A3-62, sink in upper right corner to be Type SSS-B. 15450-12

Drawing No. E1.0.1

Site Plan - Dated 4/15/91.

Drawing No. E4.2.1

Lighting Schedule - Dated 4/15/91 (Above listed electrical drawings previously issued on 4/16/91.

III.

NEW DRAWINGS - DATED 4/9/91

CP-S2 - Revised engineer's office

CP-S3 - Revised engineer's office

CP-S4 - Revised engineer's office

SKETCHES - structural

+ + END OF BULLETIN NO. 4 + +

SECTION 10201 - METAL WALL AND DOOR LOUVERS

Page 10201-2, ARTICLE 2.01 ACCEPTABLE MANUFACTURERS, Paragraph B. Other Acceptable Manufacturers, Paragraph B. Other Acceptable Manufacturers, Item 3.; delete "American Abrasive Metals Co." and insert "Penn Ventilator Co., Inc."

SECTION 11600 - LABORATORY CASEWORK

Page 11600-1, ARTICLE 1.01 WORK INCLUDED; Insert new Item "C". as follows:

C. Note: All metal casework to be provided is as scheduled on Drawing No. A5.14 and as indicated on the applicable Floor Plan drawings.

SECTION 12304 - PLASTIC LAMINATE CASEWORK

Page 12304-6, ARTICLE 2.03 FABRICATION, Paragraph E. - Narcotic Locker; insert new item no. 4 as follows:

4. Provide one locker in the wall cabinet of each "Med Room (or, Med Alcove)".

SECTION 14211 - ELECTRIC PASSENGER ELEVATORS

Page 14211-23, ARTICLE 2.05 EQUIPMENT, Paragraph P.; insert new Subparagraph 4. as follows:

4. The Elevator equipment submittal shall include the following:
- a. A complete description of products to be supplied including product data, dimensions, and specifications.
 - b. A tabulation showing the following for each vibration isolator:
 - (1) the equipment identification mark
 - (2) the isolator type
 - (3) the actual load applied
 - (4) the static deflection expected under the actual load

SECTION 15450 - PLUMBING FIXTURES AND TRIM

Page 15450-6, ARTICLE 2.04 LAVATORIES, Paragraph E. - Lavatory E; delete existing Subparagraph 1. and insert new Subparagraph 1. as follows:

1. Lavatory: Countertop vitreous china, 22 x 19 inch, self-rimming, twin front overflows, faucet ledge, center hole drilling, American Standard "Lexington" 0492.176.

11. DRAWING CHANGES

Drawing No. A2.4.1

On the Third Floor of the New Building, at Scrub Alcove (A3-67), behind Ante Rm. A3-69 - revise flooring material to read "Traction Floor" sheet vinyl anti-slip flooring - by Forbo Floor Coverings, Inc. (in lieu of the "Medintech" flooring presently called for). Color selection by Architect. Perform the same modification (on the Second Floor of the existing building), in Scrub Alcove E2-47, (between Operating Rooms No. 5 and 6). In Room E2-47, carry the anti-slip flooring up to and flush with - the Corridor face of the partition between the Corridor and Room E2-47. In Room A3-67, carry the anti-slip flooring up to the Scrub Alcove side of the partition between the Ante Room and Room A3-67.

SECTION 15450 - LIST OF ARTICLE TITLES

PLUMBING FIXTURES AND TRIM

PAGE NO.

PART 1 GENERAL

1.01	WORK INCLUDED	1
1.02	RELATED WORK	1
1.03	SUBMITTALS	1
1.04	GENERAL REQUIREMENTS	1
1.05	JOB CONDITIONS	2
1.06	SEISMIC DESIGN	2
1.07	CONTRACT CLOSEOUT	2

PART 2 PRODUCTS

2.01	ACCEPTABLE MANUFACTURERS	2
2.02	PLUMBING FIXTURE LIST	4
2.03	URINALS	5
2.04	LAVATORIES	5
2.05	SINKS	7
2.06	MOP RECEPTORS	8
2.07	SHOWERS	9
2.08	EMERGENCY SHOWER	10
2.09	EYE/FACE WASH	10
2.10	BATHS	10
2.11	CLINIC SINKS	11
2.12	SERVICE SINKS	11
2.13	SCRUB-UP SINKS	12
2.14	ELECTRIC WATER COOLERS	13
2.15	PLUMBING ACCESSORIES	13

PART 3 EXECUTION

3.01	PROTECTION	13
3.02	INSTALLATION	14
3.03	MOUNTING HEIGHTS	14

SECTION 15450
PLUMBING FIXTURES AND TRIM

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Plumbing fixtures and trim.
- B. Thermostatic mixing valves.
- C. Electric water coolers.
- D. Emergency showers/eye wash/face wash.
- E. Miscellaneous plumbing accessories.

1.02 RELATED WORK

- A. Section 15050: Basic Materials and Equipment.
- B. Section 15400: Plumbing Systems.

1.03 SUBMITTALS

- A. Submit manufacturers' Product Data and installation instructions for products listed in Article 2.01 of this section in accordance with Section 01300 Submittals Code C and D.

1.04 GENERAL REQUIREMENTS

- A. Provide fixtures described herein. All trim shall be manufacturer's first grade line, perfect in all respects. "Competition" or "Reserve Grade" material will not be accepted. Manufacturers' and model numbers listed are to indicate standard of quality. Equal products of acceptable manufacturers listed in Article 2.01 may be submitted for review.
- B. Faucets, fittings, handles, traps, seat hinges, water and waste connections, and any other exposed parts shall be polished chrome plate over nickel-plated brass. Provide chrome plated escutcheons for all exposed plated piping penetrating floors and walls. The metal used in castings shall be red metal, having a copper content of not less than 85% and tubing used at plumbing fixtures, heavy seamless brass tubing, not less than No. 17 gauge.
- C. Traps for lavatories and sinks shall be heavy cast brass, adjustable type with cleanouts.

- D. Provide supports for all lavatories; typically, J. R. Smith, Fig. 700-M31 unless indicated otherwise; bolt all supports securely to floor, using 4 bolts in each foot of each support.
- E. Plumbing fixtures shall be white, unless indicated otherwise.
- F. Fixtures shall be product of one manufacturer.
- G. Fittings of same type shall be product of one manufacturer.

1.05 JOB CONDITIONS

- A. Check millwork Shop Drawings. Confirm location and size of fixtures and openings before rough-in and installation.

1.06 SEISMIC DESIGN

- A. Refer to Section 15050, Article 1.03.B.

1.07 CONTRACT CLOSEOUT

- A. Comply with the requirements of Section 01700, Contract Closeout.
- B. Include information for all products specified in this section in the operating and maintenance manual.
- C. Provide following as specified in this section:
 - 1. 5 year warranty on electric water cooler refrigeration system.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Plumbing Fixtures (Water Closets, Urinals, Lavatories, Sinks and Baths)
 - 1. American Standard, Inc.
 - 2. Kohler Co.
 - 3. Eljer Plumbingware Div./Wallace-Murray Corp.
 - 4. Elkay
 - 5. Just
- B. Institutional Type Fixtures
 - 1. Hospital Ware
 - 2. Acorn
 - 3. Castle Forge
- C. Flushometers
 - 1. Sloan Valve Co.
 - 2. Coyne and Delany Co.

- D. Fixture Carriers
 - 1. Jay R. Smith Mfg. Co.
 - 2. Zurn Industries, Inc.
 - 3. Ancon, Inc.
 - 4. Josam Mfg. Co.
- E. Toilet Seats
 - 1. Church Seat Co.
 - 2. Sperzel Industries, Inc.
 - 3. Beneke Corp.
 - 4. Olsonite Corp.
 - 5. Bemis Mfg. Co.
- F. Electric Water Coolers
 - 1. Elkay Mfg. Co.
 - 2. Filtrine Mfg. Co., Inc.
 - 3. Oasis Water Coolers, Ebco Manufacturing Co.
 - 4. Halsey Taylor
- G. Brassware and Trim
 - 1. Speakman Co.
 - 2. American Standard, Inc.
 - 3. Kohler Co.
 - 4. Eljer Plumbingware Div./Wallace-Murray Corp.
 - 5. Chicago Faucet Co.
 - 6. Elkay
 - 7. T & S Brass
 - 8. Water Saver
- H. Traps and Supplies
 - 1. McGuire Manufacturing Co., Inc.
 - 2. Bridgeport Brass Co.
- I. Shower Heads and Thermostatic Shower Mixing Valves
 - 1. MCC Powers
 - 2. Symmons Industries, Inc.
- J. Shower Bases
 - 1. Fiat Products Inc.
 - 2. Stern-Williams Co.
- K. Mop Receptors
 - 1. Fiat Products, Inc.
 - 2. Stern-Williams Co.
- L. Hose Bibbs
 - 1. Chicago Faucet Co.
 - 2. T & S Brass
- M. Emergency Shower/Eye Wash/Face Wash
 - 1. Speakman
 - 2. Haws
 - 3. Guardian
 - 4. Western

2.02 PLUMBING FIXTURE LIST

A. Water Closet A

1. Bowl: Wall hung, water saver, siphon jet action, vitreous china, elongated bowl, 1-1/2 inch brass top spud, American Standard "Afwall" 2477.016.
2. Flush Valve: Exposed, chrome plated, oscillating handle, 1 inch screwdriver backcheck angle stop, vacuum breaker, escutcheon, for 1-1/2 inch top spud connection, Sloan Royal 110-3.
3. Seat: White, heavy-duty, solid plastic, elongated, open front contoured toilet seat, with check hinge, stainless steel mounting posts, Church, 9400KC.
4. Carrier: To suit.

B. Water Closet B [Institutional Type]

1. Bowl: Wall hung, water saver, vitreous china, siphon jet action, elongated bowl, slotted rim for bedpan holding and 1-1/2 inch brass top spud, American Standard "Afwall" 2477.024.
2. Flush Valve: Exposed, chrome plated, oscillating handle, diverter valve assembly with spray head, 1 inch screwdriver backcheck angle stop, vacuum breaker, escutcheon, for 1-1/2 inch top spud, Sloan Royal BPW-1000.
3. Seat: White, heavy-duty, solid plastic, elongated, open front contoured toilet seat, with check hinge, stainless steel mounting posts, Church 9400KC.
4. Carrier: To suit.

C. Water Closet C

1. Water closet and lavatory combination set in wall mounted vinyl clad cabinet (color as selected by Architect). Cabinet shall consist of stationary wall section and hinged lavatory section which shall conceal the water closet. A latch shall be provided to lock the lavatory cabinet in the open or closed position. Include toilet paper holder, concealed Sloan push-button flush valve and secured stainless steel panel for access to valves and piping.
2. Lavatory shall be 16 gauge Type 304 stainless steel, self rimming type with wrist action faucets, gooseneck spout and open grid drain.
3. Water closet shall be elongated floor outlet siphon jet with white open front seat.
4. Unit to be Acorn "Swingette" Model 4055, right- or left-hand as required.

D. Water Closet D

1. Bowl and Tank: Elongated water saver vitreous china, wall hung water closet, elongated siphon jet action bowl, close-coupled tank with water saving trim, 4 bolt caps; American Standard "Glenwall" 2093.631.

2. Seat: White heavy-duty, solid plastic, elongated, open-front toilet seat with cover mounting post; Church 9200M.

2.03 URINALS

A. Urinal A

1. Urinal: Wall hung, vitreous china, water saver, siphon jet, 3/4 inch top spud, flushing rim, extended stall sides, open trapway, American Standard "Trimbrook" 6561.017.
2. Flush Valve: Exposed, chrome plated, oscillating handle, 3/4 inch screwdriver backcheck angle stop, vacuum breaker, escutcheon, for 3/4 inch top spud connection, Sloan Royal 186.
3. Carrier: Floor mounted type with hanger plate, J. R. Smith 637-M31.

B. Urinal B (Handicapped)

1. Urinal: Wall hung, vitreous china, water saver, siphon jet, 1-1/4 inch inlet spud, outlet connection threaded 2 inches inside, American Standard "Allbrook" 6540.017.
2. Flush Valve: Exposed, chrome-plated, oscillating handle, 1 inch screwdriver backcheck angle stop with protective cap, vacuum breaker, spud coupling for 1-1/4 inch top spud, wall and spud flanges, Sloan Royal 180 - 1.5 water saver.
3. Carrier: Floor mounted type with hanger plate, J. R. Smith 644-M31.

2.04 LAVATORIES

A. Lavatory A

1. Lavatory: Wall hung, vitreous china, "D" shaped bowl, dual front overflow, 20 inches by 18 inches, high back, drillings on 8 inch centers, for concealed arms, American Standard "Lucerne" 0356.015.
2. Trim
 - a. Faucet: 4 inch brass color indexed wrist handles, gooseneck spout and aerator, with 1/2 gpm flow restrictor, renewable seats, grid drain with 1-1/4 inch tailpiece, American Standard 2238.202.
 - b. Supply Assembly: Flexible tube riser, loose key control valve, escutcheon and nipple, McGuire 167LK.
 - c. Trap: Adjustable cast brass "P" trap, 1-1/4 inch by 1-1/2 inch with cleanout and escutcheon, McGuire 8902.
 - d. Carrier: Floor mounted type, J. R. Smith Series 700-M31.

B. Lavatory B

1. Lavatory: Countertop vitreous china, 20 inches x 17 inches, self-rimming, front overflow, drilled on 4 inch centers, American Standard "Aqualyn" 0476.028.

2. Trim
 - a. Faucet: Aerator with 1/2 gpm flow restrictor, integral grid drain, 1/2 inch male threaded inlets, coupling nuts, "H" and "C" indexed chrome dodecahedron handles, chrome finish, American Standard 2103.588.
 - b. Supply Assembly: Flexible tube riser, loose key control valve, escutcheon and nipple, McGuire 167LK.
 - c. Trap: Adjustable cast brass "P" trap, 1-1/4 inch x 1-1/2 inch with cleanout and escutcheon, McGuire 8902.
- C. Lavatory C
1. Lavatory: Countertop vitreous china, 20 inches x 17 inches, self-rimming, front overflow, drilled on 8 inch centers, American Standard "Aqualyn" 0475.020.
 2. Trim
 - a. Faucet: 4 inch brass color indexed wrist handles, gooseneck spout and aerator, with 1/2 gpm flow restrictor, renewable seats, grid drain with 1-1/4 inch tailpiece, American Standard 2238.202.
 - b. Supply Assembly: Flexible tube riser, loose key control valve, escutcheon and nipple, McGuire 167LK.
 - c. Trap: Adjustable cast brass "P" trap, 1-1/4 inch by 1-1/2 inch with cleanout and escutcheon, McGuire 8902.
 - d. Carrier: Floor mounted type, J. R. Smith Series 700-M31.
- D. Lavatory D
1. Lavatory: Wall hung, vitreous china, "D" shaped bowl, dual front overflows, 20 inches by 18 inches, high back, center drilling, American Standard "Lucerne" 0356.421 for concealed arms.
 2. Trim
 - a. Spout: 10 inch High deck mounted rigid gooseneck, chrome plated brass, stream regulator outlet. T & S Model B-520.
 - b. Pedal Valve: Chrome Plated brass, wall mounted double pedal valve with angle stops & volume control, self-closing, flip-up pedals. T&S Model B-504-1.
 - c. Trap: Adjustable cast brass "P" trap, 1-1/4 inch x 1-1/2 inch with escutcheon, McGuire 8902.
 - d. Carrier: Floor mounted type, J. R. Smith Series 700-M31.
- E. Lavatory E
1. Lavatory: 19 x 16 x 7-1/2 inch Type 302 stainless steel, self-rimming, single compartment with undercoating, 3.5 inch outlet fitting with 3 inch grid strainer and tailpiece, center hole drilling in ledgeback, Elkay LR-2222.
 2. Trim
 - a. Spout: 10 inch high deck mounted rigid gooseneck, chrome-plated brass, stream regulator outlet. T&S Model B-520.

- b. Pedal Valve: Chrome Plated brass, wall mounted double pedal valve with angle stops and volume control, self-closing, flip-up pedals. T&S Model B-504-1.
- c. Trap: Adjustable cast brass "P" trap, 1-1/2 inch with escutcheon, McGuire 8912.

2.05 SINKS

A. Countertop Sink (CTS) A

- 1. Bowl: 19 x 16 x 7-1/2 inch Type 302 stainless steel, self-rimming, single compartment with undercoating, 3.5 inch crumb cup, strainer and tailpiece, 3 hole drilling in ledgeback, Elkay LR-2222.
- 2. Trim
 - a. Faucet: Chrome plated brass, wide spread faucet centers, 11 inch high rigid gooseneck spout, vandal resistant 3 gpm aerator 4 inch wrist blade handles with color coded indexes, rotating cylinder type valving mechanism with ceramic plate and 180° rotation with replaceable ceramic seats and flexible stainless steel hose connections Delta Model 3579 HDF.
 - b. Supply Pipes: Chrome plated pipes and hand valves when exposed, plain finish when concealed.
 - c. Trap: Adjustable cast brass "P" trap with cleanout and escutcheon, chrome plated McGuire 8912.

B. Countertop Sink (CTS) B

- 1. Bowl: Double compartment type, each to be 19 inch x 16 inch x 7-1/2 inch (43 x 22 inch overall) with undercoating, 18 gauge (.050), Type 302 (18-8) nickel bearing stainless steel, self-rim, 3 hole drilled in ledgeback, LK-H satin finish, 3-1/2 inch stainless crumb cup with stainless conical strainer basket with neoprene stopper, 1-1/2 inch C.P. brass tailpiece, Elkay LR4322.
- 2. Trim
 - a. Faucet: Single level deck type with 11 inch swing type, gooseneck spout and aerator, 6 inch long elbow handle, renewable seats, Delta Model 711 HDF.
 - b. Supply Pipes: Plain finish with hand valves.
 - c. Trap: Adjustable cast brass "P" trap with cleanout and escutcheon, McGuire 8912.

C. Countertop Sink (CTS) C

- 1. Bowl: 19 x 16 x 10 inch Type 302 stainless steel, self-rimming, single compartment with undercoating, 3.5 inch crumb cup, strainer and tailpiece, 3 hole drilling in ledgeback, Elkay OLR-2222-10.
- 2. Trim
 - a. Faucet: Chrome plated brass, wide spread faucet centers, 11 inch high rigid gooseneck spout, vandal resistant 3 gpm aerator 4 inch wrist blade handles with color coded indexes, rotating cylinder type valving mechanism with ceramic plate and 180° rotation

- with replaceable ceramic seats and flexible stainless steel hose connections Delta Model 3579 HDF.
- b. Supply Pipes: Chrome plated pipes and hand valves when exposed, plain finish when concealed.
- c. Trap: Adjustable cast brass "P" trap with cleanout and escutcheon, chrome plated McGuire 8912.

D. Countertop Sink (CTS) D

1. Bowl: Same as CTS-A except center hole drilling in ledgeback.
2. Trim:
 - a. Spout: 10 inch high deck mounted rigid gooseneck, chrome plated brass, stream regulator outlet. T & S Model B-520.
 - b. Foot Valve: Chrome plated brass, floor mounted double pedal self closing type; 1/2 inch inlets and outlet on back, T & S Model B-502.
 - c. Supply Pipes: Plain finish with hand valves.
 - d. Trap: Adjustable cast Brass "P" trap with cleanout and escutcheon, McGuire 8912.

E. Countertop Sink (CTS) E

1. Bowl: Double compartment type, each to be 19 inch x 16 inch x 7-1/2 inch (43 x 22 inch overall) with undercoating, 18 gauge (.050), Type 302 (18-8) nickel bearing stainless steel, self-rim, 3 hole drilled in ledgeback, LK-H satin finish, 3-1/2 inch stainless crumb cup with stainless conical strainer basket with neoprene stopper, 1-1/2 inch C.P. brass tailpiece, Elkay LR4322.
2. Trim
 - a. Faucet: Single level deck type with 11 inch swing type, gooseneck spout and aerator, 6 inch long elbow handle, renewable seats, Delta Model 711 HDF.
 - b. Supply Pipes: Plain finish with hand valves.
 - c. Trap: Adjustable cast brass "P" trap with cleanout and escutcheon, McGuire 8912.

F. Countertop Sink (CTS) F

1. Bowl: Same as CTS-A except 31 x 22 inch overall (28 x 16 inch inside) modified for 16 inch depth. Elkay DLR-3122-16.
2. Trim: Same as CTS-B

G. Countertop Sink (CTS) G

1. Bowl: Same as CTS-A except 31 x 22 inch overall (28 x 16 inch inside). Elkay LR-3122.
2. Trim: Same as CTS-B

2.06 MOP RECEPTORS

A. Mop Receptor A

1. Receptor: 36 x 24 x 10 inch molded stone, vinyl bumper guard on 2 sides, integrally cast drain for 3 inch lead caulked joint, Fiat MSB 3624.

2. Trim

- a. Faucet: Chrome plated fitting with vacuum breaker, integral stops, adjustable wall bracket, pail hook and 3/4 hose thread on spout, Chicago Faucet No. 897.
- b. Hose and Hose Bracket: 30 inches long, flexible, heavy-duty, cloth reinforced hose with 3/4 inch chrome plated coupling and stainless steel hose bracket with rubber grip. #832-AA
- c. Mop Hanger: 24 inches long x 3 inches wide, 18 gauge #302 stainless steel with three (3) rubber tool grips. #889-CC
- d. Strainer: Flat type 16 gauge #302 stainless steel attached with flat head, slotted machine screws, #1453-BB.
- e. Vinyl Bumperguard: #E-77-AA.
- f. Sealant: Silicone sealant to be used between wall and unit, and floor and unit. #833-AA

2.07 SHOWERS

A. Shower A

1. Shower shall be 36 inch x 34 inch x 84 inch size, right or left-hand as required with integrally molded soap dish, and shall be thermoformed from continuous cast acrylic sheet into one piece, seamless units. Include Model 407 CNT, 60 W, recessed round shower light. The units shall be reinforced in the back with fiberglass polyester resin which has been treated with flame retardant additive. Shower shall be predrilled for any field installation requirements. Provide single lever mixing valve with stops, stainless steel hose and in-line vacuum breaker, 2 inch cast brass chrome plated shower drain and 1 inch diameter stainless steel curtain rod. All units shall have antiskid floor treatment to meet performance requirements of ASTM F-462-78. Additional back reinforcements shall be suitably located to provide code complying structural integrity for factory attaching of curtain rod and slide guide for hand held flexible hose shower head. Fiat Model No. MSI-320 color white.
2. Shower Head: Flexible hose with in-line vacuum breakers for hand use or for clamping to wall, with adjustable spray, swivel joint, 59 inch long flexible hose, mounting hardware, adjustable upper bar bracket, escutcheon, all exposed parts chrome plated, Powers No. 141-163.
3. Control: Low temperature thermostatic shower valve with rough brass body, louver handle, screwdriver sweat end check stops. All exposed parts polished chrome finished, Powers L425.
4. Installation: Shower units are to be installed under Section 06100.

- B. Shower B
 - 1. Same as Shower A except 42 inch x 38-1/2 inch. Flat Model No. MSI-321.
 - 2. Shower Head: Same as Shower A.
 - 3. Control: Same as Shower A.
 - 4. Installation: Same as Shower A.

- C. Shower C (Handicapped)
 - 1. Shower Floor: 60 x 48 inch terrazzo with integral stainless steel entry cap. Entry height shall be 1/2 inch for wheelchair access, galvanized-bonderized flange extending 1 inch above shoulders, stainless steel drain body cast integrally with unit for 2 inch lead caulked connection, Fiat Model WTR-5001.
 - 2. Shower Head: Flexible hose for hand use or for clamping to wall, with adjustable spray, swivel joint, 59 inch long flexible hose, mounting hardware, adjustable upper bar bracket, escutcheon, all exposed parts chrome plated, Powers No. 141-163.
 - 3. Control: Low temperature thermostatic shower valve with rough brass body, lever handle, screwdriver sweat and check stops. All exposed parts polished chrome finished, Powers L425.

2.08 EMERGENCY SHOWER

- A. Emergency Shower A
 - 1. Concealed ceiling mounted emergency shower, complete with flanged deluge shower head, 1 inch stay-open ball valve with 28 inch pull rod with triangular handle, ceiling ferrule and interconnecting fittings. All exposed parts polished chrome plated, Speakman "Lifesaver" SE-236-PR.

2.09 EYE/FACE WASH

- A. Eye/Face Wash A
 - 1. Wall mounted aerated eye/face wash, complete with mounting brackets, 1/2 inch full flow valve, activated by stay open push handle, supply line strainer with removable element and 1-1/2 inch tailpiece, Speakman "Eyesaver" SE-400. Provide 1-1/2 inch x 1-1/2 inch adjustable cast brass "P" trap with cleanout and escutcheon. McGuire No. 8912.

2.10 BATHS

- A. Bath (BT) A
 - 1. Bathtub: 60-3/4 inch x 36-1/2 inch Acrylic tub/shower module constructed as described for acrylic showers. Include 2-16 inch vertical and 1-24 inch horizontal grab bars, hand-held shower head slide guide, 1 inch dia. stainless steel curtain rod and Model 407 CNT-TP, 60 w, recessed round shower light. Fiat MTS1-329, RH or LH as required.

2. Shower Head: Same as Shower A.
3. Control: Same as Shower A except 4-port type, Powers L426.
4. Tub Spout: Chrome plated brass diverter spout; T & S B-1095.
5. Pop-Up Drain and overflow with 1-1/2 inch tailpiece, 17 gauge.

2.11 CLINIC SINKS

A. Clinic Sink A

1. Sink: Wall mounted, 20 inch by 24 inch, vitreous china, blow out action with flushing rim, 1-1/2 inch brass top spud, American Standard 9512.013.
2. Trim
 - a. Faucet with 6 inch elbow handles, screwdriver stops, American Standard 8345.100.
 - b. Rim guards (3) stainless steel spring type, American Standard 7832.017.
 - c. Cast brass loose strainer chrome plated, American Standard 37640-02.
 - d. Bedpan Washer Assembly: Assembly to include 7837.024 vacuum breaker; 7866.015 self-closing valve, spray end, wall nozzle with hook, 4 foot rubber hose, chrome finish; 1460.104 bypass valve, renewable seat, screwdriver stop 4-arm brass handle, chrome finish, American Standard 7880.091.
 - e. Flush Valve: Sloan 117YV.

2.12 SERVICE SINKS

A. Service Sink A

1. Bowl: 22 inch by 18 inch, enameled cast iron, with wall hanger drilled for faucet through back, American Standard 7692.049.
2. Faucet: Renewable seats, 4 arm brass handles, color "H" and "C" indexes, 3/4 inch threaded hose end spout, 10-3/4 inch bucket hook, vacuum breaker, screwdriver stops in shanks, brace to wall, all chrome finished, American Standard 8344.111.
3. Trap: Cast iron "P" trap, acid-resisting enamel inside, painted outside, J. R. Smith Fig. 9120.

B. Service Sink B

1. Bowl: 25 inch x 19-1/2 inch x 12 inch deep welded seamless, Type 304, #14 gauge stainless steel, coved corners, LK-4K satin luster finish, drilled for faucet through back; Elkay ESSB-2520.
2. Faucet: Chrome plated brass wall-mounted mixing faucet on 8 inch centers, built-in stops with screwdriver slot. Rigid gooseneck with rosespray outlet, 6 inch color coded wrist action handles T & S B-352.
3. Adjustable "P" trap, cast iron enameled inside, 3 inch outlet with brass cleanout plug, chrome-plated metal strainer; Elkay LK-173.

2.13 SCRUB-UP SINKS

A. Scrub-Up Sink (SSS) A

1. Fabricate of stainless steel with all exposed welds ground and polished to blend with adjacent surfaces. All exterior surfaces No. 4 finish with exception of hinged access panels which shall be of vinyl-clad steel.
2. Construct sink of No. 16 gauge with a minimum radius of 5/8 inch on all corners and with an overall depth of 11 inch sloping to a 2 inch IPS drain at its rear center. Equip with stainless steel antisplash ends and Plexiglas divider panels between each scrub bay. Provide a water spout positioned at each bay to direct splash away from user. Sound deaden. Provide a 9-1/2 inch wide, full length removable shelf above sink. Slope sink front rim away from user.
3. Each scrub bay shall have a 20 watt instant start fluorescent light with a plastic diffuser. Wire for control by remotely located switch.
4. Equip each scrub bay with a 120 volt AC electric solenoid valve, activated by a push action, knee-actuated switch. The control valve shall function to turn water "ON" and "OFF". Operation of valve shall not require continual pressure, but shall be pushed and released to start - pushed released to stop.
5. Equip each scrub bay with knee-operated, double action displacement type soap dispenser which shall accommodate commercially available liquid soaps efficiently and without reacting with them. All soap pump mechanisms mounted with scrub station.
6. Control water temperature automatically by a mixing valve that compensates for change in water temperature and pressure. Include hot and cold water check stops. Include static sensing probe and sealed power actuator. All integrally installed for ease of servicing. Replacing the thermostat sensing element shall not necessitate disconnecting plumbing.
7. Enclose sink bowl and controls in No. 18 gauge stainless steel end panels and front apron. Extend apron down approximately 8 inches below rim of sink front. Equip remainder of cabinet front with individual hinged vinyl-clad steel access panels at each scrub position.
8. Floor-mounted stainless steel pedestal base.
9. Castle Forge SS10-2 63 x 39-1/2 x 25 inch 2 bay scrub station.

B. Scrub-Up Sink (SSS) B

1. Bowl: 25 inch x 20 inch x 10-1/2 inch wall-mounted, welded seamless No. 14 gauge stainless steel, Type 304, corrosion resistant, coved corners, LK-6K satin luster finish; Elkay Model EWS-2520.

TOWNSHIP OF BRICK

OCEAN COUNTY, NEW JERSEY

401 CHAMBERS BRIDGE ROAD, BRICK, N.J. 08723

Daniel F. Newman, Mayor

Members of Township Council

Mary Anne L. Butler, Council President

Charles E. Anderson

Patrick L. Bottazzi

Edmund H. Hibbard

Joseph C. Scarpelli

Warren H. Wolf

David W. Wolfe



Division of Inspection

A.J. Cierzo,
Construction Official

(201) 477-3000, ext. 1

CHECK LIST

Brick

RE: Block _____ Lot _____ Address HOSPITAL

Please be advised that your application for a construction permit for the subject property has been rejected due to deficiencies in the following areas:

Administrative _____

Zoning _____

Engineering _____

Building _____

Plumbing _____

Electric _____

Fire _____

Eng - Posting - Bonds
Called 2/15/80 RK

See attached review check list(s) for details as to the reason your submission has been rejected. Please revise your application accordingly and resubmit to this office.

There is a 20 working day time limit for review of all documents submitted with a construction permit application. This time limit ceases in the event of a rejection of any type, and starts over again when the rejection(s) have been corrected and the application resubmitted.

Arthur J. Cierzo,
Construction Official

Date _____

3RD FLOOR
Hot water temp?

- ① Shower head leaks Rm # 369
- ② Restroom near nurses station
hot water not closing 100%
- ③ Shower head in Rm # 3-03 missing
- ④ Drains for ice machines
- ⑤ Soiled Work Rm. needs cap
on shut off for Clinical Sink
- ⑥ Rm # 339 Sink not complete
- ⑦ strainers for handicapped
showers
- ⑧ water off to sink outside Parent
Breast feeding Rm.
- ⑨ water off to hand sink in ICU
- ⑩ locker ~~in~~ Rm # 3-87 missing
shower head
- ⑪ 3RD floor mop sink needs
groom

2ND FLOOR

- ① - move up soap dispensers (Hospital)
- ② low water flow Rm # 9
- ③ Shower head & Drain Pathology
Toilet
- ④ Change Faucet on Autopsy table



FITZPATRICK & ASSOCIATES, INC.
BUILDERS AND CONSTRUCTION MANAGERS

May 16, 1991

RECEIVED
MAY 17 1991
DIV. OF INSPECTION

Mr. Ray Korkowski
Brick Township Hall
401 Chambers Bridge Road
Brick Township, New Jersey 08723

RE: Addition & Alterations to Brick
Hospital
Our Job #8909

Gentlemen:

Per your request, we wish to advise you of the costs for the Bridge Link construction and the compactor pad enclosure at the Brick Hospital site. The cost for the Bridge Link construction is ~~\$150,000.00~~ and the cost for the compactor pad enclosure is \$80,000.00. *USE THIS*

We trust this is satisfactory. Should you have any questions or require further information, please contact the writer.

Very truly yours,

FITZPATRICK & ASSOCIATES, INC.


Robert W. McGee
Director of Purchasing

RWM/rr

5/17/91
BR



FITZPATRICK & ASSOCIATES, INC.
BUILDERS AND CONSTRUCTION MANAGERS

May 15, 1991

RECEIVED

MAY 17 1991

DIV. OF INSPECTION

Mr. Ray Korkowski
Brick Township Hall
401 Chambers Bridge Road
Brick Township, New Jersey 08723

RE: Addition & Alterations to Brick
Hospital
Our Job #8909

Gentlemen:

In accordance with your request, we are pleased to provide you with the following information in connection with the above referenced project.

Cubic footage of Dumpster Area

~~12,000 Cubic Feet~~

Cubic footage of Bridge Link

~~51,600 Cubic Feet~~ *USE THIS*

We trust that this will enable you to ~~issue permits~~ for these two portions of the project.

If any additional information is required, please contact me at 542-6100.

Very truly yours,

FITZPATRICK & ASSOCIATES, INC.

Michael Hintz
Executive Vice President

MH/rr

cc: Mr. John Rauner - MCOC

5/17/91
gk

2. Trim

- a. Spout: 10 inch High wall mounted rigid gooseneck, chrome plated brass, spray outlet. T&S Model B-536.
- b. Pedal Valve: Chrome Plated brass, wall mounted double pedal valve with angle stops and volume control, self-closing, flip-up pedals. T&S Model B-504-1.
- c. Trap: Adjustable cast brass "P" trap, 1-1/2 inch with escutcheon, McGuire 8912.
- d. Drain Fitting: Stainless steel, 3-1/2 inch opening, 4-1/2 inch top diameter with 3 inch perforated grid strainer and 1-1/2 inch O.D. stainless tailpiece; LK 188.

2.14 ELECTRIC WATER COOLERS

A. Electric Water Cooler A (Wheelchair Type)

1. Wall mounted, all stainless steel cabinet, and top with a deep basin, antisplash, chrome plated brass strainer, chrome plated brass bubbler with automatic stream control, valve operated by two bars in front panel.
2. Cooling Unit: Hermetically sealed, air cooled condensing unit for 115 volts, 60 Hertz, single phase, lubricated for life and equipped with electric cord and three-prong molded rubber plug, thermostat with an adjustable range of 42° to 53° F., A.R.I. certified, complying with Standard 1010-73. Provide five year warranty on the refrigeration system.
3. Capacity and Manufacturer: To cool 7.5 gph water to 50° F. at 90° F. ambient, Oasis OEP8 WM-D.

B. Electric Water Cooler B

1. Wall mounted, all stainless steel cabinet and antisplash top, chrome-plated brass strainer, chrome-plated brass bubbler with automatic stream control, lever operated valve.
2. Cooling Unit: Hermetically sealed, air cooled condensing unit for 115 volts, 60 Hertz, single phase, lubricated for life and equipped with electric cord and three-prong molded rubber plug, thermostat with an adjustable range of 42° to 53° F., ARI certified, complying with Standard 1010-73. Provide five year warranty on the refrigeration system.
3. Capacity and Manufacturer: To cool 8 gph water to 50° F. at 90° F. ambient, Oasis ODP8M.

2.15 PLUMBING ACCESSORIES

- A. Hose Bibb: 3/4 inch size with 3/4 inch hose thread outlet, lock shield cap, vacuum breaker, removable handle, rough chrome plated. Chicago Faucet Model 952 with vacuum breaker.

PART 3 EXECUTION

3.01 PROTECTION

- A. Protect fixtures against use and damage during construction.

3.02 INSTALLATION

- A. Install each fixture with trap, easily removable for servicing and cleaning. At completion thoroughly clean plumbing fixtures and equipment.
- B. Provide vacuum breakers for hose bibbs and faucets with hose connections.
- C. Securely bolt all fixtures to the building construction and unless special hangers are indicated, provide hangers and/or carriers designed specifically for the fixtures by the fixture manufacturer.
- D. Caulk all wall hung fixtures between fixture and wall with sealant specified in Section 07900. Provide sealant at all points where mop receptor meets walls and floor.
- E. Install electric water coolers with "P" trap and water shutoff valve within cabinet.
- F. For plumbing fixtures furnished and set by others, rough in piping and provide traps, valved cold and hot water connections and escutcheons. All exposed components shall be chrome plated unless otherwise noted.
- G. For plumbing fixtures installed in millwork, Contractor for this section shall provide template to Contractor for General Construction for required holes. Contractor for this section shall set fixtures and provide rough-in and final connections.
- H. Before installing the shower valve escutcheon in the shower cubicle, fill the entire annular space between the shower valve body and the surrounding ceramic material with sealant as specified in Section 07900.

3.03 MOUNTING HEIGHTS :

- A. Mount fixtures the following heights above finished floor, except where noted otherwise.

Water Closet:

Standard 15 inches to top of bowl rim

Handicapped 15 inches to top of bowl rim

Urinal:

Standard 22 inches to top of bowl rim

Handicapped 17 inches max. to top of bowl rim

CC: A. Lingo
R. Lavery
H. Pyle
[Signature]

GEORGE R. GILMORE
THOMAS E. MONAHAN*
TERRY F. BRADY*
* Certified Civil Trial Attorney
* Member N.J. & FLA. Bars

GILMORE & MONAHAN

A PROFESSIONAL CORPORATION
COUNSELLORS AT LAW
ALLEN STREET PROFESSIONAL CENTER
TEN ALLEN STREET
P.O. BOX 1540
TOMS RIVER, NEW JERSEY 08754
(908) 240-6000
TELECOPIER NO. 244-1840

RECEIVED

FEB 14 1991

ENGINEERING

CHARLES W. HUTCHINSON
MICHAEL B. LAVERY**
**Member N.J. & FLA. Bars
FEB 15 1991

February 12, 1991

Mr. Charles R. Henning, Vice President
Corporate Finance
The Medical Center Of Ocean County
2121 Edgewater Place
Point Pleasant, NJ 08742-2290

Re: Medical Center of Ocean County 1990 Expansion
Case # 1281
Block 1170, Lots 18, 18.2, 18.03

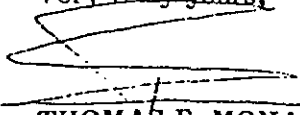
Dear Mr. Henning:

Concerning the above matter, Mr. MacFadden has asked me to respond to your letter of January 29, 1991 wherein you inquire as to whether or not Brick Township can waive the Performance Bonds for this project.

This matter was previously discussed by the Brick Township Council at one of its caucus meetings. It was concluded that the Performance Bonds could not be waived because the Brick Township Ordinance required that those Bonds be posted for all projects within the Township. The fact that the Bond Trustee will retain funds until the project has been completed, does not nullify the requirements of the Ordinance.

Accordingly, the Performance Bonds must be posted before the development permit can be issued.

Very truly yours,


THOMAS E. MONAHAN
For the Firm

TEM:pd

cc: Honorable Stevan Zboyan, Mayor
✓ Scott MacFadden, Administrator

RECEIVED

JAN 11 1991

Ewing Cole Cherry Parsky
Architects • Engineers • Interior Designers

FRANCES J. DUNSTON, M.D., M.P.H.
STATE COMMISSIONER OF HEALTH



State of New Jersey
DEPARTMENT OF HEALTH
HEALTH FACILITIES EVALUATION
CN 367, TRENTON, N.J. 08625-0367

METZLER
de Menna
RAUNER

January 10, 1991

Mr. Rad Delaney
Ewing Cole Cherry Parsky
One Centennial Square Suite 301
Haddonfield, New Jersey 08033-2328

Re: Medical Center of Ocean County
Brick and Point Pleasant, NJ
C/N # 880628-15-01
APPROVAL OF PART

Dear Mr. Delaney:

The construction documents which display the New Jersey State Department of Health approval stamp and date of January 10, 1991 are approved for:

Entry to the site; demolition; excavation; construction of footings and foundations; construction of structure. All drawings which are noted as Information Only are not approved except for that area which deals with the Connecting Link only.

These contract documents are released with the understanding that all comments relative to codes have been met and that the documents are in compliance with NJAC 5:23-2.15 (e) 3 i (3).

Please be advised that this approval shall be valid for a period of six months from the date of this letter. Failure to acquire a construction permit within that time period will void the approval and will require the applicant to submit revised contract documents conforming to the current codes for our review and approval.

Enclosed are Cost and Construction Data Reports and a supply of Monthly Construction Status Report forms which are to be submitted to this office. Copies of the signed construction contract and architect's contract must also be submitted.

Please be advised that final drawings and specifications must be submitted to this office for the review of additional work beyond the scope of this Approval of Part.

Written request for an inspection, prior to occupying the area or areas of completed work, shall be addressed to Mr. Kenneth Hess, Coordinator, Construction Monitoring Unit, NJ State Department of Health, 300 Whitehead Road, CN 367, Trenton, NJ 08625-0367.

Sincerely,



Leonard D. Dileo
Director
Health Facilities
Construction Services

LDD/GV/FHK/fmm

Enclosures
c John Rauner



Three G's Plumbing & Heating

License No. 5451

514 Arnold Avenue

P.O. Box 1310

Point Pleasant Beach, N.J. 08742 908

908 201/899-5998

FAX 201-899-5986

Called
11 AM
10/30/91
JL
RECEIVED

OCT 28 1991

DIV. OF INSPECTION

FAX TRANSMITTALMESSAGE TO:DATE: 10-28-91FAX #

920 - 4850

COMPANY NAME

BRICK MUNICIPAL - PLUMBING INSPECTION

LOCATIONATTENTION

ART CIERZO

PAGES TO FOLLOW

3

MESSAGERE: BRICK HOSPITAL

ENGINEER HAS SPECIFIED # 4055 FLOOR OUTLET.

LOOKS LIKE A S-TRAP. IS THIS ACCEPTABLE?

WE ARE CURRENTLY LAYING OUT FOR ROUGH-IN

SO WE NEED TO KNOW IF YOU WANT TO CHANGE

IT TO THE WALL OUTLET TYPE # 4050.

PLEASE LET US KNOW ASAP SO WE CAN CONTACT
THE ENGINEER.

THANK YOU -

BOB LOCKWARD

SIGNED

LAV/TOILET COMBINATION



MODEL SELECTION

Acorn offers the Swingette model with either a wall outlet blowout jet toilet or a floor outlet siphon jet toilet. The cabinet is furnished opening to the right (R) or left (L). Hand determines side to which cabinet opens when facing fixture and side to which lavatory is approached. Select model number from chart, determine valve type desired and conclude number with suffix options desired.

For Example:

4050L	-VW	-LS
Model	Valve	Options

Model Number	Toilet Outlet	Jet Style
4050 L/R	WALL	BLOWOUT*
4055 L/R	FLOOR	SIPHON

*Wall outlet not available with siphon jet.

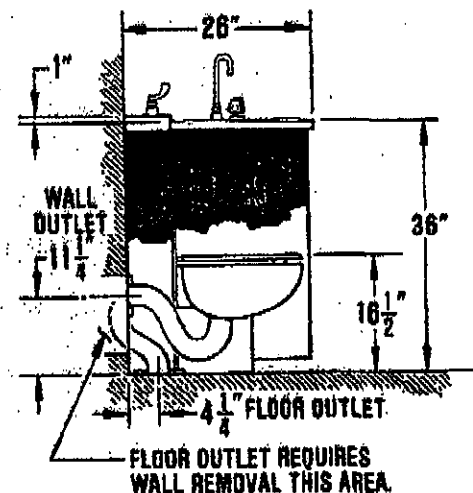
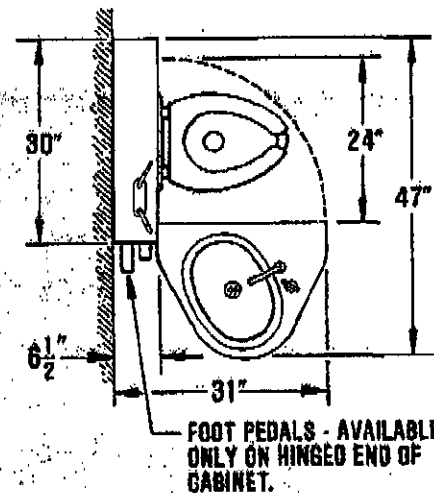
Lavatory Valve** - Select One:

- VW Deck Mounted H & C with wrist blade handles.
- VF Concealed H & C dual foot pedal operated.

Available Options** - Select as Desired:

- LS Lavatory hose spray.
- SF Special finish.
- EG Enviro-Glaze finish.
- AE Aerator
- N3 or N4 Toilet Waste Instalaid.

**Details presented pages 8 & 9.





Care-Ware®

Swingette® Floor Outlet Models

1. MODEL NUMBER AND OPTIONS SELECTION

- ☐ 4055 Swingette, Floor-Outlet

2. LEFT OR RIGHT HAND ORIENTATION

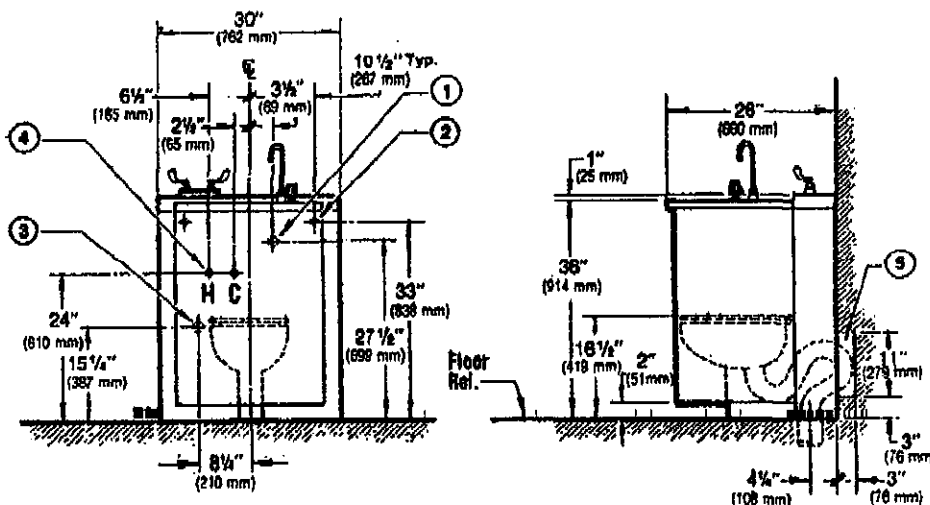
- ☐ -L Left

- ☐ -R Right

Note: L (left) or R (right) indicates cabinet location in opened position, when facing the fixture.

3. SUFFIX OPTIONS (See Model Numbers and Options Section for details.)

- ☐ -AE Aerator (on Goose-neck Spout)
- ☐ -EG Enviro-Glaze Colors, Specify: ☐ Toilet ☐ Lavatory
☐ Yellow ☐ White ☐ Blue ☐ Beige ☐ Red
☐ Tan ☐ Orange ☐ Silver ☐ Pearl ☐ Green
- ☐ -LS Lavatory Hose Spray
- ☐ -MT Metal Template
- ☐ -N3 Instalaid for 3" Soil Pipe
- ☐ -N4 Instalaid for 4" Soil Pipe
- ☐ -SF Special Finish on Cabinet and/or Counter (Subject to written approval by Acorn.)
- ☐ -SO Sensor Operated Valve "Hands-Free"
- ☐ -VF Concealed H & C Foot Pedal Operated Air-Trol Valves



Left hand model shown. Right hand opposite, including all rough-in.

NOTES:

1. Flush Valve inlet is 1" NPT female.
2. Cabinet is bolted to floor with two 3/8"-16 studs and to wall with two 1/4"-20 toggle bolts. Anchors are furnished.
3. Lavatory waste outlet is 1-1/2" NPT female.
4. Lavatory valve supplies are 1/2" NCT.
5. Wall must be removed 3" deep by 4" wide.

Important: Installation instructions and current rough-in dimensions are furnished with each fixture. Do not rough-in without certified dimensions.

Selection Summary

Model Number & Options

4055-L/R

Quantity

Approved for Manufacturing

Company

Title

Signature

Date



Care-Ware®

Swingette® Wall Outlet Models

1. MODEL NUMBER AND OPTIONS SELECTION

- ☐ 4050 Swingette, Wall Outlet

2. LEFT OR RIGHT HAND ORIENTATION

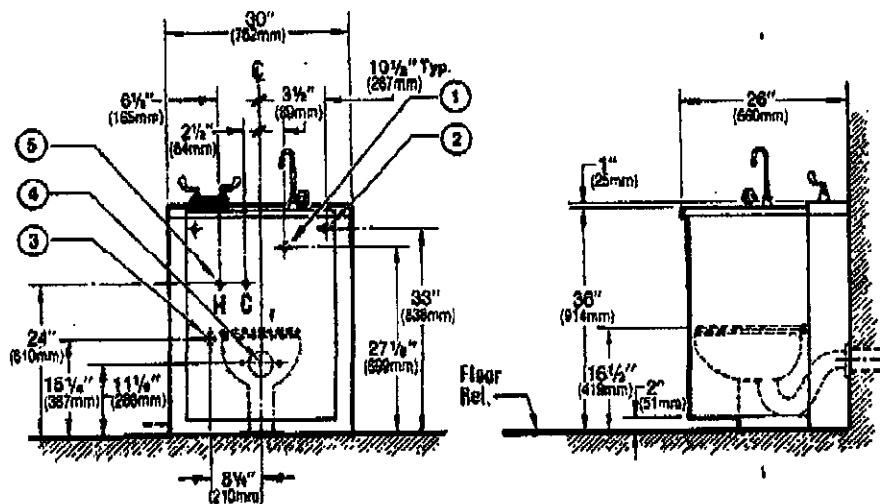
- ☐ -L Left
☐ -R Right

Note: (left) or R (right) indicates cabinet location in opened position, when facing the fixture.

3. SUFFIX OPTIONS (See Model Numbers and Options Section for details.)

- ☐ -AE Acrator (on Gooseneck Spout)
☐ -EG Enviro-Glaze Colors, Specify: ☐ Toilet ☐ Lavatory
☐ Yellow ☐ White ☐ Blue ☐ Beige ☐ Red
☐ Tan ☐ Orange ☐ Silver ☐ Pearl ☐ Green
☐ -LS Lavatory Hose Spray
☐ -MT Metal Template
☐ -N3 Instalaid for 3" Soil Pipe
☐ -N4 Instalaid for 4" Soil Pipe
☐ -SF Special Finish on Cabinet and/or Counter
 (Subject to written approval by Acorn.)
☐ -SO Sensor Operated Valve "Hands-Free"
☐ -VF Concealed H & C Foot Pedal Operated Air-Trol Valves

Fax 920 4850
 ART CIERZO



Left hand model shown. Right hand opposite, including all rough-in.

NOTES:

1. Flush Valve inlet is 1" NPT female.
2. Cabinet is bolted to floor with two 3/8"-16 studs and to wall with two 1/4"-20 toggle bolts. Anchors are furnished.
3. Lavatory waste outlet is 1-1/2" NPT female.
4. Toilet waste connection with 7-1/2" Dia. recessed gasket seat and two 3/8" holes on 6" c/c.
5. Lavatory valve supplies are 1/2" NCT.

Important: Installation instructions and current rough-in dimensions are furnished with each fixture. Do not rough-in without certified dimensions.

Selection Summary

Model Number & Options

4050

Quantity

Approved for Manufacturing

Company

Title

Signature

Date

Ewing Cole Cherry

- Architects
- Engineers
- Interior Designers
- Planners

One Centennial Square
Suite 301
Haddonfield, New Jersey
08033-2328

609.354.0060
Fax 609.429.5817

Ray
Jack

November 5, 1991

RECEIVED

NOV 7 1991

DIV. OF INSPECTION

Mr. Art Cierzo
Construction Official
BRICK TOWNSHIP CONSTRUCTION DEPARTMENT
401 Chambers Bridge Road
Brick, NJ 08723

RE: THE MEDICAL CENTER OF OCEAN COUNTY
PROJECT NO. 89056

Dear Mr. Cierezo:

With regard to the inquiry on fireproofing being used on the building expansion project at the Medical Center of Ocean County; I can assure you that spray fireproofing with Monokote MK-6 on the structural frame is the proper product to use.

The degree of thickness, which gives the different fire ratings, will be tested and inspected by an on site representative from the firm of Professional Service Industries, Inc. (PSI).

This firm, who is hired by the Medical Center, has been performing the inspection services for steel and concrete. They will remain on site to perform inspection of fireproofing and masonry. As you requested, I will make sure you receive their reports. I have enclosed some literature on the Monokote-MK-6 for your files.

Please feel free to call me, if you have any questions about this project.

Very truly yours,

EWING COLE CHERRY

Barbara A. Cedrone

Barbara A. Cedrone, A.I.A.

BAC/jm

Enclosure

cc: Mr. John Rauner - The Medical Center of Ocean County
Mr. Joseph Pandozzi - Fitzpatrick & Associates

Thomas A. Appelquist
Charles V. Belson
Jan L. Bishop
Alex B. Brouwer
Barbara A. Cedrone
Robert V. Cherry

Henry W. Chubbuck, III
Stanley M. Cole
Richard A. Delaney
John B. Di Ilio
Donald H. Dissinger
Richard A. Esslinger

Alexander Ewing
John C. Gerbner
John E. Glass
S. Mark Hebden
Harry J. Houwen
Andrew Jarvis

Scott W. Killinger
Joseph G. Klempay
Daniel P. Kolowitz
Ambrose R. Kozlowski
Benjamin L. Lavecchia
Frank M. Lebnan

Michael W. LeMasney
James T. Lile
Irving J. Maitin
William C. Morlok
Theodore R. Newell
Pradeep R. Patel

Lois R. Sarafian
Glenn A. Vernon
George von Scheven
William D. Wachsberger
James A. Wilson
Boyd C. Wolford

Monokote® Fireproofing



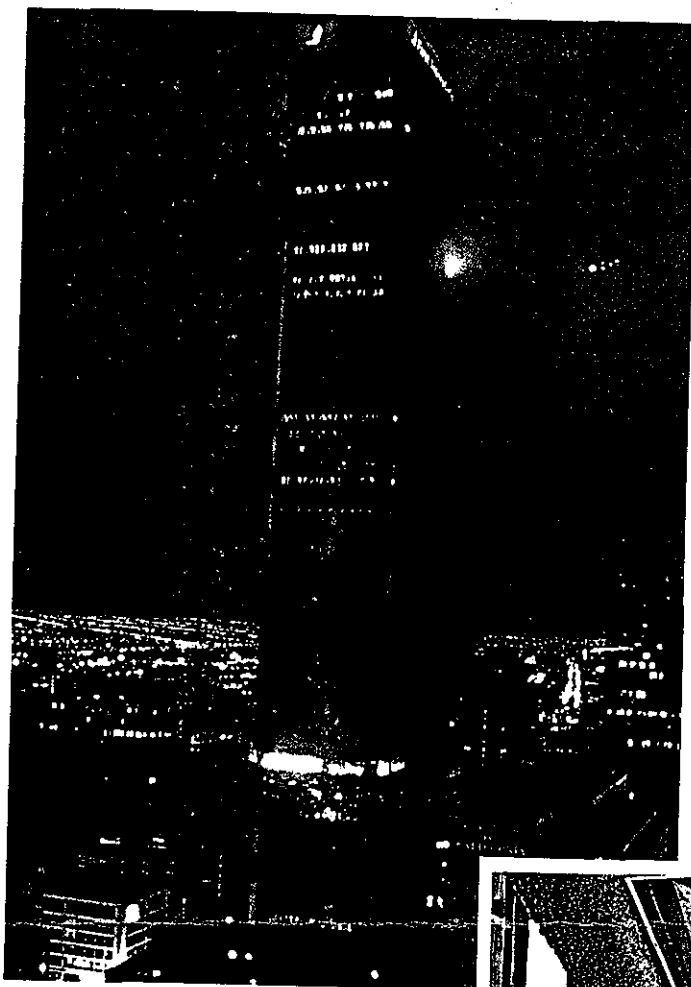


Photo: Scott Robinson

Thanks to a wise decision made 16 years ago, and a first-rate team of over 275 firefighters, the First Interstate Bank building in Los Angeles is still standing after the largest high-rise fire in California history.

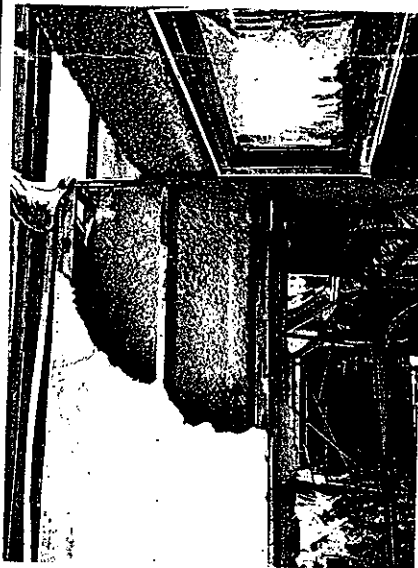
Temperatures in the blaze soared to more than 2000 degrees F, disintegrating gypsum wallboard, melting desks and chairs, and making twisted wrecks of metal ducts on four floors. But, the fireproofed structural steel beams, columns and decking withstood the onslaught, limiting the spread of the fire and preventing total building collapse.

The fireproofing was begun in 1972 but not with Monokote®. After the fireproofing had been completed on floors 1-9, the decision was made to finish the project with Monokote, a hard, cementitious material that meets or exceeds every standard for fire-resistance and in-place performance. When fire broke out on the 12th floor, Monokote was right where it was supposed to be — clinging to the steel.

Performance Under Fire



Seen thru twisted steel studs and total chaos, Monokote remains bonded to beams supporting concrete and steel floors.



The last line of defense, Monokote remained in place on columns and beams through the duration of the fire.

In-place performance is critical in the blazing inferno of a real fire, where fireproofing is tested more severely than is ever simulated under laboratory fire test conditions. Fireproofing's ability to meet critical standards of air erosion, bond strength, and impact and abrasion resistance is vital. In the chaos of the First Interstate fire, superheated air

rushed through exposed shafts and around the outside of the steel, and firefighters bumped and banged their way around the burning floors, subjecting Monokote to impact abuse and abrasion damage from hoses and fire fighting equipment. That the building still stands is testimony to the ultimate benefit of Monokote's solid in-place performance.

Monokote fireproofing was the last line of defense for the First Interstate Bank, a building which had no operational sprinkler system. Fire resistive construction methods should never be traded away to underwrite the cost of automatic sprinklers or other fire fighting improvements. Even in buildings with sprinkler systems, the back-up protection of Monokote is vitally important. The risk to life and property is simply too great.

With the help of Monokote, a catastrophe was averted at the First Interstate Bank building, proving that when all hell breaks loose, the only real fireproofing is one that doesn't go to pieces.

PP-PRODUCT PRESENTATION

Quality In-Place Performance

In-place performance is vitally important when selecting any fire protection material. It includes fire-resistance as tested by Underwriters Laboratories, Inc., and the material's ability to remain intact on the steel for the life of the structure.

Accidental removal of all or part of the fireproofing material from the steel will jeopardize the specified fire-resistance rating. When unprotected steel is exposed to high temperatures it loses yield strength and ability to carry design load — threatening the structural integrity of the building.

Both fire-resistance and in-place performance characteristics should be included in any fireproofing specification. Besides meeting all fire test requirements, a quality fireproofing material should perform well in tests gauging its resistance to construction damage and building occupant abuse. Monokote

Type MK-6 Fireproofing meets or exceeds all recommended performance standards.

Damageability Testing

Damageability tests for measuring the in-place performance of fireproofing include:

Impact Penetration — Contact with hammers, pipes or construction equipment can dislodge soft, friable fireproofing on the job site. This test, developed by the City of San Francisco and adopted by the U.S. Navy, measures penetration into the material by an impact force.

Abrasion Resistance — also developed by the City of San Francisco and adopted by the U.S. Navy, this test gauges the ability of a fireproofing material to resist removal by scraping and abrading forces.

Compression — This ASTM E761 test measures ability to resist deformation under pressure — a job site condition often caused by compression due to leaning ladders or stored material.

Bond Strength Testing

Bond Strength refers to the cohesive/adhesive properties of a material. *Cohesion* measures ability to remain intact and not separate internally. *Adhesion* gauges ability to remain attached to the substrate. Quality fireproofing must have high adhesive/cohesive bond strength to assure continuous protection throughout the building's life cycle.

Bond Impact Testing

Bond Impact measures a fireproofing material's adhesion and resistance to cracking and delamination when applied to floor construction subjected to impact and shock loading. A reliable fireproofing must remain in place and not crack or delaminate under such forces for the life of the building.

Deflection Testing

Fireproofing materials must remain in place and resist cracking and delamination under bending, deflecting stresses exerted on floors or roof. Testing in accordance with ASTM E759 measures this critical ability.

Air Erosion Testing

This test measures the effect of air movement across the fireproofing material's surface. Friable materials exposed to moving air may dust, flake, spall and delaminate from the substrates, reducing fire-resistance and interfering with electronic equipment. The ASTM air erosion test measures the damage potential in return air plenums and other areas.



**Mineral Wool
Sprayed Fiber**



**Cementitious
Monokote**

Quality fireproofing must remain in place. The friable mineral wool material on the left is easily removed, while cementitious Monokote remains in place under abrading forces.

Specialty Fireproofing Products

Grace also offers fireproofing products for special needs and service environments. These include retrofit installations, and applications where damage-resistance, high humidity, or weatherability is a major concern.

Retro-Guard® Fireproofing is a new, cementitious fireproofing product, specifically formulated for retrofit spray application to steel and concrete substrates. Retro-Guard is 100% free of mineral wool, applies easily with portable spray equipment and dries quickly to form a hard, durable, light-blue surface highly resistant to accidental damage. Retro-Guard has been tested by Underwriters Laboratories in accordance with ASTM E119 with various post removal lock-down agents and listed in over 80 beam, column, floor-ceiling and roof-ceiling assemblies for fire-resistance ratings of up to 4 hrs.

Type 106 Portland Cement Cementitious Fireproofing is a mill-mixed, spray-applied fireproofing for structural steel. Its density, hardness and damage-resistance under moist, damp or harsh environments allow greater design freedom with structural steel while insuring quality fire protection for the life of the building.

Topkrete® is a latex-modified portland cement protective coating for Type 106 Fireproofing exposed to high traffic, abrasion or impact forces.

Your Grace Representative will recommend the best combination of spray-applied fire protection systems for your project.

See table below for Monokote performance vs. standards in damageability tests.

Monokote Type MK-6 Meets Performance Standards

Characteristic Measured	Monokote Type MK-6 Performance	Performance Standard	Test Reference
Impact Penetration	5.8 cm ³	6 cm ³ (max)	NFGS-07250 City of San Francisco
Abrasion Resistance	12.5 cm ³	15 cm ³ (max)	NFGS-07250 City of San Francisco
Compression	1600 lbs/ft. ²	1000 lbs/ft. ² (min)	ASTM E761
Bond Strength	324 lbs/ft. ²	200 lbs/ft. ² (min)	ASTM E736
Bond Impact	No cracking or delamination	No cracking or delamination	ASTM E760
Deflection	No cracking or delamination	No cracking or delamination	ASTM E759
Air Erosion	000 gms/ft. ²	005 gms/ft. ²	ASTM E859/GSA
Corrosion	Does not contribute to corrosion of steel		ASTM E937

*Grace Recommended Standard: Performance Standards are outlined in more detail in publication, "A Simple Guide to Quality Fireproofing" (MK-264). Ask a Grace Representative for further information.

CC-CODES. CERTIFICATION

Building Codes

Monokote meets the requirements of the following building code bodies:

- Southern Building Code Congress International (SBCCI)
- Building Officials and Code Administrators, International (BOCA)
- International Conference of Building Officials (ICBO Report Nos. 4587 and 4607)
- New York City MEA

In areas where local codes dictate, contact your Grace Representative for assistance.

Approvals

Monokote meets or exceeds the in-place performance requirements and complies with the following specifications:

- General Services Administration (GSA); AIA/SC/GSA: 07256
- Department of the Navy; NAVFACENGCOM Guide Specification NFGS-07250, Sprayed-On Fireproofing
- U.S. Government; Federal Specification SS-S-111A
- Veterans Administration (VA); H-08-1
- U.S. Environmental Protection Agency (EPA); Regulation 40 CFR, Part 61, Sub-part M, Section 61.148

UL Fire Test Performance

Monokote Fireproofing has been tested and classified by Underwriters Laboratories, Inc. (ULI) and Underwriters Laboratories of Canada (ULC) in accordance with ASTM E119 (UL 263, ULC S101) for fire-resistance ratings from 1-4 hours in over 80 beam, column, floor/ceiling and roof/ceiling assemblies (see fire rating table, this page).

UL lists the surface burning characteristics of Monokote, when tested in accordance with the ASTM E84 tunnel test, as:

Flame Spread 0
Smoke Development 0

Underwriters Laboratories, Inc. Fire Ratings¹

The following chart details the most common UL designs utilizing Monokote Fireproofing. For specific design selection assistance, contact your Grace Sales Representative.

Construction	Restrained Assembly Rating (Hr.)					UL Design No.
	1	1½	2	3	4	
Protected Floor/Ceiling Systems						
						D703
						D739
						D743
						D753
						D754
Unprotected Floor/Ceiling Systems						
						D916
						D917
Concrete Systems						
Pan-Joist/Poured-In-Place						J701
Precast						J704
						J705
Precast/Poured-In-Place						J919
Roof/Ceiling Systems						
Mineral Fiber Board/Composite Gypsum Wallboard w/Foamed Plastic Roof Insulation						P701
						P710
Fiberglass Roof Insulation						P711
IRMA Roof						P714
Koppers Co., Inc. Rx Insulation						P715
Isocyanurate Foam Insulation						P717
Zonolite Concrete Roof Decks						P908
						P921
Beams/Joists²						
Beam Only — Floor Systems						N706
						N708
Joist Only — Floor Systems						N736
Beam Only — Roof Systems						S701, S715
Joist Only — Roof Systems						S702
Columns³						
(Size) (Metric Equivalent)						
W6 x 9 or larger (W150 x 13)						X772
W6 x 16 or larger (W150 x 22)						X772
W8 x 28 or larger (W200 x 42)						X772
W8 x 28 or larger—Boxed (W200 x 42)						X527
W10 x 49 or larger (W250 x 73)						X772
W14 x 228 or larger (W360 x 340)						X772
Tube and Pipe Columns						X771
W-shaped Steel Column ⁴ Formula						X772

¹ Refer to the UL Design Listing for concrete type, beam sizes, composite beam, deck profile, trench header, electrical inserts, roof covering type and other construction details

² Ratings for N or S series designs refer to restrained or unrestrained beam ratings

³ Column ratings do not fall under restrained or unrestrained rating criteria

⁴ Column W/D must be between 0.33 and 6.62

Lavatory:

Standard
Handicapped

34 inches to top of basin rim
35 inches max. to top of basin rim
30 inches min. to underside of basin
apron

Electric Water Cooler:

Standard
Handicapped

40 inches to top of basin rim
36 inches to bubbler outlet

Water Closet Flush Valves:

Standard
Handicapped

11 inches minimum above bowl rim
Mounted for use from the wide side of
stall

+ + END OF SECTION + +

TOWNSHIP OF BRICK

OCEAN COUNTY, NEW JERSEY

401 CHAMBERS BRIDGE ROAD, BRICK, N.J. 08723

Daniel F. Newman, Mayor

Members of Township Council

Mary Anne L. Butler, Council President

Charles E. Anderson

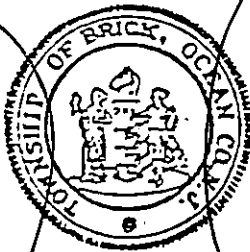
Patrick L. Bottazzi

Edmund H. Hibbard

Joseph C. Scarpelli

Warren H. Wolf

David W. Wolfe



Division of Inspections

A.J. Cierzo,
Construction Official

(201) 477-3000, ext. 262

CHECK LIST

RE: Block 1170 Lot 1802 Address Brick

HOSPITAL

Please be advised that your application for a construction permit for the subject property has been rejected due to deficiencies in the following areas:

Administrative

Zoning

Engineering

Building

Plumbing

Electric

Fire

4/24/91
NO PLAN
RAY
He said he brought in
4/25/91 plan. JH

See attached review-check list(s) for details as to the reason your submission has been rejected. Please revise your application accordingly and resubmit to this office.

There is a 20 working day time limit for review of all documents submitted with a construction permit application. This time limit ceases in the event of a rejection of any type, and starts over again when the rejection(s) have been corrected and the application resubmitted.

4/26/91 NO PLAN. RJK

Arthur J. Cierzo,
Construction Official

Date

**ALLIED FIRE & SAFETY
EQUIPMENT CO., INC.**
517 Green Grove Road • P.O. Box 607
Neptune, New Jersey 07754-0607
(908) 922-3399 • Fax (908) 918-8668

CONTRACTOR'S MATERIAL & TEST CERTIFICATE FOR ABOVEGROUND PIPING

PROCEDURE

Upon completion of work, inspection and tests shall be made by the contractor's representative and witnessed by an owner's representative. All defects shall be corrected and system left in service before contractor's personnel finally leave the job.

A certificate shall be filled out and signed by both representatives. Copies shall be prepared for approving authorities, owners and contractor. It is understood the owner's representative's signature in no way prejudices any claim against contractor for faulty material, poor workmanship, or failure to comply with approving authority's requirements or local ordinances.

PROPERTY NAME						DATE		
THE MEDICAL CENTER of OCEAN COUNTY (BRICK HOSPT.)						1-13-93		
PROPERTY ADDRESS								
425 JACK MARTIN BLVD. BRICK NJ 08724								
PLANS	ACCEPTED BY APPROVING AUTHORITY(S) NAMES							
	TOWNSHIP OF BRICK							
	ADDRESS							
	401 CHAMBERS BRIDGE RD. BRICK NJ 08724							
INSTALLATION CONFORMS TO ACCEPTED PLANS							☒ YES ☐ NO	
EQUIPMENT USED IS APPROVED							☒ YES ☐ NO	
IF NO, EXPLAIN DEVIATIONS								
INSTRUCTIONS	HAS PERSON IN CHARGE OF FIRE EQUIPMENT BEEN INSTRUCTED AS TO LOCATION OF CONTROL VALVES AND CARE AND MAINTENANCE OF THIS NEW EQUIPMENT							
	☒ YES ☐ NO							
HAVE COPIES OF APPROPRIATE INSTRUCTIONS AND CARE AND MAINTENANCE CHARTS AND NFPA 13A BEEN LEFT ON PREMISES							☒ YES ☐ NO	
IF NO, EXPLAIN								
LOCATION OF SYSTEM								
SUPPLIES BLDGS.								
SECOND FLOOR								
SPRINKLERS	MAKE	MODEL	YEAR OF MANUFACTURE	ORIFICE SIZE	QUANTITY	TEMPERATURE RATING		
	CENTRAL	A	1996	1/2	339	1650		
	CENTRAL	A	1992	1/2	20	2120		
PIPE AND FITTINGS	PIPE CONFORMS TO NFPA-13 STANDARD							
	☒ YES ☐ NO							
FITTINGS CONFORM TO NFPA-13 STANDARD							☒ YES ☐ NO	
IF NO, EXPLAIN								
ALARM VALVE OR FLOW INDICATOR	ALARM DEVICE				MAXIMUM TIME TO OPERATE THROUGH TEST PIPE			
	TYPE	MAKE	MODEL	MIN.	SEC.			
	POTTER ELECTRIC	VANG	VSRD					
DRY PIPE OPERATING TEST	DRY VALVE			Q.O.D.				
	MAKE	MODEL	SERIAL NO.	MAKE	MODEL	SERIAL NO.		
	N/A							
	TIME TO TRIP THRU TEST PIPE*		WATER PRESSURE	AIR PRESSURE	TRIP POINT AIR PRESSURE	TIME WATER REACHED TEST OUTLET*		ALARM OPERATED PROPERLY
	MIN.	SEC.	PSI	PSI	PSI	MIN.	SEC.	YES NO
	Without Q.O.D.							
	With Q.O.D.							
	IF NO, EXPLAIN							

SPRINKLER SYSTEMS

DELUGE & PREACTION VALVES	OPERATION <u>N/A</u> ☐ PNEUMATIC ☐ ELECTRIC ☐ HYDRAULIC							
	PIPING SUPERVISED ☐ YES ☐ NO				DETECTING MEDIA SUPERVISED ☐ YES ☐ NO			
	DOES VALVE OPERATE FROM THE MANUAL TRIP AND/OR REMOTE CONTROL STATIONS ☐ YES ☐ NO							
	IS THERE AN ACCESSIBLE FACILITY IN EACH CIRCUIT FOR TESTING ☐ YES ☐ NO				IF NO, EXPLAIN			
	MAKE	MODEL	DOES EACH CIRCUIT OPERATE SUPERVISION LOSS ALARM		DOES EACH CIRCUIT OPERATE VALVE RELEASE		MAXIMUM TIME TO OPERATE RELEASE	
			YES	NO	YES	NO	MIN.	SEC.
TEST DESCRIPTION	HYDROSTATIC: Hydrostatic tests shall be made at not less than 200 psi (13.6 bars) for two hours or 50 psi (3.4 bars) above static pressure in excess of 150 psi (10.2 bars) for two hours. Differential dry-pipe valve clappers shall be left open during test to prevent damage. All aboveground piping leakage shall be stopped. FLUSHING: Flow the required rate until water is clear as indicated by no collection of foreign material in burlap bags at outlets such as hydrants and blow-offs. Flush at flows not less than 400 GPM (1514 L/min) for 4-inch pipe, 600 GPM (2271 L/min) for 5-inch pipe, 750 GPM (2839 L/min) for 6-inch pipe, 1000 GPM (3785 L/min) for 8-inch pipe, 1500 GPM (5678 L/min) for 10-inch pipe and 2000 GPM (7570 L/min) for 12-inch pipe. When supply cannot produce stipulated flow rates, obtain maximum available. PNEUMATIC: Establish 40 psi (2.7 bars) air pressure and measure drop which shall not exceed 1-1/2 psi (0.1 bars) in 24 hours. Test pressure tanks at normal water level and air pressure and measure air pressure drop which shall not exceed 1-1/2 psi (0.1 bars) in 24 hours.							
TESTS	ALL PIPING HYDROSTATICALLY TESTED AT <u>200</u> PSI FOR <u>2</u> HRS.				IF NO, STATE REASON			
	DRY PIPING PNEUMATICALLY TESTED ☐ YES ☐ NO							
	EQUIPMENT OPERATES PROPERLY ☐ YES ☐ NO							
	DRAIN TEST	READING OF GAGE LOCATED NEAR WATER SUPPLY TEST PIPE:			RESIDUAL PRESSURE WITH VALVE IN TEST PIPE OPEN WIDE			
	STATIC PRESSURE: _____ PSI			_____ PSI				
	Underground mains and lead in connections to system risers flushed before connection made to sprinkler piping.							
	VERIFIED BY COPY OF THE U FORM NO. 85B ☐ YES ☐ NO			OTHER EXPLAIN				
	FLUSHED BY INSTALLER OF UNDER-GROUND SPRINKLER PIPING ☐ YES ☐ NO							
BLANK TESTING GASKETS	NUMBER USED <u>2</u>	LOCATIONS					NUMBER REMOVED	
WELDING	WELDED PIPING ☐ YES ☒ NO							
	IF YES ...							
	DO YOU CERTIFY AS THE SPRINKLER CONTRACTOR THAT WELDING PROCEDURES COMPLY WITH THE REQUIREMENTS OF AT LEAST AWS D10.9, LEVEL AR-3 ☐ YES ☐ NO							
	DO YOU CERTIFY THAT THE WELDING WAS PERFORMED BY WELDERS QUALIFIED IN COMPLIANCE WITH THE REQUIREMENTS OF AT LEAST AWS D10.9, LEVEL AR-3 ☐ YES ☐ NO							
	DO YOU CERTIFY THAT WELDING WAS CARRIED OUT IN COMPLIANCE WITH A DOCUMENTED QUALITY CONTROL PROCEDURE TO INSURE THAT ALL DISCS ARE RETRIEVED, THAT OPENINGS IN PIPING ARE SMOOTH, THAT SLAG AND OTHER WELDING RESIDUE ARE REMOVED, AND THAT THE INTERNAL DIAMETERS OF PIPING ARE NOT PENETRATED ☐ YES ☐ NO							
HYDRAULIC DATA NAMEPLATE	NAMEPLATE PROVIDED ☐ YES ☐ NO		IF NO, EXPLAIN					
REMARKS	DATE LEFT IN SERVICE WITH ALL CONTROL VALVES OPEN:							
	<u>1-13-93</u> <u>HL Fire Sub.</u>							
	NAME OF SPRINKLER CONTRACTOR							
SIGNATURES	TESTS WITNESSED BY							
	FOR PROPERTY OWNER (SIGNED)				TITLE		DATE	
	FOR SPRINKLER CONTRACTOR (SIGNED)				TITLE		DATE	
<u>Don M. Voss</u>								
ADDITIONAL EXPLANATION AND NOTES								

Contractor's Material & Test Certificate for Aboveground Piping

**ALLIED FIRE & SAFETY
EQUIPMENT CO., INC.**
517 Green Grove Road • P.O. Box 607
Neptune, New Jersey 07754-0607
(908) 922-3399 • Fax (908) 918-8668

CONTRACTOR'S MATERIAL & TEST CERTIFICATE FOR ABOVEGROUND PIPING

PROCEDURE

Upon completion of work, inspection and tests shall be made by the contractor's representative and witnessed by an owner's representative. All defects shall be corrected and system left in service before contractor's personnel finally leave the job.

A certificate shall be filled out and signed by both representatives. Copies shall be prepared for approving authorities, owners and contractor. It is understood the owner's representative's signature in no way prejudices any claim against contractor for faulty material, poor workmanship, or failure to comply with approving authority's requirements or local ordinances.

PROPERTY NAME <u>The Medical Center of Ocean County Brick House</u>						DATE <u>1-13-93</u>			
PROPERTY ADDRESS <u>425 JACK MARTIN BLVD. BRICK NJ 08724</u>									
PLANS	ACCEPTED BY APPROVING AUTHORITY(S) NAMES <u>TOWNSHIP OF BRICK</u>								
	ADDRESS <u>401 CHAMBERS BRIDGE RD. BRICK NJ 08724</u>								
	INSTALLATION CONFORMS TO ACCEPTED PLANS ☒ YES ☐ NO								
	EQUIPMENT USED IS APPROVED ☒ YES ☐ NO IF NO, EXPLAIN DEVIATIONS								
INSTRUCTIONS	HAS PERSON IN CHARGE OF FIRE EQUIPMENT BEEN INSTRUCTED AS TO LOCATION OF CONTROL VALVES AND CARE AND MAINTENANCE OF THIS NEW EQUIPMENT? ☒ YES ☐ NO IF NO, EXPLAIN								
	HAVE COPIES OF APPROPRIATE INSTRUCTIONS AND CARE AND MAINTENANCE CHARTS AND NFPA 13A BEEN LEFT ON PREMISES? ☒ YES ☐ NO IF NO, EXPLAIN								
LOCATION OF SYSTEM	SUPPLIES BLDGS. <u>THIRD FLOOR</u>								
SPRINKLERS	MAKE	MODEL	YEAR OF MANUFACTURE	ORIFICE SIZE	QUANTITY	TEMPERATURE RATING			
	<u>CENTRAL</u>	<u>A</u>	<u>1992</u>	<u>1/2"</u>	<u>314</u>	<u>165°</u>			
PIPE AND FITTINGS	PIPE CONFORMS TO <u>NFPA-13</u> STANDARD ☒ YES ☐ NO								
	FITTINGS CONFORM TO <u>NFPA-13</u> STANDARD ☒ YES ☐ NO IF NO, EXPLAIN								
ALARM VALVE OR FLOW INDICATOR	ALARM DEVICE			MAXIMUM TIME TO OPERATE THROUGH TEST PIPE					
	TYPE	MAKE	MODEL	MIN.	SEC.				
	<u>POTER ELECTRIC</u>	<u>VANE</u>	<u>VSRD</u>						
DRY PIPE OPERATING TEST	DRY VALVE			Q.O.D.					
	MAKE	MODEL	SERIAL NO.	MAKE	MODEL	SERIAL NO.			
	<u>N/A</u>								
	TIME TO TRIP THRU TEST PIPE*		WATER PRESSURE	AIR PRESSURE	TRIP POINT AIR PRESSURE	TIME WATER REACHED TEST OUTLET*	ALARM OPERATED PROPERLY		
	MIN.	SEC.	PSI	PSI	PSI	MIN.	SEC.	YES	NO
	Without Q.O.D.								
	With Q.O.D.								
	IF NO, EXPLAIN								

SPRINKLER SYSTEMS

DELUGE & PREACTION VALVES	OPERATION <u>N/A</u>		☐ PNEUMATIC		☐ ELECTRIC		☐ HYDRAULIC	
	PIPING SUPERVISED		☐ YES		☐ NO		DETECTING MEDIA SUPERVISED ☐ YES ☐ NO	
	DOES VALVE OPERATE FROM THE MANUAL TRIP AND/OR REMOTE CONTROL STATIONS		☐ YES		☐ NO			
	IS THERE AN ACCESSIBLE FACILITY IN EACH CIRCUIT FOR TESTING		☐ YES		☐ NO		IF NO, EXPLAIN	
	MAKE	MODEL	DOES EACH CIRCUIT OPERATE SUPERVISION LOSS ALARM		DOES EACH CIRCUIT OPERATE VALVE RELEASE		MAXIMUM TIME TO OPERATE RELEASE	
			☐ YES ☐ NO		☐ YES ☐ NO		MIN. SEC.	
TEST DESCRIPTION	HYDROSTATIC: Hydrostatic tests shall be made at not less than 200 psi (13.6 bars) for two hours or 50 psi (3.4 bars) above static pressure in excess of 150 psi (10.2 bars) for two hours. Differential dry-pipe valve clappers shall be left open during test to prevent damage. All aboveground piping leakage shall be stopped. FLUSHING: Flow the required rate until water is clear as indicated by no collection of foreign material in burlap bags at outlets such as hydrants and blow-offs. Flush at flows not less than 400 GPM (1514 L/min) for 4-inch pipe, 600 GPM (2271 L/min) for 5-inch pipe, 750 GPM (2839 L/min) for 6-inch pipe, 1000 GPM (3785 L/min) for 8-inch pipe, 1500 GPM (5678 L/min) for 10-inch pipe and 2000 GPM (7570 L/min) for 12-inch pipe. When supply cannot produce stipulated flow rates, obtain maximum available. PNEUMATIC: Establish 40 psi (2.7 bars) air pressure and measure drop which shall not exceed 1-1/4 psi (0.1 bars) in 24 hours. Test pressure tanks at normal water level and air pressure and measure air pressure drop which shall not exceed 1-1/4 psi (0.1 bars) in 24 hours.							
TESTS	ALL PIPING HYDROSTATICALLY TESTED AT <u>200</u> PSI FOR <u>2</u> HRS.		IF NO, STATE REASON					
	DRY PIPING PNEUMATICALLY TESTED		☐ YES		☐ NO			
	EQUIPMENT OPERATES PROPERLY		☐ YES		☐ NO			
	DRAIN TEST	READING OF GAGE LOCATED NEAR WATER SUPPLY TEST PIPE:		RESIDUAL PRESSURE WITH VALVE IN TEST PIPE OPEN WIDE				
	STATIC PRESSURE: _____ PSI		_____ PSI					
	Underground mains and lead in connections to system risers flushed before connection made to sprinkler piping.							
	VERIFIED BY COPY OF THE U FORM NO. 85B		☐ YES		☐ NO		OTHER EXPLAIN	
	FLUSHED BY INSTALLER OF UNDERGROUND SPRINKLER PIPING		☐ YES		☐ NO			
BLANK TESTING GASKETS	NUMBER USED	LOCATIONS						NUMBER REMOVED
	<u>2</u>	<u>1</u>						
WELDING	WELDED PIPING		☐ YES		☒ NO			
	IF YES ...							
	DO YOU CERTIFY AS THE SPRINKLER CONTRACTOR THAT WELDING PROCEDURES COMPLY WITH THE REQUIREMENTS OF AT LEAST AWS D10.9, LEVEL AR-3		☐ YES		☐ NO			
	DO YOU CERTIFY THAT THE WELDING WAS PERFORMED BY WELDERS QUALIFIED IN COMPLIANCE WITH THE REQUIREMENTS OF AT LEAST AWS D10.9, LEVEL AR-3		☐ YES		☐ NO			
	DO YOU CERTIFY THAT WELDING WAS CARRIED OUT IN COMPLIANCE WITH A DOCUMENTED QUALITY CONTROL PROCEDURE TO INSURE THAT ALL DISCS ARE RETRIEVED, THAT OPENINGS IN PIPING ARE SMOOTH, THAT SLAG AND OTHER WELDING RESIDUE ARE REMOVED, AND THAT THE INTERNAL DIAMETERS OF PIPING ARE NOT PENETRATED		☐ YES		☐ NO			
HYDRAULIC DATA NAMEPLATE	NAMEPLATE PROVIDED		☐ YES		☐ NO		IF NO, EXPLAIN	
REMARKS	DATE LEFT IN SERVICE WITH ALL CONTROL VALVES OPEN: <u>1-13-93 11:45 AM</u> <u>Witness 200 PSI Test.</u> <u>for 1st 2nd & 3rd hours only. Joseph Evans Lin Sub. Coole</u>							
SIGNATURES	NAME OF SPRINKLER CONTRACTOR		<u>Alfred Fine</u>					
	FOR PROPERTY OWNER (SIGNED)		TITLE		DATE			
	FOR SPRINKLER CONTRACTOR (SIGNED)		TITLE		DATE		<u>1-13-93</u>	
ADDITIONAL EXPLANATION AND NOTES								

INSPECTOR: K. Shuter
JOB: Brick Hospital
SP# 11281
SECTION: All four
WEATHER: Sunny
TEMPERATURE: 80°s

DATE: 1-1-95
TYPE OF WORK: Final Eng
LOCATION: Jack Morris Blvd
BLOCK: 1170
LOT: 18/02/03

ENGINEERING RECOMMENDATIONS FOR
CERTIFICATE OF OCCUPANCY
INSPECTION CHECK LIST

ITEMS TO BE COMPLETED	COMPLETED	DEFICIENT
1. Driveway	/	
2. Grading	/	
3. Sidewalk	/	
4. Road Pavement	/	
5. Landscaping & Sodding	/	
6. Clean-up Procedures	/	
7. Note on going construction in immediate area	/	
8. Safety	/	

COMMENTS REFERENCING ITEM NUMBER:

RECOMMENDATIONS:

- ☐ TEMP. C.O.
☒ FINAL C.O.
☐ DETAILED REINSPECTION
☐ HOLD INSPECTION UNTIL LOT ELEVATION FIELD VERIFIED

☐ PLANNING BOARD ENGINEER
☒ MUNICIPAL ENGINEER

I, _____, Authorized representative of _____, hereby acknowledge the above deficiencies, and further realize that the Certificate of Occupancy will be conditioned upon the acceptable resolution thereof within _____ days of the issuance of Certificate of Occupancy.

INSPECTOR: *H. Deibel*DATE: *2/18/93*JOB: *Brick Hospital* SECTION:TYPE OF WORK: *Addition*WEATHER: *50° Sunny*LOCATION: *Route 88*

TEMPERATURE:

BLOCK:

LOT:

**ENGINEERING RECOMMENDATIONS FOR
CERTIFICATE OF OCCUPANCY
INSPECTION CHECK LIST**

ITEMS TO BE COMPLETED	COMPLETED	DEFICIENT
1. Driveway	✓	
2. Grading	✓	
3. Sidewalk	✓	
4. Road Pavement	<i>STAB. DONE</i>	
5. Landscaping & Sodding	<i>ONGOING</i>	
6. Clean-up Procedures	✓	
7. Note on going construction in immediate area		<i>SITE WORK CONTINUING</i>
8. Safety	✓	

COMMENTS REFERENCING ITEM NUMBER:

*SITE TO REMAIN CLEAN & NEAT DURING
ONGOING CONSTRUCTION, TEMP. C.O. VALID
UNTIL JULY 1, 1993*

RECOMMENDATIONS:

☒ TEMP. C.O.☐ FINAL C.O.☐ DETAILED REINSPECTION☐ HOLD INSPECTION UNTIL LOT ELEVATION FIELD VERIFIED

PLANNING BOARD ENGINEER

H. Deibel

MUNICIPAL ENGINEER

_____, Authorized representative of _____, hereby acknowledge the above deficiencies, and further realize that the Certificate of Occupancy will be conditioned upon the acceptable resolution thereof within _____ days of the issuance of Certificate of Occupancy.

HYDRAULIC CALCULATION NOTES

BRICK HOSPITAL AT 425 JACK MARTIN BOULEVARD - 5TH FLOOR

(1) CALCULATION FORMULAS

FRICTIONAL LOSS: $P_f = \frac{4.52 \times L \times Q^{1.85}}{D^{4.87} \times C^{1.85}}$

P_f : frictional resistance in psi
 Q : water flow in gpm
 L : length of pipe plus equivalent length of fittings in feet
 C : pipe roughness coefficient
 D : actual pipe internal diameter in inches

WATER SUPPLY PRESSURE: $P = P_s - (P_s - P_r) \times \frac{Q^{1.85}}{Q_r^{1.85}}$

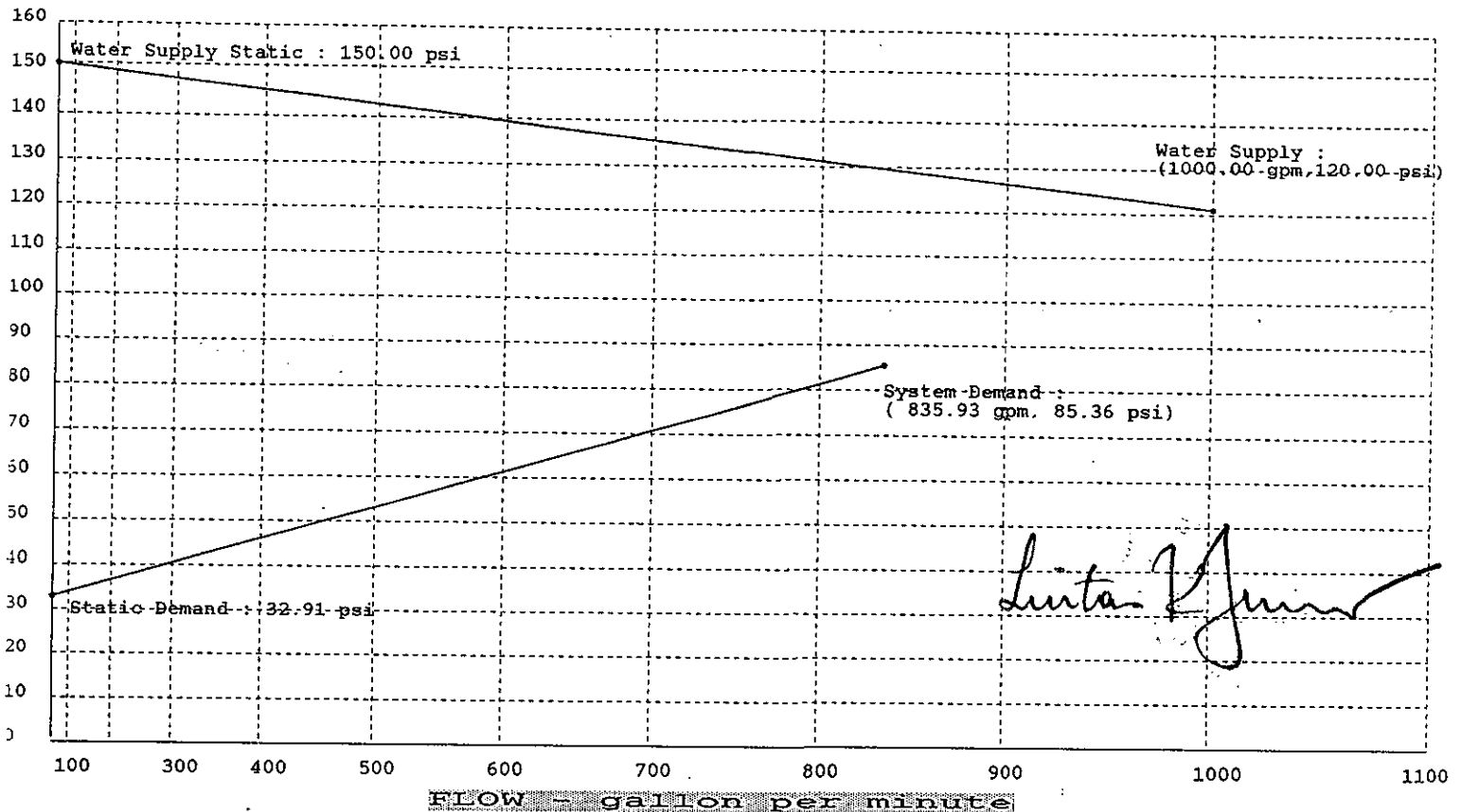
P : pressure available at Node#1 with Q gpm flowing
 Q : total system flow in gpm
 P_s : static pressure in psi (150 psi)
 P_r : residual pressure in psi (120 psi)
 Q_r : water flow in gpm through hydrant flow test (1000 gpm)

(2) SYMBOLS AND ABBREVIATION

T Tee
E Elbow
EE 45-degree Elbow
LE Long Turn Elbow
GV Gate Valve

BV Butterfly Valve
CV Check Valve
AV Alarm Valve
DV Dry Pipe Valve
DL Deluge Valve

(3) WATER SUPPLY & DEMAND GRAPH



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HYDRAULIC CALCULATION FOR SPRINKLER SYSTEM:

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PROJECT NAME: THE MEDICAL CENTER OF OCEAN COUNTY - BRICK HOSPITAL
 PROJECT ADDRESS: 425 JACK MARTIN BLVD., BRICK, N. J. 08724
 CALCULATION AREA: 5TH FLOOR

DESIGN CRITERIA: DENSITY = 0.10 gpm/sq.ft./1500 sq.ft. PLUS 500.00 gpm
 WATER SUPPLY: STATIC 150.00 psi, RESIDUAL 120.00 psi AT 1000.00 gpm

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SPRINKLER SYSTEM DATA: (Pipe & Fittings)

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FROM NODE	TO NODE	SIZE (inch)	LENGTH (feet)	HW-C VALUE	ELEV.DIFF. (feet)	FTG.EQV. LENGTH	TOTAL LENGTH	FITTINGS & DEVICES
1	40	4.260	100.00	120	76.00	42.00	142.00	1T 1GV 2E
40	50	3.260	150.00	120	0.00	38.00	188.00	1E 2T 1GV
50	51	2.067	1.75	120	0.00	10.00	11.75	1T
51	52	1.049	2.00	120	0.00	5.00	7.00	1T
51	53	1.610	5.25	120	0.00	8.00	13.25	1T
53	55	1.610	3.00	120	0.00	0.00	3.00	none
55	56	1.049	3.00	120	0.00	5.00	8.00	1T
55	57	1.380	1.25	120	0.00	6.00	7.25	1T
57	59	1.049	5.00	120	0.00	0.00	5.00	none
59	60	1.049	1.00	120	0.00	5.00	6.00	1T
59	61	1.049	11.00	120	0.00	2.00	13.00	1E
51	62	2.067	14.50	120	0.00	0.00	14.50	none
62	63	1.049	2.00	120	0.00	5.00	7.00	1T
62	64	1.610	5.25	120	0.00	8.00	13.25	1T
64	66	1.610	3.00	120	0.00	0.00	3.00	none
66	67	1.049	3.00	120	0.00	5.00	8.00	1T
66	68	1.380	1.25	120	0.00	6.00	7.25	1T
68	70	1.049	5.00	120	0.00	0.00	5.00	none
70	71	1.049	1.00	120	0.00	5.00	6.00	1T
70	72	1.049	11.00	120	0.00	2.00	13.00	1E
50	73	2.067	10.25	120	0.00	10.00	20.25	1T
73	74	1.049	2.00	120	0.00	5.00	7.00	1T
73	75	1.610	5.25	120	0.00	8.00	13.25	1T
75	77	1.610	3.00	120	0.00	0.00	3.00	none
77	78	1.049	3.00	120	0.00	5.00	8.00	1T
77	79	1.380	1.25	120	0.00	6.00	7.25	1T
79	81	1.049	5.00	120	0.00	0.00	5.00	none
81	82	1.049	1.00	120	0.00	5.00	6.00	1T
81	83	1.049	11.00	120	0.00	2.00	13.00	1E
73	84	2.067	14.50	120	0.00	0.00	14.50	none
84	85	1.049	2.00	120	0.00	5.00	7.00	1T
84	86	1.610	5.25	120	0.00	8.00	13.25	1T
86	88	1.610	3.00	120	0.00	0.00	3.00	none
88	89	1.049	3.00	120	0.00	5.00	8.00	1T

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SPRINKLER SYSTEM DATA: (Pipe & Fittings)

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FROM NODE	TO NODE	SIZE (inch)	LENGTH (feet)	HW-C VALUE	ELEV.DIFF. (feet)	FTG.EQV. LENGTH	TOTAL LENGTH	FITTINGS & DEVICES
89	90	1.380	1.25	120	0.00	6.00	7.25	1T
90	92	1.049	5.00	120	0.00	0.00	5.00	none
92	93	1.049	1.00	120	0.00	5.00	6.00	1T
93	94	1.049	11.00	120	0.00	2.00	13.00	1E

=====

SPRINKLER SYSTEM INPUT DATA: (Sprinkler "K", Node & Area)

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OPERATING SPRINKLERS LOCATED AS FOLLOWS HAVE A "K" OF 5.60

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NODE:	52	56	60	61	63	67	71	72	74	78	82	83	85	89
AREA:	120	40	140	140	120	40	140	140	120	40	140	140	120	40

.....

NODE: 93 94

AREA: 140 140

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SUMMARY OF SPRINKLER SYSTEM INPUT DATA:

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SYSTEM CONSISTS OF 38 PIPES, 39 JUNCTIONS, 0 LOOPS

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AREA CALCULATED = 1760.00 sq.ft., MINIMUM DENSITY = 0.100 gpm/sq.ft.

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CALCULATION RESULTS WITH REQUIRED FLOW AT REMOTE HEAD: (system demand)

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NODE NO.	ELEV. (ft.)	PIPE SIZE	PIPE LENGTH	DISCH. (gpm)	INFLOW (gpm)	PRESS. (psi)	LOSS Pf	LOSS Pe	AREA PER HD.	DSCHRG DENSITY
94	92.00	1.05	13.00	14.82	-14.82	7.00	0.97	0.00	140.00	0.11
93	92.00	1.05	6.00	15.81	-30.63	7.97	1.72	0.00	140.00	0.11
92	92.00	1.05	5.00	0.00	-30.63	9.69	1.43	0.00	0.00	0.00
90	92.00	1.38	7.25	0.00	-30.63	11.12	0.55	0.00	0.00	0.00
89	92.00	1.05	8.00	19.12	-49.74	11.67	5.62	0.00	40.00	0.48
88	92.00	1.61	3.00	0.00	-49.74	17.28	0.26	0.00	0.00	0.00
86	92.00	1.61	13.25	0.00	-49.74	17.54	1.16	0.00	0.00	0.00
84	92.00					18.70				
85	92.00	1.05	7.00	23.41	-23.40	17.48	1.22	0.00	120.00	0.20
84	92.00	2.07	14.50	0.00	-73.14	18.70	0.76	0.00	0.00	0.00
73	92.00					19.46				
83	92.00	1.05	13.00	19.72	-19.72	12.40	1.65	0.00	140.00	0.14
81	92.00					14.05				
82	92.00	1.05	6.00	20.38	-20.37	13.24	0.81	0.00	140.00	0.15
81	92.00	1.05	5.00	0.00	-40.09	14.05	2.36	0.00	0.00	0.00
79	92.00	1.38	7.25	0.00	-40.09	16.40	0.90	0.00	0.00	0.00
77	92.00					17.30				

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CALCULATION RESULTS WITH REQUIRED FLOW AT REMOTE HEAD: (system demand)

=====

NODE NO.	ELEV. (ft.)	PIPE SIZE	PIPE LENGTH	DISCH. (gpm)	INFLOW (gpm)	PRESS. (psi)	LOSS Pf	LOSS Pe	AREA PER HD.	DSCHRG DENSITY
=====										
78	92.00	1.05	8.00	22.41	-22.40	16.02	1.28	0.00	40.00	0.56
77	92.00	1.61	3.00	0.00	-62.49	17.30	0.40	0.00	0.00	0.00
75	92.00	1.61	13.25	0.00	-62.49	17.70	1.76	0.00	0.00	0.00

73	92.00					19.46				
=====										
74	92.00	1.05	7.00	23.88	-23.87	18.20	1.26	0.00	120.00	0.20
73	92.00	2.07	20.25	0.00	-159.51	19.46	4.51	0.00	0.00	0.00

50	92.00					23.98				
=====										
72	92.00	1.05	13.00	19.88	-19.88	12.60	1.67	0.00	140.00	0.14

70	92.00					14.27				
=====										
71	92.00	1.05	6.00	20.54	-20.53	13.45	0.82	0.00	140.00	0.15
70	92.00	1.05	5.00	0.00	-40.41	14.27	2.39	0.00	0.00	0.00
68	92.00	1.38	7.25	0.00	-40.41	16.66	0.91	0.00	0.00	0.00

66	92.00					17.57				
=====										
67	92.00	1.05	8.00	22.58	-22.58	16.27	1.30	0.00	40.00	0.56
66	92.00	1.61	3.00	0.00	-62.99	17.57	0.40	0.00	0.00	0.00
64	92.00	1.61	13.25	0.00	-62.99	17.98	1.79	0.00	0.00	0.00

62	92.00					19.77				
=====										
63	92.00	1.05	7.00	24.07	-24.06	18.48	1.28	0.00	120.00	0.20
62	92.00	2.07	14.50	0.00	-87.05	19.77	1.05	0.00	0.00	0.00

51	92.00					20.82				
=====										
61	92.00	1.05	13.00	20.42	-20.41	13.29	1.76	0.00	140.00	0.15

59	92.00					15.05				
=====										
60	92.00	1.05	6.00	21.09	-21.09	14.19	0.86	0.00	140.00	0.15
59	92.00	1.05	5.00	0.00	-41.50	15.05	2.51	0.00	0.00	0.00
57	92.00	1.38	7.25	0.00	-41.50	17.56	0.96	0.00	0.00	0.00

55	92.00					18.52				
=====										
56	92.00	1.05	8.00	23.19	-23.18	17.15	1.37	0.00	40.00	0.58
55	92.00	1.61	3.00	0.00	-64.68	18.52	0.43	0.00	0.00	0.00
53	92.00	1.61	13.25	0.00	-64.68	18.94	1.88	0.00	0.00	0.00

51	92.00					20.82				
=====										
52	92.00	1.05	7.00	24.71	-24.69	19.48	1.35	0.00	120.00	0.21
=====										

=====

CALCULATION RESULTS WITH REQUIRED FLOW AT REMOTE HEAD: (system demand)

=====

NODE NO.	ELEV. (ft.)	PIPE SIZE	PIPE LENGTH	DISCH. (gpm)	INFLOW (gpm)	PRESS. (psi)	LOSS Pf	LOSS Pe	AREA PER HD.	DSCHRG DENSITY
51	92.00	2.07	11.75	0.00	-176.42	20.82	3.16	0.00	0.00	0.00
50	92.00	3.26	188.00	0.00	-335.93	23.98	18.07	0.00	0.00	0.00
40	92.00	4.26	142.00	250.00	-585.93	42.05	10.38	32.93	0.00	0.00
1	16.00					85.36				

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CALCULATION RESULTS SUMMARY:

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TOTAL SPRINKLER FLOW = 336 gpm WITH MIN.DENSITY OF 0.106 gpm/sq.ft.
 BASED ON MINIMUM OPERATING PRESSURE OF 7 psi AT THE MOST REMOTE SPRINKLER
 500.00 gpm OF STANDPIPE HOSESTREAMS ARE ADDED TO SPRINKLER FLOW WITH
 250.00 gpm AT NODE 40 AND 250.00 gpm AT NODE 1

=====

PRESSURE REQUIRED AT WATER SUPPLY (Node #1 - BASEMENT LEVEL) = 85.36
 THE MAXIMUM VELOCITY OF 18.47 FT/S OCCURS BETWEEN NODES 88 AND 89
 AVAILABLE PRESSURE = 128.47 psi AT A TOTAL FLOW OF 835.93 gpm

=====

F. Emergency Generator Combustion Air and Ventilation Control: When emergency generator is energized, normally open intake damper opens. Provide a 2-stage room thermostat that shall, on a rise in temperature, open intake damper (if it is not already open), and exhaust damper, and energize the exhaust fan at low speed. Upon a further rise, energize fan at high speed. Provide delay for fan spin down between high and low fan speeds. Dampers shall be proven open by end switches.

G. Electrical Room AB-03 Ventilation Control.

1. Provide a room thermostat which shall, on a rise in space temperature, open intake damper and energize exhaust fan. Intake damper shall be proven open by end switch.

H. Duct Smoke Damper and Combination Fire/Smoke Damper Control.

1. Unless otherwise specified, duct smoke dampers and combination fire/smoke dampers shall operate as specified herein.

2. Air Handling Units

- a. Combination fire/smoke dampers throughout system also open when fan is energized. Provide end switch to prove damper open if damper is within 20 feet of fan.
- b. Upon detection of smoke, by a duct-mounted smoke detector, after a time delay for supply fan spindown, all smoke and fire/smoke dampers close.
- c. Any time fan is deenergized, all smoke and fire/smoke dampers close after time delay for fan spindown.

3. Exhaust System Serving One Zone. Upon detection of smoke, fan shall continue to run.

4. Exhaust System Serving Multiple Zones and Separate Exhaust Ducts

- a. Upon detection of smoke, fire/smoke damper shall close for smoke zone only. Other zones remain open and fan continues to run.
- b. A static pressure sensor in exhaust fan suction shall deenergize fan when its setpoint is exceeded.
- c. When fan is deenergized, after a time delay for fan spindown, all smoke and combination fire/smoke dampers close.

5. Exhaust System Serving Multiple Zones with Common Exhaust Ducts. Upon detection of smoke, exhaust fan shall be deenergized, and after a time delay for fan spindown, all smoke and fire/smoke dampers close.

I. Packaged Terminal Room Air Conditioning Units: Provide wiring between room thermostat, hot water control valve and unit.

J. Computer Room Units: Provide wiring between fan, condenser modules, and control panel.

HYDRAULIC CALCULATION NOTES

Wet

BRICK HOSPITAL - MECHANICAL AREA ON BASEMENT FLOOR

(1) CALCULATION FORMULAS

FRICTIONAL LOSS: $P_f = \frac{4.52 \times L \times Q^{1.85}}{D^{4.87} \times C^{1.85}}$

P_f : frictional resistance in psi

Q : water flow in gpm

L : length of pipe plus equivalent length of fittings in feet

C : pipe roughness coefficient

D : actual pipe internal diameter in inches

WATER SUPPLY PRESSURE: $P = P_s - (P_s - P_r) \times \frac{Q^{1.85}}{Q_r^{1.85}}$

P : pressure available at Node#1 with Q gpm flowing

Q : total system flow in gpm

P_s : static pressure in psi (150 psi)

P_r : residual pressure in psi (120 psi)

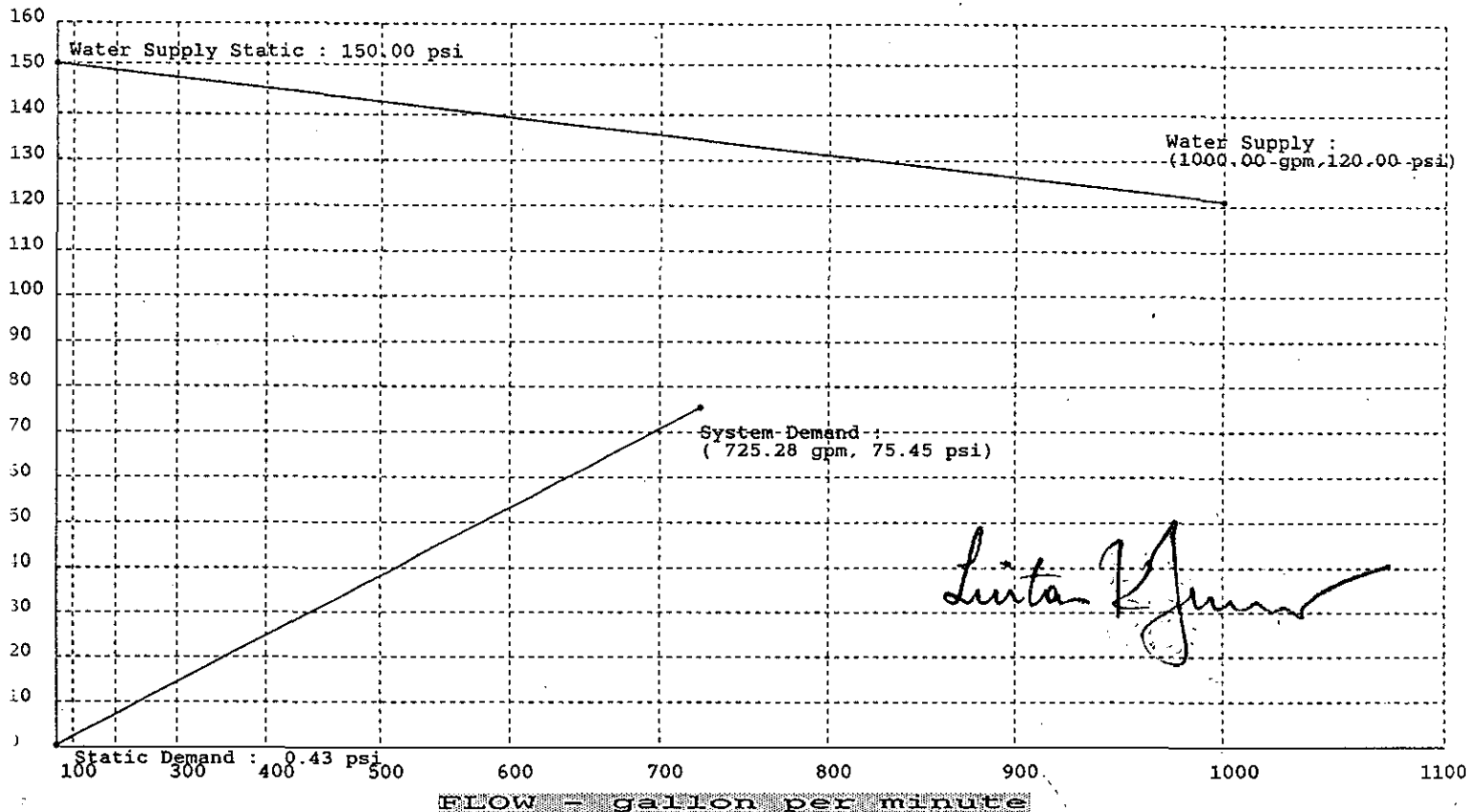
Q_r : water flow in gpm through hydrant flow test (1000 gpm)

(2) SYMBOLS AND ABBREVIATION

T Tee
E Elbow
EE 45-degree Elbow
LE Long Turn Elbow
GV Gate Valve

BV Butterfly Valve
CV Check Valve
AV Alarm Valve
DV Dry Pipe Valve
DL Deluge Valve

(3) WATER SUPPLY & DEMAND GRAPH



=====

HYDRAULIC CALCULATION FOR SPRINKLER SYSTEM:

=====

PROJECT NAME: THE MEDICAL CENTER OF OCEAN COUNTY - BRICK HOSPITAL
 PROJECT ADDRESS: 425 JACK MARTIN BLVD., BRICK, N. J. 08724
 CALCULATION AREA: BASEMENT - MECHANICAL AREA

DESIGN CRITERIA: DENSITY = 0.18 gpm/sq.ft./3000 sq.ft. PLUS 0.00 gpm
 FOR SIZING SPRINKLER SYSTEM UP TO TIE-IN POINT NODE 10
 WATER SUPPLY: STATIC 150.00 psi, RESIDUAL 120.00 psi AT 1000.00 gpm
 AT TIE-IN POINT (NODE 10) FROM STANDPIPE SYSTEM MAIN

=====

SPRINKLER SYSTEM DATA: (Pipe & Fittings)

=====

FROM NODE	TO NODE	SIZE (inch)	LENGTH (feet)	HW-C VALUE	ELEV.DIFF. (feet)	FTG.EQV. LENGTH	TOTAL LENGTH	FITTINGS & DEVICES
10	11	3.068	6.50	120	1.00	30.00	36.50	1T 1GV 2E
11	12	3.068	10.75	120	0.00	0.00	10.75	none
12	13	3.068	6.75	120	0.00	0.00	6.75	none
13	14	3.068	11.00	120	0.00	15.00	26.00	1T
14	15	3.068	10.50	120	0.00	0.00	10.50	none
15	16	1.610	0.75	120	0.00	8.00	8.75	1T
13	17	2.469	1.00	120	0.00	12.00	13.00	1T
17	18	2.469	12.00	120	0.00	0.00	12.00	none
18	19	2.469	12.00	120	0.00	0.00	12.00	none
19	20	2.469	12.00	120	0.00	0.00	12.00	none
20	21	2.469	12.00	120	0.00	0.00	12.00	none
11	100	1.049	1.00	120	0.00	5.00	6.00	1T
12	101	1.049	1.00	120	0.00	5.00	6.00	1T
14	102	1.049	6.50	120	0.00	5.00	11.50	1T
14	103	1.049	4.25	120	0.00	5.00	9.25	1T
103	104	1.049	10.75	120	0.00	0.00	10.75	none
16	105	1.049	1.00	120	0.00	5.00	6.00	1T
17	106	1.049	4.25	120	0.00	5.00	9.25	1T
106	107	1.049	10.75	120	0.00	0.00	10.75	none
18	108	1.049	4.25	120	0.00	5.00	9.25	1T
108	109	1.049	10.75	120	0.00	0.00	10.75	none
18	110	1.049	6.50	120	0.00	5.00	11.50	1T
110	111	1.049	10.75	120	0.00	0.00	10.75	none
19	112	1.049	4.25	120	0.00	5.00	9.25	1T
112	113	1.049	10.75	120	0.00	0.00	10.75	none
19	114	1.049	6.50	120	0.00	5.00	11.50	1T
114	115	1.049	10.75	120	0.00	0.00	10.75	none
21	120	1.049	4.25	120	0.00	5.00	9.25	1T
120	121	1.049	10.75	120	0.00	0.00	10.75	none
21	122	1.049	6.50	120	0.00	5.00	11.50	1T
122	123	1.049	10.75	120	0.00	0.00	10.75	none
20	116	1.049	4.25	120	0.00	5.00	9.25	1T
116	117	1.049	10.75	120	0.00	0.00	10.75	none
20	22	1.049	5.50	120	0.00	5.00	10.50	1T

=====

=====

SPRINKLER SYSTEM DATA: (Pipe & Fittings)

=====

FROM NODE	TO NODE	SIZE (inch)	LENGTH (feet)	HW-C VALUE	ELEV.DIFF. (feet)	FTG.EQV. LENGTH	TOTAL LENGTH	FITTINGS & DEVICES
22	118	1.049	1.00	120	0.00	0.00	1.00	none
22	119	1.049	15.00	120	0.00	9.00	24.00	1T 2E

=====

SPRINKLER SYSTEM INPUT DATA: (Sprinkler "K", Node & Area)

=====

OPERATING SPRINKLERS LOCATED AS FOLLOWS HAVE A "K" OF 5.60

=====

NODE:	100	101	102	103	104	105	106	107	108	109	110	111	112	113
AREA:	129	129	129	129	129	120	129	129	129	129	129	129	129	129

.....

NODE:	114	115	116	117	118	119	120	121	122	123
AREA:	129	129	129	129	129	129	129	129	129	129

=====

SUMMARY OF SPRINKLER SYSTEM INPUT DATA:

=====

SYSTEM CONSISTS OF 36 PIPES, 37 JUNCTIONS, 0 LOOPS

=====

AREA CALCULATED = 3087.00 sq.ft., MINIMUM DENSITY = 0.180 gpm/sq.ft.

=====

CALCULATION RESULTS WITH REQUIRED FLOW AT REMOTE HEAD: (system demand)

=====

NODE NO.	ELEV. (ft.)	PIPE SIZE	PIPE LENGTH	DISCH. (gpm)	INFLOW (gpm)	PRESS. (psi)	LOSS Pf	LOSS Pe	AREA PER HD.	DSCHRG DENSITY
119	11.00	1.05	24.00	23.22	-23.22	17.19	4.12	0.00	129.00	0.18
22	11.00					21.31				
118	11.00	1.05	1.00	25.72	-25.72	21.10	0.21	0.00	129.00	0.20
22	11.00	1.05	10.50	0.00	-48.94	21.31	7.15	0.00	0.00	0.00
20	11.00					28.46				
117	11.00	1.05	10.75	24.80	-24.80	19.61	2.08	0.00	129.00	0.19
116	11.00	1.05	9.25	26.08	-50.87	21.69	6.77	0.00	129.00	0.20
20	11.00					28.46				
123	11.00	1.05	10.75	23.89	-23.88	18.19	1.94	0.00	129.00	0.19
122	11.00	1.05	11.50	25.13	-49.01	20.14	7.86	0.00	129.00	0.19
21	11.00					27.99				
121	11.00	1.05	10.75	24.59	-24.59	19.28	2.05	0.00	129.00	0.19
120	11.00	1.05	9.25	25.86	-50.44	21.33	6.67	0.00	129.00	0.20
21	11.00					27.99				
115	11.00	1.05	10.75	24.82	-24.82	19.64	2.09	0.00	129.00	0.19

=====

=====

CALCULATION RESULTS WITH REQUIRED FLOW AT REMOTE HEAD: (system demand)

=====

NODE NO.	ELEV. (ft.)	PIPE SIZE	PIPE LENGTH	DISCH. (gpm)	INFLOW (gpm)	PRESS. (psi)	LOSS Pf	LOSS Pe	AREA PER HD.	DSCHRG DENSITY
114	11.00	1.05	11.50	26.10	-50.92	21.73	8.43	0.00	129.00	0.20
19	11.00					30.16				
113	11.00	1.05	10.75	25.55	-25.54	20.81	2.20	0.00	129.00	0.20
112	11.00	1.05	9.25	26.86	-52.40	23.01	7.15	0.00	129.00	0.21
19	11.00					30.16				
111	11.00	1.05	10.75	26.33	-26.33	22.11	2.33	0.00	129.00	0.20
110	11.00	1.05	11.50	27.68	-54.01	24.44	9.40	0.00	129.00	0.21
18	11.00					33.84				
109	11.00	1.05	10.75	27.10	-27.10	23.42	2.45	0.00	129.00	0.21
108	11.00	1.05	9.25	28.48	-55.57	25.87	7.97	0.00	129.00	0.22
18	11.00					33.84				
107	11.00	1.05	10.75	29.66	-29.65	28.05	2.90	0.00	129.00	0.23
106	11.00	1.05	9.25	31.15	-60.80	30.95	9.41	0.00	129.00	0.24
17	11.00					40.36				
105	11.00	1.05	6.00	37.87	-37.86	45.76	2.54	0.00	120.00	0.32
16	11.00					48.30				
104	11.00	1.05	10.75	32.68	-32.67	34.06	3.47	0.00	129.00	0.25
103	11.00	1.05	9.25	34.30	-66.97	37.53	11.26	0.00	129.00	0.27
14	11.00					48.79				
102	11.00	1.05	11.50	37.17	-37.16	44.08	4.71	0.00	129.00	0.29
14	11.00					48.79				
101	11.00	1.05	6.00	39.35	-39.34	49.41	2.73	0.00	129.00	0.31
12	11.00					52.14				
100	11.00	1.05	6.00	41.12	-41.10	53.94	2.96	0.00	129.00	0.32
11	11.00					56.90				
21	11.00	2.47	12.00	0.00	-99.45	27.99	0.47	0.00	0.00	0.00
20	11.00	2.47	12.00	0.00	-199.27	28.46	1.70	0.00	0.00	0.00
19	11.00	2.47	12.00	0.00	-302.59	30.16	3.68	0.00	0.00	0.00
18	11.00	2.47	12.00	0.00	-412.17	33.84	6.52	0.00	0.00	0.00

=====

=====

CALCULATION RESULTS WITH REQUIRED FLOW AT REMOTE HEAD: (system demand)

=====

NODE NO.	ELEV. (ft.)	PIPE SIZE	PIPE LENGTH	DISCH. (gpm)	INFLOW (gpm)	PRESS. (psi)	LOSS Pf	LOSS Pe	AREA PER HD.	DSCHRG DENSITY
17	11.00	2.47	13.00	0.00	-472.96	40.36	9.11	0.00	0.00	0.00
13	11.00					49.47				
16	11.00	1.61	8.75	0.00	-37.86	48.30	0.46	0.00	0.00	0.00
15	11.00	3.07	10.50	0.00	-37.86	48.76	0.02	0.00	0.00	0.00
14	11.00	3.07	26.00	0.00	-141.99	48.79	0.68	0.00	0.00	0.00
13	11.00	3.07	6.75	0.00	-614.95	49.47	2.67	0.00	0.00	0.00
12	11.00	3.07	10.75	0.00	-654.29	52.14	4.77	0.00	0.00	0.00
11	11.00	3.07	36.50	0.00	-695.39	56.90	18.12	0.43	0.00	0.00
10	10.00					75.45				

=====

CALCULATION RESULTS SUMMARY:

=====

TOTAL SPRINKLER FLOW = 695 gpm WITH MIN. DENSITY OF 0.180 gpm/sq.ft.

PRESSURE REQUIRED AT SPRINKLER TIE-IN POINT (NODE 10) = 75.45

THE MAXIMUM VELOCITY OF 31.69 FT/S OCCURS BETWEEN NODES 13 AND 17

TOTAL FLOW (gpm) DELIVERD TO THE SPRINKLER SYSTEM ONLY = 695.00

AVAILABLE PRESSURE = 134.68 psi AT 695.39 gpm

=====

Optional Accessories For Hydrostatic Tank Monitoring

Antifreeze Mixtures

O/C TANKS recommends and supplies the Hydrostatic Tank Monitor for use with Fiberglas® double-wall tanks (Models DWT-Type II). If the Hydrostatic Tank Monitor is used in areas of the country where ambient temperatures or delivered product temperatures may subject the tank to freezing conditions, an antifreeze solution must be used to avoid potential tank damage.

Brine Antifreeze Solution

As an optional accessory, O/C TANKS can supply a calcium chloride solution which is pre-mixed and blended to provide freeze protection to -40°F.

The Brine Antifreeze is non-toxic and can be factory installed on tanks 10' diameter 20,000 gallon capacity and smaller*.

The factory installed monitoring fluid has a color tracer. This continuous leak test is designed to detect hidden shipping damage and jobsite handling damage.

Glycol Antifreeze Solutions

A mixture of water and either ethylene glycol or propylene glycol (contractor provided) is an alternate to provide protection against freezing. Local environmental codes should be reviewed for chemical acceptability—particularly if ethylene glycol is used.

A minimum of 30% ethylene glycol or 35% propylene glycol and water solution is recommended. At or above these minimum glycol concentrations, an antifreeze

contract in volume, thus preventing damage to the monitoring components, tank and piping. Do not use more than 75% glycol.

Freeze Protection	% Glycol Mixture (with water)
20°F	20%
0°F	30%
-20°F	40%
-40°F	50%

Water Paste Detection

To detect water in the tank bottom, water detection paste is available from petroleum equipment distributors. However, some water detection paste cannot detect antifreeze mixtures. If antifreeze mixtures are used for the cavity monitoring fluid, the following product is capable of detecting water or antifreeze (brine or up to 50% glycol) solution in the tank water bottoms:

WATER FINDER
#7686-1870
DAYCO/NATIONAL
DAYTON, OHIO

Fiberglas Reservoir Sensor

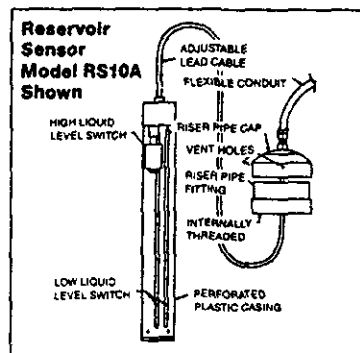
All Model DWT-Type II tanks include a Fiberglas reservoir mounted on the tank top as a standard feature. After filling with liquid, the level in the Fiberglas reservoir may be monitored periodically by using a dipstick or continuously by using the optional reservoir sensor, in conjunction with an optional electronic control panel.

The monitoring sensor is placed into the Fiberglas reservoir through a 4" riser

pipe (for 10' diameter tanks) from grade. The sensor includes the riser pipe cap with a 16" length of flexible conduit, which is connected to an electrical junction box (contractor supplied). The reservoir sensor has sufficient cable length for a maximum tank burial depth of 10' from the tank top to grade.

The reservoir sensor operates on the principle of conductance to detect the presence of liquid in the Fiberglas reservoir.

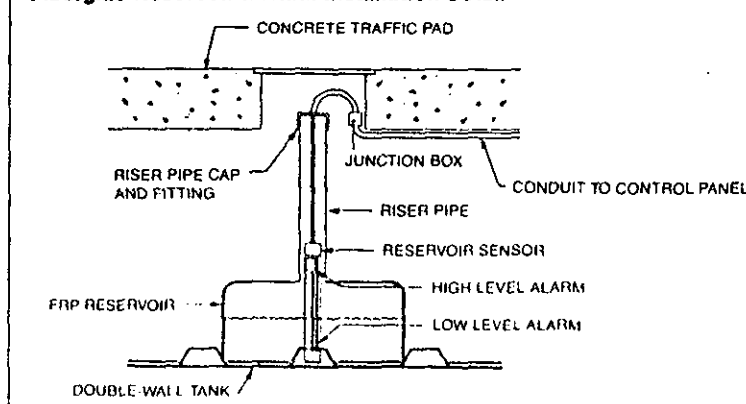
Under normal conditions, the titanium metal probes will be immersed in the liquid media, thereby completing the electrical sensing circuit (normally closed). If the reservoir liquid level drains and exposes the sensor probes, an alarm will sound at the electronic control panel.



The reservoir sensor is also equipped with a high-level float switch that will generate an alarm condition for an outer-wall leak in a high groundwater condition.

To prevent the intrusion of groundwater into the reservoir for extreme high groundwater conditions, the factory-drilled

Fiberglas Reservoir Normal Installation Detail



*For larger tanks, brine antifreeze can be bulk shipped to the tank site.

-sizing for water and sewer services

Property Owner MEDICAL CENTER Date 7/22/91

Property Address JACK MARTIN BLVD Block 1 Lot 2

Zoning _____ Use Group 2

Contractor Gourley License No. Registration 054

Water Main Size _____ Water Pressure _____ Sewer Main Size _____

Plumbing Fixtures	Number	(sfu) Water Units	(dfu) Drainage Units
1. Water Closet	<u>142</u>	(10) <u>14210</u>	() <u>1420</u>
2. Lavatory	<u>262</u>	(2) <u>542</u>	(2) <u>542</u>
3. Bath Tub	<u>9</u>	(2) <u>18</u>	() <u>18-</u>
4. Shower Stall	<u>79</u>	(2) <u>158</u>	() <u>158</u>
5. Kitchen Sink	<u>131</u>	(3) <u>393</u>	() <u>393</u>
6. Service Sink	_____	() _____	() _____
7. Laundry Tray	_____	() _____	() _____
8. Dishwasher	_____	() _____	() _____
9. Washing Machine	_____	() _____	() _____
10. Urinal	<u>3</u>	(10) <u>30</u>	() <u>30</u>
11. Floor Drain	_____	() _____	() _____
12. Drinking Fountain	<u>14</u>	(1/2) <u>7</u>	() <u>7</u>
13. Air Conditioner (water cooled)	_____	() _____	() _____
14. Dental Unit	_____	() _____	() _____
15. Lawn Sprinkler No. of Heads	_____	() _____	() _____
16. Fire Sprinkler No. of Heads	_____	() _____	() _____
17. _____	_____	() _____	() _____
18. _____	_____	() _____	() _____

Total

2568

2568

Gallons per minute

390-

Size of Service

6"

Date: _____

Approved: _____

Brick Township Plumbing Inspector

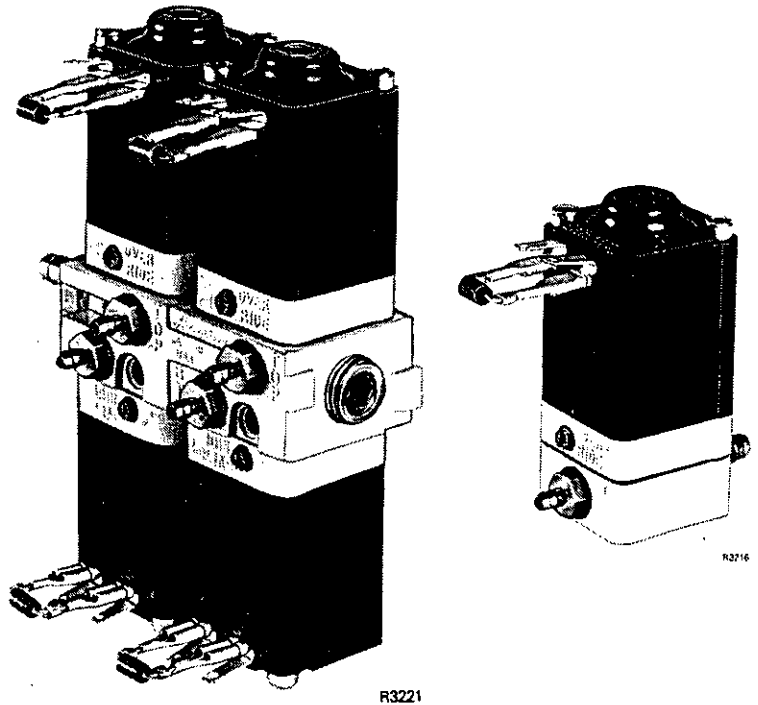
INVOICE DATE	INVOICE NO.	DESCRIPTION	INVOICE AMOUNT	DISC.	NET AMOUNT
5/17/91		BUILDING PERMIT FEE	1,402.74	0.00	1,402.74
CHECK DATE		CHECK #	VENDOR #		
MAY 17, 1991		290378			
			1,402.74	0.00	1,402.74

THE MEDICAL CENTER OF OCEAN COUNTY • PT. PLEASANT • NEW JERSEY • 08742

Honeywell

14004569, 14004570 E/P Relays

1170 18. 18.3
Med. CTR o/c
ADDN.



GENERAL

The 14004569 Single and 14004570 Quad Electric/Pneumatic Relays are small solenoid valves which open and close the air supply to pneumatic controls. The control input is a low power 24V dc on-off signal.

FEATURES

- Small size for panel mounting.
- Low power requirement for direct connection to Excel and DeltaNet outputs.
- Usable as a diverting relay, a selector relay, or a stop and bleed relay.
- Mount and operate in any position.
- Operate from 24V dc.
- Override for manual operation on power failure.
- Supression diodes and quick connects furnished.

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FITZPATRICK & ASSOC. INC.

Honeywell

THESE TRANSFORMERS ARE USED FOR POWERING 24 VOLT SYSTEMS.

□ AT20,40,72 are designed to power thermostats, gas valves and relays.

- Meet "NEC Class 2 not wet, Class 3 wet" and U.L. 1585 requirements.
- Color-coded leadwires for primary connections.
- Color-coded leadwires or screw terminals for secondary connections.
- Mounting means available for panel, foot, plate or clamp mounting.
- Overload protection provided: energy-limited.

□ AT87,88 are primarily for powering air conditioning systems. Can also be used in other applications that do not exceed listed ratings.

- Meet "NEC Class 2 not wet, Class 3 wet" and U.L. 1585 requirements.
- Models available with multitap primary.
- Color-coded leadwires for primary connections.
- Color-coded leadwires or screw terminals for secondary connections.
- Foot or plate mounting available.
- Overload protection provided:
 - AT87A: energy-limited (except certain models).
 - AT88A: fuse in secondary.

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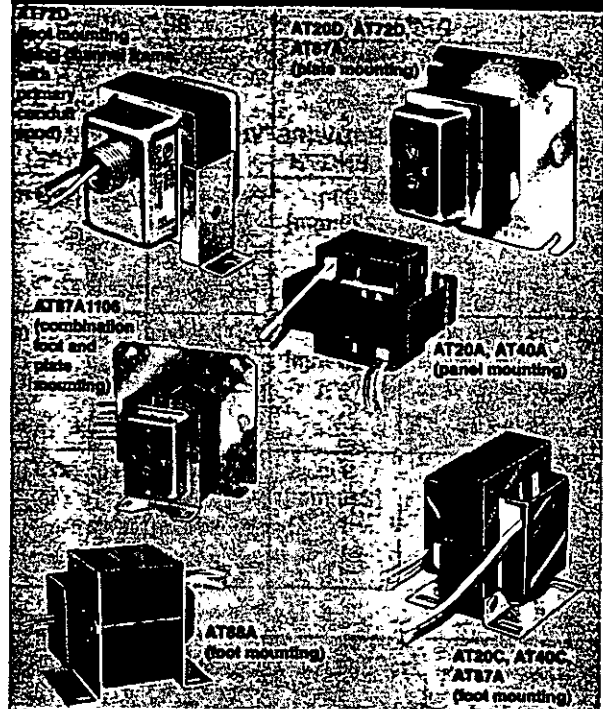
MAY 07 1992

FITZPATRICK & ASSOC. INC.

S.M.
Rev. 10-87●

Form Number 60-2254—2
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TRANSFORMERS



AT20A,C,D;
AT40A,C;
AT72D;
AT87A;
AT88A

TABLE I—SUPER TRADELINE, TRADELINE MODELS (con't.)

MODEL ^a	PRIMARY		SECONDARY		OUTPUT RATING (VA)	NEMA TYPE	MOUNTING MEANS	DIMENSIONS SEE FIG.
	VOLTAGE 50/60 Hz (Vac)	LEADWIRE LENGTH	VOLTAGE (Vac)	CONNECTIONS (LEADWIRE LENGTH OR TERMINAL TYPE)				
AT72D1683 b,d	120	9 in. [229 mm]	24	2 screw terminals	40	D	Combination plate, foot or knockout mounting.	13
AT72D1691 b,d	208/240	9 in. [229 mm]	24	2 screw terminals	40	D	Combination plate, foot or knockout mounting.	13
AT87A1106 b,d	120/208/ 240	13 in. [330 mm]	24	2 screw terminals	50	—	Combination foot or plate mounting.	14
AT88A1021 a,c	208/240	12 in. [305 mm]	24	12 in. [305 mm]	75	—	Foot mounting.	11

^aTRADELINE model.^bSUPER TRADELINE model.^cUnderwriters Laboratories Inc. component recognized, File No. E14881, Guide No. XOKV2 (U.L. 1585).^dUnderwriters Laboratories Inc. listed, File No. E14881, Guide No. XOKV (U.L. 1585).^eAll Canadian Standards Association listed, File No. LR18190, Guide No. 400-R-2.

TRADELINE MODELS AVAILABLE:

AT20A, AT40A Transformers with energy-limited burnout protection. For panel mounting or horizontal or vertical foot mounting. Includes channel frame mounting feet. See Table I for specifications.

AT88A Transformer with internal fused secondary for overload protection. Foot mounting. See Table I for specifications.

ADDITIONAL TRADELINE FEATURE:

TRADELINE pack with cross reference label and special TRADELINE instruction sheet.

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STANDARD MODELS

AT20, 40, 72, 87, 88 Transformers. See Table II for model specifications.

TABLE II—STANDARD MODELS

FITZPATRICK & ASSOC. INC.

MODEL ^a	PRIMARY		SECONDARY		OUTPUT RATING (VA)	NEMA TYPE	MOUNTING MEANS	DIMENSIONS SEE FIG.
	VOLTAGE 50/60 Hz (Vac)	LEADWIRE LENGTH	VOLTAGE (Vac)	CONNECTIONS (LEADWIRE LENGTH OR TERMINAL TYPE)				
AT20A ^{e,g}	120 ^b	9 in. [229 mm]	24	9 in. [229 mm]	19	B	Panel ^a	1
	240	9 in. [229 mm]		9 and 20 in. [229 and 508 mm]				
AT20C ^{e,g}	120	9 or 12 in. [229 or 305 mm]	24	9 or 12 in. [229 or 305 mm]	19	B	Foot ^a	2
	208	9 in. [229 mm]		9 in. [229 mm]				
	240 ^b	9 or 14 in. [229 or 356 mm]		9 or 18 in. [229 or 457 mm]				
AT20D ^{f,g}	120	9 in. [229 mm]	24	Screw terminals or 9 in. [229 mm] leads	19	B	4x4 in. plate	10

(continued on page 4)

SPECIFICATIONS

SUPER TRADELINE/TRADELINE MODELS

SUPER TRADELINE controls offer features not available on TRADELINE or standard models, and are designed to replace a wide range of Honeywell and competitive controls.

TRADELINE models are selected and packaged to provide ease of stocking, ease of handling and maximum replacement value. Specifications of SUPER TRADELINE and TRADELINE controls are the same as those of standard models, except as noted below.

SUPER TRADELINE MODELS AVAILABLE:

AT72D Transformers with energy-limited burnout protection. Can be used for foot mounting; plate mounting (transformer all above or 3/4 above plate); for use on 4x4 in., 4 in. octagon, and 2x4 in. electrical boxes; and clamp mounting via a junction box knockout. See Table I for specifications.

AT87A Transformer with inherent overload protection (primary winding burnout). Can be used for foot or plate mounting on a 4x4 in. or octagonal outlet box. See Table I for specifications.

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TABLE I—SUPER TRADELINE, TRADELINE MODELS.

MODEL ^a	PRIMARY		SECONDARY		OUTPUT RATING (VA)	NEMA TYPE	MOUNTING MEANS	DIMENSIONS SEE FIG.
	VOLTAGE 50/60 Hz (Vac)	LEADWIRE LENGTH	VOLTAGE (Vac)	CONNECTIONS (LEADWIRE LENGTH OR TERMINAL TYPE)				
AT20A1123 a,c	120	9 in. [229 mm]	24	9 in. [229 mm]	20	B	Vertical and Horizontal channel frame with mounting feet.	12
AT40A1121 a,c	120	9 in. [229 mm]	24	9 in. [229 mm]	40	D	Vertical and Horizontal channel frame with mounting feet.	12
AT40A1139 a,c	240	9 in. [229 mm]	24	9 in. [229 mm]	40	D	Vertical and Horizontal channel frame with mounting feet.	12

(continued on page 3)

ORDERING INFORMATION

WHEN PURCHASING REPLACEMENT AND MODERNIZATION PRODUCTS FROM YOUR TRADELINE WHOLESALER OR YOUR DISTRIBUTOR, REFER TO THE TRADELINE CATALOG OR PRICE SHEETS FOR COMPLETE ORDERING NUMBER, OR SPECIFY—

1. Order number; SUPER TRADELINE or TRADELINE, if desired.
2. Primary voltage and frequency.
3. Primary and secondary connections.
4. Mounting means; size of mounting plate, if required.
5. Optional specifications, if desired.

IF YOU HAVE ADDITIONAL QUESTIONS, NEED FURTHER INFORMATION, OR WOULD LIKE TO COMMENT ON OUR PRODUCTS OR SERVICES, PLEASE WRITE OR PHONE:

1. YOUR LOCAL HONEYWELL RESIDENTIAL DIVISION SALES OFFICE (CHECK WHITE PAGES OF PHONE DIRECTORY).
2. RESIDENTIAL DIVISION CUSTOMER SERVICE
HONEYWELL INC., 1885 DOUGLAS DRIVE NORTH
MINNEAPOLIS, MINNESOTA 55422-3992 (612) 542-7500

IN CANADA—HONEYWELL LIMITED/HONEYWELL LIMITEE, 740 ELLESMERE ROAD, SCARBOROUGH, ONTARIO M1P 2V9. INTERNATIONAL SALES AND SERVICE OFFICES IN ALL PRINCIPAL CITIES OF THE WORLD.

TABLE II—STANDARD MODELS (continued)

MODEL ^e	PRIMARY		SECONDARY		OUTPUT RATING (VA)	NEMA TYPE	MOUNTING MEANS	DIMENSIONS SEE FIG.
	VOLTAGE 50/60 Hz (Vac)	LEADWIRE LENGTH	VOLTAGE (Vac)	CONNECTIONS (LEADWIRE LENGTH OR TERMINAL TYPE)				
AT88A ^{e,g}	120	12 in. [305 mm]	24	12 in. [305 mm]	75	—	Foot ^d	11
	208/240	12 in. [305 mm]		12 in. [305 mm]				
	400	12 in. [305 mm]		12 in. [305 mm]				
	480 ^j	12 in. [305 mm]		12 in. [305 mm]				

^aWith black plastic end bells.

^bAvailable with wraparound channel frames for foot mounting.

^c120 V model available with 2x4 in. plate and screw terminals on secondary.

^dWithout end bells, with fuse in secondary.

^eUnderwriters Laboratories Inc. component recognized, File No. E14881, Guide No. XOKV2 (U.L. 1585).

^fUnderwriters Laboratories Inc. listed, File No. E14881, Guide No. XOKV (U.L. 1585).

^gCanadian Standards Association listed, File No. LR18190, Guide No. 400-R-2.

^hNon-energy-limited; with inherent overload protection: primary winding burnout.

^jAvailable with female quick-connect terminals on all leadwires.

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LEADWIRE COLOR CODE:

120 VAC: White

208 VAC: Red

220 or 240 VAC: Orange

277 VAC: Brown

400 VAC: Violet

480 VAC: Black/Red

Common: Black (Common with respect to transformer winding only; not the external circuit.)

Secondary connections are blue and yellow leadwires or screw terminals.

OPTIONAL SPECIFICATIONS: Transformers with special voltages and terminal arrangements available upon request.

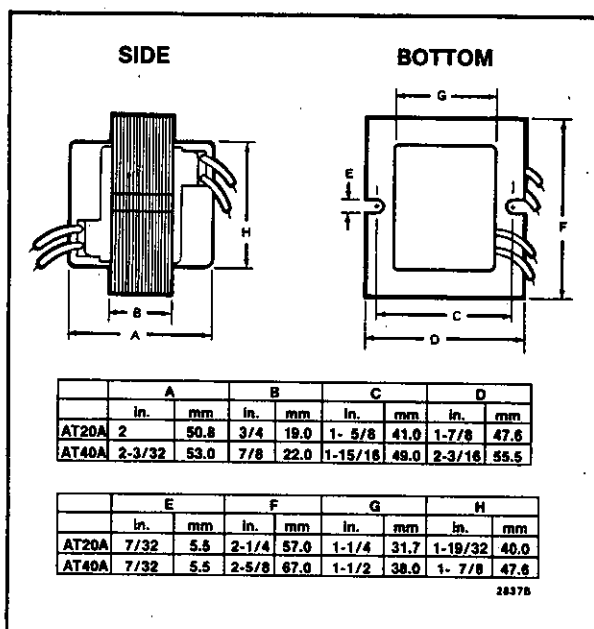


FIG. 1—AT20A, AT40A DIMENSIONS IN in. [mm IN BRACKETS].

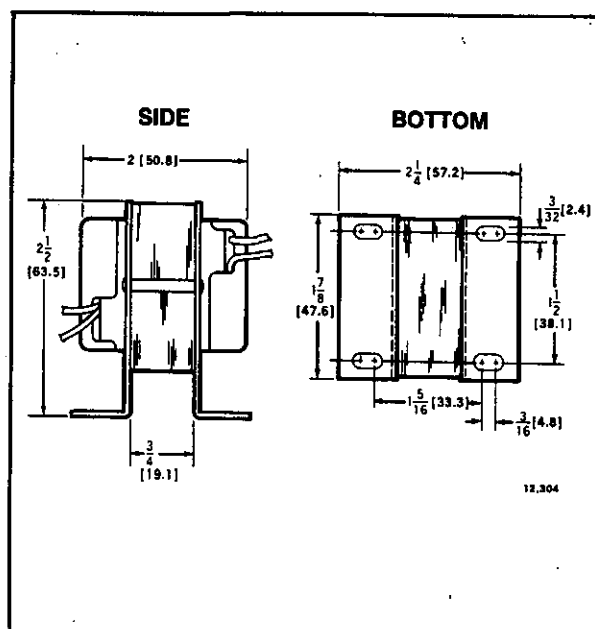


FIG. 2—AT20C DIMENSIONS IN in. [mm IN BRACKETS].

TABLE II—STANDARD MODELS (continued)

MODEL ^a	PRIMARY		SECONDARY		OUTPUT RATING (VA)	NEMA TYPE	MOUNTING MEANS	DIMEN- SIONS SEE FIG.
	VOLTAGE 50/60 Hz (Vac)	LEADWIRE LENGTH	VOLTAGE (Vac)	CONNECTIONS (LEADWIRE LENGTH OR TERMINAL TYPE)				
AT40A ^{e,g}	120 ^b	9 in. [229 mm]	24	9 in. [229 mm]	38	D	Panel ^a	1
	208	9 in. [229 mm]		9 in. [229 mm]				
	208/240 ^b	9 in. [229 mm]		9 in. [229 mm]				
	240 ^b	9 in. [229 mm]		9 in. [229 mm]				
AT40C ^{e,g}	120 ^b	9 in. [229 mm]	24	9 or 12 in. [229 or 305 mm]	38	D	Foot ^a	3
	208	9 in. [229 mm]		9 in. [229 mm]				
	208/240	9 or 15 in. [229 or 381 mm]		9 in. [229 mm]				
	240	9 in. [229 mm]		9 in. [229 mm]				
AT72D ^{f,g}	120 ^c	9 or 16 in. [229 or 406 mm]	24	9 in. [229 mm] leads, screw terminals or conduit with 32 in. [813 mm] leads	38	D	For mounting with 1/2-in. primary conduit spud, or 4 x 4 in. plate ^c	4, 5, 6, 7, 8, 9, 10
	208	9 in. [229 mm]						
	208/240	9 in. [229 mm]						
	240	9 in. [229 mm]						
	240	12 in. [305 mm] (no primary conduit)						
AT87A ^{f,g}	120	9 in. [229 mm]	24	Screw terminals	48	—	4x4 in. plate or foot mounting.	10, 14
AT87A ^{f,g,h}	120/208/ 240	13 in. [330 mm]	24	Screw terminals	50	—	4x4 in. plate	10
AT87A ^{e,g}	120	12 in. [305 mm]	24	12 in. [305 mm]	48	—	Foot ^a	3
	120/208/ 240 ^d	13 in. [330 mm]		13 in. [330 mm]			Foot ^d	11
	208/240	8, 12, or 24 in. [203, 305, or 610 mm]		5, 12, or 24 in. [127, 305, or 610 mm]			Foot ^a	3
	240	12 in. [305 mm]		12 in. [305 mm]				
	277	12 or 15 in. [305 or 381 mm]		12 in. [305 mm]				
	400	12 in. [305 mm]		12 in. [305 mm]				
	480	12 or 15 in. [305 or 381 mm]		12 or 30 in. [305 or 762 mm]				

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(continued on page 5)

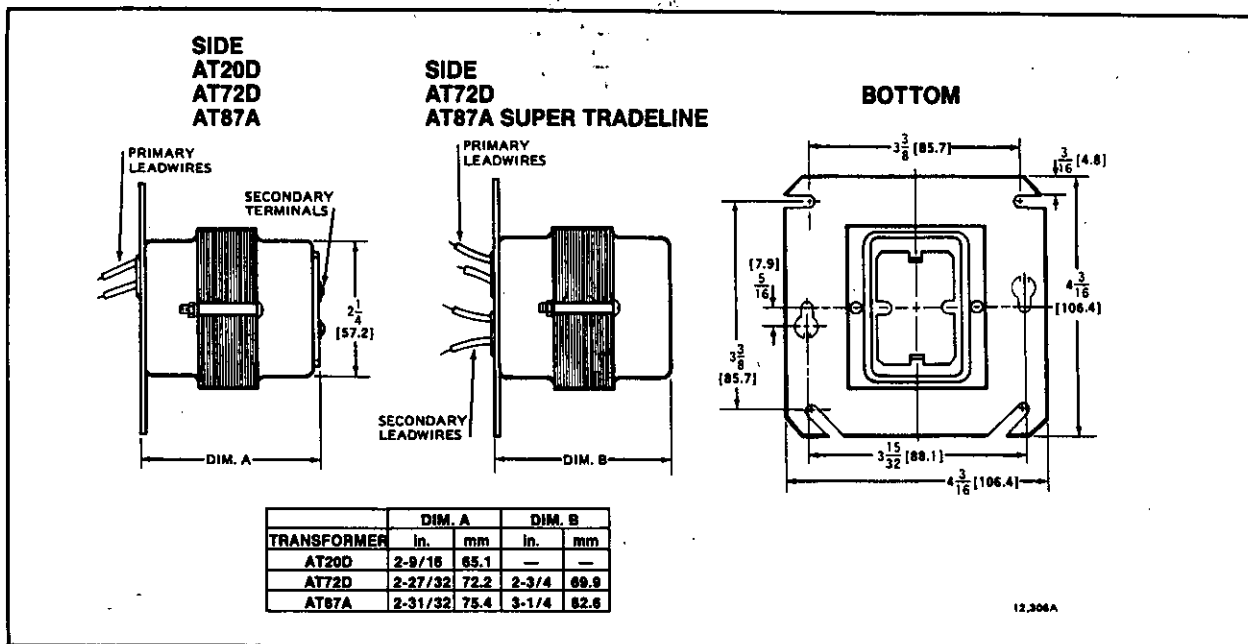


FIG. 10—AT20D, AT72D, AT87A DIMENSIONS IN in. [mm IN BRACKETS] WITH 4x4 in. MOUNTING PLATE.

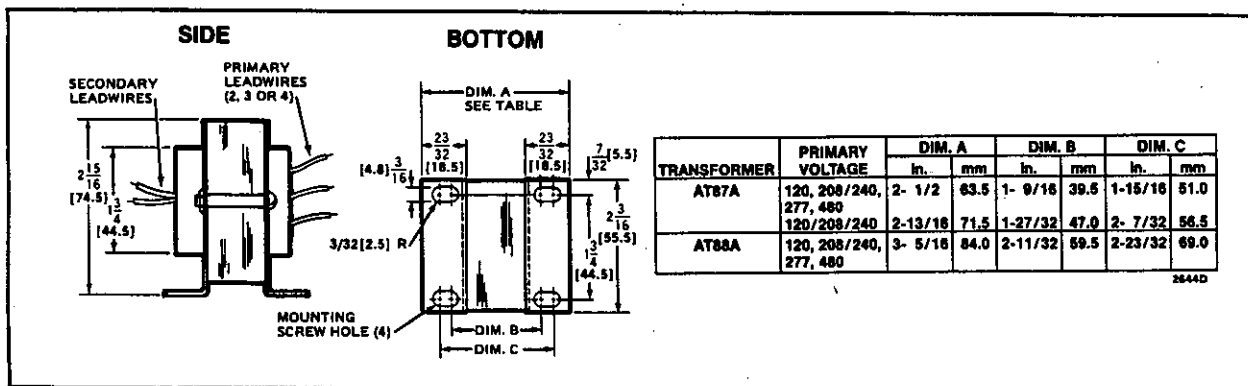


FIG. 11—AT87A, AT88A (FOOT MOUNTED) DIMENSIONS IN in. [mm IN BRACKETS].

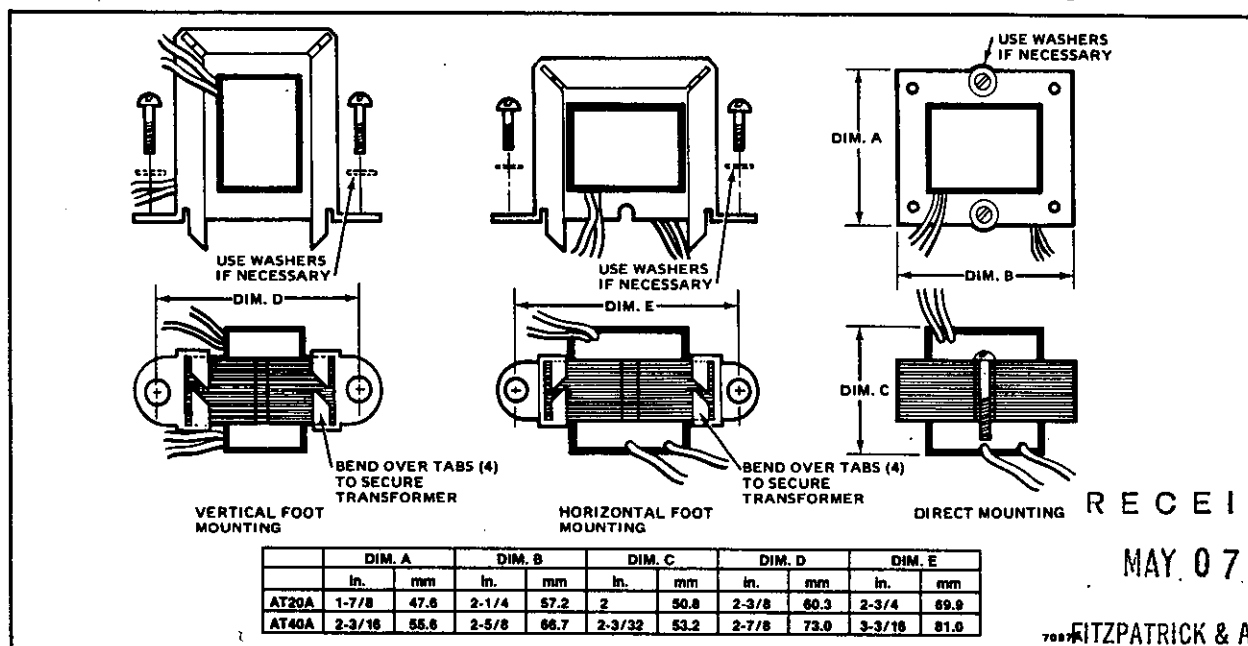


FIG. 12—TRADELINE AT20A, AT40A DIMENSIONS IN in. [mm IN BRACKETS].

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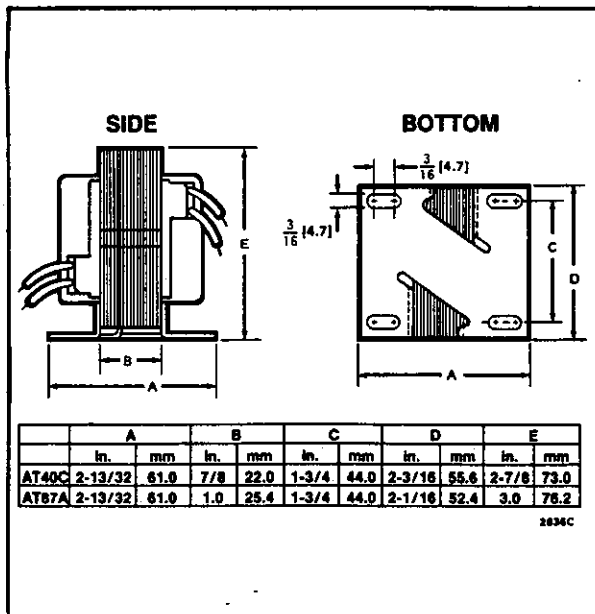


FIG. 3—AT40C, AT87A DIMENSIONS IN in. [mm IN BRACKETS].

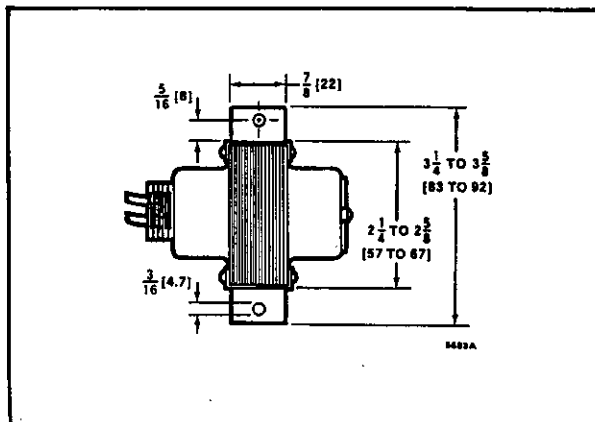


FIG. 4—AT72D DIMENSIONS IN in. [mm IN BRACKETS] WITH CONDUIT SPUD ON PRIMARY.

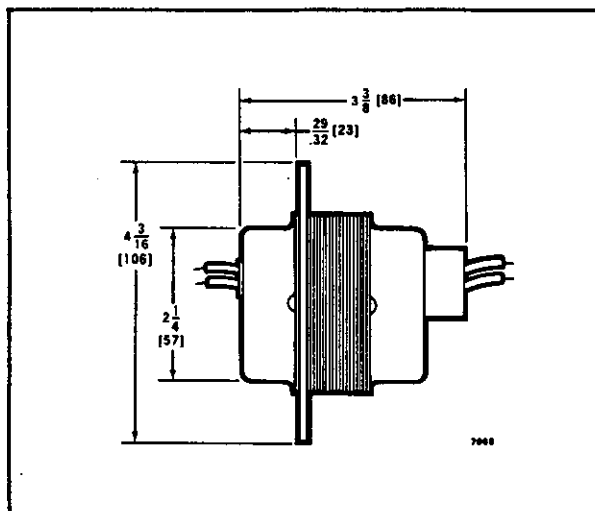


FIG. 5—AT72D DIMENSIONS IN in. [mm IN BRACKETS] WITH CONDUIT SPUD ON SECONDARY.

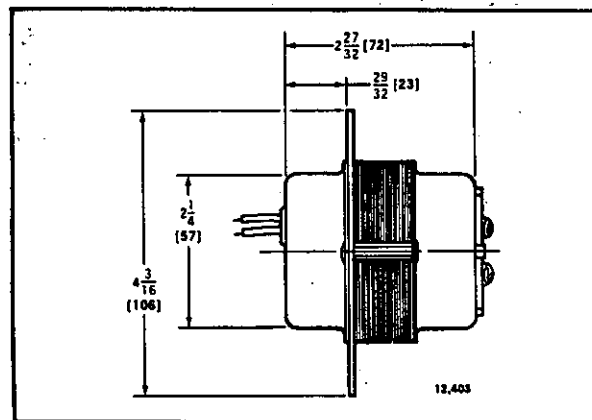


FIG. 6—AT72D DIMENSIONS IN in. [mm IN BRACKETS] WITH SECONDARY SCREW TERMINALS; 4x4 in. PLATE MOUNTING WITH PLATE MOUNTED AT THE LAMINATIONS.

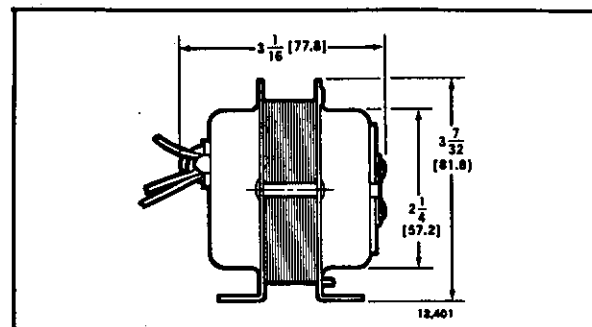


FIG. 7—AT72D DIMENSIONS IN in. [mm IN BRACKETS]; FOOT MOUNTING.

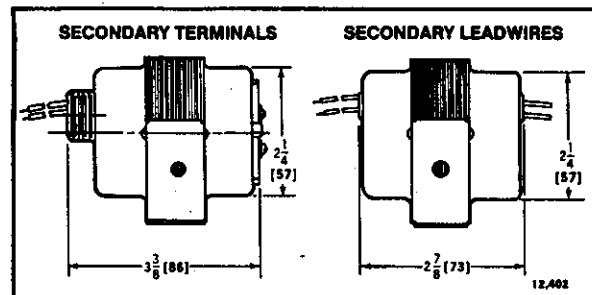


FIG. 8—AT72D DIMENSIONS IN in. [mm IN BRACKETS] WITH FOOT MOUNTING BRACKETS.

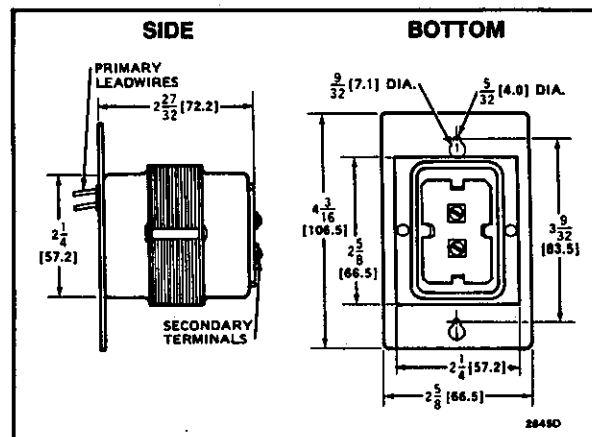


FIG. 9—AT72D DIMENSIONS IN in. [mm IN BRACKETS] WITH 2X4 in. MOUNTING PLATE.

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INSTALLATION

WHEN INSTALLING THIS PRODUCT...

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out system operation as suggested in these instructions.

CAUTION

Disconnect power supply before beginning installation to prevent electrical shock or equipment damage.

MOUNTING

Mount the transformer as best suits the individual application.

PANEL MOUNTING

Use bolts through slots in laminations (Fig. 15).

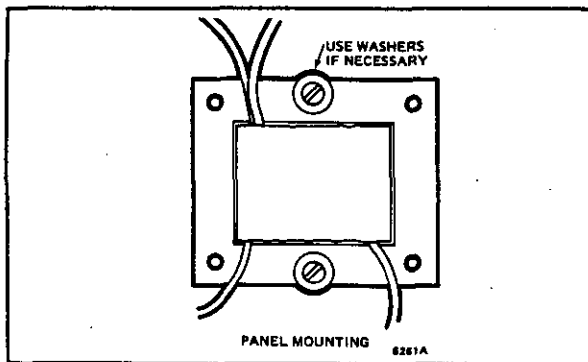


FIG. 15—USE BOLTS IN SLOTS FOR PANEL MOUNTING.

FOOT MOUNTING

For mounting foot-mounted transformers, use screws or bolts (not furnished) through slots in mounting feet to fasten transformer to mounting surface (Fig. 16). Discard mounting plate (if included).

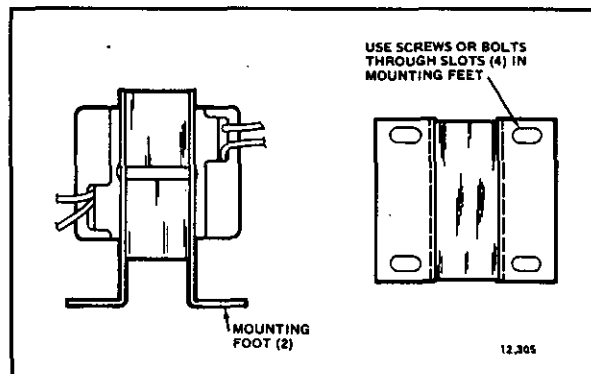


FIG. 16—FOOT MOUNTING (AT20C shown).

FOOT MOUNTING USING CHANNEL FRAMES

Place horizontal or vertical channel frame over laminations as shown in Fig. 17, and bend tabs over to hold transformer securely in place. Mount transformer through 3/16 in. holes in mounting feet.

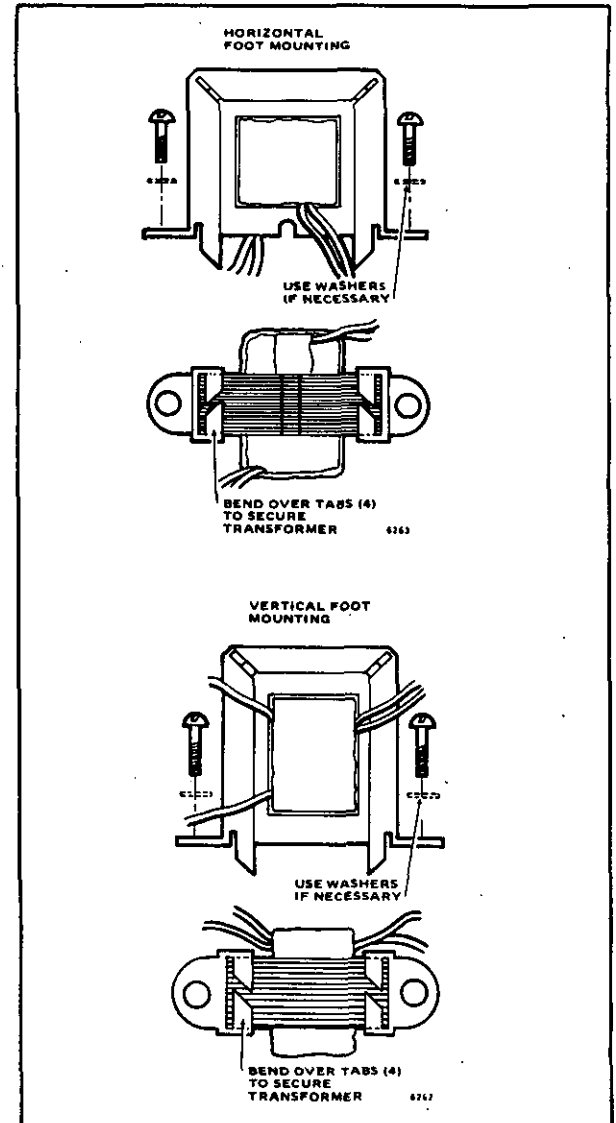


FIG. 17—USE HORIZONTAL CHANNEL FRAME FOR HORIZONTAL FOOT MOUNTING; VERTICAL CHANNEL FRAME FOR VERTICAL FOOT MOUNTING.

PLATE MOUNTING

If not already on transformer, mount plate to transformer. Then, mount transformer and plate to electrical box.

MOUNTING PLATE TO TRANSFORMER

The plate may be mounted to transformer in one of two positions: (1) at clamp on primary end bell (transformer all above plate), or (2) at the laminations (transformer 3/4 above plate). See Fig. 18.

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2. Take transformer in one hand. Primary end bell should face you.
3. Take the mounting plate in the other hand. Keyhole slots should be up.
4. Place large knockout in mounting plate over primary leadwires and end bell. Small tab at bottom center of plate fits in transformer mounting foot.
5. Insert mounting screw through holes as illustrated in Fig. 21. Secure plate to transformer. Do not over-tighten screw.

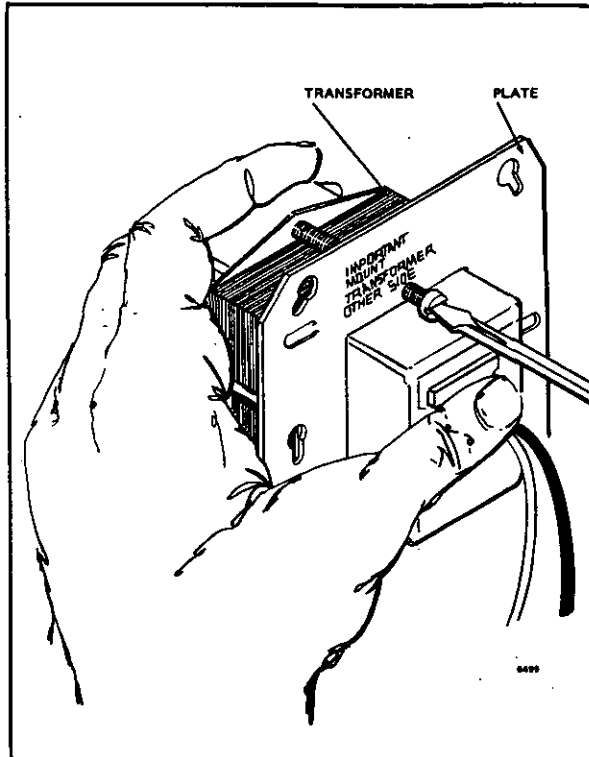


FIG. 21—SECURE PLATE TO TRANSFORMER WITH MOUNTING SCREW.

MOUNTING TRANSFORMER AND PLATE TO ELECTRICAL BOX

The mounting plate may be mounted to 4x4 in. boxes with regular- and irregular-spaced mounting holes, to 2x4 in. boxes and to 4 in. octagon boxes. See Fig. 22. Use the screws supplied with the electrical box. Place them through the proper mounting holes in the plate and secure transformer and plate to box. Punch out appropriate knockouts for plate mounting holes, if necessary.

NOTE: Transformer feet should always be outside of junction box.

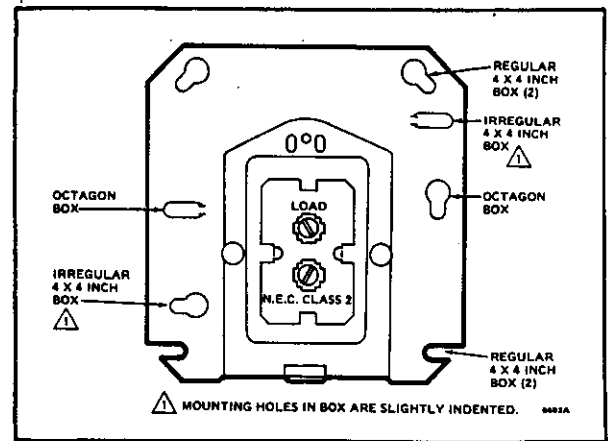


FIG. 22—LOCATION OF MOUNTING HOLES IN PLATE.

CLAMP MOUNTING VIA JUNCTION BOX KNOCKOUT

This mounting option does not require use of mounting plate. To mount transformer within knockout:

1. Insert primary leadwires, clamp and screw on transformer end bell through suitable 1/2 in. knockout in junction box. Clamp screw must be turned almost completely out in order to get clamp through knockout.
2. Tighten clamp screw securely against rim of knockout (Fig. 19). Avoid damaging the leadwires with the screwdriver.

WIRING

CAUTION

1. Disconnect power supply to prevent electrical shock or equipment damage.
2. Tape all unused, exposed leadwires separately. All wiring must comply with local electrical codes and ordinances.
3. Do NOT short transformer secondary terminals; this may burn out the overload protection.

1. Connect primary leadwires to line voltage power supply.
2. Connect transformer secondary to 24 Vac control system.

NOTE: Some models are available with a primary or secondary conduit spud. If used, connect wires first and then screw conduit onto spud.

See SPECIFICATIONS section for leadwire color-coding.

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CHECKOUT

Before connecting transformer to system, check secondary voltage with a voltmeter.
After installation is complete, turn on power supply.

Place controlled equipment in operation and observe through at least one complete cycle. Make sure it functions as intended.

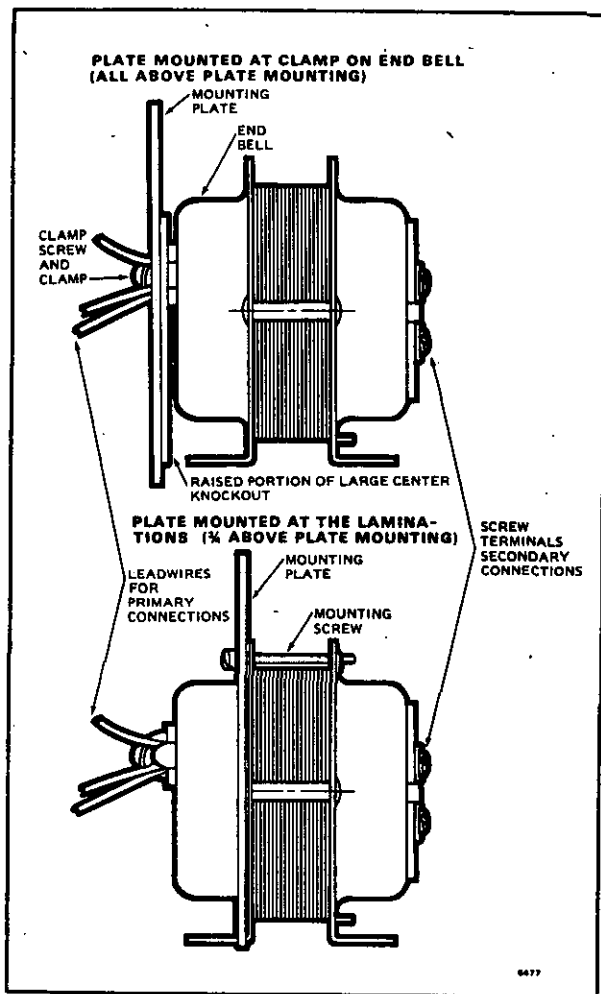


FIG. 18—PLATE MAY BE MOUNTED TO TRANSFORMER IN ONE OF TWO POSITIONS (AT72D shown).

To mount plate at clamp on primary end bell (for models with clamp): all-above-plate mounting:

1. Take mounting plate in one hand. Keep the keyhole slots up and the raised portion of the large center knockout toward you.
2. Fit hole in plate over clamp attached to the end bell. Clamp screw must be turned almost completely out.
3. With plate in place over clamp, tighten screw securely against rim of round hole. See Fig. 19. Avoid damaging the leadwires with the screwdriver.

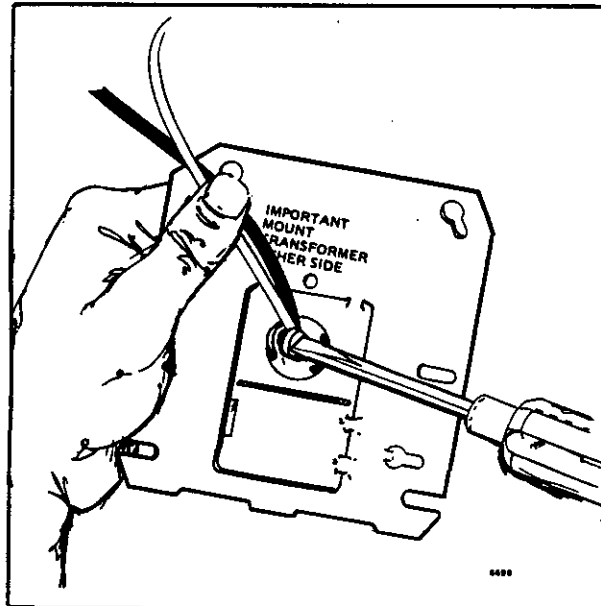


FIG. 19—TIGHTEN CLAMP SECURELY AGAINST RIM OF ROUND HOLE.

To mount plate at the laminations (3/4 above plate mounting):

1. Remove large center knockout in mounting plate as illustrated in Fig. 20.

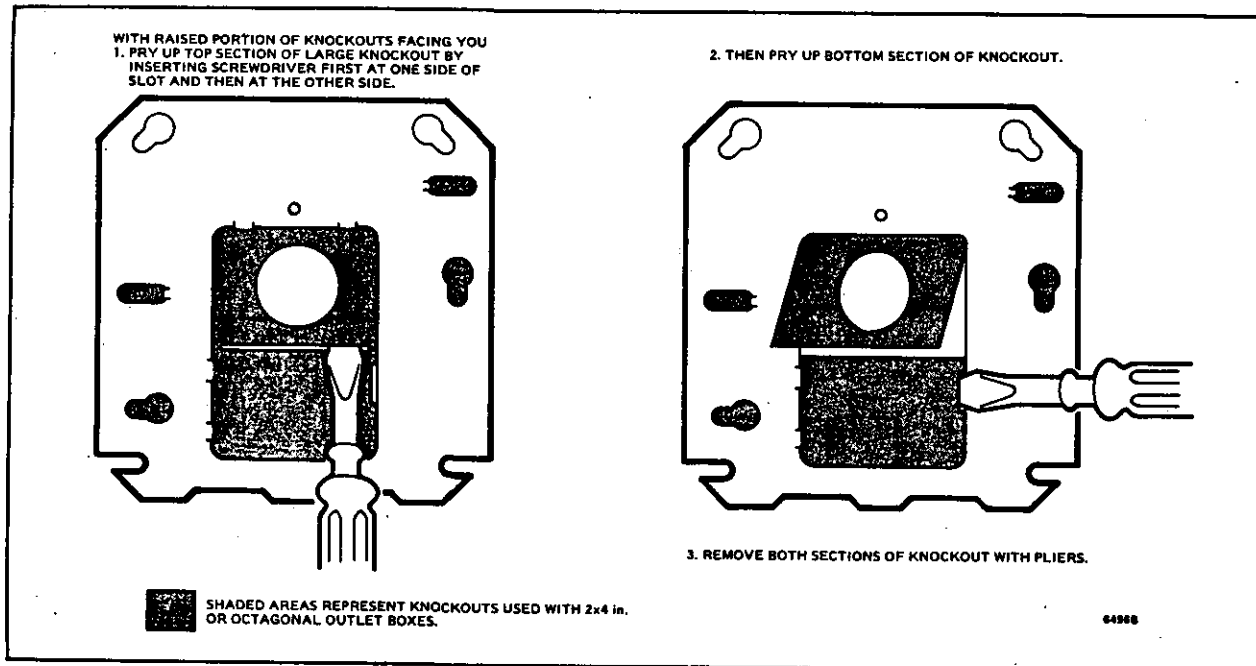
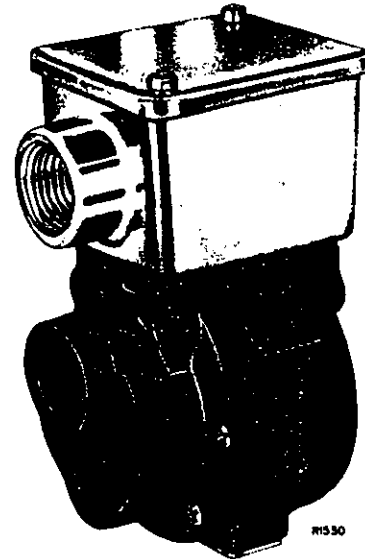


FIG. 20—REMOVING LARGE CENTER KNOCKOUT. RECEIVED

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BKDEPD1HAA40 WATER FLOW DIFFERENTIAL PRESSURE SWITCH



GENERAL

Differential Pressure switches open or close a switch contact in response to a change in the pressure rise across a pump or drop across a restriction. They are used to start or stop a pump and/or activate an alarm.

FEATURES

- NEMA 4, Water-tight housing.
- Nonposition sensitive.
- UL and CSA Listed.

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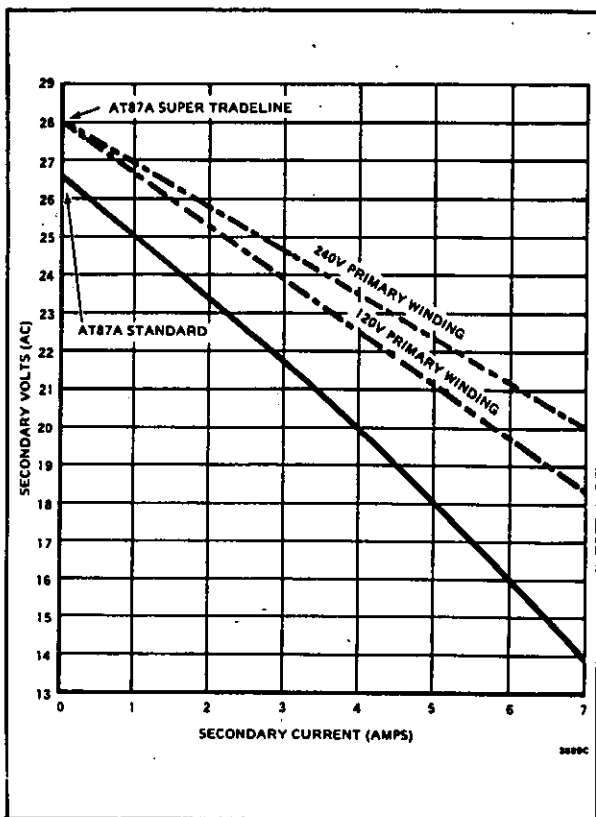


FIG. 23—REGULATION CURVE FOR AT87A.

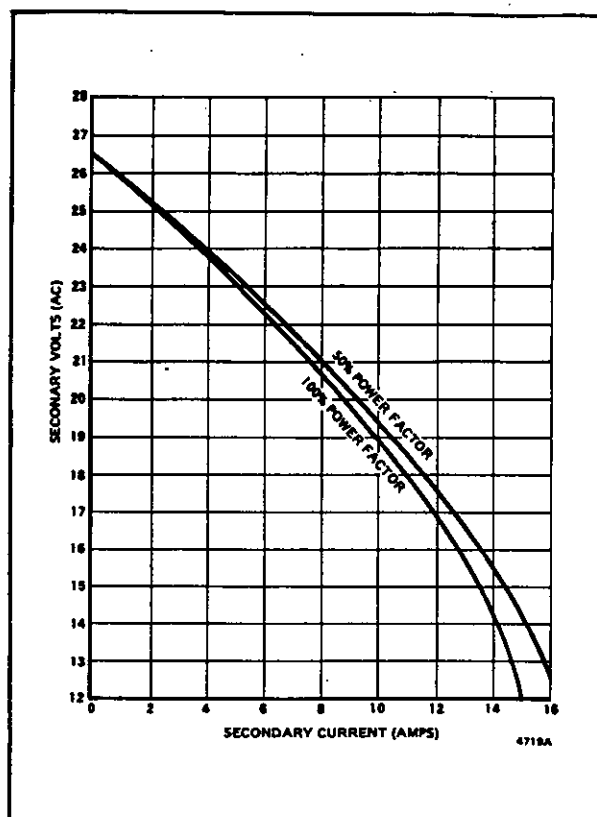
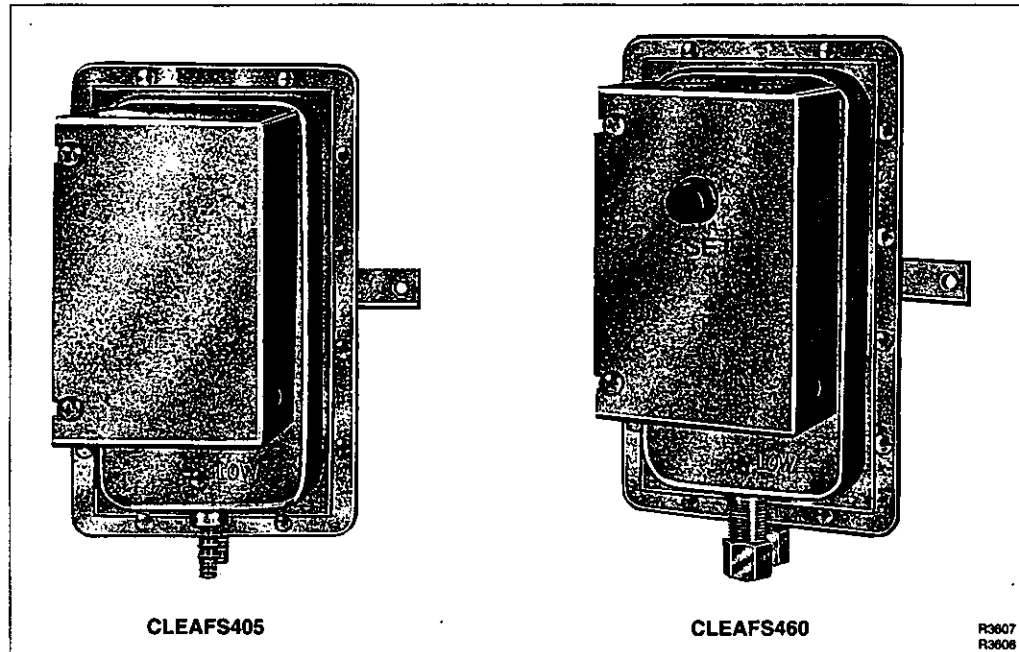


FIG. 24—REGULATION CURVE FOR AT88A.

CLEAFS405 & CLEAFS460

Airflow Differential Pressure Switches



General

CLEAFS405 and CLEAFS460 Airflow Differential Pressure Switches are used to sense positive, negative, or differential air pressure in HVAC systems. They provide high or low limit with alarm or high limit shutdown with manual reset.

Features

- Models available with compression or barb fittings
- Form "C" contacts. Electrical switch enclosed in metal box with cover
- Reliable pneumatic operation
- UL and CSA Listed, FM approved
- Manual reset model available
- Adjustable setpoint

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DESCRIPTION

Differential Pressure Switches open or close a switch contact in response to a change in sensed differential pressure.

Electrical Rating:

4A at 125/250V ac, 50% power factor.

Electrical Connections:

Screw terminals, No. 6.

Operating Temperature:

165F (74C).

SPECIFICATIONS

Dimensions:

See Figure 1.

Working Pressure Range:

3 to 150 psi (21 to 1034 kPa).

Maximum Pressure Difference:

150 psi (1034 kPa).

Differential Pressure Setpoint (Adjustable):

3 to 38.8 psi on decreasing pressure.

4.2 to 40 psi on increasing pressure.

Switch Contact Arrangement:

spdt.

Switch Differential:

0.15 to 1.2 psi (1 to 8 kPa).

NOTE: Switch makes common to n.c. at setpoint on decreasing differential pressure and common to n.o. at setpoint plus switch differential on increasing differential pressure.

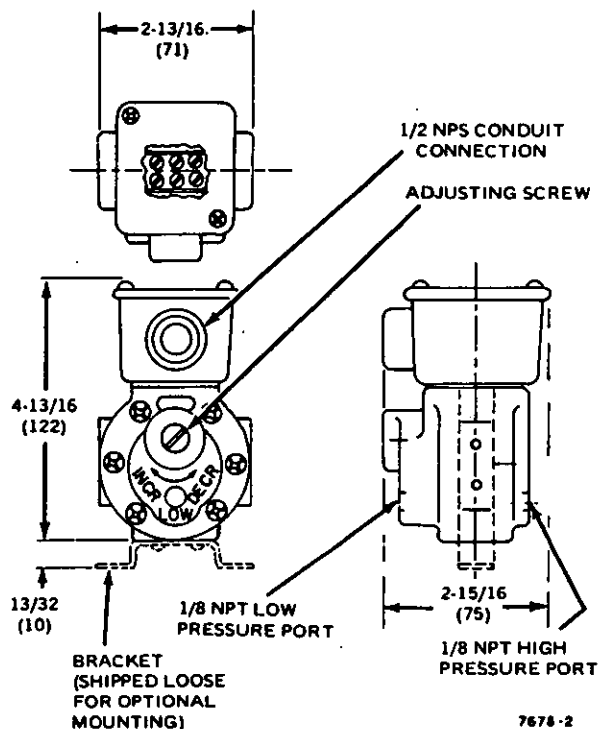


Fig. 1. Differential Pressure Switch Dimensions in Inches (Millimeters).

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6-85

Honeywell

HP970A & B Pneumatic Humidistats



GENERAL

The HP970A and B are two-pipe proportioning humidistats for controlling actuators of valves and dampers in air conditioning systems requiring control for humidification and dehumidification.

FEATURES

- Nylon element.
- Straight setpoint scales.
- Plug-in air connections.
- Corrosion resistant materials.
- Air filter.

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Description

CLEAFS405 and CLEAFS460 Airflow Differential Pressure Switches provide high or low limit with alarm or high limit shutdown with manual reset.

Specifications

Models:

- ☐ CLEAFS405: auto reset, 1/4-in. compression fittings
- ☐ CLEAFS405-112: auto reset, dual barb fittings for 1/4-in. or 3/8-in. O.D. plastic tubing
- ☐ CLEAFS460: 1/4-in. compression fittings, manual reset

Setpoint:

CLEAFS405 and CLEAFS405-112: Adjustable 0.05 to 12.0 in. wc (0.012 to 2.98 kPa)
 CLEAFS460: Adjustable 0.50 to 12.0 in. wc (0.12 to 2.98 kPa)

Connections:

Electric:

- Screw terminals with cup washers
- Knockout for 1/2-in. conduit

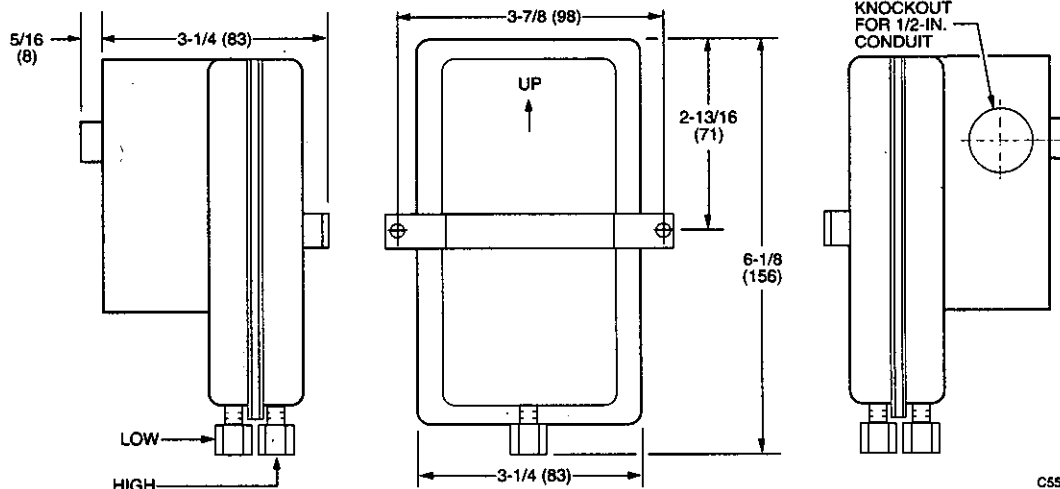
Pneumatic:

- Compression and barb fittings

Switching Action:

Form "C" contacts. Normally open contacts close on a pressure rise above setpoint and normally closed contacts open on a pressure rise above setpoint.

Dimensions in Inches (Millimeters):



C5512

Switching Differential:

Nonadjustable:

Setpoint	Differential in in. wc (kPa)	
	CLEAFS405	CLEAFS460
Minimum	0.02 (0.005)	0.5 (0.12)
Maximum	0.8 (0.2)	1.0 (0.25)

Maximum Differential Pressure:

0.5 psi, 13.85 in. wc, or 3.44 kPa

Electrical Rating:

CLEAFS405 and CLEAFS405-112: Pilot duty 300 VA, 115 to 277V ac; non-inductive 10A to 277V ac maximum; dry circuit 10 mA at 5V dc
 CLEAFS460: 15A, 125 to 277V ac; 1/4 hp, 125V ac; 1/2 hp, 250V ac; 1/2A, 125V dc; 1/4A, 250V dc

Listings:

UL and CSA Listed
 FM approved

Operating Temperature:

-40 to 180F (-40 to 82C)

Mounting Position:

Vertical. Diaphragm must be vertical with input connections down.

Accessories:

- ☐ CLE18311 Adapter: Changes 1/4-in. compression fitting to barb fitting for 1/4-in. or 3/8-in. O.D. plastic tubing

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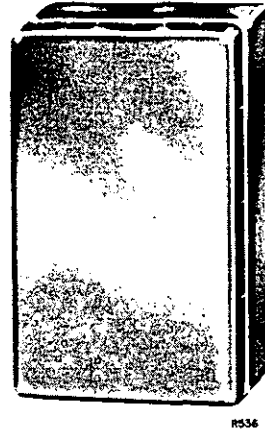
Commercial Buildings Group
 Honeywell Inc.
 Honeywell Plaza
 Minneapolis, Minnesota 55408

Honeywell Limited
 740 Ellesmere Road
 Scarborough, Ontario
 M1P 2V9

Helping You Control Your World

Honeywell

HP971A Pneumatic Humidity Sensor



GENERAL

The HP971 provides direct-acting, proportional, relative humidity sensing for humidity control and indication in a one- or two-pipe pneumatic application. It is used in conjunction with a pneumatic receiver controller.

The HP971A requires a minimum of 50 fpm air velocity for proper operation.

NOTE: Do not use the HP971 where there may be a high concentration of lithium chloride in the ambient air.

FEATURES

- Proportional control.
- Corrosion resistant materials.
- Simple plug-in air head connections.
- Factory calibrated.

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HP970A & B Pneumatic Humidistats

DESCRIPTION

The HP970A and B are two-pipe proportioning humidistats for controlling actuators of valves and dampers in air conditioning systems requiring control for humidification and dehumidification.

SPECIFICATIONS

Models:

- ☐ HP970A—Direct acting.
- ☐ HP970B—Reverse acting.

Setpoint Range:

HP970A—15 to 75% rh, in 5% increments.
HP970B—15 to 75% rh or 65 to 95% rh, in 5% increments.

Adjustment:

External breakaway knob with internally adjustable locking stops for minimum and maximum settings.

Throttling Range:

Adjustable 3 to 15% rh.

Temperature Limits:

Operating: 45 to 125F (7 to 52C).
Storage: -30 to +150F (-34 to +66C).

Maximum Safe Pressure:

25 psi (172 kPa).

Filter:

Replaceable cartridge type.

Air Consumption:

0.011 scfm (5.2 ml/s).

Mounting:

Horizontal or vertical wall mounted with plug-in backplate.

Dimensions:

3-1/8 x 1-7/8 x 1-1/2 in. deep (80 x 50 x 40 mm).

Branch Line Indication:

Self-sealing gage tap accessible under cover.

Supply Air Pressure:

18 psi (124 kPa).

Covers:

Order separately (see 77-9828).

Fittings:

Order separately (see 95-7134).

Accessories:

Order separately:
Duct Mounting Bracket No. AK3996.
Modernization Kit 14002575-001.

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77-9832
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MLF TAB: II, C, 3.

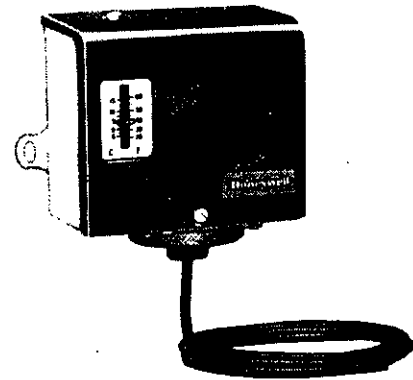
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Honeywell

L480B, G Temperature Controllers



R3310

GENERAL

L480 Temperature Controllers provide temperature or limit control of air conditioning systems and refrigeration units used as low limit controllers. They control based on the lowest temperature sensed by any one-foot portion of the 20-foot, temperature-sensitive element assembly. They are used to close or open electrically operated dampers and valves, or shut off compressor or fan motors when the element senses temperatures below a critical point. The L480B may also be used as a frost alarm sensor in storehouses or other locations where low temperatures would damage building contents.

FEATURES

- Automatic recycling or manual reset models
- Dual temperature scaleplate
- Dust-proof and moisture-proof
- Horizontal or vertical mounting
- UL and CSA listed

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HP971A Pneumatic Humidity Sensor

DESCRIPTION

The HP971 provides direct-acting, proportional, relative humidity sensing for humidity control and indication in a one- or two-pipe pneumatic application. It is used in conjunction with a pneumatic receiver controller.

The HP971A requires a minimum of 50 fpm air velocity for proper operation.

NOTE: Do not use the HP971 where there may be a high concentration of lithium chloride in the ambient air.

SPECIFICATIONS

Model:

HP971A: Direct-acting.

Sensing Ranges:

Nonadjustable, 65 to 95% rh, 15 to 75% rh, and 15 to 85% rh (for use with HP973 Enthalpy Controller).

Output:

3 to 15 psi (21 to 103 kPa).

Ambient Temperature:

45 to 125F (7 to 52C).

Maximum Safe Pressure:

25 psi (172 kPa).

Filter:

Replaceable cartridge type.

Air Consumption:

0.022 scfm (10.4 ml /s).

Mounting:

Horizontal or vertical mounted with plug-in back-plate.

Dimensions:

3-1/8 x 1-7/8 x 1-1/2 in. deep (80 x 50 x 40 mm).

Branch Line Indication:

Self-sealing gage tap, accessible under cover.

Construction:

Corrosion resistant metals and finishes with high-strength, glass-filled, Delrin and Noryl molded parts.

Supply Air Pressure:

18 psi (124 kPa).

Covers:

Order separately (see 77-9836).

Fittings:

Order separately (see 95-7134).

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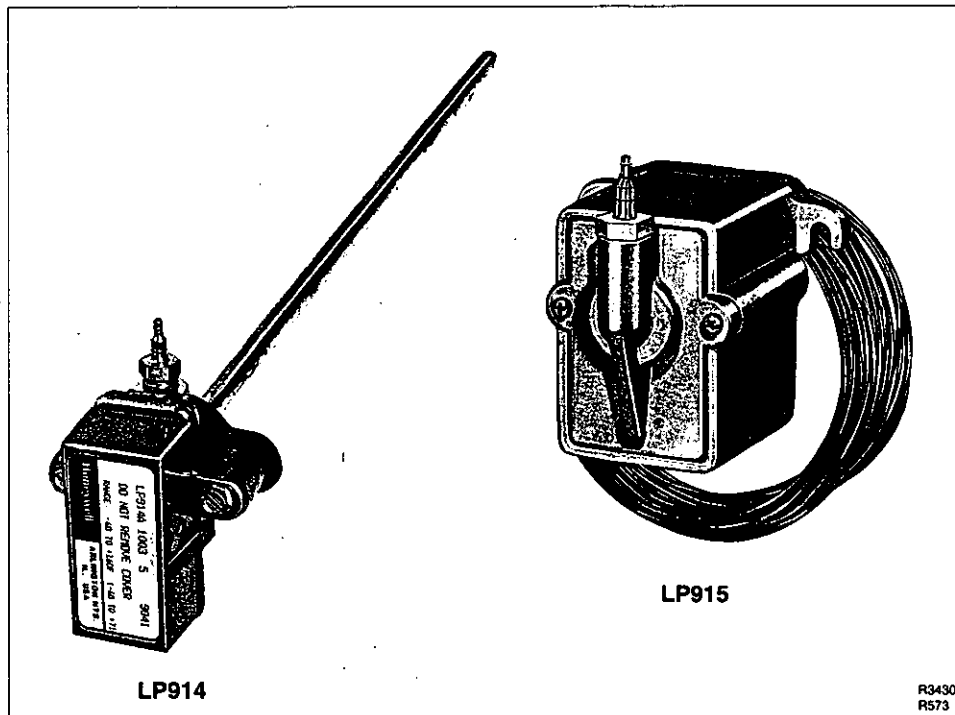
77-9833

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LP914A and LP915A Pneumatic Temperature Sensors



General

The LP914A and LP915A Pneumatic Temperature Sensors are proportional-type temperature sensors used with a pneumatic controller for control of pneumatic valves and damper actuators in fanroom applications. The LP915A is a duct-mounted, liquid-filled, averaging type sensor. The rod and tube insertion element of the LP914A can be duct-, well-, or through-the-wall-mounted.

Features

- May be used with a calibrated gage for continuous temperature indication

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L480B, G Temperature Controllers

DESCRIPTION

The L480 Temperature Controllers provide temperature or limit control of air conditioning systems and refrigeration units by operating electric motors for dampers, valves, compressors, or fans.

SPECIFICATIONS

Models:

- ☐ L480B Temperature Controller: Automatically recycles
- ☐ L480G Temperature Controller: Manual reset

Switching Action:

L480B: Spdt snap acting switch. Breaks control circuit and makes another circuit (makes R-B and breaks R-W) on temperature fall.

L480G: Spdt snap acting switch. Breaks control circuit on temperature fall.

Temperature Range:

20 to 60F (-5 to 15C)

Scaleplate:

Dual Fahrenheit/Celsius scaleplate

Sensing Means:

20 ft (6m) element, no sensing bulb. Controller operates based on lowest temperature of any one-foot portion of element.

Differential:

Nonadjustable and additive; 10F (6C)

Temperature Setting Means:

Slotted screw at top of device. Setpoint is indicated through scale opening in cover.

Ambient Temperatures:

Cover:

Maximum: 140F (60C)

Minimum: 20F (11C) above scale range setpoint

Element:

Maximum: 225F (107C)

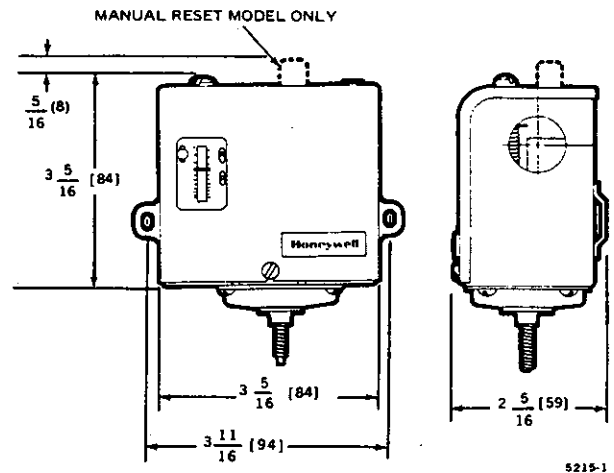
Finish:

Gray enamel

Mounting:

Vertical or horizontal using mounting lugs on back of case

Dimensions in Inches (Millimeters):



Electrical Ratings (Amperes):

	120V ac	240V ac
Full Load	10.2	6.5
Locked Rotor	61.2	39.0

T758

DC Rating: 0.2A at 120V dc, 0.1A at 240V dc
Pilot Duty Rating: 125 VA at 600V ac

Approvals:

UL Listed
CSA Listed

Accessories:

CCT1802: Grommet for mounting element in hole in duct wall

CCT2600: Clips for mounting element inside duct

7640HX: Assembly kit for installing tubing when access into duct is not possible

Bag assemblies for immersing sensing element in water coil. Includes 1/2-14 NPT plug:

7617M: 3/4 in. (19 mm) long opening for sensing element

7617ABY: 1-3/8 in. (35 mm) long opening for sensing element

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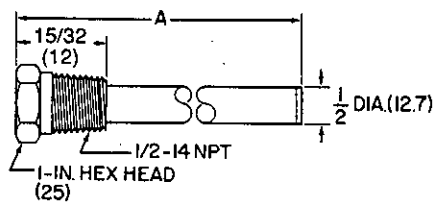
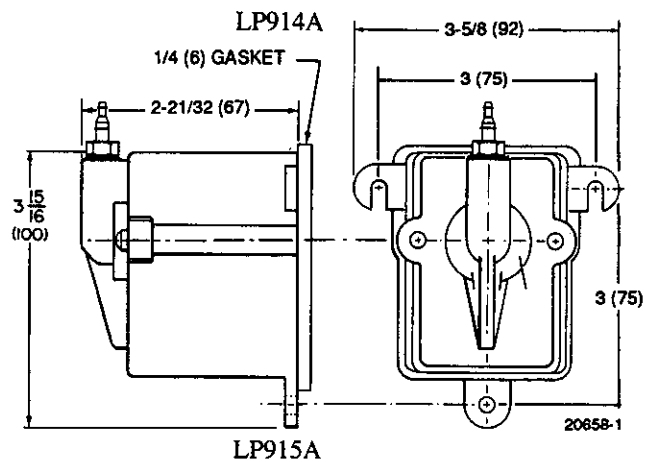
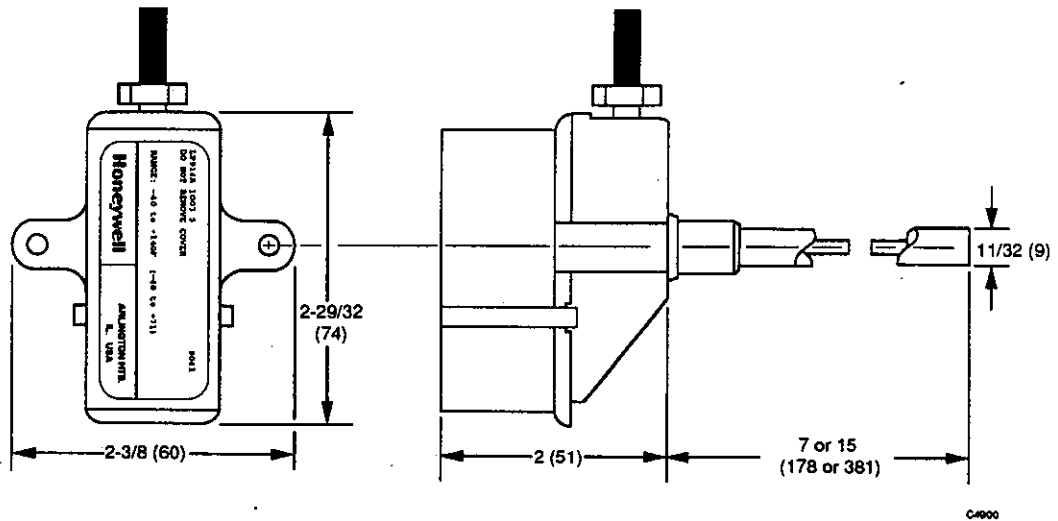
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Dimensions In Inches (Millimeters):



A Dimension

Copper:

- 315046A 15-15/32 in. (393 mm)
- 315046B 7-15/32 in. (190 mm)

Stainless Steel:

- 315904A 15-13/32 in. (391 mm)
- 315904B 7-13/32 in. (188 mm)

164-2

LP914A Wells

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Description

The LP914A and LP915A Pneumatic Temperature Sensors are proportional-type temperature sensors used with a pneumatic controller for control of pneumatic valves and damper actuators in fanroom applications. The LP915A is a duct-mounted, liquid-filled, averaging type sensor. The rod and tube insertion element of the LP914A can be duct-, well-, or through-the-wall-mounted.

Specifications

Models:

- ☐ LP914A: Insertion element, direct acting
- ☐ LP915A: Averaging element, direct acting

Sensing Range:

Nonadjustable

LP914A

-40 to +160F (-40 to +71C)
+40 to +240F (+4 to +115C)
-20 to +80F (-29 to +27C)
+25 to +125F (-4 to +52C)

LP915A

0 to 200F
(-18 to +93C)
25 to 125F
(-4 to +52C)

Maximum Safe Temperature at the Element:

LP914A: 265F (129C)
LP915A: 225F (107C)

Supply Air Pressure:

18 psi (124 kPa) nominal

Maximum Safe Air Pressure:

25 psi (172 kPa)

Pressure Output:

3 to 15 psi (21 to 103 kPa)

Air Consumption:

0.019 scfm (540 sccm)

Air Connections:

Push-on combination barb connector for 5/32-in. (4-mm)
and 1/4-in. (6-mm) O.D. tubing

Mounting:

LP914A: Duct mounted, or through-the-wall (maximum
12 in. [305 mm] thick) mounted
LP915A: Duct mounted

Element (Type and Size):

LP914A: Rod and tube, 7 in. (178 mm) and 15 in.
(381 mm) lengths for water and air
LP915A: Liquid filled, 8 ft 10 in. (2.7m) or 18 ft 6 in.
(5.6m) averaging

Finish:

LP914A: Gray styrene plastic cover, nonremovable
LP915A: Brass forging

Accessories Available:

Wells for LP914A:

Copper

- ☐ 315046A for 15-in. (381 mm) element
- ☐ 315046B for 6-1/2-in. (165 mm) element

Stainless Steel

- ☐ 315904A for 15-in. (381 mm) element
- ☐ 315904B for 6-1/2-in. (165 mm) element

LP915A

- ☐ 314439 Averaging element clip
- ☐ 311085-00107 Sunshade for LP914A
Through-the-wall mounting model

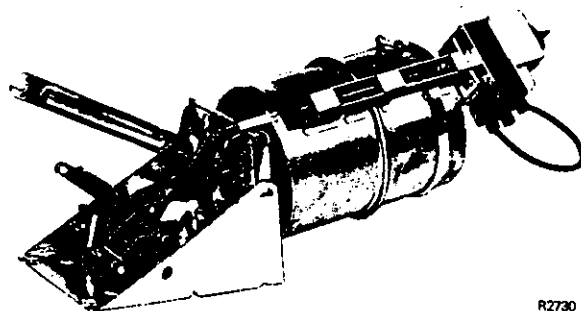
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MP918A and B Pneumatic Damper Actuators



R2730

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GENERAL

The MP918A and B Damper Actuators position damper blades, controlling the airflow through a particular portion of an HVAC system. The MP918A is the same as the MP918B with a positive positioner.

FEATURES

- Rolling diaphragm operated
- Low friction shaft bearing
- Close tolerance on operating range and stroke
- Versatile mounting and connecting hardware
- Models available for use with UL classified leakage rated (smoke) dampers
- Cost efficient mounting to Honeywell dampers
- Nonoverlapping spring ranges for sequencing
- Reliable—long life

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Helping You Control Your World

MP918A and B Pneumatic Damper Actuators

Push Rod Assembly: 14004106-001 (conversion of internal normally closed to external)
 Crank Arm Assembly: 14004107-001 (conversion of internal normally closed to external)
 Alternate Top Mount Bag Assembly: 14004324-001

Damper Load Ratings (See Following Tables):

Damper load ratings for Honeywell Moduflow Dampers (non UL Listed models) are calculated by adding the B dimensions of all sections.

EXAMPLE:

Damper Type: D640
 Duct Dimensions: 112 inches (A dimension) x 36 inches (B dimension)
 Actuator: MP918B
 Operating Range: 3 to 13 psi (21 to 90 kPa)
 Type of Operation: Modulating Service
 Main Air Pressure: 18 psi (124 kPa)
 The 112-inch A dimension requires three damper sections. Multiplying the B dimension (36 inches) by three equals 108 inches of total B dimension. The MP918B Maximum Damper Load Rating Table shows that one MP918B will operate up to 123 inches of damper. Therefore, one MP918B Actuator is required for this example.

MP918A Maximum Damper Rating for B Dimensions in Inches (Millimeters)

Damper Model	Operating Range psi (kPa)	Modulating Service		2-Position Service	
		18 psi (124 kPa)	20 psi (138 kPa)	18 psi (124 kPa)	20 psi (138 kPa)
D640, D641	8 to 13 (55 to 90)	205 (1415)	287 (1979)	205 (1415)	287 (1979)
D642, D643, D644, D645	1	169 (1165)	236 (1627)	169 (1165)	236 (1627)

1 With positive positioner (3, 5, or 10 psi span)

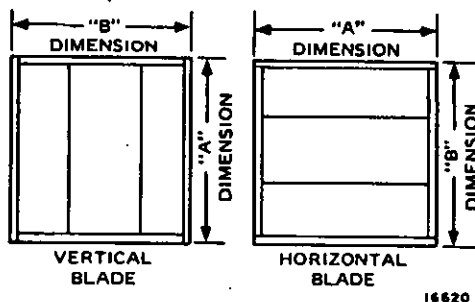
T199

MP918B Maximum Damper Rating for B Dimensions in Inches (Millimeters)

Damper Model	Operating Range psi (kPa)	Modulating Service		2-Position Service
		13 psi (90 kPa)	18 psi (124 kPa)	18 psi (124 kPa)
D640, D641	3 to 7 (21 to 48)	123 (848)	123 (848)	123 (848)
	3 to 13 (21 to 90)	N/A	123 (848)	123 (848)
	5 to 10 (34 to 69)	123 (848)	123 (848)	205 (1413)
	8 to 13 (55 to 90)	N/A	123 (848)	205 (1413)
D642, D643, D644, D645	3 to 7 (21 to 48)	101 (696)	101 (696)	101 (696)
	3 to 13 (21 to 90)	N/A	101 (696)	101 (696)
	5 to 10 (34 to 69)	101 (696)	101 (696)	169 (1165)
	8 to 13 (55 to 90)	N/A	101 (696)	169 (1165)

N/A = Not Applicable.

T200



Damper A and B Dimensions

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MP918A and B Pneumatic Damper Actuators

DESCRIPTION

The MP918A and B Damper Actuators position damper blades, controlling the airflow through a particular portion of an HVAC system. The MP918A is the same as the MP918B with a positive positioner.

SPECIFICATIONS

Models:

- ☐ MP918A: Actuator with positive positioner
- ☐ MP918B: Actuator without positive positioner

Maximum Safe Air Pressure:

MP918A: 25 psi (172 kPa)
MP918B: 29 psi (200 kPa)

Operating Range:

MP918A: 3, 5, or 10 psi (21, 34, or 69 kPa) nonadjustable.
Span factory adjusted for 10 psi; 5 psi feedback spring included; 3 psi feedback spring available. See Accessories.

MP918B: See following table.

Net Force Exerted and Stroke:

Model	Operating Range psi (kPa)	Stroke in. (mm)	Net Force in Pounds (N) Exerted at Various Pressures	
			0 psi (0 kPa)	18 psi (124 kPa)
MP918B	3-7 (21-48)	3.5 (90) ↓	52 (231)	244 (1086)
	3-13 (21-90)		50 (222)	89 (396)
	5-10 (34-69)		96 (427)	162 (721)
	8-13 (55-90)		160 (712)	83 (369)
MP918A	8-13 (55-90) ¹	3.5 (90)	160 (712)	83 (369)

¹ Also see MP918A Operating Range and Startpoint Pressure.

T201-1

Startpoint Pressure (MP918A):

Adjustable 1.5 to 13 psi (10 to 90 kPa)

Ambient Temperature Range:

MP918A: -20 to 160F (-29 to 70C)
MP918B: -40 to 160F (-40 to 70C)

Air Connections:

MP918A: 5/32-in. (4 mm) push-on barb (pilot); 1/4-in. (6 mm) push-on barb (main and branch)
MP918B: 1/4-in. (6 mm) push-on barb
UL listed actuators: Special high temperature plastic tubing pigtailed that allow connection to 1/4-in. (6 mm) O.D. copper tubing

Diaphragm:

Neoprene, rolling type
Effective area: 23.8 in² (154 cm²)

Body Material:

Electro galvanized steel

Air Consumption:

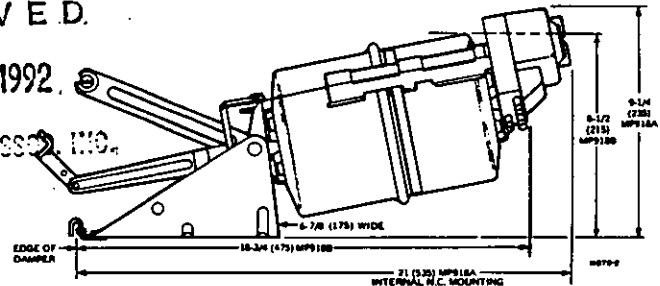
MP918A: 0.021 scfm (9.9 ml/sec) at 18 psi (124 kPa)
MP918B: Zero

Dimensions In Inches (Millimeters):

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UL Listed Damper Actuators:

Models Available: MP918B: 8 to 13 psi (55 to 90 kPa) and MP918A

UL Restrictions: UL listing applies only when used with UL classified Honeywell SD series leakage rated dampers or other dampers with which actuators are listed

Mainline Pressure Limits: 18 psi (124 kPa) minimum, one section per actuator; 20 psi (138 kPa) minimum, two sections per actuator; 25 psi (172 kPa) maximum

Damper Limitations:

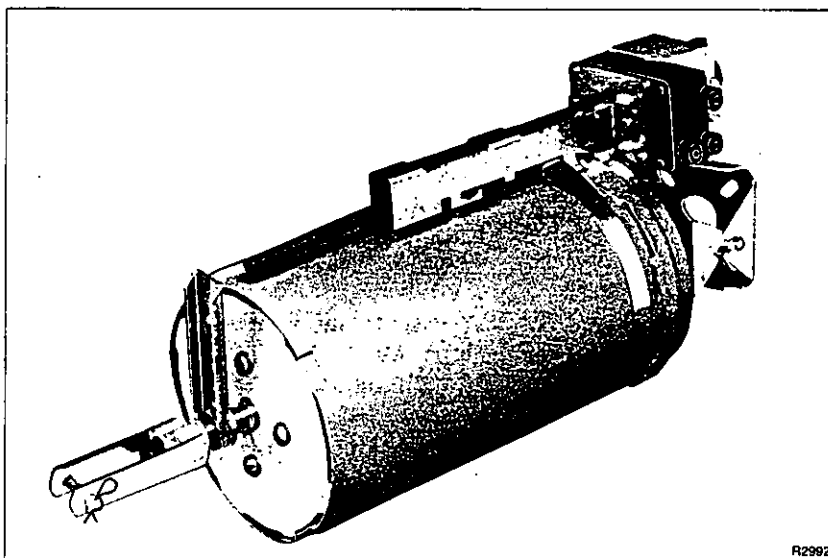
D640SD, D641SD: See 77-5129
D644SD, D645SD: See 77-5140

Accessories:

Kit to convert MP918B (8 to 13 psi spring range) to MP918A: 14004264-002 (contains 10 psi feedback spring)
Positioner Feedback Spring Kit: 14004210-001 (contains 3, 5, and 10 psi springs)
Feedback Spring Kit for 3 psi span (MP918A): 14004509-001 (10 springs per kit)
Hitch Pin Bag Assembly: 14004241-002 (contains six clevis pins)
Mounting Screw Bag Assembly: 14004237-001 (conversion of internal mounting models to external)

Honeywell

MP920B Pneumatic Actuator



General

MP920B Pneumatic Actuators are suitable for fan inlet vane control applications in a VAV system.

Features

- Rolling diaphragm operated
- Fail safe on over pressure
- Actuator can be swivel mounted from either end to pipe, floor, or wall surface
- Optional positive positioner provides accurate positioning under varying load conditions

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Aquastat Pressuretrol*

MODEL NUMBER P457A

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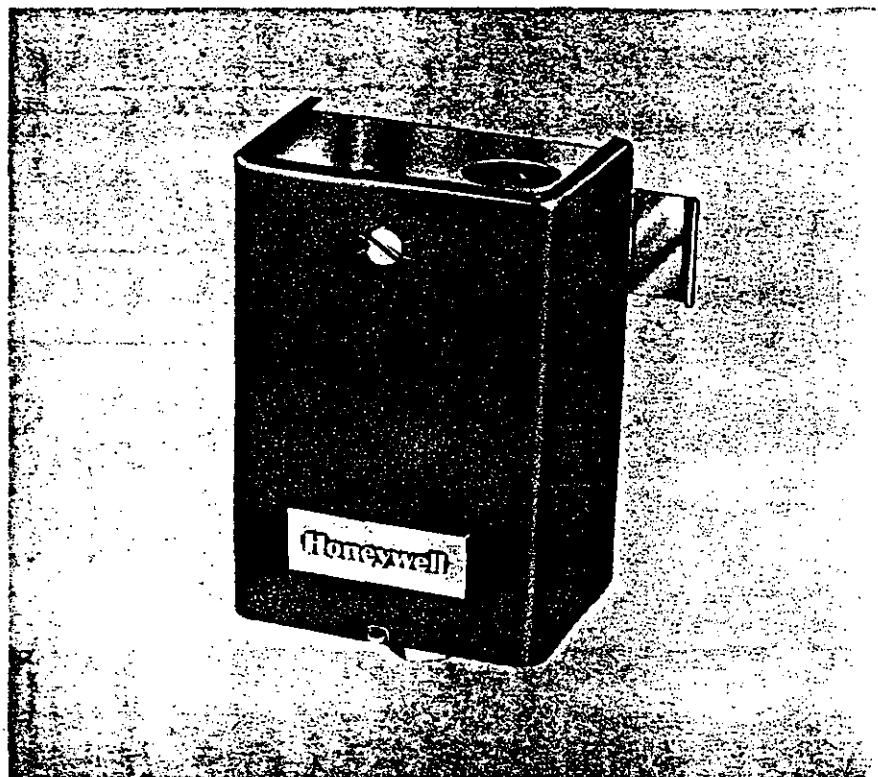
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General

The P457A Aquastat Pressuretrol is used with a direct-acting pneumatic room thermostat to provide control of fan motor operation in unit heater applications where hot water or steam is supplied continuously to the heat exchanger. A built-in switch stops the fan when heat is not available.

Features

- SPDT MICRO SWITCH* snap-switch.
- Precalibrated.
- Two straps for mounting.



Specifications

MODEL
P457A.

ELECTRICAL RATING (In Amperes)

	120v AC	208v AC	240v AC
Full Load	8.0	5.1	5.1
Locked Rotor	48.0	30.6	30.6

AMBIENT TEMPERATURE
125 F (52 C) maximum.

SETPOINT RANGE

P-E Relay: 2 to 16 psi (14 to 110 kPa).
Factory set at 8 psi (55 kPa). Aquastat: Nonadjustable.
Makes on temperature rise, 120 ± 10 F (49 ± 5 C).
Breaks on temperature fall, 95 ± 10 F (35 ± 5 C).

PIPE TEMPERATURE
250 F (121 C) maximum, 35 F (2 C) minimum.

AIR CONNECTION
1/8 in. NPT.

DIMENSIONS
See Figure 1.

MAXIMUM SYSTEM PRESSURE
25 psi (172 kPa).

WHEN SPECIFYING, INDICATE
Model Number

Description

MP920B Pneumatic Actuators are suitable for fan inlet vane control applications in a VAV system.

Specifications

Models:

- ☐ MP920B: Operator only
See ACCESSORIES for Positioner

Maximum Safe Air Pressure:

29 psi (200 kPa)

Stroke:

6 in. (150 mm)

Effective Area:

24.8 in.² (160 cm²)

Spring Range:

7-1/4 to 13 psi (50 to 90 kPa)

Positioner Input Span:

10 psi (70 kPa)

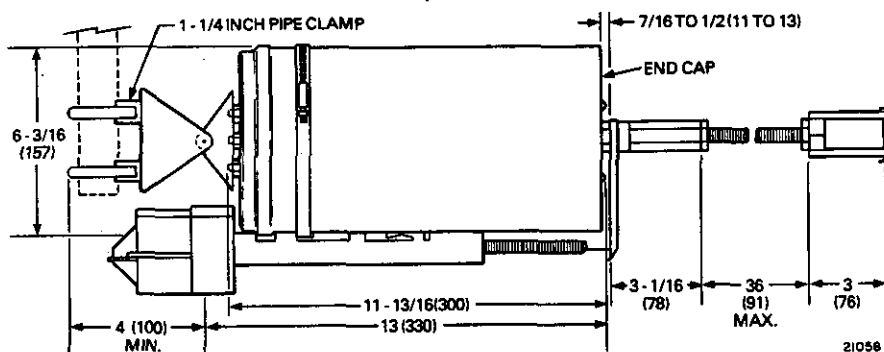
Net Force Exerted:

For fan inlet vane applications only:

With 0 psi applied: 173 lb force (770 N) available to close fan inlet vanes

With 20 psi (138 kPa) applied: 298 lb force (1326 N) available to open fully closed fan inlet vanes; 173 lb force (770 N) with shaft fully extended

Dimensions In Inches (Millimeters):



Ambient Temperature Range:

-20 to 158F (-30 to 70C)

Diaphragm:

Neoprene, rolling type

Housing:

Grey enamel finish on steel body

Shipping Weight:

Operator: 13-1/4 lb. (6.0 kg)

Positioner Kit: 2-1/8 lb. (1 kg)

Shaft End Connection:

9/16 in.-18 UNF male with 3/8 in.-16 UNC female

Air Connection:

MP920B: 1/4 in. (6 mm) push-on barb

Positioner:

5/32 in. (4 mm) push-on barb (pilot)

1/4 in. (6 mm) push-on barb (main and branch)

Accessories

- ☐ 14004345-001 Positive Positioner Kit
- ☐ AK3556 Pipe Mounting Bag Assembly, for 1-1/4 in. pipe
- ☐ AK3557 Short Clevis Bag Assembly, for 3/8 in.-16 threaded rod
- ☐ AK3558 Swivel Bracket Bag Assembly
- ☐ AK3559 Long Clevis Bag Assembly with actuator shaft coupling for 5/8 in.-11 threaded rod
- ☐ AK3560 Ball joint, 3/8 in.-24 threaded stud with couplings for 5/8 in.-11 threaded rod and actuator shaft
- ☐ AK3561 Ball joint, 3/8 in.-24 threaded stud with couplings for 3/8 in.-16 threaded rod
- ☐ 14004368-002 Bracket Assembly

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740 Ellesmere Road

Scarborough, Ontario

M1P 2V9

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Typical Operation

When the branch line pressure from the room thermostat drops to the setpoint, 8 psi (55 kPa), the R-B contacts of the P-E relay make to turn on the unit heater fan motor. Should there be a loss of heat at the heat exchanger, the return line fluid temperature drops causing the Aquastat contacts to break overriding the room thermostat and shutting off the fan motor.

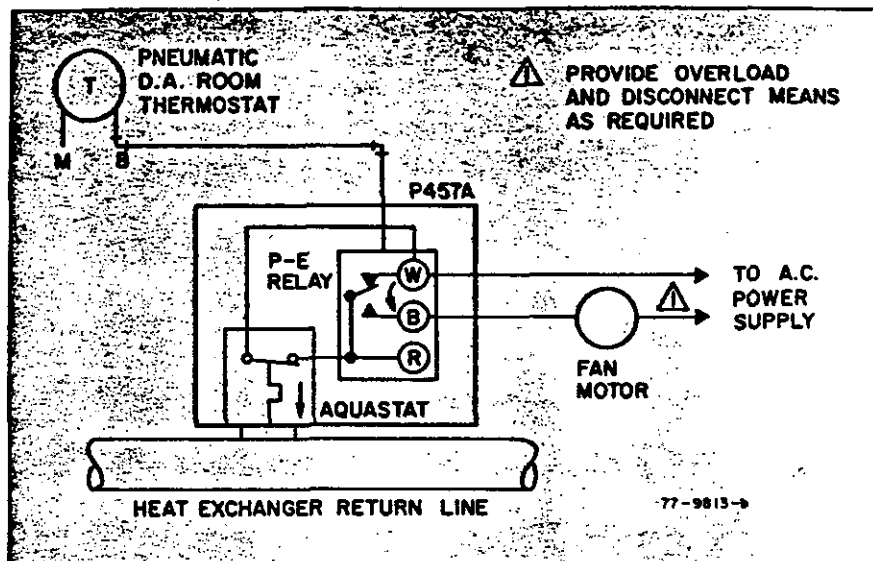
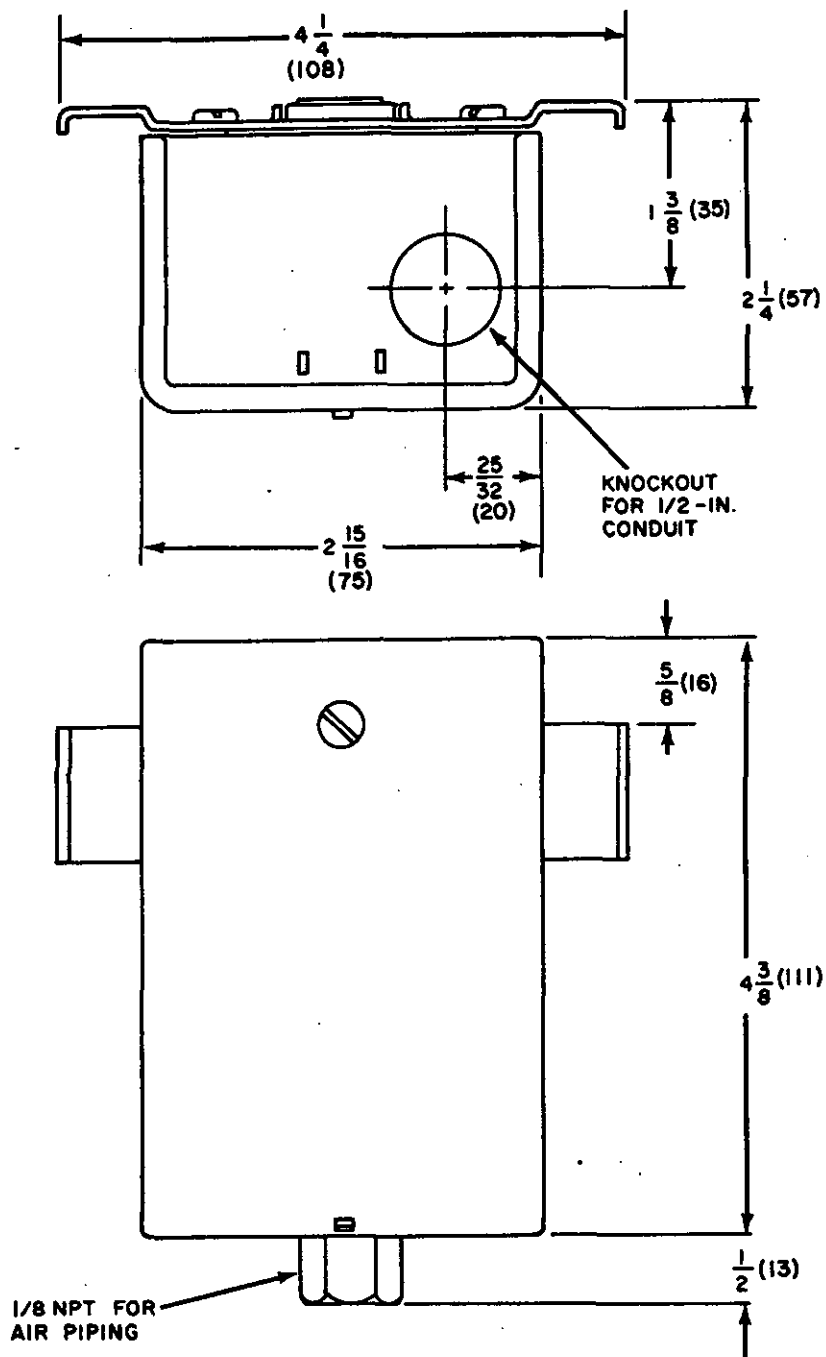


FIG. 2. P457A TYPICAL OPERATION

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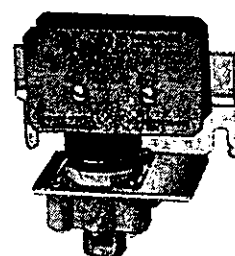
FIG. 1. P457A APPROXIMATE DIMENSIONS IN INCHES (MILLIMETERS)

Honeywell

P658A, B, C, E, and F Pneumatic/Electric Switches



P658A



P658B, C

GENERAL

The P658A, B, C, E, and F Pneumatic/Electric Switches convert a pneumatic signal from a controller or other pneumatic device to a spdt electric switch action. The P658A, B, E, and F are used for on/off control of fans and pumps, energizing electric heaters, day-night control of unitary equipment, interlock functions, and control of other electrical equipment commonly found in mechanical systems. The P658C is intended for use with DeltaNet Systems or any system requiring low-impedance switching for monitoring status.

FEATURES

- Models available for surface or panel mounting
- Barb protected by open cage
- All ferrous parts plated to prevent corrosion
- Factory calibrated setpoint field adjustable to meet job requirements
- Neoprene diaphragm element

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P658A, B, C, E, and F Pneumatic/Electric Switches

Electrical Rating:

Model	Motor Load	Resistive Load	Pilot Duty
P658A, B	1 hp at 125V ac 2 hp at 250 or 277V ac	25A at 125, 250, or 480V ac	750 VA at 125, 250, or 277V ac
P658E, F	3/4- hp at 125, 250, or 277V ac	25A at 125, 250, or 277V ac; 10A at 480V ac	720 VA at 125, 250, or 277V ac

P658C: 5mA at 5V dc

Electrical Connections:

P658A, B, C: Screw terminals

P658E, F: 1/4-in. quick-connect male tab terminals

Terminal Designations:

P658A, B, C: R (C), W (N.O.), B (N.C.)

P658E, F: COM, NO, NC

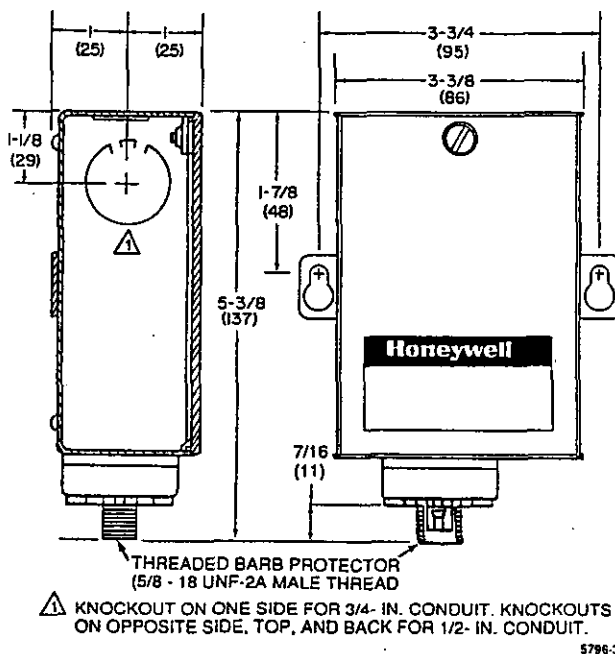
Maximum Safe Air Pressure:

30 psi (207 kPa)

Air Connection:

Push-on, sharp-barb fitting for 1/4-in. (6-mm) O.D. plastic tubing

Dimensions in Inches (Millimeters):

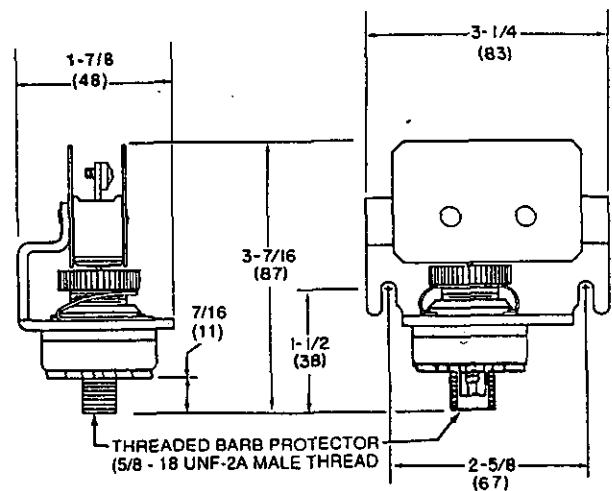


P658A RECEIVED

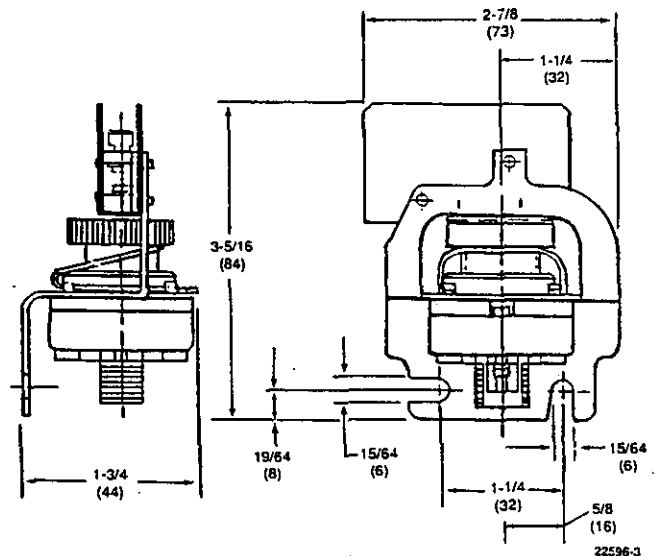
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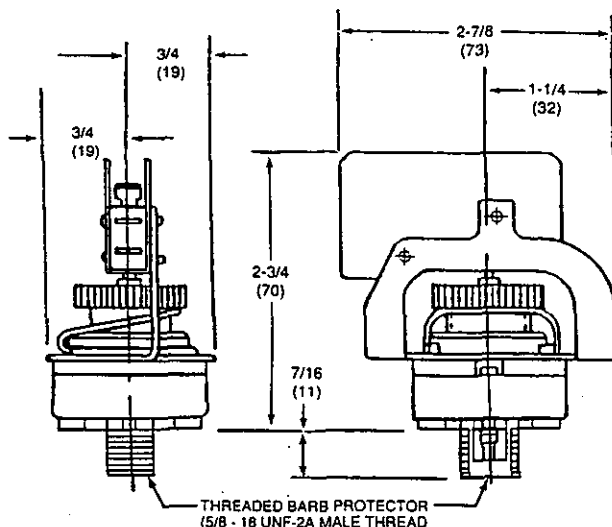
FITZPATRICK & ASSOC. INC.



P658B, C



P658E



P658F

22596-2

77-9829

P658A, B, C, E, and F Pneumatic/Electric Switches

DESCRIPTION

The P658A, B, C, E, and F Pneumatic/Electric Switches convert a pneumatic signal from a controller or other pneumatic device to a spdt electric switch action. The P658A, B, E, and F are used for on/off control of fans and

pumps, energizing electric heaters, day-night control of unitary equipment, interlock functions, and control of other electrical equipment commonly found in mechanical systems. The P658C is intended for use with DeltaNet Systems or any system requiring low-impedance switching for monitoring status.

SPECIFICATIONS

Models:

Model	✓	Case	Mounting	Switch Action	Setpoint		Differential (Fixed)
					Factory Set	Field Adjustable	
P658A		Yes	Surface	c	2, 4, 10, or 14 psi (14, 28, 69, or 97 kPa)	2 to 24 psi (14 to 165 kPa)	2 psi (14 kPa)
P658B		No	Panel ^a	c	4, 7, 8, 10, 13; or 14 psi (28, 48, 55, 69, 90, or 97 kPa)		
P658C		No	Panel ^a	c	10 psi (69 kPa)		1.5 psi (10 kPa)
P658E		No	Panel ^a	d	7, 8, 10, 12, or 13 psi (48, 55, 69, 83, or 90 kPa)	2 to 17 psi (14 to 117 kPa)	1 psi (7 kPa)
					14 psi (97 kPa)	12 to 25 psi (83 to 172 kPa)	
					No	2 to 17 psi (14 to 117 kPa)	
					No	12 to 25 psi (83 to 172 kPa)	
				e	10 or 13 psi (69 or 90 kPa)	2 to 17 psi (14 to 117 kPa)	
P658F		No	Panel ^b	d	6, 8, or 10 psi (41, 55, or 69 kPa)	2 to 17 psi (14 to 117 kPa)	
					No	2 to 17 psi (14 to 117 kPa)	
					No	7 to 21 psi (48 to 145 kPa)	
					No	12 to 25 psi (83 to 172 kPa)	

^a Internal panel mounted using mounting screws and bracket.

^b Internal panel mounted. Secured through double-D hole in panel or electrical case using hex nut.

^c Makes R to B and breaks R to W on a pressure fall to the setpoint; makes R to W and breaks R to B on a pressure rise to the setpoint plus the differential.

^d Makes COM to NC and breaks COM to NO on a pressure fall to the setpoint; makes COM to NO and breaks COM to NC on a pressure rise to the setpoint plus the differential.

^e Makes COM to NO and breaks COM to NC on a pressure rise to the setpoint; makes COM to NC and breaks COM to NO on a pressure fall to the setpoint minus the differential.

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P765A, B Pneumatic/Electric Transducer

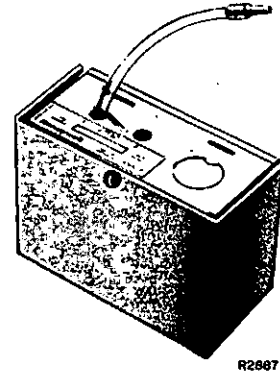
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GENERAL

FITZPATRICK & ASSOC. INC.

The P765A, B Pneumatic/Electric transducer accepts a proportional pneumatic signal of 0 to 15 psi (0 to 100 kPa) and converts it into a direct acting 2 to 10V dc voltage signal to provide an indication or a feedback control where pressure to voltage conversion is required. The P765A is a single P/E Transducer and the P765B Dual P/E Transducer consists of two independent P/E transducers.



FEATURES

- Factory calibrated.
- No air consumption.
- Use with Micronik 100, Excel DDC, or other 2 to 10V dc devices.
- Single or dual units available.

SPECIFICATIONS

Models:

- P765A: Single P/E transducer.
- P765B: Dual P/E transducer.

Power Consumption:
2 VA.

Power Supply:
24V, $\pm 15\%$, 50/60 Hz. A built-in isolation transformer allows the P765 to obtain 24V ac from the Excel Panel Transformer.

Ambient Temperature Limit:
Temperature: 32 to 122 F (0 to 50 C).
Storage: -40 to +158 F (-40 to 70 C).

Relative Humidity:
5 to 95% rh.

Input Signal:

0 to 15 psi (0 to 100 kPa) nonconsuming.

Maximum Safe Air Pressure:

28 psi (193 kPa).

Output Signal:

2 to 10V dc.

Output Current:

10 mA Maximum.

Air Connections:

Barb-fittings for 1/4-inch (6 mm) OD standard polyethylene tubing.

Wiring:

18 to 22 AWG (1.0 mm² to 0.7 mm²).

Dimensions:

See Figure 1.

TYPICAL OPERATION

A zone control system load analyzer provides the highest and lowest branch pressure input from zone thermostats to a P765B P/E Transducer which converts them into a direct acting 2 to 10V dc output for the Excel DDC Controller for heating and cooling applications.

Environmental Limits:**Operating Temperature Range:**

P658A, C: -20 to 140F (-4 to 60C)

P658B: -20 to 160F (-4 to 71C)

P658E, F: 40 to 140F (4 to 60C)

Operating Humidity Range: 5 to 95% rh; 80F (27C)
maximum wet-bulb temperature**Finish:**

P658A: Gray-beige cover

P658B, C, E, and F: Gray; plated ferrous parts

Optional Accessory:CCT2363 5/8-18 Hex Nut (for internal-enclosure
mounting that extends barb outside of enclosure)**Agency Listings:****P658A:**UL Listing, Category SDYF; intended for direct
separate installation in the field

CSA Listing, Volume II.

P658B, E, F:UL File No. E49725, Category SDFY2, Component
Listing

CSA Listing, Volume I

P658C: UL Listing not applicable (low-voltage
application)**RECEIVED**

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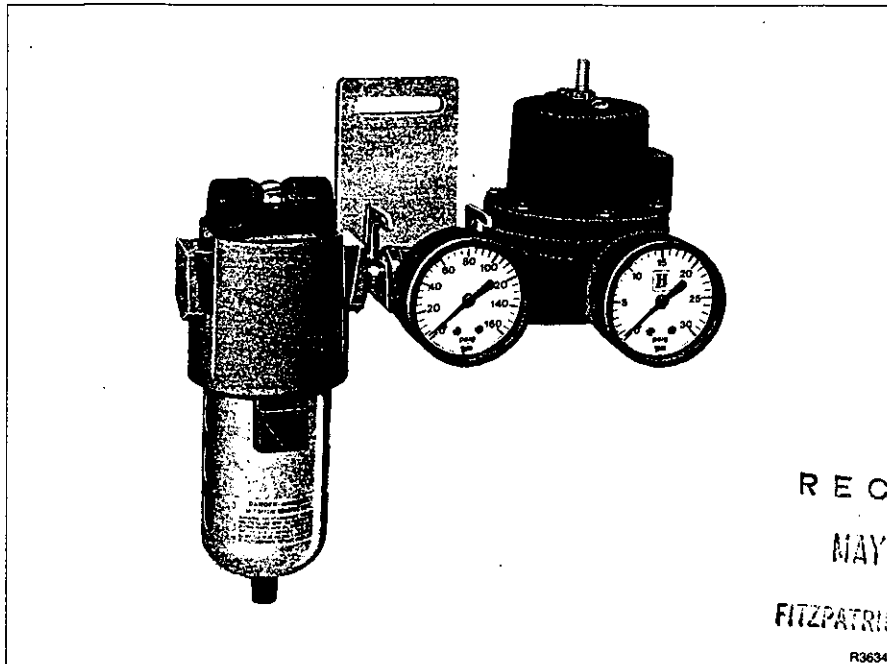
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In Canada: Scarborough, Ontario M1P 2V9
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MLF TAB: II. C. 4.

Printed in USA

Rev. 7-89

PP902C & D Pressure Reducing Valve and Filter Stations



General

The PP902C and D Pressure Reducing Valve (PRV) and Filter Stations control the pressure and filter the air delivered to pneumatic control systems.

The PP902C is used in single pressure systems, while the PP902D is used in two-pressure systems requiring two independently regulated air pressure settings.

Features

- Built-in adjustable safety relief valve
- Built-in pressure gages
- Pneumatically controlled, adjustable, two-pressure model available for Day/Nite or Summer/Winter control systems
- Built-in, high-capacity micron filter
- RP418 or RP818 Electric-Pneumatic Relay and 14003638-001 Mounting Bracket Kit mount directly to PP902D switchover port
- Green-Red filter replacement indicator

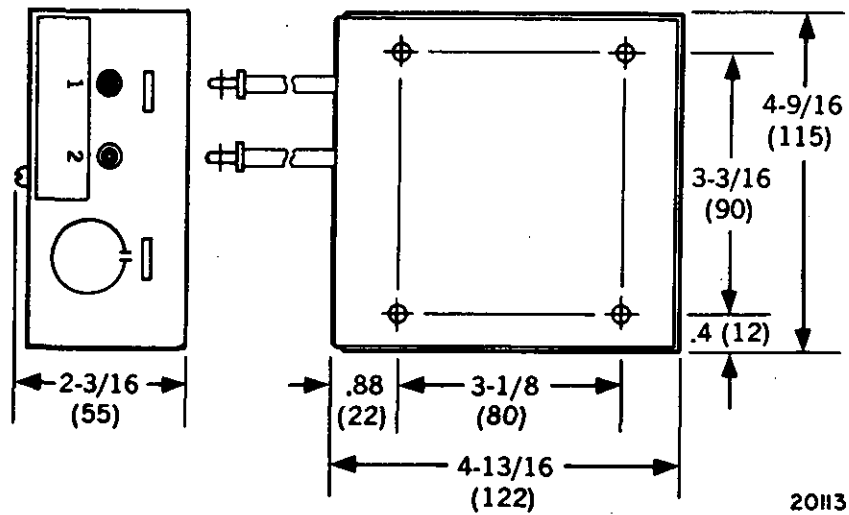


Fig. 1. P765 E/P Transducer Approximate Dimensions in Inches (Millimeters).

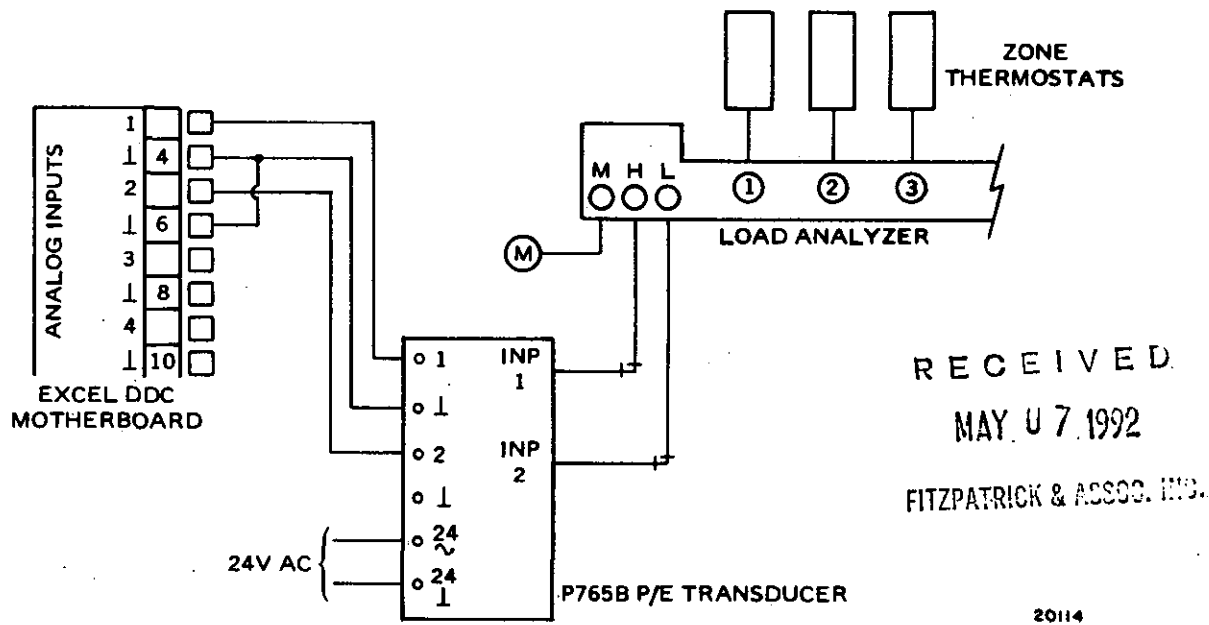


Fig. 2. P765B E/P Transducer in Heating and Cooling Control Application.

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Honeywell

Differential Pressuretrol

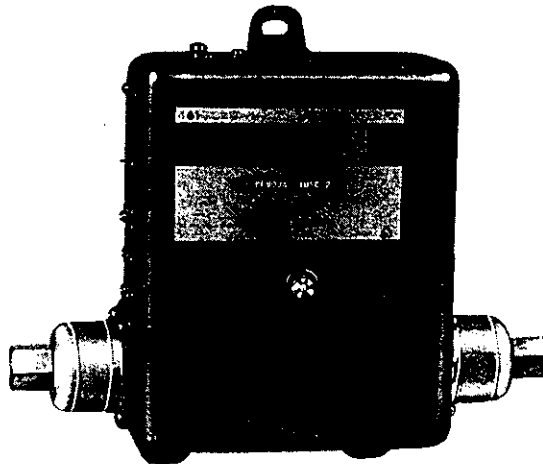
MODEL NUMBER PP903A

General

The PP903A is a differential pressure, bleed type controller providing proportional control of pneumatic actuators and valves.

Features

- Direct or reverse-acting. Change-over link provides quick and easy change-over from direct to reverse-acting.
- Easily accessible adjustment means for throttling range and pressure range.
- Mounting lugs for quick and easy mounting.



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Specifications

MODEL
PP903A

TABLE 1. PP903A SPECIFICATIONS

Pressure Difference Setpoint Range*	Operating Pressure Limits of Bellows Assemblies		Approximate Throttling Range of Controller at:					
			Low End of Scale		Mid Scale		High End of Scale	
	Min	Max.	Min	Max.	Min	Max.	Min	Max.
0-22 psi (0-152 kPa)	22 Hg vac	85 psi (586 kPa)	-----	-----	6 oz. (2/5 kPa)	26 oz. (11 kPa)	-----	-----
3-50 psi (21-344 kPa)	2 psi (14 kPa)	85 psi (586 kPa)	1.5 psi (10 kPa)	11 psi (76 kPa)	3 psi (21 kPa)	16 psi (110 kPa)	4 psi (28 kPa)	22 psi (152 kPa)
5-65 psi (35-448 kPa)	0 psi	300 psi (2068 kPa)	6 psi (41 kPa)	30 psi (217 kPa)	-----	-----	9 psi (62 kPa)	30 psi (207 kPa)

*A blank scale is provided to permit the controller to be calibrated to individual installations in the field.

Description

The PP902C and D Pressure Reducing Valve (PRV) and Filter Stations control the pressure and filter the air delivered to pneumatic control systems. The PP902C is used in single pressure systems, while the PP902D is used in two-pressure systems requiring two independently regulated air pressure settings.

Specifications

Models:

- ☐ PP902C: Single-pressure PRV
- ☐ PP902D: Two-pressure PRV

Inlet Pressure:

45 to 150 psi (310 to 1034 kPa)

Outlet Pressure (Regulated):

0 to 25 psi (0 to 172 kPa); factory set at 18 psi (124 kPa)

Differential Pressure (PP902D):

Adjustable 0 to 5 psi (0 to 35 kPa); factory set at 4.5 psi (31 kPa)

Gages:

Inlet: 0 to 160 psi

Outlet: 0 to 30 psi

or

Inlet: Dual scale, 0 to 160 psi and 0 to 11 kPa

Outlet: Dual scale, 0 to 30 psi and 0 to 2 kPa

Filter Replacement Indicator:

Full green, new filter

Full red, filter replacement recommended, 10 psi (69 kPa) pressure drop

Safety Pressure Relief:

Adjustable 12 to 25 psi (83 to 172 kPa); factory set at 22 to 25 psi (152 to 172 kPa)

Relief Capacity:

5 cu ft/min (2.4 L/s) at 20 psi (138 kPa) outlet

Maximum Air Flow:

10 cu ft/min (4.7 L/s) at 18 psi (124 kPa) outlet

Maximum Air Consumption:

0.06 cu ft/min (1700 cu scm/min)

Connections:

Inlet and outlet air: 1/4-inch female NPT

PP902D pilot: 1/8-inch female NPT

Filter Bowl Material:

Polycarbonate with metal bowl guard

Filter Rating:

0.01 micron coalescing type; 99.9998 percent filtering efficiency

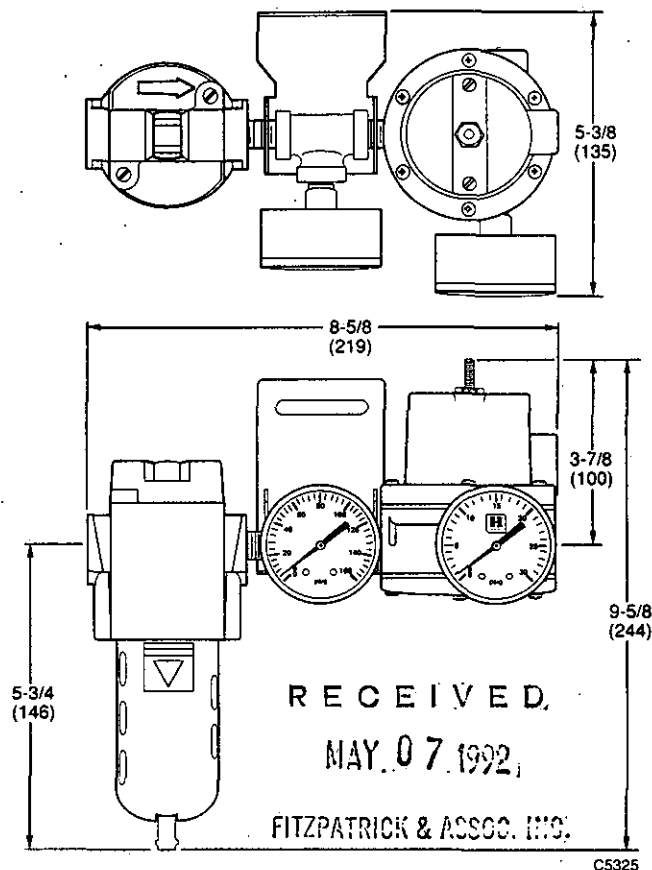
Mounting:

Mount with bracket provided or directly supported by plumbing system

Finish:

Anodized aluminum (PRV) and paint (filter)

Dimensions in Inches (Millimeters):



Accessories:

- ☐ RP418 or RP818 Electric-Pneumatic Relay (requires a Mounting Bracket Kit 14003638-001 for mounting on the PP902D)
- ☐ Mounting Bracket Kit: 14003638-001 (for mounting RP418 or RP818 Electric-Pneumatic Relay directly on PP902D switchover port)
- ☐ Filter Replacement Kit: 14004203-001

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Home and Building Control

Honeywell Inc.
Honeywell Plaza
P.O. Box 524
Minneapolis, MN 55408-0524

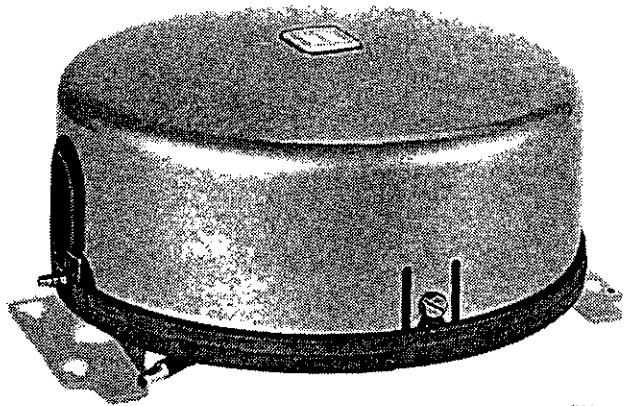
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Scarborough, Ontario
M1P 2V9

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PP904A & B Differential Pressure Regulators



R3395

GENERAL

The PP904A and B Differential Pressure Regulators, when used with pneumatic control devices, control the static, differential, or velocity pressures in a central fan installation. They can also be used as adjustable-range differential pressure transmitters.

FEATURES

- Direct or reverse acting
- Adjustable setpoint and throttling range (zero and span)
- Sharp-barb, push-on connectors for plastic tubing
- Field calibration possible

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MAXIMUM SAFE AIR PRESSURE

18 psi (124 kPa)

ADJUSTMENT MEANS

External slotted screws for throttling range and pressure range.

TYPE OF ELEMENT

Bellows

BRANCH LINE CONNECTION

1/8 NPT

INPUT CONNECTIONS

1/4 NPT

MOUNTING

Lugs for three-point surface mounting.

DIMENSIONS

See Figure 1.

FINISH

Gray

ACCESSORIES

Adjustable Restrictor-310418A.
(Furnished with device.)

WHEN ORDERING, SPECIFY

Pressure difference range.

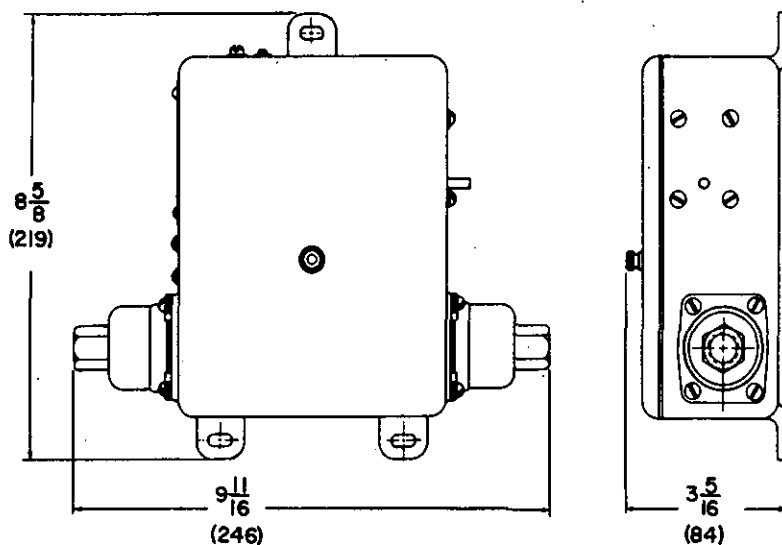


FIG. 1. PP903A APPROXIMATE DIMENSIONS IN INCHES (MILLIMETERS)

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Honeywell

THE R4222, R8222, R4228 AND R8228 ARE GENERAL PURPOSE RELAYS FOR USE IN REFRIGERATION AND AIR CONDITIONING EQUIPMENT, APPLIANCES, VENDING MACHINES, AND OTHER APPLICATIONS REQUIRING GENERAL PURPOSE SWITCHING.

☐ R4222 and R8222 contacts are available for Powerpile (millivoltage), pilot duty, and power pole applications.

☐ R4228 and R8228 have power rated contacts only.

☐ R4222 and R4228 models have line voltage (120, 208/240, 277, or 480 Vac) coils. R8222 and R8228 models have low voltage (24 Vac) coils.

☐ Models available with a variety of switching configurations.

☐ Laminated magnet construction for high efficiency.

☐ Contacts rated for voltages up to 600 Vac.

☐ Molded terminal numbers and circuit diagram on top of relay provide easy identification for wiring and checking system operation.

☐ Relay constructed for high reliability.

☐ Quick-connect terminals are standard; double quick-connects available on coil terminals.

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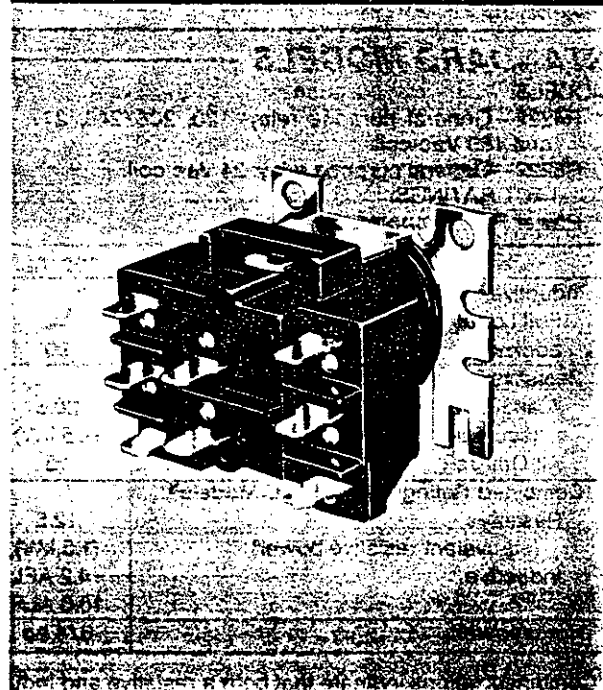
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REV. 4-85•

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SWITCHING RELAYS



R4222; R8222;
R4228; R8228

PP904A & B Differential Pressure Regulators

DESCRIPTION

The PP904A and B Differential Pressure Regulators, when used with pneumatic control devices, control the static, differential, or velocity pressures in a central fan installation. They can also be used as adjustable-range differential pressure transmitters.

SPECIFICATIONS

Models:

- ☐ PP904A: Two-pipe, direct or reverse acting static pressure controller
- ☐ PP904B: One-pipe, direct or reverse acting static pressure controller or adjustable velocity pressure transmitter with 0.007 in. external restriction

Setpoint Range:

Adjustable: 0.0 to ± 8 in. wc (0.0 to ± 1.99 kPa)

Throttling Range:

PP904A: Adjustable, 0.03 to 0.5 in. wc (0.007 to 0.125 kPa)

PP904B: Adjustable, 0.06 to 0.5 in. wc (0.015 to 0.125 kPa)

Construction:

Gray hammered enamel finish with neoprene diaphragms and plated steel parts

Air Consumption at 18 psi:

PP904A: 0.022 scfm (9.8 ml/s)

PP904B: 0.021 scfm (9.4 ml/s)

Air Handling Capacity:

PP904A: 0.039 scfm with 1 psi drop (18 ml/s with 7 kPa drop)

PP904B: 0.021 scfm (9.9 ml/s)

Normal Air Supply:

20 psi (138 kPa)

Maximum Safe Air Pressure:

25 psi (172 kPa)

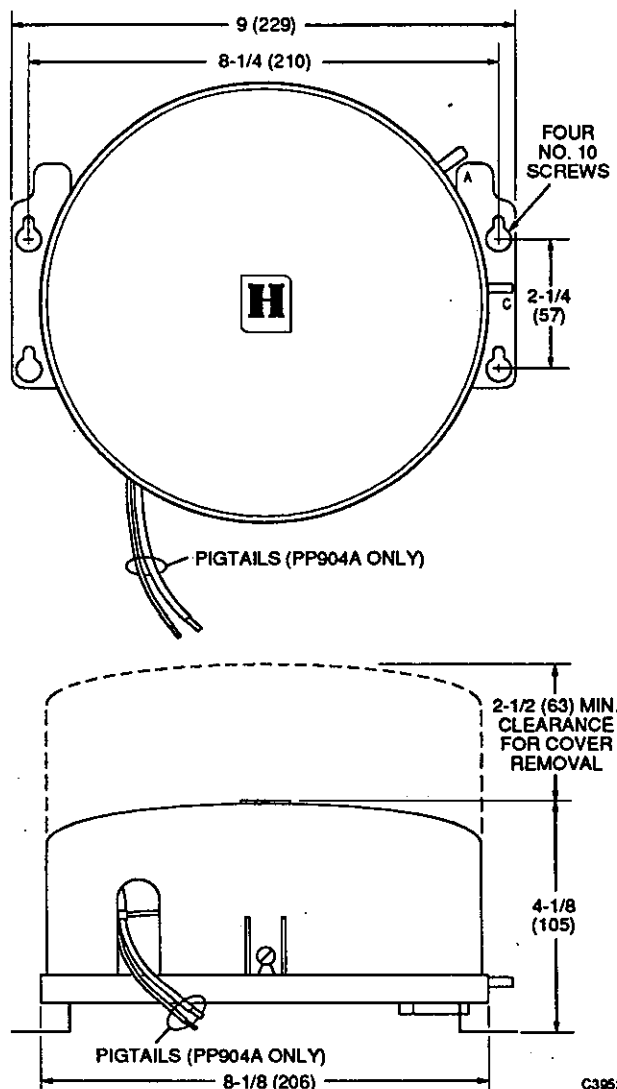
Safe Static Pressure:

28 in. wc (6.97 kPa)

Ambient Temperature Limits:

40 to 120F (5 to 50C)

Dimensions In Inches (Millimeters):



Air Connections:

Inputs A and C: Sharp-barb, push-on connectors for 1/4-in. (6-mm) O.D. plastic tubing

PP904A:

MLP: Sharp-barb, push-on connectors for 1/4-in. (6-mm) O.D. plastic tubing

BLP: Sharp-barb, push-on connectors for 5/32-in. (4-mm) O.D. plastic tubing

PP904B: Sharp-barb, push-on connectors for 1/4-in. (6-mm) O.D. plastic tubing

Accessories:

Static Duct Head: 14004238-001

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Pilot Duty Poles for R4222 and R8222 Only:
 Minimum—3 VA at 24, 120, and 480 Vac.
 Maximum—25 VA at 24 Vac, 125 VA at 120, 240, and 480 Vac.
 Resistive—3 A at 277 Vac (0.75 power factor).

Power Pole (amperes per pole)—
 Powerpile (millivoltage) for R4222 and R8222 Only:
 The normally open pilot duty contacts are rated for Powerpile (millivoltage) applications—0.25 A at 0.25 to 12 Vdc.

R4228A,B; R8228A,B	120 Vac	208 Vac	240 Vac	277 Vac	480 Vac
Inductive					
Full Load	16 18	18	18	12	5
Locked Rotor	96 72	72	72	72	30
Resistive ^a (equivalent resistive power)	25 (3.0 kW)	25 (5.2 kW)	25 (6.0 kW)	25 (6.9 kW)	15 (7.2 kW)
Horsepower	1 hp	2 hp	2 hp	2 hp	1.5 hp
R4228C,D; R8228C,D	120 Vac	208 Vac	240 Vac	277 Vac	480 Vac
Inductive					
Full Load	5.5	5.5	5.5	5.5	3.0
Locked Rotor	15	15	15	15	8
Resistive ^a (equivalent resistive power)	25 (3.0 kW)	25 (5.2 kW)	25 (6.0 kW)	25 (6.9 kW)	12.5 (6.0 kW)
Combined Ratings ^b					
Resistive (equivalent resistive power)	20.8 (2.5 kW)	20.8 (4.3 kW)	20.8 (5.0 kW)	20.8 (5.6 kW)	10.4 (5.0 kW)
Inductive	+4.2 AFL 10.0 ALR	+4.2 AFL 10.0 ALR	+4.2 AFL 10.0 ALR	+4.2 AFL 10.0 ALR	+2.1 AFL 5.0 ALR
R4228E; R8228E	120 Vac	208 Vac	240 Vac	277 Vac	480 Vac
Inductive					
Full Load	16	—	18	5	5
Locked Rotor	96	—	72	30	30
Resistive ^a	25	—	25	25	15

^aAlso rated 10 A resistive at 600 V.

^bCombined ratings indicate that both a resistive and an inductive load can be operated by each pole.

COIL RATINGS: All coils meet Underwriters Laboratories Inc. requirements for Class B coils. If coil voltages other than those listed below are desired, contact your local Honeywell representative for additional information.

COIL RATINGS		24 V	120 V	208/240 V	277 V	480 V
DC Resistive		9.5 ohms	232 ohms	875 ohms	1385 ohms	3600 ohms
		9.25 ohms ^b				
Pickup Voltage (maximum) ^a		18 V	96 V	176 V	220 V	384 V
Pickup Voltage (nominal)		16 ± 2 V	80 ± 10 V	150 ± 20 V	190 ± 30 V	330 ± 40 V
Inrush VA (maximum)		20 VA	20 VA	20 VA	20 VA	20 VA
Inrush VA (nominal)		17.0 VA 17.7 VAB	17.0 VA	13.5 VA/18.5 VA	17.8 VA	17 VA
Sealed VA (maximum), Sealed VA (nominal)		10 VA 9 VA 9.5 VAB	10 VA 9 VA	10 VA 6.7 VA/9.2 VA	10 VA 9.7 VA	10 VA 9 VA
Sealed Amps (nominal)		0.375 A 0.400 AB	0.075 A	0.032 A/0.038 A	0.034 A	0.019 A
Sealed Wattage		5.0 W 5.3 W ^b	5.4 W	3.6 W/5 W	5.5 W	5.5 W
Admittance	(open)	0.029 0.031 ^b	0.0012	0.0003	0.0002	0.00007
	(sealed)	0.016 0.016 ^b	0.0006	0.00015	0.00012	0.00004

^aVoltages listed are for the relay base mounted vertical. With the terminals pointing down, pickup voltage is increased by 12 percent.

^bR8222D,G,J,N,R,T,V only.

NOTE: Pickup voltage varies with pole form. Specific models will have lower tolerance than shown above.

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SPECIFICATIONS

IMPORTANT

THE SPECIFICATIONS GIVEN IN THIS PUBLICATION DO NOT INCLUDE NORMAL MANUFACTURING TOLERANCES. THEREFORE, THIS UNIT MAY NOT MATCH THE LISTED SPECIFICATIONS EXACTLY. ALSO, THIS PRODUCT IS TESTED AND CALIBRATED UNDER CLOSELY CONTROLLED CONDITIONS, AND SOME MINOR DIFFERENCES IN PERFORMANCE CAN BE EXPECTED IF THOSE CONDITIONS ARE CHANGED.

TRADELINE MODELS

TRADELINE models are selected and packaged to provide ease of stocking, ease of handling and maximum replacement value. TRADELINE model specifications are the same as those of standard models except as noted below.

TRADELINE MODELS AVAILABLE:

R4222B,D,N,V Switching Relay—line voltage.

R8222B,D,N,V Switching Relay—low voltage.

R4228A,B,D Heavy-duty Relay—line voltage.

R8228A,B,D Heavy-duty Relay—low voltage.

TERMINALS: R4222, R8222, R4228D and R8228D have single quick-connects on poles, double quick-connects on coil terminals. R4228A,B and

R8228A,B have double quick-connects on poles and double quick-connects on coil terminals.

SWITCHING CONFIGURATIONS: R4222 and R8222, see Table II. R4228 and R8228, see Table I.

ADDITIONAL FEATURES:

TRADELINE pack with cross reference label and special instruction sheet.

STANDARD MODELS

MODELS:

R4222—General purpose relay: 120, 208/240, 277, and 480 Vac coil.

R8222—General purpose relay: 24 Vac coil.

CONTACT RATINGS:

Power Pole (amperes per pole)—

R4228—Heavy-duty general purpose relay: 120, 208/240, 277, and 480 Vac coil.

R8228—Heavy-duty general purpose relay: 24 Vac coil.

R4222, R8222 ^c	120 Vac	208 Vac	240 Vac	277 Vac	480 Vac
Inductive					
Full Load	12	6	6	6	3
Locked Rotor	60	35	35	35	18
Resistive					
A and C Models ^b (equivalent resistive power)	20.8 (2.5 kW)	20.8 (4.3 kW)	20.8 (5.0 kW)	20.8 (5.7 kW)	10 (4.8 kW)
All Others ^b	15	15	15	15	10
Combined Ratings for A and C Models ^a					
Resistive (equivalent resistive power)	12.5 (1.5 kW)	12.5 (2.6 kW)	12.5 (3.0 kW)	12.5 (3.4 kW)	6.25 (3.0 kW)
Inductive	+4.2 AFL 10.0 ALR	+4.2 AFL 10.0 ALR	+4.2 ALF 10.0 ALR	+4.2 AFL 10.0 ALR	+2.1 AFL +5.0 ALR
Horsepower	3/4 hp	3/4 hp	3/4 hp	3/4 hp	3/4 hp

^aCombined ratings indicate that both a resistive and inductive load can be operated by each pole.

^bAlso rated 5 amp resistive at 600 volts. ^cUnderwriters Laboratories Inc. and CSA approved for 50 cycle applications.

ORDERING INFORMATION

WHEN PURCHASING REPLACEMENT AND MODERNIZATION PRODUCTS FROM YOUR TRADELINE WHOLESALE OR YOUR DISTRIBUTOR, REFER TO THE TRADELINE CATALOG OR PRICE SHEETS FOR COMPLETE ORDERING NUMBER, OR SPECIFY—

1. Order number, include suffix letter and specify TRADELINE if desired.

2. Contact ratings.

3. Coil ratings.

4. Double quick-connects on coil terminals if desired.

5. Accessories.

IF YOU HAVE ADDITIONAL QUESTIONS, NEED FURTHER INFORMATION, OR WOULD LIKE TO COMMENT ON OUR PRODUCTS OR SERVICES, PLEASE WRITE OR PHONE:

1. YOUR LOCAL HONEYWELL RESIDENTIAL DIVISION SALES OFFICE (CHECK WHITE PAGES OF PHONE DIRECTORY).

2. RESIDENTIAL DIVISION CUSTOMER SERVICE
HONEYWELL INC., 1885 DOUGLAS DRIVE NORTH
MINNEAPOLIS, MINNESOTA 55422-4386 (612) 542-7500

IN CANADA—HONEYWELL CONTROLS LIMITED, 740 ELLESMERE ROAD, SCARBOROUGH, ONTARIO M1P 2V9.
INTERNATIONAL SALES AND SERVICE OFFICES IN ALL PRINCIPAL CITIES OF THE WORLD.

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ACCESSORIES:

1. 129384A Case and Cover Assembly.
2. 4074BVJ Receptacle with 8 color-coded plug-in leadwires and retaining bail, for panel mounting applications; see Fig. 2.
3. Q633A1003—4 x 4 plate-mounted relay receptacle with metal relay cover and 8 color-coded plug-in leadwires.

NOTE:

- a. Use the receptacle in applications within the current carrying rating of the wire size and quick-connect terminal being used.
 - b. The receptacle will accept relays with double quick-connect terminals.
4. 135959 Receptacle only. Leads and quick-connect terminals are not supplied with the receptacle.

NOTE: Not all standard quick-connect terminals will be adequately retained in this receptacle. It is recommended that a quick-connect terminal with 0.016 inch [0.406 mm] maximum material thickness be

used (0.012 inch [0.305 mm] preferred). The maximum permissible dimension between the rolls is 0.115 inch [2.92 mm]. These requirements are met by AMP, Inc. Faston "250" series terminal No. 42100-1 quick-connects or equivalent.

5. 135887 Wire Bail only.

6. 137881A Adapters for converting 1/4 inch [6.4 mm] quick-connects to No. 6 screw terminals (bag of eight).

UNDERWRITERS LABORATORIES INC. COMPONENT RECOGNIZED:

R4222 and R8222 models: A to H,J,U,V,W,Y,Z; File No. E59779; Guide No. NLDX2.

R4222 and R8222 models: K,L,M,N,P,Q,R,S,T; File No. E49809; Guide No. NKCR2.

R4228 and R8228 models: A,B,C,D,E; File No. E59779; Guide No. NLDX2.

CANADIAN STANDARDS ASSOCIATION COMPONENT CERTIFIED:

R4222 and R8222: File No. LR35066; Guide No. 184-N-13.13.

R4228 and R8228: File No. LR35066; Guide No. 184-N-13.13.

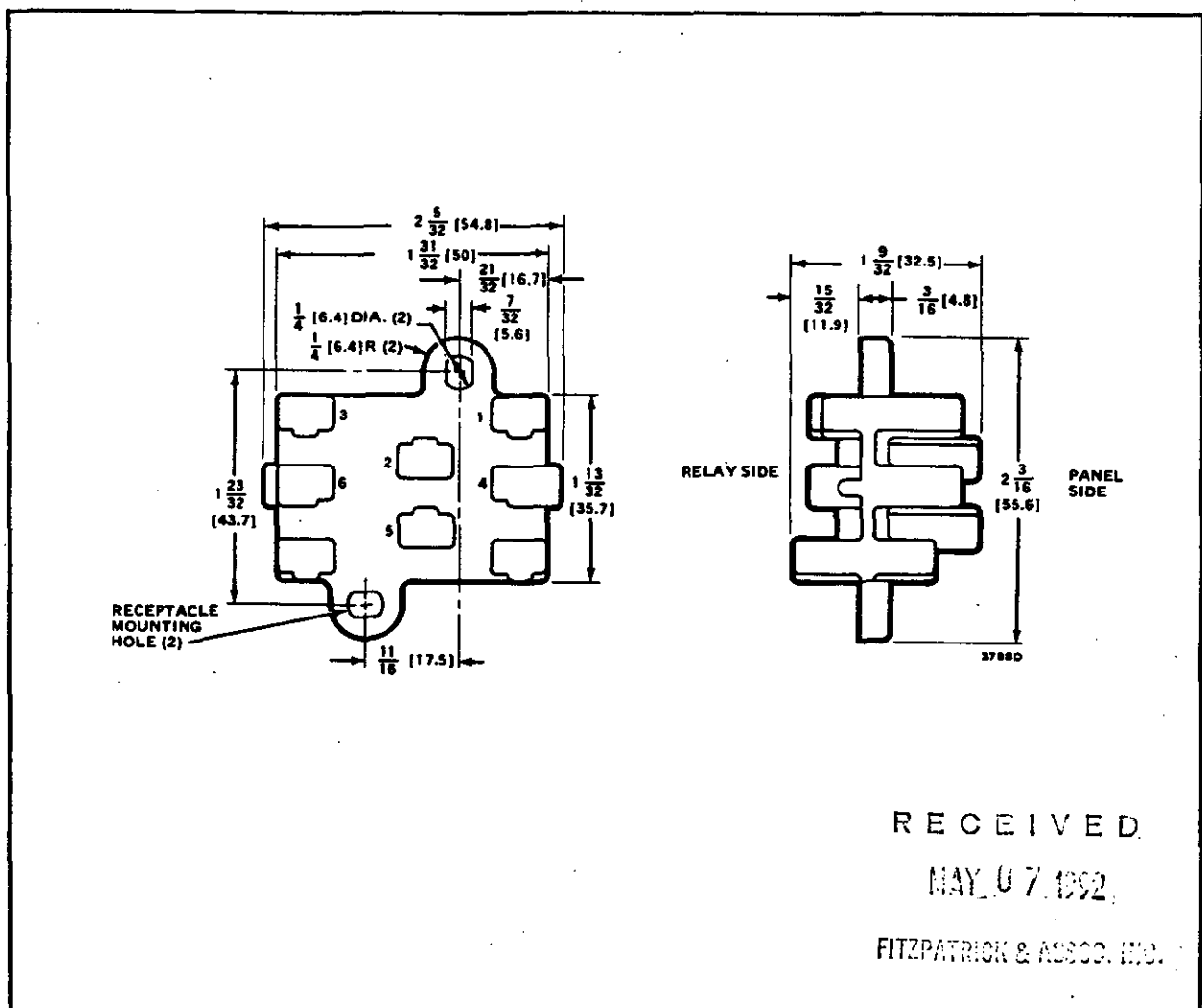


FIG. 2—DIMENSIONS OF WIRING RECEPTACLE.

TERMINALS: Quick-connects are provided as shown:

MODEL	TERMINALS	NUMBER OF QUICK-CONNECTS	
		SINGLE	DOUBLE
R4222 & R8222	Coil	Std.	Opt.
R4228 & R8228E	Load	Std.	—
R4228A,B & R8228A,B	Coil	—	Std.
R4228C,D & R8228C,D	Load	Std.	—

MOUNTING: Use 2 screws (up to No. 10 size) through holes in the metal base. Base is designed for easy replacement of competitive relays.

AMBIENT TEMPERATURE RANGE: Minus 20 F [minus 29 C] to 155 F [68 C].

DIMENSIONS: See Fig. 1.

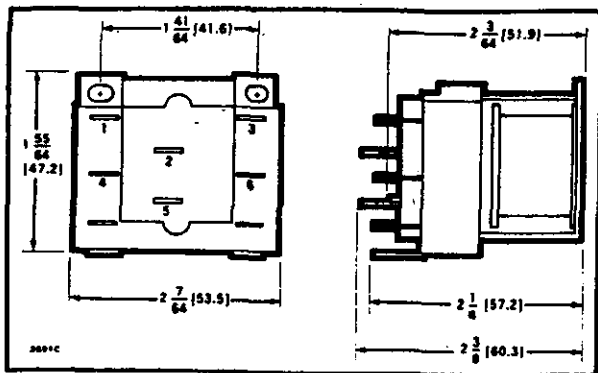


FIG. 1—RELAY DIMENSIONS IN in. [mm IN BRACKETS].

SWITCHING CONFIGURATIONS

The following tables give switching configurations, contact ratings, and terminal designations for the switching relays. For example, the R4222A is a spst switching relay with normally open power rated contacts. The R4222K is a spst relay with normally open contacts rated for pilot duty applications. Electrical connections to the A and K models would be made to terminals 1 and 3.

TABLE I—R4228, R8228

SWITCHING CONFIGURATION	TERMINALS	R4228 OR R8228 MODEL SUFFIX POWER RATED ONLY
SPST, N.O. (DOUBLE QUICK-CONNECTS)	1—3 4—6	A
SPDT, (DOUBLE QUICK-CONNECTS)	1—3 4—2 5—6	B
SPST, N.O.	1—3	C
DPST, N.O.	1—3 4—6	D
SPST, N.C.	1—3	E

TABLE II—R4222, R8222

SWITCHING CONFIGURATION	TERMINALS	R4222 OR R8222 MODEL SUFFIX	
		POWER RATED	PILOT DUTY RATED
SPST, N.O.	1—3	A	K
SPDT	1—3 4—2	B	L
DPST, N.O.	1—3 4—6	C	M
DPDT	1—3 4—2 5—6	D	N
SPST, N.C.	1—2	E	P
DPST, 1-N.O. AND 1-N.C.	1—3 4—5	F	Q
DPST, N.C.	1—2 4—5	G	R
SPDT AND SPST, N.O.	1—3 4—2 5—6	H	S
SPDT AND SPST, N.C.	1—3 4—2 5—6	J	T
DPST N.O. (ONE POWER AND ONE PILOT DUTY)	1—3 4—6	†U	
DPDT (ONE POWER AND ONE PILOT DUTY)	1—3 4—2 5—6	†V	
SPDT AND SPST, N.O. (ONE POWER AND ONE PILOT DUTY)	1—3 4—2 5—6	†W	
SPDT AND SPST, N.O. (ONE POWER AND ONE PILOT DUTY)	1—3 4—6 5—2	†Y	
DPST, N.C.	1—2 4—5	†Z	

†Models with suffix letters U,V,W,Y and Z have power rated contacts on silver colored terminals and pilot duty rated contacts on brass colored terminals.

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WIRE-CONNECT

Operate the relay and controlled equipment to make sure that relay pulls in when the coil is energized and that controlled equipment operates as intended.

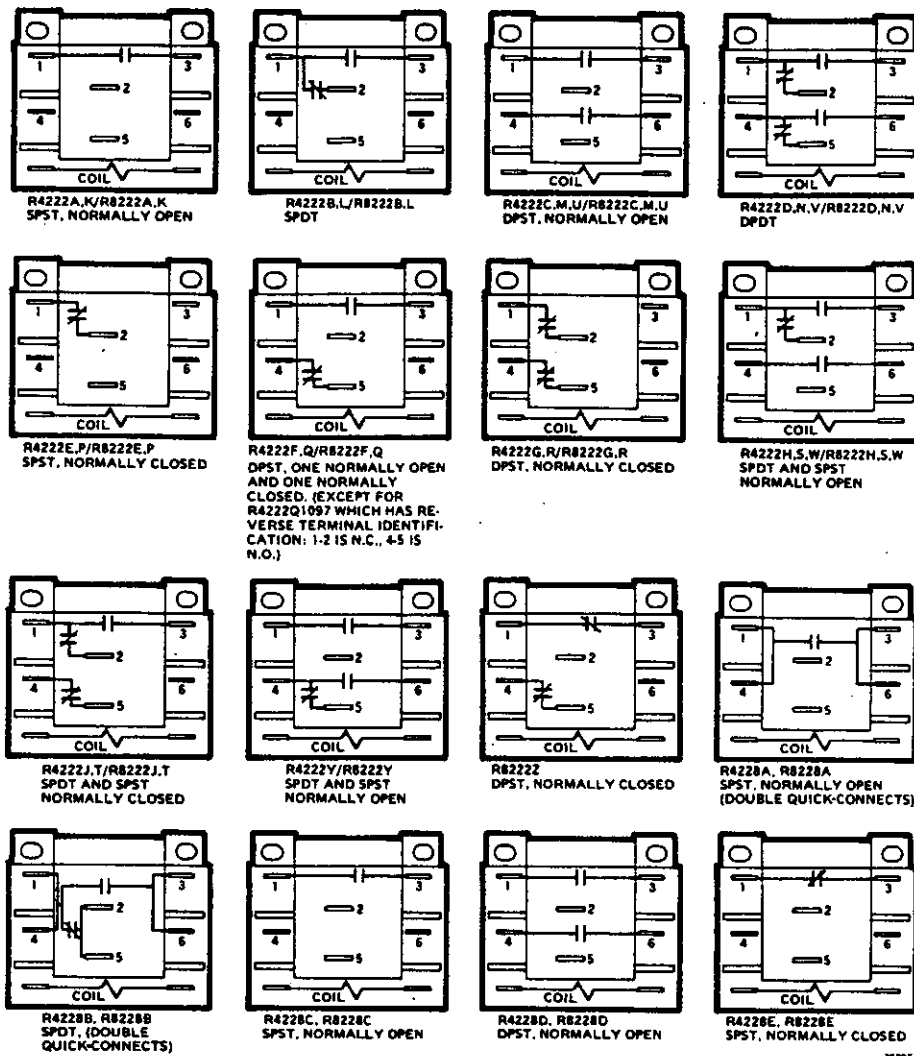


FIG. 6—R4222/R8222, R4228/R8228 CIRCUIT AND TERMINAL DESIGNATION.

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INSTALLATION

WHEN INSTALLING THIS PRODUCT . . .

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out product operation as provided in these instructions.

CAUTION

Disconnect power supply before beginning installation to prevent electrical shock or equipment damage.

LOCATION

Mount the relay on a flat, solid surface as close as possible to the equipment being controlled. *The relay may be mounted in any position except with the terminals pointed down.* Secure in place with two screws through holes or slots in the mounting base or as shown in Fig. 3 or 4. See Fig. 1 for mounting dimensions.

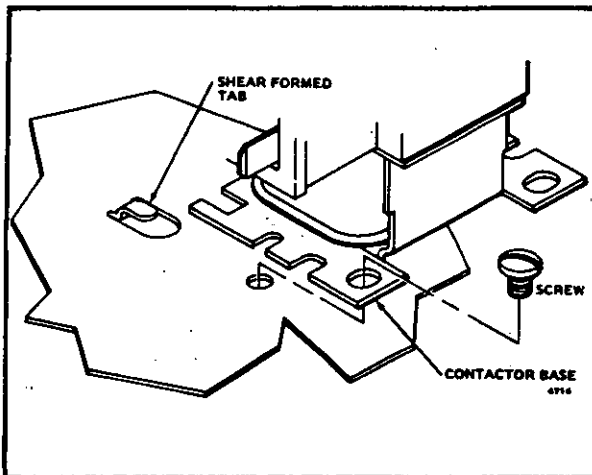


FIG. 3—MOUNTING RELAY ON PANEL WITH SHEAR-FORMED TAB AND ONE SCREW.

WIRING

Disconnect power supply before connecting wiring to avoid electrical shock or equipment damage.

All wiring must comply with local codes and ordinances. Crimp female quick-connects to the system wires and attach to the male quick-connect terminals of the relay. The relay has molded terminal numbers and circuit diagram for easy identification when wiring. Fig. 6 shows the location and circuits of all models.

Do not exceed contact and coil ratings when wiring into system.

Leadwires are provided with the 135959 Receptacle in 4074BVJ Bag Assembly for additional relay pole positions. Insert the required leadwires in the relay receptacle as follows.

Determine the leadwire colors required for the relay and application desired. Push the leadwire terminal into the receptacle plate from the side stamped with the numbers (Fig. 5). When inserting the leadwire, the tang on the quick-connect terminal must align with the small clearance slot in the terminal opening. Press the terminal in until it locks in place.

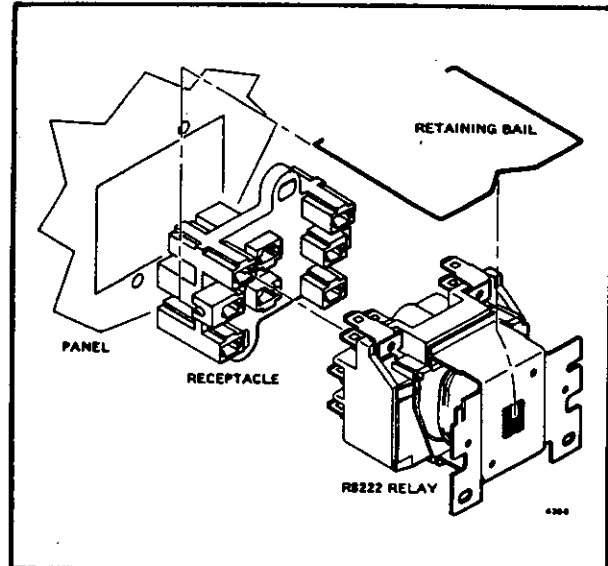


FIG. 4—RELAY MOUNTING USING RECEPTACLE AND RETAINING BAIL.

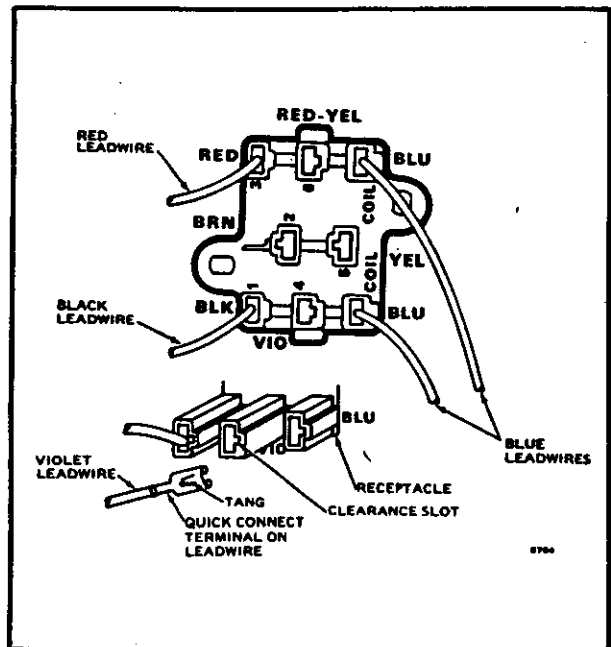
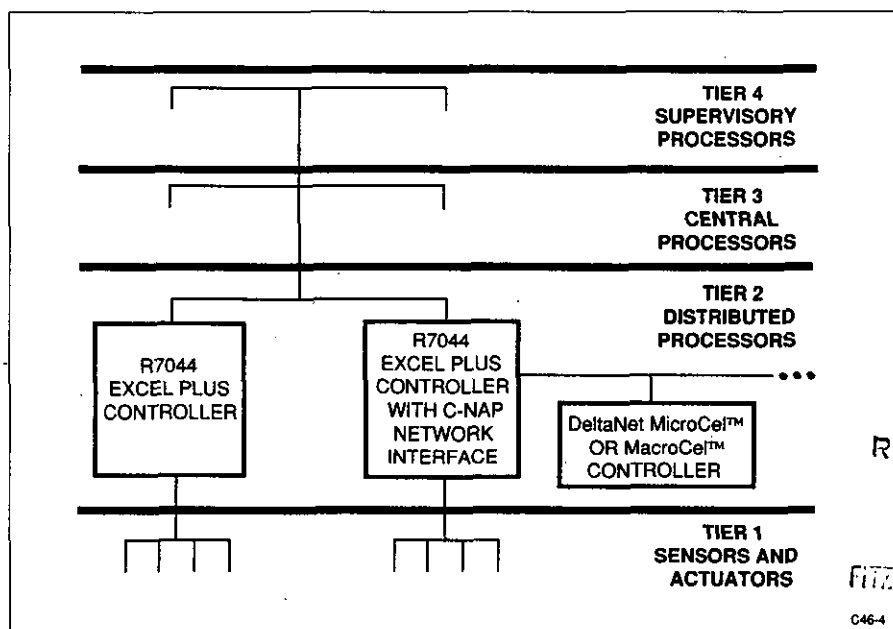


FIG. 5—BOTTOM OF 135959 RECEPTACLE SHOWING LEADWIRE INSTALLATION.

DeltaNet R7044A-E, G Excel Plus Controller Software



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General

DeltaNet R7044 Excel Plus Controllers ("R7044s") contain a compact set of operating system and application software that provides local analog/digital point processing (A/D and D/A conversion, scaling and offset limit comparisons, alarm sensing), Direct Digital Control (DDC), and Energy Management System (EMS) control. R7044 Models A-E and G allow communication and data sharing with other R7044s or a central processor via a peer protocol network. All R7044s also operate in stand-alone mode.

DDC and EMS programs resident in the R7044 provide proven Proportional-Integral-Derivative (PID) and adaptive control. Energy management algorithms can be matched to individual processes for optimum control. Custom programs in the DeltaNet Pascal programming language can be written and entered into individual R7044s to meet site control needs. An optional Control Network Automation Protocol (C-NAP) Network Interface provides an interface between R7044 Models D, E, G and DeltaNet MicroCel™ and/or DeltaNet MacroCel™ Controllers. R7044G is intended for applications where coordination of a C-NAP subsystem is the R7044's primary function.

Features

- AC peer communication bus
- Full complement of standard programs
 - Automatic daylight savings time changeover
 - Distributed Power Demand Control Program
 - EMS programs
 - Exception Schedule Program
 - Time/Event Programs
- PID and adaptive control operators
 - Choice of P, PI, PID, or adaptive control
 - Library of standard DDC programs and operators
- DeltaNet Pascal custom programming language
- Total input/output processing at the R7044 Controller
- Flexible alarm limits
 - Floating alarm limits
 - Two sets of analog limits per point
- Optional C-NAP Network Interface for Models D, E, G
- Dialup to individual R7044D, E, G and clusters of R7044s

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command system points as well as perform other functions common to HVAC control sequences (for example, analog-controlled digital operator, digital-controlled analog operator, and minimum and maximum operators). Programs can implement the full PID operator or parts of it (just the Proportional, P, or Proportional-Integral, PI) to match processes for optimum control. The adaptive control operator provides automatic adjustments to system control in response to environmental changes without operator intervention. The PID and adaptive algorithms ensure proper system operation and reduce coding errors inherent in custom programs. Use of these standard operators makes the transition from pneumatic control to DDC straightforward, simple, and easy to understand.

To further simplify DDC programming, R7044 software includes a standard library of pretested DDC programs that handle the most common HVAC control sequences, for example, Discharge Air Dry-Bulb Temperature Control for Air Handling Unit (AHU) Dual Duct Hot Deck, Mixed Air Dry-Bulb Temperature Control for AHU, and Room Air Dry-Bulb Temperature Control of Cooling Coil with Room Humidity High Limit.

DeltaNet Pascal Custom Programming Language:

DDC programs are written in DeltaNet Pascal, which is derived from a proven high-level language taught at most universities and familiar to many in the industry. DeltaNet Pascal has a full complement of logical, arithmetic, and relational operators that are compatible with the standard DDC operators in performing DDC control sequences. Programs call DDC operators to implement control sequences in the same manner as standard Pascal operators.

Total Input/Output Processing at the R7044 Controller:

Software provides fast response time by performing all A/D and D/A conversions (not applicable to R7044G), limit comparisons, and reasonability checks locally. Communication bus throughput improves because of lower traffic and the fact that all transmissions are in digital format. Alarm lockout further improves bus communication by suppressing the nuisance alarms that can occur when a digital point (for example, a fan) is turned off and related point values (for example, temperatures in the controlled space) drift into alarm range.

Through a scheme of command and residual priorities that tests the sender's priority before command output, R7044 command control eliminates the contention that can occur for control of a point. When manual control of a point is needed, high-priority operator commands block program-issued point changes. Normally, command control honors point minimum ON or OFF times so as to avoid the motor damage that can occur from too rapid cycling. However, Time/Event Programs can bypass time adherence to ensure control of a point during emergencies. Other valuable

functions from local command control include maximum OFF times (to ensure that ventilation standards are met during occupancy), delays between commands to large loads (to minimize current surges), and an operator-specified command trace function (to assist in troubleshooting).

For ease of operator communication, operator inputs and calculation results from DDC and energy management programs take the form of "pseudopoints", which look like analog and digital points but which do not represent any physical device connected to the R7044. Operators display, command, log, and acknowledge alarms from pseudopoints as they would any physical point.

When a single point (for example, an outdoor air sensor) is to provide input to multiple R7044s on the same bus or on different buses, global point processing ensures that point value is transmitted to all the devices that need it.

Flexible Alarm Limits:

Alarms can be assigned to "float". Floating alarm limits follow DDC setpoints so that as the setpoints change, alarm limits change. Software adjusts alarm limits in response to new conditions to avoid alarms that do not reflect true alarm conditions.

Software also provides two sets of analog limits per point: one set to handle actual alarm limits for a point, a second set for warning limits. Independent messages track each set.

Optional C-NAP Network Interface for Models D, E, G:

An optional Control Network Automation Protocol (C-NAP) Interface for R7044 Models D, E, and G allows communication with a maximum total of 198 DeltaNet MicroCel and/or MacroCel ("M-Cel™") Controllers (of which 12 can be MacroCel Controllers) and a maximum of 5000 M-Cel points mapped into the R7044 addressing scheme. The R7044 and M-Cel Controllers perform their normal control and monitoring functions. In addition, the R7044 and the M-Cel Controllers can interact dynamically so that the R7044 can use point data from M-Cel Controllers for DDC and EMS input. Based on these inputs, the R7044 can reset M-Cel Controller DDC programs and coordinate Time/Event Programs or global strategies (for example, occupied/unoccupied periods, smoke purge).

Dialup to Individual R7044D, E, G and Clusters of R7044s:

R7044D, E, and G support dialup at sites where a single R7044 can handle a remote building's control needs. The central processor can dial directly into the remote R7044 when operators or programs at the central need data from it. A user-specified data file in the R7044 determines which point alarms or alarm priorities should cause immediate dialup to the central. The remote R7044 performs its usual functions, including EMS, DDC, and communication with an optional subsystem of M-Cel Controllers.

Description

DeltaNet R7044 Excel Plus Controllers ("R7044s") contain operating system and application software that performs local analog/digital point processing (A/D and D/A conversion, scaling and offset limit comparisons, alarm sensing), Direct Digital Control (DDC), and Energy Management System (EMS) control. All R7044 models can operate in stand-alone mode. Models A-E and G can communicate with other R7044s or a central processor via a peer communications network that allows data sharing among devices.

AC Peer Communication Bus:

R7044 Models A-E and G communicate with each other and higher-level central processors via an RS-485 ac-coupled peer communication bus. The bus uses Honeywell Distributed Bus Control (HDBC) protocol. HDBC is a token-passing peer protocol that gives each connected device equal access to the bus. Error detection and recovery capabilities guarantee operation of the bus with as few as two operational devices present.

Peer communication allows point data transfer over single and multiple buses system-wide. Sensor and program parameter sharing reduces system costs. For example, a single Outdoor Air (OA) sensor connected to one R7044 can provide OA temperature to all devices.

Full Complement of Standard Programs:

The variety of standard programs available enables each R7044 to adapt to unique mechanical systems and to fulfill most customer needs. Even when R7044s connect to a central device, programs operate independently for ensured system reliability.

Automatic Daylight Savings Time Changeover—Allows operators to preset the days when software should reset the system clock backward or forward an hour for daylight savings time. All time changes and time program adjustment take place automatically without operator intervention.

Distributed Power Demand Control—Minimizes peak power loads by turning off selected equipment (99 loads maximum) before power demand peaks. Can use several strategies (for example, predictive with sliding or fixed window, ideal rate with fixed window) to calculate loading decisions. Provides power demand control independent of a central processor.

Duty Cycle—Reduces energy consumption via staggered duty cycle periods to reduce equipment ON time.

Enthalpy Control—Reduces energy consumption by selecting the air source that requires the least total heat (enthalpy) removal by the cooling coil to reach the desired cooling discharge air temperature.

Exception Scheduling—Provides 32 date and time schedules to interrupt standard system processing for special occasions such as holidays. Gives operators the ability to define a full year's schedule of holidays and exceptions to normal schedules one year in advance. In addition to programming exception schedules, operators can change normal occupancy schedules permanently or override them temporarily (for example, office remodeling requires extended hours during the current week).

Load Reset—Resets cooling and heating setpoints to just satisfy the zone of maximum demand.

Optimum Stop—Shuts system down at an optimal time before occupancy ends: late enough to maintain comfort levels and early enough to save energy that would otherwise be spent maintaining comfort levels with no one in the building.

Runtime—Monitors and accumulates runtime (ON or OFF time) on all equipment and produces messages at preset levels of machine usage. Annunciates an alarm when a machine exceeds a preset runtime limit.

Time/Event Program (TEP)—Issues point commands and initiates standard or custom DDC programs based on start/stop schedules, point alarm, or point change-of-state. Operators can enable/disable any of the 99 (maximum) TEPs individually or manually initiate them as needed. TEPs provide time schedule control and event-triggered sequences independent of a central processor.

Unoccupied Period Programs

Optimum Start—Starts Heating, Ventilating, and Air Conditioning (HVAC) system before occupancy begins to bring space temperatures within comfort zone by occupancy time. Calculates best start time by sampling space temperature periodically and calculating the amount of time necessary to reach operator-set comfort limits.

Night Cycle—Cycles equipment during off-hours to maintain temperature within acceptable limits.

Night Purge—Activates in the morning before system start-up to purge building with cool early morning air during the cooling season. Precooling reduces the load on start-up equipment.

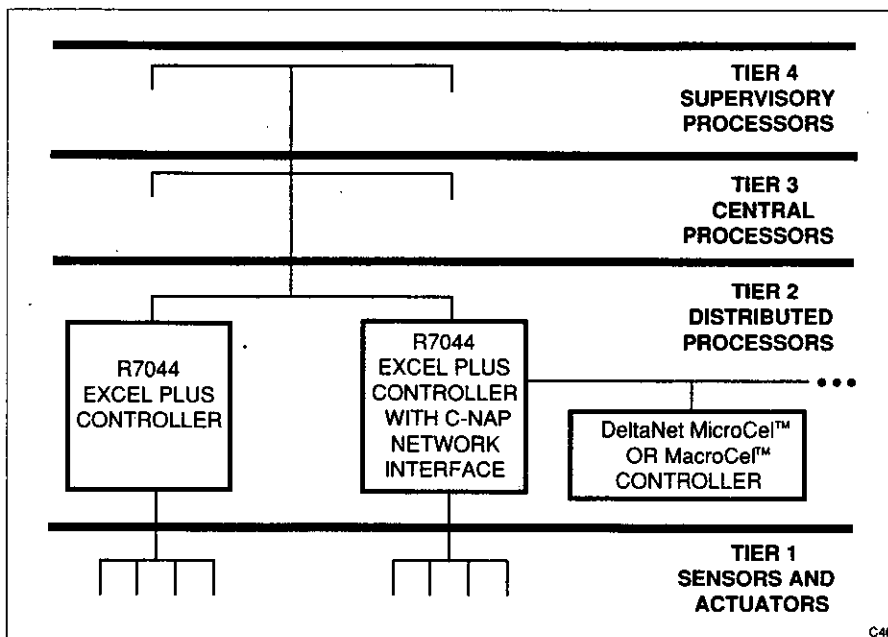
Zero Energy Band—Resets cooling and heating setpoints to keep space temperature within comfort zone with a minimum amount of energy consumption.

PID and Adaptive Control Operators:

R7044 software offers DDC operators and programs, including Proportional-Integral-Derivative (PID) and adaptive control operators. A library of standard DDC operators provide statements that read sensor values and

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DeltaNet R7044A-E, G Excel Plus Controller Hardware



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General

The DeltaNet R7044 Excel Plus Controller ("R7044") is one of a family of Tier 2 Processors used in DeltaNet Systems. R7044s can operate in stand-alone mode. They can also operate as an integral part of a peer communications network sharing data with other Tier 2 processors or with a host central processor.

The various R7044 models provide different configurations of analog, digital, totalizer, and universal points. Universal points are primarily analog outputs; however, they can be used as digital outputs, or, on Models D and E they can be digital/analog inputs.

To complement stand-alone operation, a DeltaNet W1044 Excel Plus Operator Terminal ("P.O.T.") is available. This hand-held or door-mounted operator interface provides direct access to and command of point data and stored operating parameters. An optional Control Network Automation Protocol (C-NAP) Network Interface board provides an interface between R7044 Models D, E, and G and DeltaNet MicroCel™ and/or MacroCel™ Controllers. Models D, E, and G also support an optional autodial modem for dialup to a Tier 3 central processor.

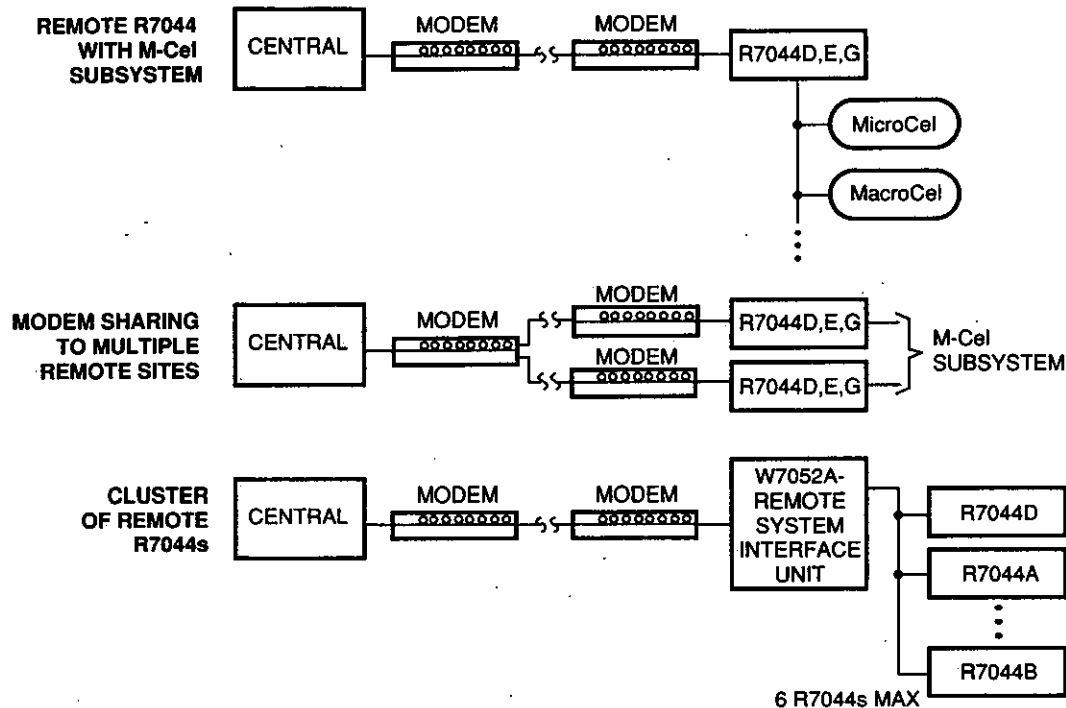
Features

- Stand-alone energy management and direct digital control
- Flexible input/output configuration
- Point density optimized for distributed processing
- Fully compatible with higher-order host systems
- Battery-backed real-time clock and RAM (Models A and B)
- Capacitor-backed real-time clock and RAM (Models D, E, G)
- W1044 P.O.T. port
- Processor active and diagnostic LEDs
- Installable and serviceable packaging
- Optional C-NAP Network Interface (Models D, E, G)
- Optional dialup to higher-order processor (Models D, E, G)

In configurations where two or more remote sites each have one R7044, multiple ports from the central can provide modem communication to each R7044. If usage patterns permit, one central modem can provide access to multiple R7044s.

When the main operator interface must communicate with a cluster of remote controllers, or the remote R7044s include Models A or B, a DeltaNet W7052A Remote System

Interface Unit ("W7052A-RSIU") manages communication from a maximum of six remote R7044s. The R7044s communicate on a peer bus connected to the W7052A-RSIU and have the features of a bus of R7044s at the central. The W7052A-RSIU acts as a communications manager and a buffer for alarm histories and historical data. The central performs all its normal functions in addition to communication with the W7052A-RSIU.



Dialup Configurations.

C4987-1

Software:

S963 DeltaNet R7044A, B Excel Plus Controller Operating System
S982 DeltaNet R7044D-G Excel Plus Controller Operating System. Dialup requires Ver. 3.1 or higher.

Software Licensing:

Before software delivery, the end user must execute a software license agreement.

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Honeywell

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Minneapolis, MN 55408-0524

Commercial Buildings Group
Honeywell Limited-Honeywell Limitée
740 Ellesmere Road
Scarborough, Ontario
M1P 2V9

Helping You Control Your World

Input/Output Point Characteristics:

Analog Inputs—Analog inputs support voltage ranges of 0 to 10V dc, and a resistance type input range of up to 8000 ohms for R7044A, B and 5.5K ohms for R7044D, E.

Analog inputs can be used as totalizer inputs with 4 to 20 mA signal at a 2-second minimum scan rate.

Sensors supported: Balco, 3000- and 1000-ohm platinum, and PT100 (two-wire mode).

Analog Outputs—Linear voltage range of 2 to 10V dc with maximum current of 20 mA. Output signal 0 to 12V. Can be used as maintained digital outputs. Data file defines usage.

Digital Inputs—Voltage level, current level, and contact inputs with a minimum of 1-second hold.

Digital Outputs—Maintained or pulsed with pulse duration from 100 ms to 2.5 seconds, programmable in 100-ms increments. Maximum maintained current is 50 mA per output. Start/Stop types supported: maintained, universal, momentary, two-speed motors, and 12V/24V magnetic latch.

Totalizer Inputs—Pulse type with frequency of up to 20 pulses per second. Minimum contact opening or closing time is 21 ms.

Microprocessor:

MC68000

Data File:

EPROM for Operating System (OS)

Battery-backed RAM for DDC/EMS parameters (modifiable via DeltaNet W1045 Excel Plus Portable Programming Terminal and central operator interface when R7044 is connected to a host processor)

Memory Capacity:

Models A and B:

RAM	32K bytes nonbattery-backed, 32K bytes battery-backed
OS EPROM	256K bytes
Data File EPROM	64K bytes

Models D, E, G:

RAM	256K capacitor-backed
OS EPROM	512K bytes
Data File EPROM	64K bytes (expandable to 128K on main board)

A C-NAP Network Interface board provides the following additional memory capacity:

RAM	64K to 256K
Data File EPROM	128K

Backup:

Models A and B:

72-hour battery-backed RAM
Nonrechargeable lithium battery

Models D, E, G:

8-hour capacitor-backed RAM
72 hours with addition of optional nonrechargeable lithium battery

Transmission Rate:

9600 bits per second

Accessories:

NEU-DK-16 Matrix Board (8x2) for up to 16 digital input points
NEU-DK-64 Matrix Board (8x8) for up to 64 digital input points
14506635 Rough-in Ring Cabinet
14006090-028101 Full-size Door with P.O.T.
MCRSM2400 or MUSMT224EH7 (for UL systems)
autodial modem for R7044D, E, G
14502654-003 modem cable, 5 ft (1.5m)
14506921-001 modem bracket

Optional C-NAP Network Interface (R7044D, E, G Only):

Ordering: 14506839 C-NAP Network Interface board
Board Dimensions: 5 in. (127 mm) x 12 in. (305 mm)
Installation: Field-installable daughterboard
Interface: 198 (maximum total) DeltaNet MicroCel and/or MacroCel Controllers of which 12 can be MacroCel Controllers, 5000 (maximum) MicroCel/MacroCel points (analog inputs and outputs, digital inputs and outputs, and pseudopoints) mapped to R7044 points during system engineering
Approvals: Underwriters Laboratories Listed per UL Standards 864 and 916; complies with FCC Part 15

Approvals:

Underwriters Laboratories Listed per UL Standards 864 and 916 (R7044D, E, G only)
Complies with FCC Part 15

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Description

DeltaNet R7044 Excel Plus Controllers ("R7044s") perform analog/digital point processing for sensors and actuators as well as local Direct Digital Control (DDC), Energy Management System (EMS), and system control functions. R7044s can operate in either stand-alone configuration or as Tier 2 processors in a peer communications network sharing data with other processors. With an optional Control Network Automation Protocol (C-NAP) Network Interface, DeltaNet MicroCel™ and/or MacroCel™ Controller points look like sensors and actuators that R7044D, E, and G can monitor and supervise or reset. DeltaNet R7044A-E, G Software Specification Data Sheet 74-2373, DeltaNet Micro Central/Excel Plus System Specification Data Sheet 74-5812, DeltaNetwork Micro Central/Excel Plus System Specification Data Sheet 74-5251, and DeltaNet Excel Plus Dialup Specification Data Sheet 74-5814 provide further details on R7044 functionality.

Specifications

Models:

- ☐ R7044A Excel Plus 34-Point Controller
- ☐ R7044B Excel Plus 66-Point Controller (includes I/O Expansion Board)
- ☐ R7044C I/O Expansion Board Only
- ☐ R7044D Excel Plus 40-Point Controller
- ☐ R7044E Excel Plus 64-Point Controller
- ☐ R7044G Excel Plus 4-Point Controller (totalizer inputs only)

Physical Characteristics:

Environmental Limits:

Operating Temperature: 32 to 122F (0 to 50C)
 Storage Temperature: -40 to 158F (-40 to 70C)
 Humidity: 5 to 95% rh max noncondensing

Electrical:

Models A and B:

24V ac +10%, -15%, 50/60 Hz ± 1 Hz, 3.5A (includes DeltaNet W1044 Excel Plus Operator Terminal [P.O.T.], I/O Expansion board, and 16 relays)
 24V dc +20%, -15%

Models D, E, and G:

120V ac +10%, -15%, 47-63 Hz, 0.59A
 220V ac +10%, -15%, 47-63 Hz, 0.30A (includes W1044 P.O.T. and 20 relays with 24V coils at 40 mA)

Mounting:

R7044A-E: On subpanel in full-size ring cabinet or in a steel housing
 R7044G: On subpanel in half-size ring cabinet
 Accessory mounting space available in full-size ring cabinet
 Removable terminal strips for trouble-free installation and serviceability (Models A and B)
 Barrier terminal strips for easy wiring installation (Models D, E, G)
 Internal static and transient protection
 Optional C-NAP Network Interface: field-installable daughterboard

Enclosures:

Models A-E:

Full-size ring cabinet: 37-1/4 in. (947 mm) high, 24 in. (610 mm) wide, 9 in. (229 mm) deep

Model G:

Half-size ring cabinet: 18-5/8 in. (473 mm) high, 24 in. (610 mm) wide, 9 in. (229 mm) deep

Communication:

Ac-coupled, peer communication (RS-485) bus
 RS-232-C serial communication port

Maximum Number of R7044s on a Peer Bus:

29

Input/Output Point Capacity:

R7044A: 32 points and 2 totalizer inputs
 16 analog/digital inputs

8 analog outputs

8 digital outputs

R7044B (with Expansion Board): 64 points and 2 totalizer inputs

32 analog/digital inputs

16 analog outputs

16 digital outputs

R7044C: Expansion Board Kit to convert Model A to Model B

R7044D: 36 points and 4 totalizer inputs

18 analog/digital inputs

6 universal analog/digital inputs/outputs

12 digital outputs

R7044E: 60 points and 4 totalizer inputs

30 analog/digital inputs

10 universal analog/digital inputs/outputs

20 digital outputs

R7044G: 4 totalizer inputs

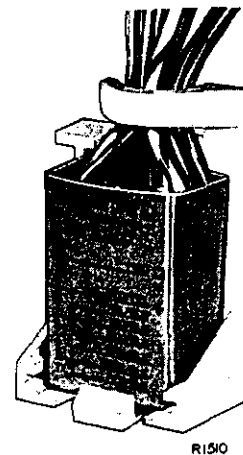
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R8407A Universal Remote Accessory Relay



GENERAL

The R8407A Universal Remote Accessory Relay is intended for use in any application where a remote accessory relay is required. One model is available with two leadwires per contact to provide supervision to the relay contact. These devices are available to fit most general application remote relay functions.

FEATURES

- Mounts in electrical enclosure
- Self-adhesive backing for fastening to enclosure cover
- Fire label provided for front of electrical enclosure

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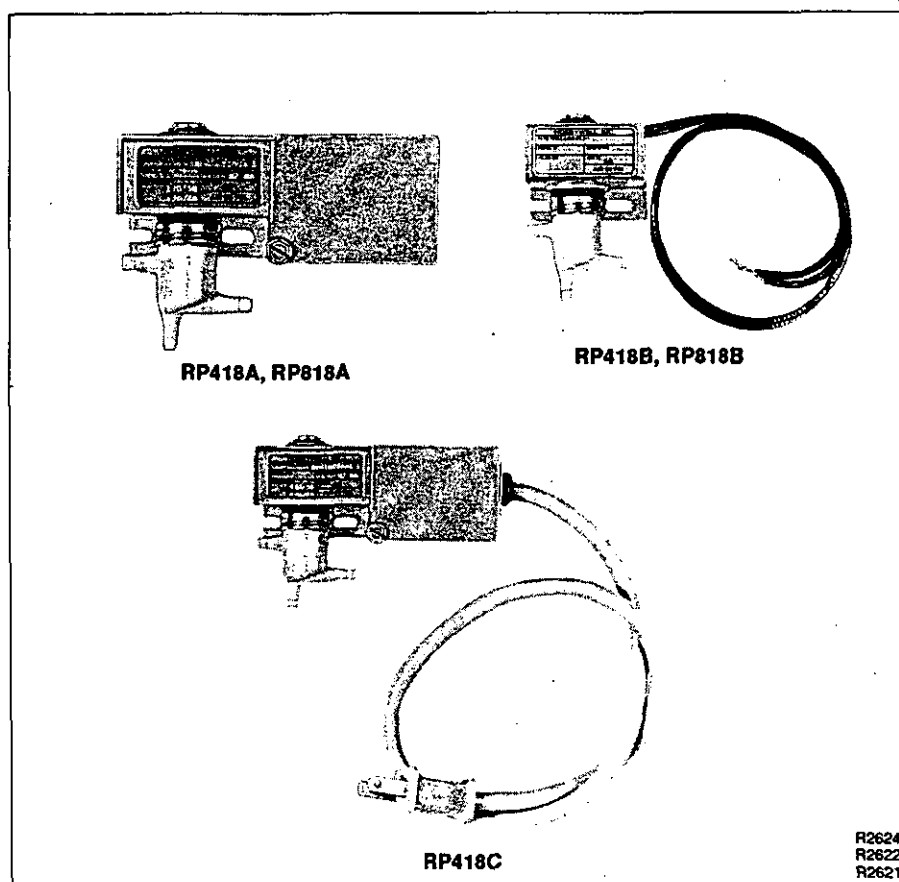
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Helping You Control Your World

RP418A-C & RP818A, B Electric/ Pneumatic Relays



General

The RP418 and RP818 Electric/Pneumatic Relays are solenoid valves which open and close the air supply to pneumatic controls. The control input is an on/off line voltage signal to the RP418A-C and 24V ac signal to the RP818A and B.

Features

- Usable as a diverting relay, a selector relay, or a stop and bleed relay
- Mount and operate in any position
- Directly mounts to MP516A Actuators, VP516C Valves, or PP901B and PP902D Pressure Regulators
- Available with lead wires, junction box, or plug-in electrical connections

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R8407A Universal Remote Accessory Relay

DESCRIPTION

The R8407A Universal Remote Accessory Relay is intended for use in any application where a remote accessory relay is required.

SPECIFICATIONS

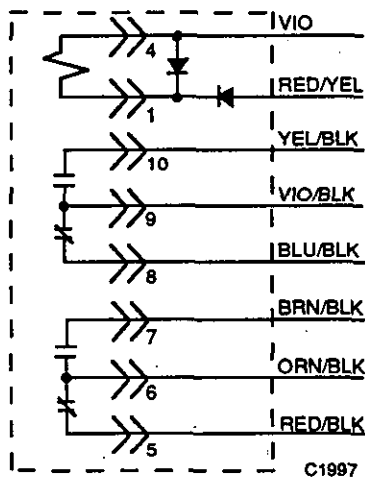
Models:

Model	Voltage	Contacts
R8407A1009	24V dc	dpdt
R8407A1017	24V dc	spdt
R8407A1025	12V dc	dpdt
R8407A1033	24V dc	dpdt

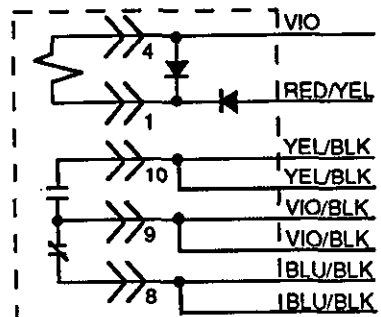
T910

Contact Configuration:

DPDT



SPDT



C1998

Electrical Ratings:

Models	Coils				Contacts			
	Nom-Inal	Pull-In	Drop-Out	Resistance	28V dc	120V dc	240V dc	Load
R8407A								
1009	24V dc	19V dc	2.3V dc	2.5 kΩ	2.0A	2.0A	—	Resistive
1017	24V dc	19V dc	2.3V dc	2.5 kΩ	2.0A	2.0A	—	Resistive
1025	12V dc	10V dc	1.7V dc	1 kΩ	2.0A	2.0A	—	Resistive
1033	24V dc	19V dc	2.3V dc	2.5 kΩ	5.0A	5.0A	3.0A	Resistive
					—	120 VA	120 VA	Inductive
					14 VA	60A	72 VA	Lamp Load
					1 mA at 5V dc	—	—	Lamp Load

T911

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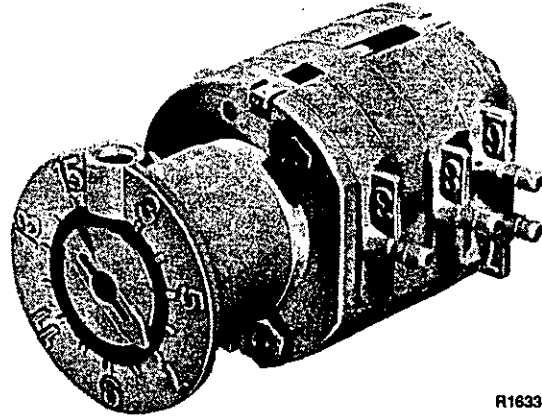
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RP471A Pneumatic Snap Acting Relay



R1633

GENERAL

The RP471A is a four port, snap acting relay which converts a proportional air pressure change from a controller to a positive (two-position) pressure change to a pneumatic valve or damper operator. It can also divert a supply line to one of two branches.

Pilot pressure can be modulating; switch action is snap acting, two-position.

FEATURES

- Manually adjustable switching pressure
- Sharp barb connections for 5/32-inch (4 mm) O.D. plastic tubing
- Molded plastic construction with neoprene diaphragms and piano wire springs
- Surface or panel mounted

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Description

The RP418 and RP818 Electric/Pneumatic Relays are solenoid valves which open and close the air supply to pneumatic controls. The control input is an on/off line voltage signal to the RP418A-C and 24V ac signal to the RP818A and B.

Specifications

Models:

✓	Model	Line Voltage	Low Voltage	Wall Mount	Panel Mount	Device Mount	Splice Box	Open Coil	Cord & Plug
	RP418A	X		X		X	X		
	RP418B	X			X			X	
	RP418C	X		X		X	X		X
	RP818A		X	X		X	X		
	RP818B		X		X			X	

Air Capacity:

0.42 scfm (200 ml/s) at 20 psi (138 kPa) supply with 1 psi (7 kPa) pressure drop

Capacity Index (Cv):

0.075

Pressure Rating:

50 psi (340 kPa) maximum air

Air Connections:

1/4-in. (6-mm) O.D. plastic tubing

Electrical Connections:

RP418/818A: Junction Box and 15 in. (380 mm) leads

RP418/818B: 15 in. (380 mm) leads

RP418C: Cord and plug

Power Consumption:

12.5 VA Inrush

7.1 VA Holding

Ambient Temperature Rating:

0 to 100F (-18 to 38C). (For ambient temperature rating to 120F [49C], refer to RP418 Installation Instructions 95-6046.)

Construction Materials:

Valox 420 plastic and corrosion-resistant metal

Approvals:

RP418A, RP818A: UL Listed, Guide Y10Z

RP418B, RP818B, RP418C: UL-recognized component,

File MP1502, Vol. 11, Sec. 1

CSA recognized—File No. LR50900

Accessories:

Mounting Kit 14003638-001 for direct mounting to

MP516A, VP519C, PP901, and PP902

Voltage Frequency:

RP418A:

100, 110, 120, 200, 208, 220, 240, 277, 440, 480/50

120, 208, 240, 277, 480, 575/60

RP418B:

110, 120, 208, 220, 240, 440, 480/50

120, 208, 240, 480, 575/60

RP418C:

110/50, 120/60

RP818A,B:

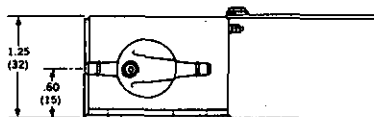
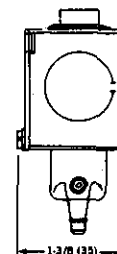
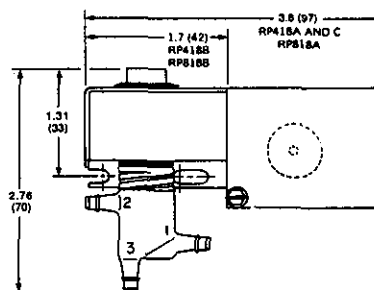
24/50, 24/60

Switching:

Deenergized: Ports 2 and 3 connected, Port 1 blocked

Energized: Ports 1 and 3 connected, Port 2 blocked

Dimensions In Inches (Millimeters):



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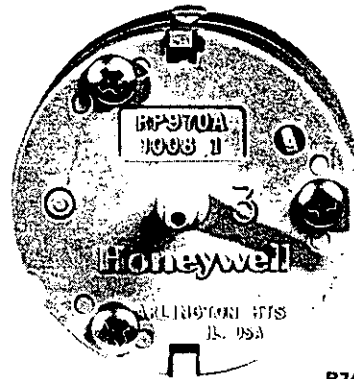
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RP970A Capacity Relay



GENERAL

The RP970A is a direct acting, proportional relay suitable for use in HVAC systems to increase the capacity of a branch line signal to a pneumatic valve or damper operator. The RP970A provides a 1:1 pressure ratio.

FEATURES

- In-line, wall, or panel mounted.
- Sharp barb air connections.
- Molded plastic construction.

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RP471A Pneumatic Snap Acting Relay

DESCRIPTION

The RP471A is a four port, snap acting relay which converts a proportional air pressure change from a controller to a positive (two-position) pressure change to a pneumatic valve or damper operator. It can also divert a supply line to one of two branches.

SPECIFICATIONS

Model:

RP471A: Snap acting pneumatic relay

Setpoint Range:

Adjustable, 3 to 15 psi (20 to 105 kPa)

Action:

SPDT, positive snap acting

Differential:

1 psi (10 kPa), nonadjustable, factory set

Maximum Safe Air Pressure:

30 psi (205 kPa)

Operating Pressure (Switch and Pilot):

0 to 18 psi (0 to 124 kPa)

Ambient Operating Limits

Temperature: 0 to 140F (-18 to 60C)

Humidity: 5 to 95%

Ambient Storage Limits:

Temperature: -30 to 150F (-34 to 66C)

Humidity: 5 to 95%

Knob Rotation:

300 degrees (from 3 to 15 psi on scale)

Mounting:

Surface or panel using 1-1/2 in. (38 mm) dia. metal spring clip (supplied) or in-line

Air Connections:

Sharp barb connections for 5/32-in. (4 mm) O.D. plastic tubing

Pilot:

Modulating pressure

Operation:

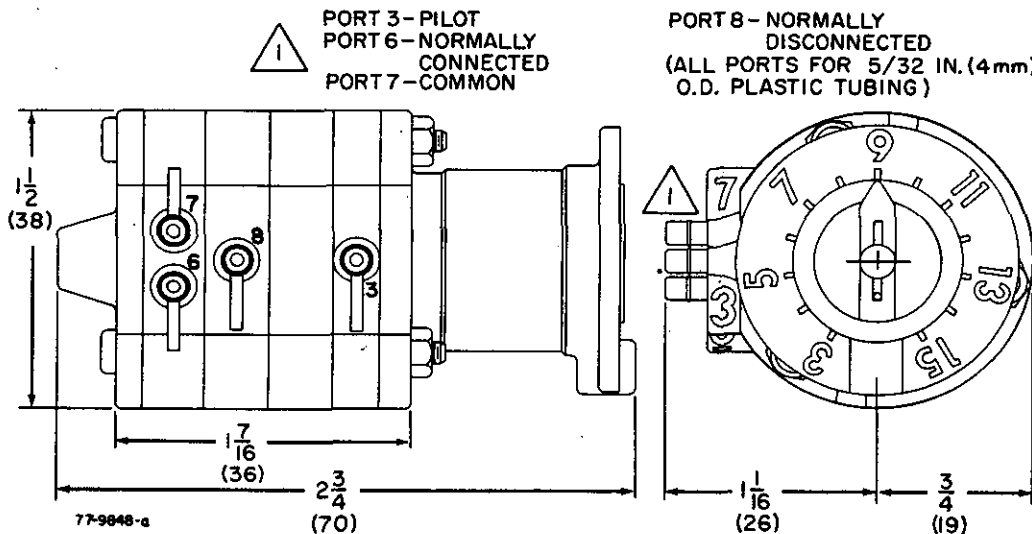
Makes 7 to 6 on pressure decrease to setpoint minus differential

Makes 7 to 8 on pressure increase to setpoint

Construction:

Molded plastic with neoprene diaphragms and piano wire springs

Dimensions:



Approximate Dimensions in Inches (Millimeters)

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RP7517A, B Electronic-Pneumatic Transducer

GENERAL

The RP7517 Electronic-Pneumatic Transducer is used in electronic-pneumatic control systems to convert a proportional, electric, output signal from a controller into a direct-acting, proportional pneumatic signal to operate a pneumatic actuator.

The RP7517A Transducer is used in MicroniK 100 and DeltaNet DDC applications; the RP7517B is used in Excel DDC applications.

FEATURES

- Snap rail or screw mounting.
- Factory calibrated.
- Dual barb fittings.
- High accuracy.

SPECIFICATIONS

Model:

RP7517A: 2-wire, without internal power supply.

Used with DeltaNet DDC and MicroniK 100.

RP7517B: 3-wire, with internal power supply.

Used with Excel DDC.

Ambient Operating Limit:

Temperature: 41 to 131 F (5 to 55 C).

Humidity: 5 to 95% rh.

Storage: -22 to 158 F (-30 to +70 C).

Power Supply:

RP7517A: None.

RP7517B: 24V, +10% -15%, 50/60 Hz.

Power Consumption:

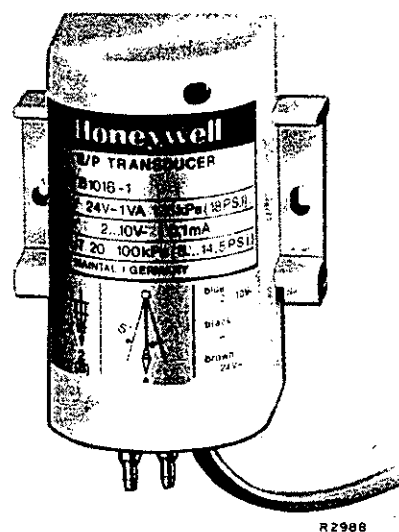
RP7517A: 16 mA at 12V dc.

RP7517B: 1.7 VA.

Input Signal:

RP7517A: 2 to 10V dc.

RP7517B: 2 to 10V dc (up to 0.1 mA).



Output Pressure:

3 to 14.5 psi (20 to 100 kPa) at 2 to 10V dc.

Minimum: 0.14 psi (1 kPa) at 0V dc.

Maximum: 17 psi (120 kPa) at 18 psi (125 kPa) main pressure.

Main Air Pressure:

18 psi (125 kPa).

Maximum Safe Air Pressure:

29 psi (200 kPa).

Air Consumption:

0.025 scfm (11.7 ml/s).

Air Capacity:

0.45 scfm (211 ml/s).

Air Connections:

Dual barb-fittings for:

1/4-inch (6 mm) O.D. or

5/32-inch (4 mm) O.D. polyethylene tubing.

Lead Wires:

30-inch (762 mm).

DESCRIPTION

The RP970A is a direct acting, proportional relay suitable for use in HVAC systems to increase the capacity of a branch line signal to a pneumatic valve or damper operator. The RP970A provides a 1:1 pressure ratio.

SPECIFICATIONS

Model:

☐ RP970A Direct acting, proportional capacity relay

Operating Range:

0 to 18 psi (0 to 125 kPa)

Maximum Safe Air Pressure:

30 psi (205 kPa)

Ambient Operating Limits:

Temperature: 0 to 140 F (-18 to 60 C)

Humidity: 5 to 95%

Operating Air Pressures:

Pilot: 3 to 15 psi (20 to 105 kPa)

Main: 18 psi (125 kPa)

Air Handling Capacity:

0.039 scfm at 1 psi differential (18 ml/s at 5 kPa differential)

Air Consumption:

0.0017 scfm (0.8 ml/s) maximum

Mounting:

In line, wall, or panel mounted

Air Connections:

Barb type for 1/4 in. (6 mm) O.D. plastic tubing for Port 1 and 5/32 in. (4 mm) O.D. plastic tubing for Ports 2, 3, and 4

Construction:

Molded plastic with neoprene diaphragm, brass valve seats, and 100-mesh stainless steel filters in main and branch ports

Dimensions:

See Figure 1

Accessories:

1. 14003030-001 1-1/2 in. Mounting Clip
2. 801629S 1-1/2 in. Cable Clamp

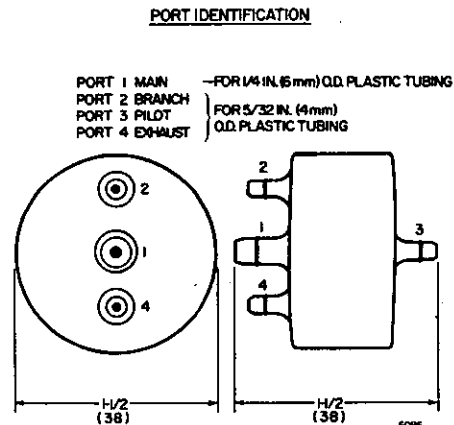


Fig. 1. RP970A Dimensions in Inches (Millimeters).

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THE T675 AND T678 TEMPERATURE CONTROLLERS REGULATE THE TEMPERATURE OF AIR OR LIQUIDS IN DUCTS, PIPES, TANKS, AND BOILERS. TYPICAL USES INCLUDE CONTROL OF DAMPERS AND VALVES IN HEATING, COOLING, OR HEATING-COOLING SYSTEMS.

☐ T675A has 1 single-pole, double-throw (spdt) switch that breaks R-B and makes R-W at the set point on a temperature rise.

☐ T675B Manual Reset Low Limit has 1 single-pole, single-throw (spst) switch that breaks at the set point on a temperature fall, and requires manual resetting.

☐ T678A has 2 single-pole, double-throw (spdt) switches that operate in sequence. The right switch breaks R-B and makes R-W at the set point on a temperature rise. The left switch breaks R-B and makes R-W if the temperature continues to rise through the interstage differential.

☐ T675A models available with an adjustable differential.

☐ T675A and T678A have set point adjustment knob on front of case.

☐ Capillary tubing allows remote mounting of sensing element; models available with various lengths.

☐ T675A and T678A models available with a fast-response sensing element.

☐ Controller can be mounted in any position.

☐ Mounting accessories available for all applications.

☐ Ambient temperature compensated.

☐ Insert supplied with TRADELINE models replaces set point knob to discourage tampering.

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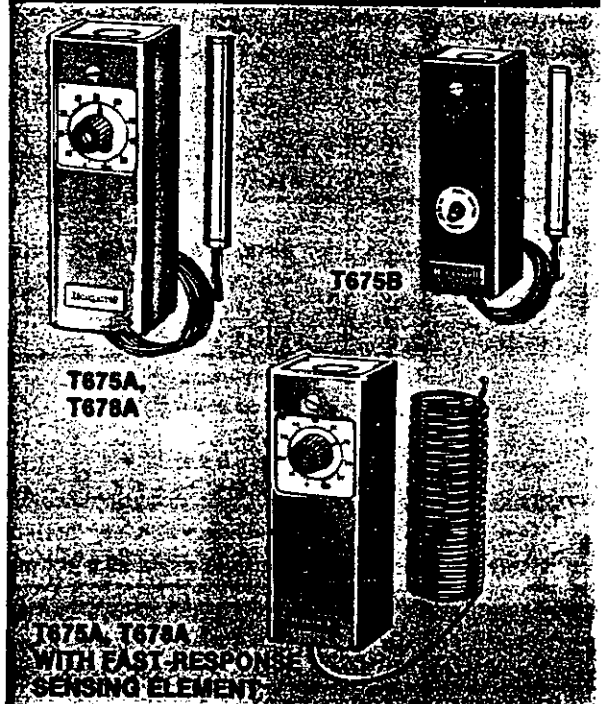
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TEMPERATURE CONTROLLERS



T675A,B; T678A

TYPICAL OPERATION

Calibration:

Factory calibrated.

NOTE: RP7517 must be mounted vertically within 5 degrees or factory calibration will be off.

Dimensions:

See Figure 1.

Wiring Diagram:

See Figure 2.

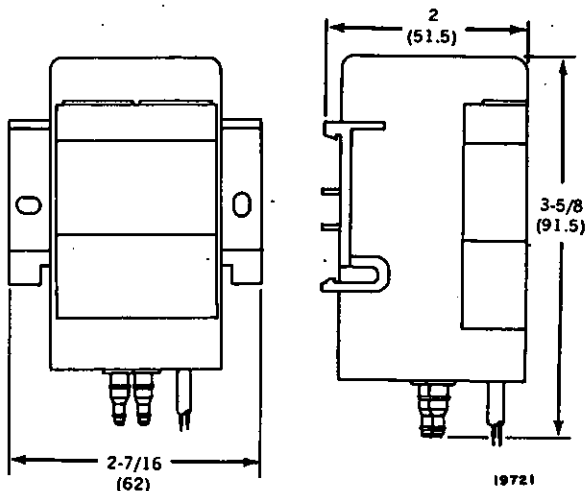


Fig. 1. RP7517 E/P Transducer Approximate Dimensions in Inches (Millimeters).

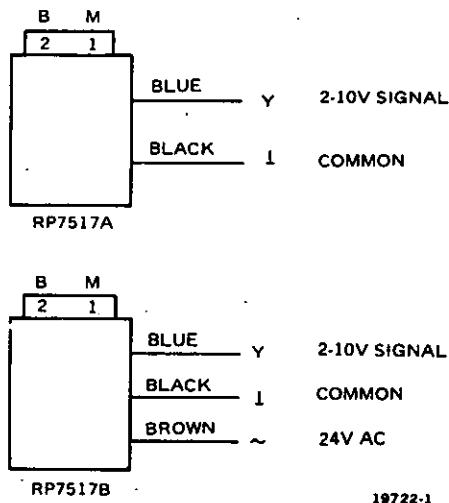


Fig. 2. RP7517 Wiring Diagram.

A typical humidity control application for the RP7517A consists of an H7501 Space Humidistat providing space humidity input and an H7500 Duct Humidistat providing a high humidity limit signal to a Micronik 100 Humidity Controller. The output signal of the controller is converted by the RP7517A to a pneumatic signal operating the pneumatic humidifier valve.

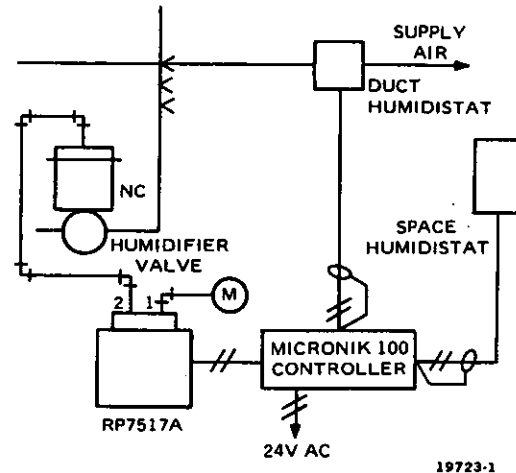


Fig. 3. RP7517A in Humidity Control Application.

A typical heating control application for the RP7517B consists of a duct sensor providing temperature input into an Excel DDC Controller. The output of the Controller is converted by the RP7517B to a pneumatic signal operating the pneumatic heating coil valve.

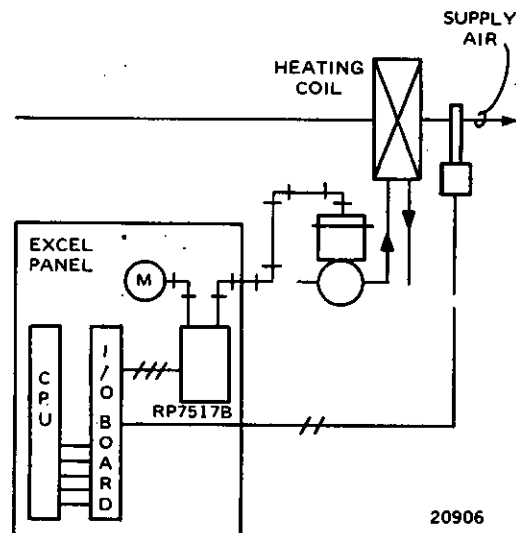


Fig. 4. RP7517B in Temperature Control Application.

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STANDARD MODELS

MODELS (also refer to Table II):

T675A Temperature Controller—spdt switching to make or break a circuit on a temperature change; fast-response models operate approximately 4 times faster than standard models.

T675B Low Limit Temperature Controller—spst

switching to break a circuit on a temperature fall; must be manually reset.

T678A Temperature Controller—2 spdt switches operate 2 independent circuits in sequence; fast-response models operate approximately 4 times faster than standard models.

TABLE II—STANDARD MODELS AVAILABLE.

MODEL	SNAP-ACTING SWITCHES	DIFFERENTIAL ^a	OPERATING TEMPERATURE RANGE (SCALE RANGE) ^c		MAXIMUM SAFE BULB TEMPERATURE	
			F	C	F	C
T675A	1 spdt	Adjustable 3 F to 10 F [1.7 to 5.6 C]	0 to 100	-18 to + 38	125	52
			160 to 260	71 to 127	280	138
		Adjustable 3.6 F to 12 F [2.0 to 6.7 C]	55 to 175	13 to 79	200	93
			0 to 100	-18 to + 38	125	52
		Fixed at 1 F [0.6 C]	55 to 175 ^d	13 to 79	200	93
			160 to 260	71 to 127	280	138
T675B	1 spst	Manual reset ^b	30 to 50 ^e	-1 to + 10	125	52
T678A	2 spdt	Each switch: Fixed at 3 F [1.7 C] Interstage: Adjustable 3 F to 10 F [1.7 C to 5.6 C]	0 to 100	-18 to + 38	125	52
			160 to 260	71 to 127	280	138
		Each switch: Fixed at 3.6 F [2.0 C] Interstage: Adjustable 3.6 F to 12 F [2.0 C to 6.7 C]	0 to 100 ^f	-18 to + 38	125	52
			55 to 175	13 to 79	200	93

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^aAll differentials are subtractive except for the T675B (which has manual reset) and the interstage differential on T678A models.

^bTemperature should rise 10 F [5.6 C] above the set point before resetting.

^cCelsius scaleplates available. See Accessories.

^dModel available with a fast-response sensing element, including a 131524A Capillary Holder.

^eFactory-set and locked at 37 F [3 C].

^fSensing element is a 12 ft [3.7 m] averaging element on the end of a 10 ft [3.0 m] copper capillary.

ELECTRICAL RATINGS:

T675A models with adjustable differential and T678A:

	120 Vac	240 Vac	277 Vac
Full Load	8.0	5.1	4.2
Locked Rotor	48.0	30.6	25.2
Pilot Duty	125 VA	125 VA	125 VA

T675A models with fixed differential—125 VA at 120/208/240/277 Vac.

T675B—125 VA pilot duty up to 277 Vac.

T678A—maximum connected load = 2000 VA.

OPERATING TEMPERATURE RANGE (SCALE RANGE):
See Table II.

DIFFERENTIAL: See Table II.

ADJUSTMENTS:

Set Point (Operating Temperature):

T675A and T678A—adjustment knob on dial on front of controller.

T675B—screwdriver slot in center of dial (cover must be removed).

Differential (cover must be removed):

T675A models with adjustable differential—adjustment dial on snap-acting switch.

T678A interstage differential—star wheel on left side of chassis.

MAXIMUM SAFE BULB TEMPERATURE: See Table II.

TEMPERATURE SENSING ELEMENT: Standard element is a liquid-filled, remote bulb. Some models are available with a fast-response, liquid-filled, coiled capillary element which reduces response time to approximately 1/4 that of the standard bulb.

SENSING BULB SIZE:

Length—4-3/16 in. [106.4 mm].

Diameter—1/2 in. [12.7 mm].

MAXIMUM SENSING BULB PRESSURE: 50 psi [344.7 kPa] for direct immersion.

CAPILLARY LENGTH AND MATERIAL:

T675A and T678A standard models—5 ft [1.5 m] copper, or 20 ft [6.1 m] copper, monel, or stainless steel.

T675A and T678A fast-response models—5 ft [1.5 m] copper capillary with a coiled sensing element on the end; sensing element is coiled 1/8 in. [3.2 mm] tubing, 1-1/2 in. [38.1 mm] diameter x 5 in. [127 mm] long. The coil may be stretched to approximately 10 in. [254 mm].

T675B—10 ft [3.0 m] copper.

CAPILLARY HOLDER: 107324A included with TRADELINE models (except fast-response models). 131524A included with all fast-response models.

WIRING KNOCKOUTS: Two, 7/8 in. [22.2 mm] diameter knockouts for 1/2 in. conduit (1 in the top and 1 in the bottom).

CONTROLLER MOUNTING: Any position; 3 screws through slotted holes in back of case (Fig. 1).

SENSING BULB MOUNTING:

In air ducts—capillary holder (Figs. 2 and 3).

In boilers or storage tanks—immersion well (Fig. 4) or capillary compression fitting (Fig. 5).

DIMENSIONS: See Fig. 1.

APPROVALS:

UNDERWRITERS LABORATORIES INC. LISTED:

T675A and T678A—File No. E4436, Vol. 4; Guide No. XAPX.

T675B—File No. SA481, Vol. 3; Guide No. SDFY.

CANADIAN STANDARDS ASSOCIATION CERTIFIED (120 V, 240 V, and some 208 V models only): T675A and T678A—File No. LR1620, Guide No. 400-E-0.

REPLACEMENT PART:

1. 131524A Capillary Holder, for mounting a fast-response sensing element in an air duct.

ACCESSORIES:

1. 107324A Capillary Holder—for mounting a sensing bulb in an air duct; 8-3/8 in. [212.7 mm] long.

2. 311266D Duct Bulb Holder.

3. Immersion Well Assembly—to protect sensing bulb from mechanical or chemical damage when mounting in a boiler or storage tank; copper, 4-3/4 in. [120.7 mm] insertion length; includes 112721 Tube Clip for clamping capillary tube to immersion well—

—112622AA, 1/2-14 NPT external threads on spud.

—112630A, 3/4-14 NPT external threads on spud.

4. Capillary Compression Fitting—to provide seal-off when mounting sensing bulb directly in a boiler or storage tank; brass, 5/8 in. [15.9 mm] thread length—

—104484A, 1/2-14 NPT external threads on spud.

—104484B, 3/4-14 NPT external threads on spud.

5. 105900 T-strap—for clamping sensing bulb to a pipe or similar mount.

6. 7640HY Bag Assembly—with standoff bracket for mounting the controller to an insulated duct.

7. Q615A Splash-proof Enclosure.

8. 34886A Sun Shield.

9. 801534 Calibration Wrench.

10. 194899 Tamper-resisting Insert Button to conceal set point.

11. Celsius scaleplates for T675.

—194486D: 75 to 125 °C replaces 160 to 260 °F scaleplate.

—194486F: 15 to 75 °C replaces 55 to 175 °F scaleplate.

—194486H: minus 30 to 50 °C replaces 0 to 100 °F scaleplate.

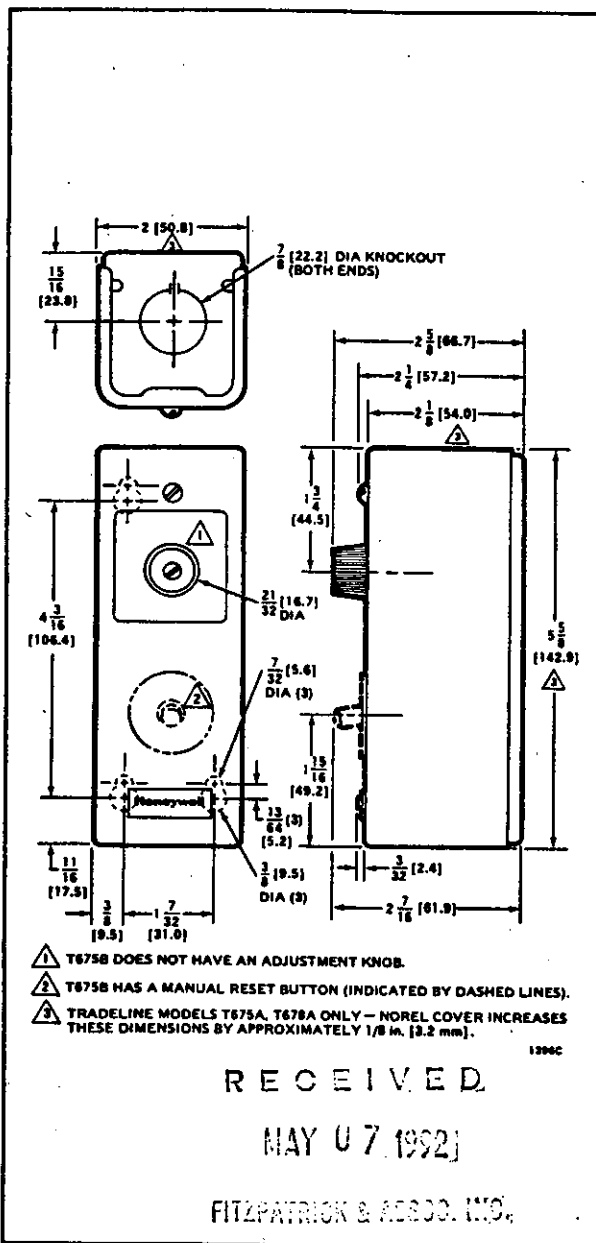


FIG. 1—DIMENSIONS OF THE T675 AND T678 TEMPERATURE CONTROLLER, IN in. [mm IN BRACKETS].

INSTALLATION

WHEN INSTALLING THIS PRODUCT...

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out product operation as provided in these instructions.

CAUTION

Disconnect power supply before beginning installation to prevent electrical shock and equipment damage.

LOCATION AND MOUNTING

The controller may be installed in any convenient position. Mount it with 3 screws through the slotted holes in the back of the case (Fig. 1). Be sure to consider the length of the capillary before mounting the controller.

Install the sensing element where it is exposed to the average temperature of the controlled medium. The sensing bulb may be directly immersed or mounted in a well. T675A or T678A fast-response models must use the capillary holder furnished with the device (Fig. 2). The remote sensing bulb of standard models should be held in place with a capillary holder, immersion well, or compression fitting (Figs. 3-5). Sharp bends or kinks in the capillary tubing affect the efficiency of the controller and must be avoided. Excess capillary should be carefully coiled and left directly beneath the controller.

NOTE: When pressure fittings are used in areas of vibration, such as pipe lines, the bulb must be adequately supported.

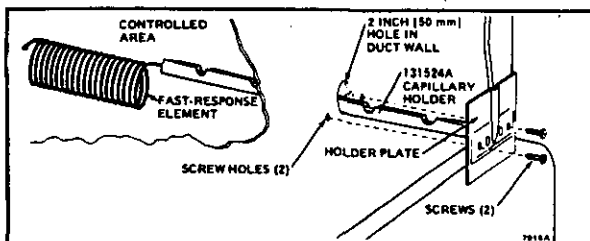


FIG. 2—MOUNTING A FAST-RESPONSE ELEMENT IN AN AIR DUCT.

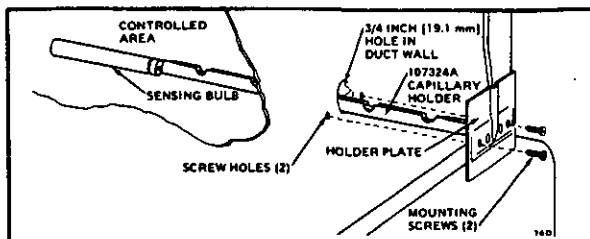


FIG. 3—MOUNTING THE SENSING BULB AND CAPILLARY HOLDER IN AN AIR DUCT.

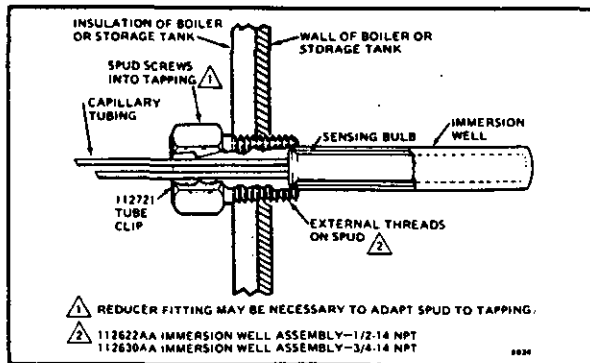


FIG. 4—MOUNTING THE SENSING BULB IN AN IMMERSION WELL.

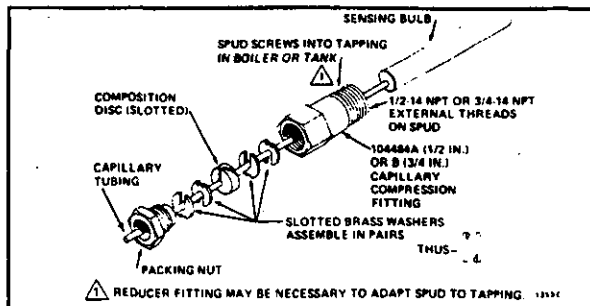


FIG. 5—MOUNTING THE SENSING BULB USING A CAPILLARY COMPRESSION FITTING.

WIRING

Disconnect the power supply before making wiring connections to prevent electrical shock and equipment damage. All wiring must comply with applicable electrical codes, ordinances, and regulations. If using the controller with a flame safeguard control, use moisture-resistant No. 14 wire suitable for at least 167 F [75 C] for a primary control (such as an RA890), or for at least 194 F [90 C] for a programming control (such as an R4140). For high temperature installations, use moisture-resistant No. 14 wire selected for a temperature rating above the maximum operating temperature.

Two knockouts for 1/2 in. conduit are provided—one in the top and one in the bottom of the case. Follow the wiring instructions furnished with the heating or cooling system. Fig. 6 shows the switching action.

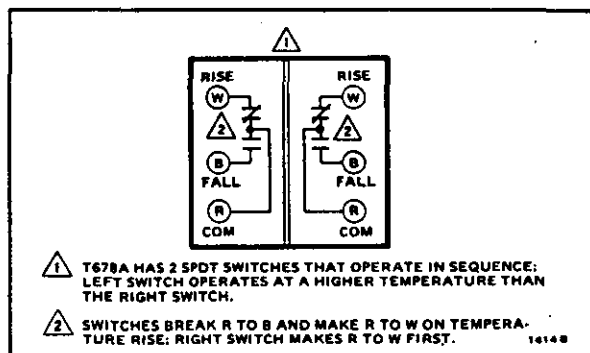


FIG. 6—T678A SWITCHING. T675A HAS ONE spdt SWITCH. T675B HAS ONE spst SWITCH (opens on temp. fall).

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OPERATION

T675A

As the temperature of the controlled medium falls below the set point less differential, the T675A switch makes terminals R to B and energizes a normally closed solenoid valve to provide heat. In cooling applications, the T675A makes terminals R to W as the temperature rises above the set point, energizing cooling equipment. Fig. 7 shows the operation of the T675A. Fig. 8 shows the location of the adjustment dial on models with an adjustable differential.

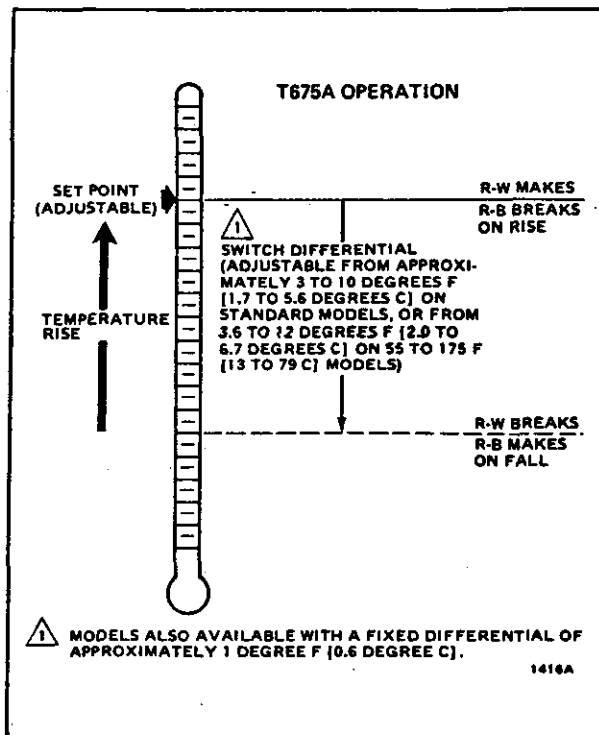


FIG. 7—OPERATION OF THE T675A.

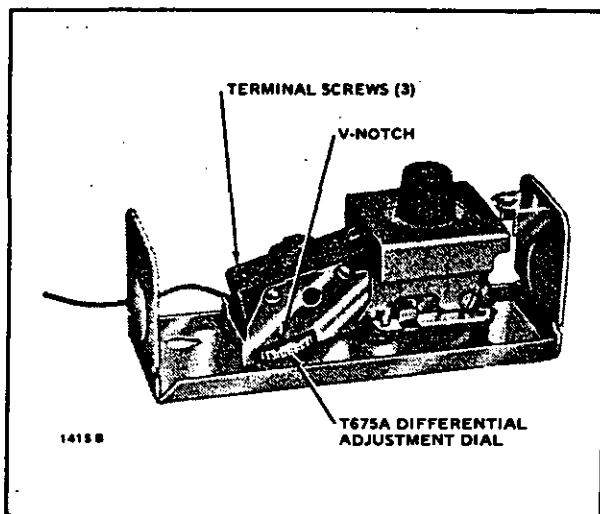


FIG. 8—LOCATION OF THE ADJUSTMENT DIAL ON T675A MODELS WITH AN ADJUSTABLE DIFFERENTIAL.

FREEZE-UP PROTECTION

When using the T675A (auto-recycling) for freeze-up protection, the recommended set point is 38 F [3.3 C] plus the switch differential.

EXAMPLE: Set point of 38 F [3.3 C] plus 1 F [0.6 C] (fixed differential model) equals an actual set point of 39 F [3.9 C].

EXAMPLE: Set point of 38 F [3.3 C] plus 3 F [1.7 C] (adjustable differential model) equals an actual set point of 41 F [5 C].

This provides an adequate safety factor for freeze-up protection.

NOTE: The T675B is a manual reset device specifically designed for freeze-up protection.

T675B

Used as a low limit controller, the T675B interrupts the operation of equipment if the temperature of the controlled medium falls below the set point. The device is reset manually after a rise in temperature of approximately 10 F [5.6 C]; push in the manual reset button on the front of the case. The operation of the T675B is shown graphically in Fig. 9.

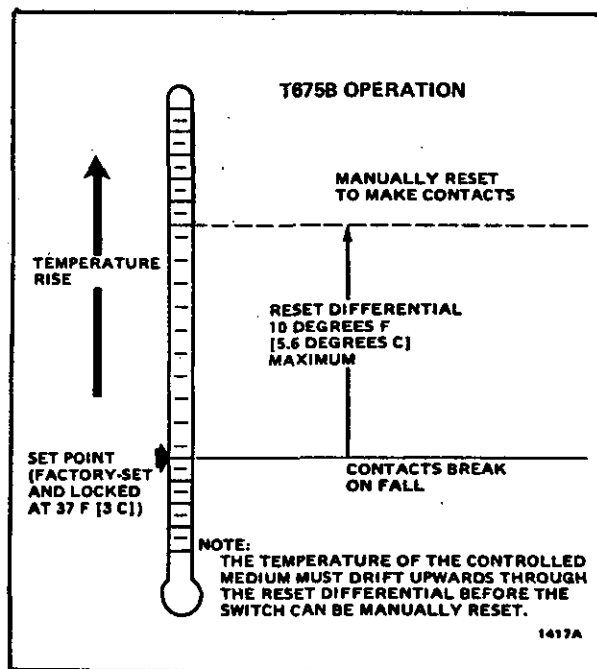


FIG. 9—OPERATION OF THE T675B.

T678A

When the temperature at the sensing element rises above the set point of the controller, the switch on the right makes R-W. Should the temperature continue to rise through the preselected interstage differential of the controller, the switch on the left will make R-W.

Conversely, on a temperature fall, the switch on the left makes R-B, providing first step switching. If the temperature continues to fall, the switch on the right makes R-B to provide sequencing of equipment.

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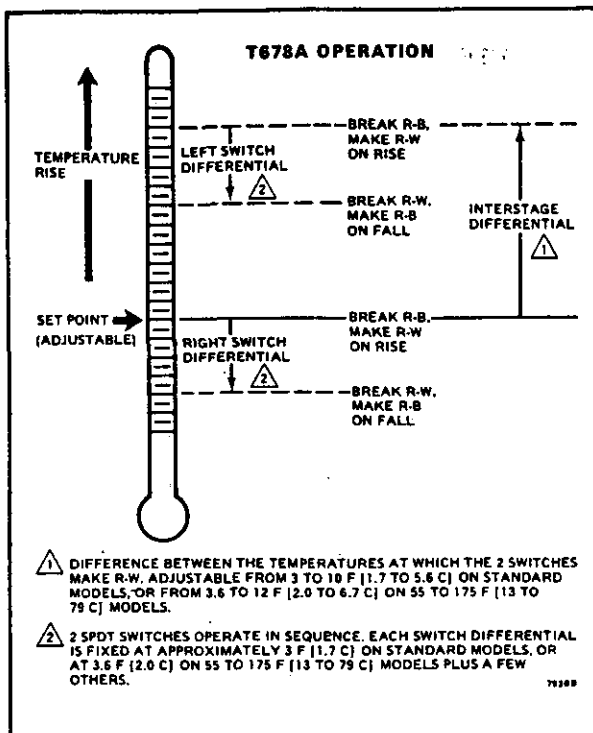


FIG. 10—OPERATION OF THE T678A.

The T678A Temperature Controller has an adjustable interstage differential. The set point adjustment knob determines the temperature at which the right switch operates. The left switch can be adjusted to operate from 3 F to 10 F [1.7 C to 5.6 C] (or 3.6 F to 12 F [2.0 C to 6.7 C] on some models) above the point of operation of the right switch. An illustration depicting the operation of the T678A is shown in Fig. 10. The interstage differential is adjusted by turning the star wheel with a narrow screwdriver inserted into the rectangular hole in the chassis (Fig. 11).

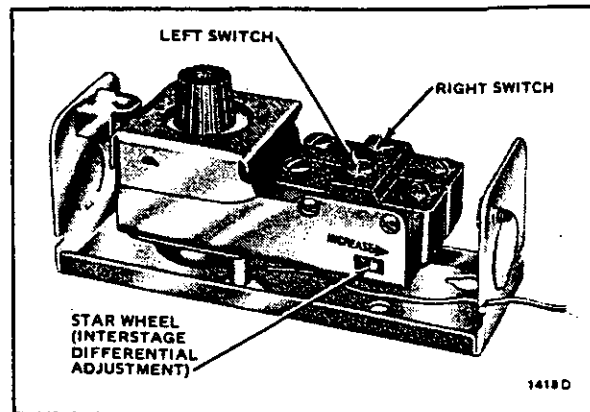


FIG. 11—INTERSTAGE DIFFERENTIAL ADJUSTMENT ON A T678A.

CALIBRATION AND CHECKOUT

All controllers are carefully tested and calibrated at the factory under controlled conditions. If the controller is not operating at a temperature corresponding to the scale setting and differential setting, check to see that the sensing bulb senses the average temperature of the medium controlled. If the temperature of the controlled medium is changing rapidly, the differential will appear wider than its setting.

For calibration, an accurate temperature reading of the controlled medium must be taken. Place an accurate thermometer near the sensing bulb, or refer to a thermometer that has been installed as part of the system. If the sensing bulb is installed in an inaccessible area, or if the controlled medium is unstable, the bulb should be removed and placed in a controlled bath for accurate calibration.

T675A

These controllers are calibrated so that the dial setting, indicated by the pointer on the adjustment knob, is the point at which the R-W switch contacts make on a temperature rise. Measure the temperature at the bulb. Rotate the adjustment knob counterclockwise from the top of the scale, simulating a temperature rise, until the R-W switch contacts make. Note the dial reading. If it differs from the bulb temperature, calibrate the dial as follows:

1. Determine the number of degrees difference between the bulb temperature and the dial reading at which the R-W switch contacts make.
2. Remove the adjustment knob and slip the fingers of the calibration wrench (accessory, Part No. 801534) into the slots of the dial. Rotate the dial until the fingers

of the wrench drop into the slots of the calibration nut under the dial. Note the dial indication at this point. Turn the dial and the calibration nut up or down scale the number of degrees that the bulb temperature differs from the point at which the contacts make (determined in step 1). For example, move the dial from 45 to 65 if the dial reading in step 1 was 45 degrees and the bulb temperature was 65 degrees.

3. Check the calibration adjustment by moving the adjustment knob up and down the scale while listening for the contacts to make and break. If the dial is still out of calibration, repeat the calibration procedure.

T675B

NOTE: The cover must be removed to see the dial. All T675B models have been factory-set and locked at 37 F [3 C].

These controllers are calibrated so that the dial setting, indicated by the fixed pointer at the top of the dial, is the point at which the switch contacts break on temperature fall.

Measure the temperature at the bulb. Remove the cover of the controller. Loosen the locking screw. Insert a screwdriver in the slot in the center of the dial. Start with the dial at the bottom of the scale, and rotate the dial counterclockwise to simulate a temperature fall until the switch contacts break. Note the dial reading. If it differs from the bulb temperature, follow the calibration procedure outlined for the T675A. Tighten the locking screw and replace the cover.

T678A

These controllers are calibrated so that the dial setting, indicated by the pointer on the adjustment knob, is the pointer at which the R-W contacts of the right switch make on a temperature rise. If the temperature continues to rise, the R-W contacts of the left switch make at the dial setting *plus* the interstage differential. (The interstage differential is adjustable as shown in Figs. 10 and 11.)

Measure the temperature at the bulb. Rotate the adjustment knob counterclockwise  from the top of the scale, simulating a temperature rise, until the R-W contacts of the right switch make. Note the dial reading. If it differs from the bulb temperature, follow the calibration procedure outlined for the T675A.

After calibrating the dial, check the setting of the interstage differential. Set the adjustment knob at the

bulb temperature. Then rotate the adjustment knob counterclockwise , simulating a temperature rise, until the R-W contacts of the left switch make. Note the dial reading. The difference between this reading and the bulb temperature is the interstage differential. The interstage differential may be adjusted if necessary (Fig. 11).

CHECKOUT

Check the operation of the controller by raising and lowering the set point through the temperature range of the air or liquid being controlled. Make sure that the controlled equipment operates as intended.

To install tamper-resisting insert on TRADELINE models, remove screw from adjustment knob, remove knob, install insert.

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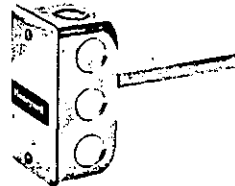
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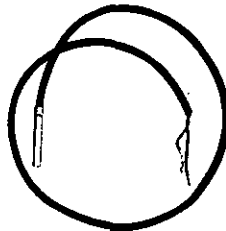
T7005, T7006, T7007, and T7008 Platinum Sensors



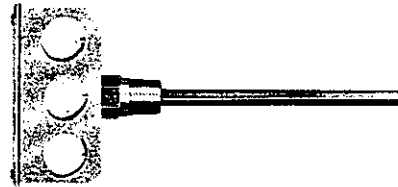
**T7005
SPACE SENSOR**



**T7006
DUCT SENSOR**



**T7007
REMOTE BULB SENSOR**



**T7008
IMMERSION SENSOR**

R3427
R3426
R2923
R2953

General

T7005, T7006, T7007, and T7008 Platinum Sensors ("Sensors") monitor temperatures in building management control applications, including Direct Digital Control systems. They are designed for a variety of media such as air, liquid, and steam and can be used with DELTA 540 and 541 Data Gathering Panels, DeltaNet R7044 Excel Plus Controllers, and DeltaNet MicroCel™ and MacroCel™ Controllers.

Each Sensor consists of a platinum-film resistance element on a ceramic chip and is overlaid with protective glass to ensure long-term reliability. Platinum element resistance varies directly with temperature change. Sensors are calibrated to a very close tolerance by double laser trimming of the element. This method of calibration eliminates field calibration.

Features

- Fast response
- Precise temperature measurement
- DELTA and DeltaNet system compatibility

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Description

T7005, T7006, T7007, and T7008 Platinum Sensors ("Sensors") monitor temperatures in building management control applications, including Direct Digital Control systems. They are designed for a variety of media such as air, liquid, and steam.

Specifications

Models:

☐ T7005 Space Sensor:

The T7005 Space Sensor monitors temperature in a room or area of a building. The platinum sensing element provides fast response to temperature changes. Any Honeywell T7000 Standard Series no display (blank) cover can be used. Indicate cover selection when ordering sensor.

T7006 Duct Sensor:

The T7006 Duct Sensor measures air temperature in a duct. The platinum sensing element is in the tip of a brass probe.

- ☐ Sensor with 12-1/2-in. (317-mm) probe
- ☐ Sensor with 5-in. (127-mm) probe

☐ T7007 Remote Bulb Sensor:

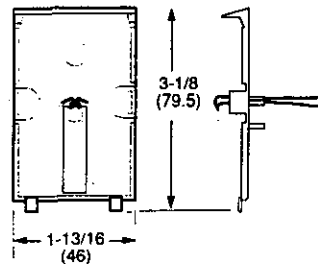
The T7007 Remote Bulb Sensor measures the temperature in applications where other sensors are not appropriate such as outdoor air temperature and strap-on pipe sensing. The sensor can also be used in ducts where standard duct sensors are not practical. The platinum sensing element is in a sealed probe attached to an oil resistant cable.

T7008 Immersion Sensor:

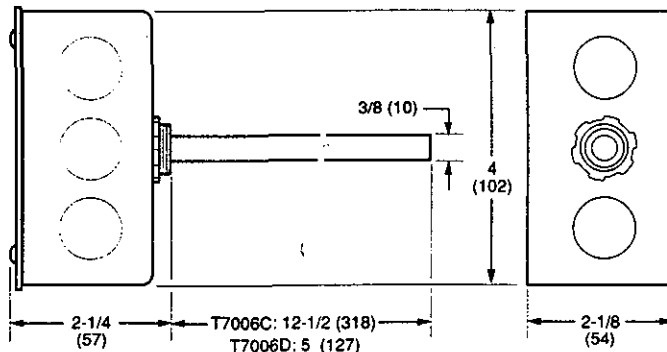
The T7008 Immersion Sensor detects temperatures of heated or chilled water, or other fluids. The platinum sensing element is in the tip of a sealed, corrosion-resistant brass probe. The T7008 mounts in a well for tank or pipe installation.

- ☐ T7008 High Temperature Sensor
- ☐ T7008 Chilled Water Sensor

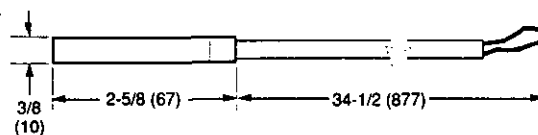
Dimensions in Inches (Millimeters):



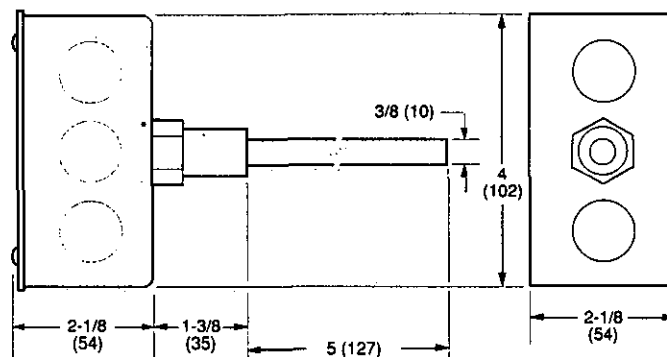
T7005



T7006



T7007



T7008

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Sensor Specifications:

Data	Models				
	T7005 Space Sensor	T7006C&D Duct Sensor	T7007 Remote Bulb Sensor	T7008 Immersion Sensor	
				High Temperature	Chilled Water
Application	Room and area air temperatures	Air temperature in ducts	Outdoor air and pipe temperature sensing	High temperature fluid systems such as hot water	Fluid systems requiring high accuracy such as chilled water
Mounting	Directly on wall	Directly on duct	Sun Shield/Bulb Holder for outdoor air use, or Strap-on Kit or clamp for pipe sensing	Copper Well 23904A	
Lead Wires	Two 22 AWG (0.38 sq mm) wires for low resistance splicing		Oil resistant cable with two 18 AWG (0.81 sq mm) wires for low resistance splicing	Two 18 AWG (0.81 sq mm) wires for low resistance splicing	Two 22 AWG (0.38 sq mm) wires for low resistance splicing
Operating Temperature	50 to 85F (10 to 29C)	-40 to 160F (-40 to 71C)		20 to 392F (-6.7 to 200C)	32 to 113F (0 to 45C)
Humidity	95% rh, noncondensing			—	
Coefficient	4.8 ohms/F (2.7 ohms/K) — positive temperature coefficient			—	
Sensing Element	Platinum-film	Platinum-film in brass tube	Platinum-film	Platinum-film in brass tube	

Accessories:

T7005 Space Sensor:

Cover, Satin Chrome:

- ☐ Vertical Mount with Logo, 14004406-300
- ☐ Horizontal Mount with Logo, 14004406-400
- ☐ Vertical or Horizontal no Logo, 14004406-800

Cover, Beige:

- ☐ Vertical Mount with Logo, 14004407-300
- ☐ Horizontal Mount with Logo, 14004407-400
- ☐ Vertical or Horizontal no Logo, 14004407-800
- ☐ Finish Plate, Black: 14002136-004
- ☐ Finish Plate, Beige: 14002136-005
- ☐ Wall Mounting Ring: 14004458-001
- ☐ Adapter Plate: 14001496-001
- ☐ Standoff Ring: 14000885-005

T7007 Remote Bulb Sensor:

- ☐ Installation Kit (all pipes): 14503800
- ☐ Installation Kit (uninsulated pipe): 14503801
- ☐ Sun Shield/Bulb Holder: 107323A

T7008 Immersion Sensor:

- ☐ Copper Well: 23904A

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Honeywell

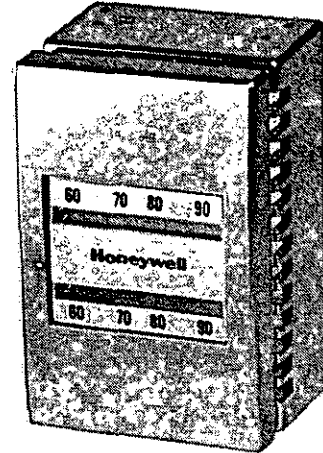
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Helping You Control Your World

Honeywell

TP970A and B Pneumatic Thermostats



R3357

GENERAL

TP970A and B Pneumatic Thermostats provide high-capacity, proportional control of pneumatic devices, such as valves and damper actuators, in heating, ventilating, and air conditioning systems. These two-pipe, pilot-bleed Thermostats maintain comfortable conditions and are designed for trouble-free service.

FEATURES

- Bimetal sensing element
- High capacity
- Straight-scale thermometer located on thermostat rather than on cover
- Plug-in air connections
- Adjustable throttling range
- Replaceable filter

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TP970A and B Pneumatic Thermostats

DESCRIPTION

TP970A and B Pneumatic Thermostats provide high-capacity, proportional control of pneumatic devices, such as valves and damper actuators, in heating, ventilating, and air conditioning systems.

SPECIFICATIONS

Models:

- ☐ TP970A: Direct acting
- ☐ TP970B: Reverse acting

Setpoint Ranges:

TP970A: 60 to 90F, 40 to 70F, or 15 to 30C
TP970B: 60 to 90F or 15 to 30C

Throttling Range:

Adjustable: 2 to 10 degrees F (1.1 to 5.6 degrees C)

Filter:

Replaceable cartridge type

Maximum Safe Air Pressure:

25 psi (172 kPa)

Maximum Safe Temperature:

150F (66C)

Setpoint Adjustment:

Knob with adjustable, locking stops for minimum and maximum settings

Thermometer:

Spiral bimetal

Mounting:

Wall mounted
Horizontal or vertical

Branch Line Indication:

Self-sealing gage tap accessible under cover

Air Consumption:

0.011 scfm (5.19 ml/s)

Dimensions (Cover):

3-1/4 in. (83 mm) by 2 in. (51 mm) by 1-5/8 in. (42 mm) deep

Covers:

Locking type
For standard covers, see 77-1003
For special covers, see 77-9828

Fittings:

Order separately (see 95-5597)

Accessories:

See 77-1003

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Honeywell

77-9201

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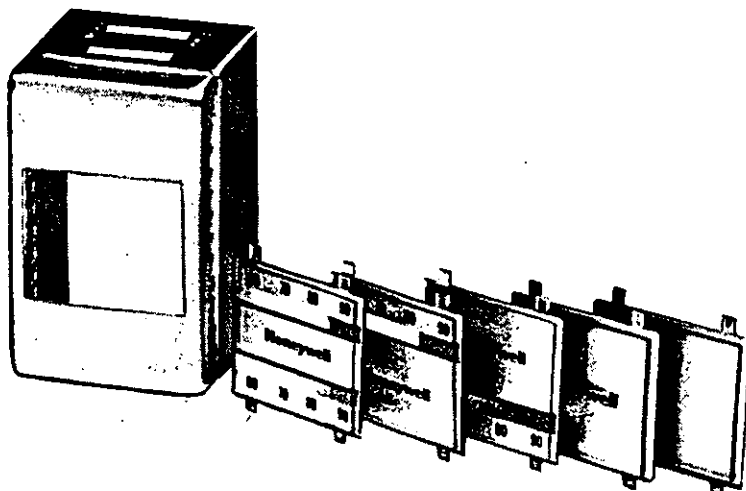
In the USA: Honeywell Plaza, Minneapolis, Minnesota 55408
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Subsidiaries and Affiliates Around the World

Printed in USA

Rev. 10-88

Honeywell

HP970 and TP970 Series Special Cover Kits



R3418

GENERAL

The HP970 and TP970 Series Special Cover Kits ("Kits") are used with the HP970 and TP970 Series Humidistats, Thermostats, and Sensors. Each Kit contains a cover in one of four finishes, an assortment of windows, a window clip, a setpoint slot insert, and assembly instructions.

FEATURES

- Compact cover for aesthetic appearance
- Setpoint slot insert for tamper resistance
- Four finishes for a variety of decors
- Setpoint only, thermometer only, both setpoint and thermometer, or blank display for a variety of applications

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HP970 and TP970 Series Special Cover Kits

DESCRIPTION

The HP970 and TP970 Series Special Cover Kits ("Kits") are used with the HP970 and TP970 Series Humidistats, Thermostats, and Sensors. Each Kit contains a cover in one of four finishes, an assortment of windows, a window clip, a setpoint slot insert, and assembly instructions.

Material:
Aluminum

Dimensions:

14004741-003 Humidistat Cover: 1-15/16 in. (50 mm) wide by 3-1/8 in. (80 mm) high by 1-1/2 in. (39 mm) deep

Other Covers: 1-7/8 in. (48 mm) wide by 3-1/8 in. (80 mm) high by 1-1/2 in. (39 mm) deep

SPECIFICATIONS

Models:

The following table shows windows provided in each Kit. Each Kit also includes window clip, setpoint slot insert, and assembly instructions.

Accessories:

Finish Chips 14002511-001 (finish samples)

For additional accessories, see HP970 and TP970 Series Standard Covers and Accessories Specification Data 77-1003

✓ Kit Part No.*	Cover Finish	Windows Provided				
14004741-001	Brushed aluminum	60 70 80 90 Honeywell	60 70 80 90 Honeywell	Honeywell	Honeywell	(blank)
14004741-002	Brushed aluminum	15 20 25 30 Honeywell	15 20 25 30 Honeywell	Honeywell	Honeywell	(blank)
14004741-003 (for humidistats only)	Brushed aluminum	Honeywell HUMIDITY 20 30 40 50 60 70	Honeywell	(blank)		
14004742-001	Polished aluminum	60 70 80 90 Honeywell	60 70 80 90 Honeywell			
14004743-001	Brushed brass	60 70 80 90 Honeywell	60 70 80 90 Honeywell	Honeywell	40 50 60 70 Honeywell	Honeywell
		15 20 25 30 Honeywell	15 20 25 30 Honeywell			
14004744-001	Polished brass	60 70 80 90 Honeywell	60 70 80 90 Honeywell	15 20 25 30 Honeywell	Honeywell	

* When ordering, use complete part number including three-digit suffix.

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FITZPATRICK & ASSOC. INC.

Rev. 1-90

Honeywell

THE T4051, T6051, AND T6052 ARE HEAVY DUTY, LINE VOLTAGE THERMOSTATS USED TO CONTROL FAN COILS, FANS, MOTOR STARTERS, VALVES, CONTACTORS, AND CIRCULATOR MOTORS IN HEATING AND/OR COOLING SYSTEMS.

- ☐ T4051A is for heating control.
- ☐ T4051B is for cooling control.
- ☐ T4051D is for electric heat applications.
- ☐ T6051A and B may be used in heating systems, cooling systems, combination heat-cool systems (changeover must be provided), or as a series 60 controller for valves and motors.
- ☐ T6051B has special explosion-proof housing.
- ☐ T6052A is for 2-stage heating or 2-stage cooling systems.
- ☐ T6052B is for 1-stage heating-cooling systems with automatic changeover.
- ☐ Q651 Subbases are available to provide system and fan switching from the thermostat location.
- ☐ A locking cover is standard on all models.
- ☐ The set point knob locks in the desired setting and may be removed to prevent tampering.
- ☐ TRADELINE models may be vertically or horizontally mounted.

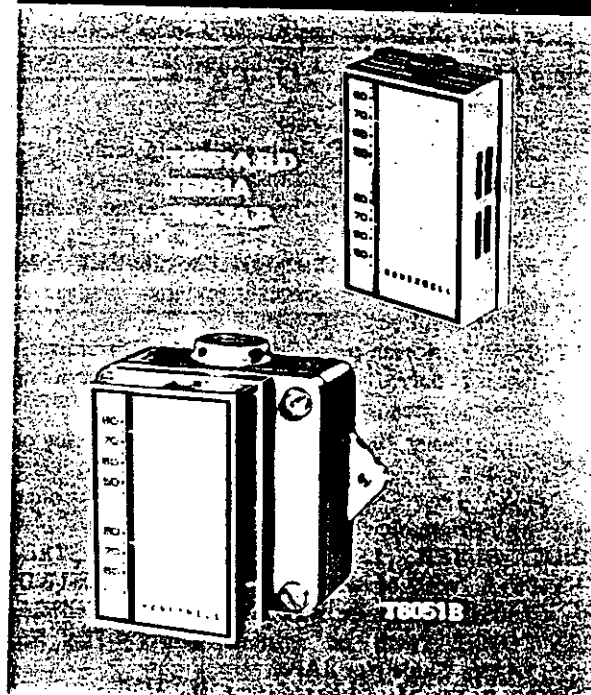
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FITZPATRICK & WOOD, INC.

HEAVY DUTY THERMOSTATS



T4051A,B,D;
T6051A,B;
T6052A,B

Form Number

60-2008-2

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FITZPATRICK & ASSOC. INC.

SPECIFICATIONS

IMPORTANT

THE SPECIFICATIONS GIVEN IN THIS PUBLICATION DO NOT INCLUDE NORMAL MANUFACTURING TOLERANCES. THEREFORE, THIS UNIT MAY NOT MATCH THE LISTED SPECIFICATIONS EXACTLY. ALSO, THIS PRODUCT IS TESTED AND CALIBRATED UNDER CLOSELY CONTROLLED CONDITIONS, AND SOME MINOR DIFFERENCES IN PERFORMANCE CAN BE EXPECTED IF THOSE CONDITIONS ARE CHANGED.

TRADELINE MODELS

TRADELINE models are selected and packaged to provide ease of stocking, ease of handling, and maximum replacement value. TRADELINE model specifications are the same as those of standard models except as noted below.

TRADELINE MODELS AVAILABLE: T6051A, T6052A,B Heavy Duty Thermostats.

MOUNTING: Mount either vertically or horizontally on a standard outlet box. T6051A, T6052B can be mounted on a Q651 Subbase (see Accessories) to provide manual switching at thermostat.

RESISTIVE CURRENT (ELECTRIC HEAT APPLICATIONS) FOR T6051A (without Q651): 22 amp at 120/240V ac; 19 amp at 277V ac.

SCALE RANGE: 46 to 84 F; scale marked 50, 60, 70, and 80 [8 to 29 C; scale marked 10, 15, 20, 25].

ADDITIONAL FEATURES:

- Extra cover plate for horizontal mounting.
- T6051A may be used in electric heat systems (without Q651 Subbase).
- TRADELINE pack with cross reference label and special instruction sheet.

STANDARD MODELS

MODELS:

T4051A Heavy Duty Thermostat—heating only.

T4051B Heavy Duty Thermostat—cooling only.

T4051D Heavy Duty Thermostat—electric heating only.

T6051A Heavy Duty Thermostat—heating only, cooling only, or heating/cooling (external changeover switch required).

T6051B Explosion-proof, Heavy Duty Thermostat—heating only, cooling only, or heating/cooling (external changeover switch required).

T6052A Heavy Duty Thermostat—2-stage heating or cooling.

T6052B Heavy Duty Thermostat—heating/cooling with automatic changeover.

UNDERWRITERS LABORATORIES INC. LISTED:

T4051A (with or without Q651A,B,C), T4051B,D; T6051A (with or without Q651A,B); T6052A, T6052B (with or without Q651C)—File No. E4436, Guide No. XAPX.

T6051B—File No. E12842, Guide No. XBDV.

Explosion-proof Enclosure—Class I, Groups C and

D and Class 2, Groups E, F, and G.

CANADIAN STANDARDS ASSOCIATION

CERTIFIED:

T4051A,B,D; T6051A; T6052A,B—File No. LR1620.

T6051B—File No. LR30676-L.

ELECTRICAL RATINGS (AMPERES):

Voltage and Frequency—120/240V ac, 50/60 Hz.

(T4051B—120 or 240V ac, 50/60 Hz.)

All models except T6051B—

		120V AC	240V AC
T4051A,B,Da T6051A (heat) T6052A (N.C. contacts)	Full Load	16.0	8.0
T6052B (auto changeover heat and cool)	Locked Rotor	96.0	48.0
T6051A (cool) T6052A (N.O. contacts)	Full Load	8.0	4.0
	Locked Rotor	48.0	24.0

(continued on page 3)

ORDERING INFORMATION

WHEN PURCHASING REPLACEMENT AND MODERNIZATION PRODUCTS FROM YOUR TRADELINE WHOLESALE OR YOUR DISTRIBUTOR, REFER TO THE TRADELINE CATALOG OR PRICE SHEETS FOR COMPLETE ORDERING NUMBER, OR SPECIFY—

1. Order number (TRADELINE, if desired).
2. Optional specifications, if desired. (Specify 120 or 240V ac when ordering T4051B.)
3. Accessories, if required.

IF YOU HAVE ADDITIONAL QUESTIONS, NEED FURTHER INFORMATION, OR WOULD LIKE TO COMMENT ON OUR PRODUCTS OR SERVICES, PLEASE WRITE OR PHONE:

1. YOUR LOCAL HONEYWELL RESIDENTIAL DIVISION SALES OFFICE (CHECK WHITE PAGES OF PHONE DIRECTORY).
2. RESIDENTIAL DIVISION CUSTOMER SERVICE
HONEYWELL INC., 1885 DOUGLAS DRIVE NORTH
MINNEAPOLIS, MINNESOTA 55422 (612) 542-7500

(IN CANADA—HONEYWELL CONTROLS LIMITED, 740 ELLESMERE ROAD, SCARBOROUGH, ONTARIO M1P 2V9)
INTERNATIONAL SALES AND SERVICE OFFICES IN ALL PRINCIPAL CITIES OF THE WORLD.

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T6051B Only-

		120V AC	240V AC
Heating	Full Load	10.2	6.5
	Locked Rotor	61.2	39.0
Cooling	Full Load	7.4	4.0
	Locked Rotor	44.4	24.0

aT4051D also has resistive rating—22 amp at 120/240V ac; 19 amp at 277V ac.

Pilot Duty Rating (all models)—125 VA.

DIFFERENTIAL:

T4051, T6051—1 F [0.6 C].

T6052A—

—stage 1 heat, stage 2 cool—2.5 F [1.4 C] (nominal).

—stage 2 heat, stage 1 cool—3.2 F [1.8 C] (nominal).

T6052B—

—stage 1 heat—2.5 F [1.4 C] (nominal).

—stage 2 cool—3.2 F [1.8 C] (nominal).

SWITCHING: Snap-acting switch makes on temperature fall for heating and on temperature rise for cooling. On T6052A, two switches make in sequence for 2-stage heating or cooling. On T6052B, two switches make in sequence for auto changeover.

SCALE RANGE:

Fahrenheit—46 to 84 F; scale marked 50, 60, 70, 80.
Celsius—8 to 29 C; scale marked 10, 15, 20, 25.

MOUNTING: All models except T6051B mount directly on standard outlet box. T6051B cast housing serves as outlet box.

COVER: Molded cover.

DIMENSIONS, IN INCHES [MILLIMETRES IN BRACKETS]: All models except T6051B—5 [127] high, 3-1/8 [79.4] wide, 1-5/8 [41.3] deep. Switches and wiring terminals protrude into outlet box 7/8 inch [22.2 mm]. T6051B—see Fig. 1.

OPTIONAL SPECIFICATIONS:

1. T6051A with WARMER-COOLER scale; moisture-fungus treated.
2. T6051A, 46 to 84 Fahrenheit scale, for horizontal mounting.
3. T6051A with Celsius scale. Mounts either horizontally or vertically.
4. T6052A with Celsius scale. Mounts either horizontally or vertically.
5. T6052B with Celsius scale. Mounts either horizontally or vertically.
6. T4051, T6051A, or T6052 with metal cover.
7. T4051, T6051A, or T6052 without thermometer.

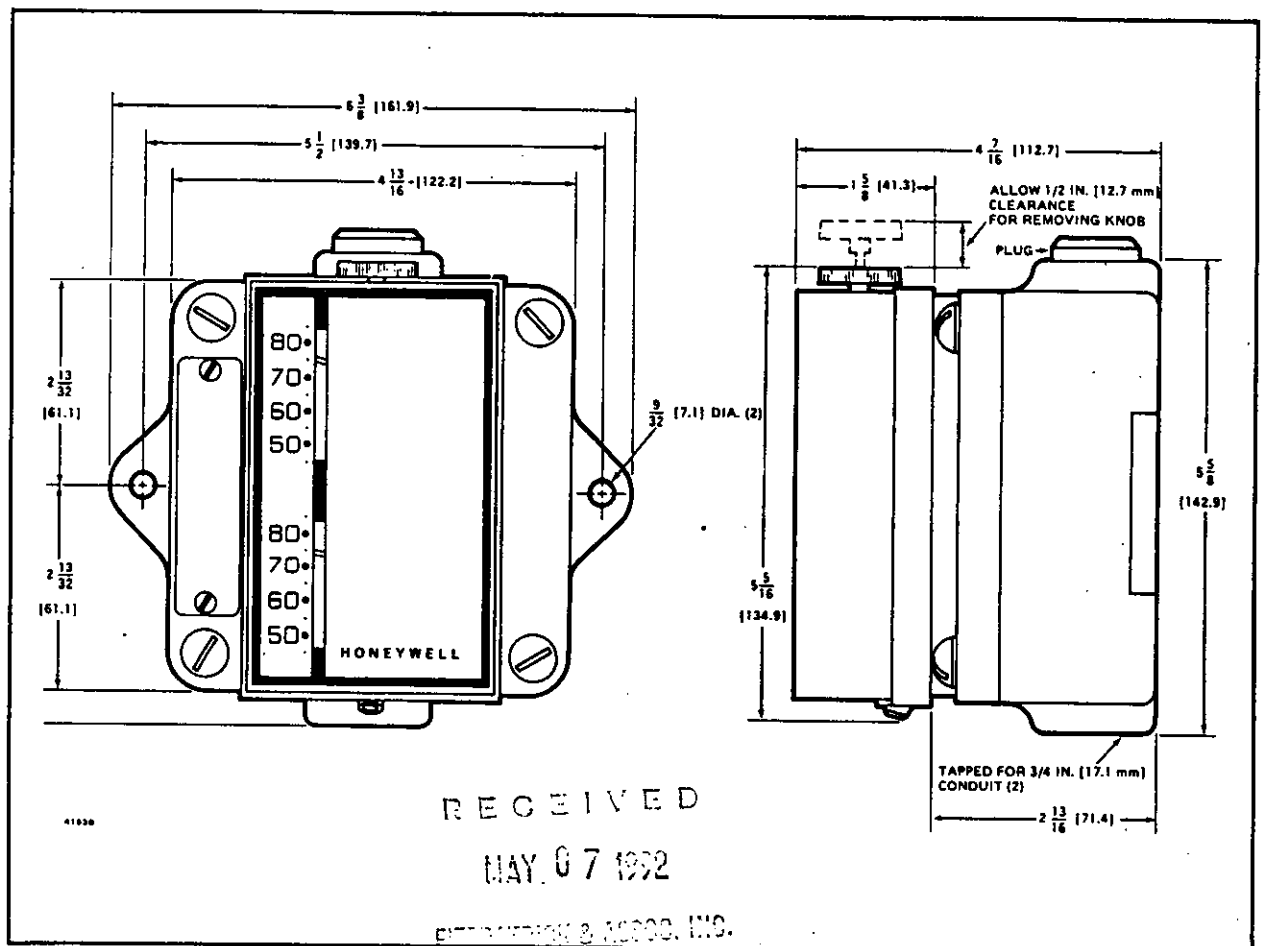


FIG. 1—MOUNTING DIMENSIONS FOR T6051B IN INCHES [MILLIMETRES SHOWN IN BRACKETS].

ACCESSORIES:

Q651 Subbase to provide switching at the thermostat location. Q651A,B are suitable for use with T4051A and T6051A thermostats. Q651C can be used with T4051A, T6051A, and T6052B thermostats. Q651 Subbase may be used with T6052A 2-stage thermostat but the T6052A-Q651 combination is not Underwriters Laboratories Inc. approved. Subbases mount either horizontally or vertically on a standard outlet box.

- Q651A provides HEAT-OFF-COOL; AUTO-OFF-ON or HEAT-OFF-FAN switching.
- Q651B provides AUTO-OFF-FAN switching.
- Q651C provides AUTO-OFF or HEAT-OFF switching.

133722D or 133723B Universal Thermostat Guards or 23394B Locking Guard. See thermostat guards specification sheet.

Explosion-proof Changeover Switches^a (T6051B);

- SPDT EFS Selector Switch—hub size 3/4 in.; Catalog No. EFS21271.
- DPDT EFS Selector Switch—hub size 3/4 in.; Catalog No. EFS21273.

^aWhen ordering, specify hub size and catalog num-

ber. Order explosion-proof changeover switches directly from:

Crouse-Hinds Co.

P.O. Box 131

Syracuse, New York 13201.

135653AB Blank Metal Cover (without set point scale, without thermometer). Polished chrome, T6051, T6052.

135653AA Metal Cover with thermometer and set point scale. Polished chrome. T6051, T6052.

135654AC Blank Metal Cover (without set point scale, without thermometer). Silver bronze. T6051, T6052.

135654AA Metal Cover with thermometer and set point scale. Silver bronze. T6051, T6052.

135654AB Metal Cover with set point scale, without thermometer. Silver bronze. T6051, T6052.

135652AA Blank Faceplate (without set point scale, without thermometer). T6051.

135651A Faceplate with set point scale, without thermometer. T6051.

135531D Horizontal Faceplate with set point scale and thermometer. T6051, T6052.

135499 Setting Knob.

INSTALLATION

WHEN INSTALLING THIS PRODUCT...

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out product operation as provided in these instructions.

CAUTION

Disconnect power supply before beginning installation to prevent electrical shock and equipment damage.

LOCATION

Install the thermostat in a location where it will sense the average room temperature. Mount the thermostat about 5 feet [1.5 metres] above the floor on an inside wall. Standard models must be mounted vertically unless supplied with a horizontal scaleplate. TRADELINE models may be mounted either horizontally or vertically.

If using a Q651 Subbase, refer to the instructions packed with the subbase.

MOUNTING

TRADELINE ONLY

The T6051A and the T6052A,B may either be mounted horizontally or vertically. If mounting horizontally, the cover plate must be changed. To remove vertical cover plate, bend 4 corner tabs to outside and push out cover. Place horizontal cover plate on frame and bend 4 corner tabs to inside (Fig. 2).

CAUTION

The T6052A has two-stage capability. Each stage's output contacts have a current rating of 16 amps at 120V ac (for a total of 32). The Q651 Subbase total contact rating is 16 amps at 120V ac. For this reason, the Q651/T6052A combination is not Underwriters Laboratories Inc. approved. If the T6052A is used with a Q651 Subbase, ensure that the actual contact current does not exceed the total (16 amps) contact rating of the Q651.

ALL STANDARD MODELS EXCEPT T6051B

1. Mount a 2 x 4 inch outlet box either vertically or horizontally, depending on the model used. Models with vertical faceplate mount on vertical outlet box; models with horizontal faceplate mount on horizontal outlet box.

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The DeltaNetwork Micro Central/Excel Plus System addresses the building-management-system needs of a broad spectrum of buildings. The System consists of up to 16 DeltaNet Micro Central/Excel Plus subsystems. A Honeywell AP-X Personal Computer (PC) is the IBM-compatible central in each subsystem. A subsystem consists of a Tier 3 processor (the PC) that connects through a W7053 Gateway to Tier 2 distributed processors including the DeltaNet R7044 Excel Plus Controller ("R7044") and DeltaNet FS90 Fire & Security Systems ("FS90"). Tier 2 processors connect, in turn, to Tier 1 sensors and actuators. Tier 3 functions include historical data collection, Colorgraphics, bar charting, curve plotting, report generation, and a variety of third-party programs. Tier 2 R7044 functions include point processing (e.g., alarm detection), Direct Digital Control, energy management, and time/holiday scheduling. Tier 2 FS90 functions include stand-alone operation, emergency audio communication, and intelligent sensor input. Communication options include direct connect, dialup, leased line, and fiber optics.

- Flexible architecture
- DeltaNetwork peer bus, R7044 peer bus
- Dialup and leased-line connection to remote W7053s
- Interactive operator interface software
- User-language system penetration
- Distributed energy management and control programs in R7044
- Distributed fire and security monitoring and control
- UL Grade AA high-security line supervision
- Fire and security point reporting by zone or individual sensor
- Operator privilege levels and segregation
- Full Colorgraphic software package
- Historical storage and data management software
- Proven third-party software options
- Interfaces to existing systems

FITZPATRICK & LOGG, INC.

DeltaNetwork Micro Central/Excel Plus System

DESCRIPTION

The DeltaNetwork Micro Central/Excel Plus System ("DeltaNetwork") addresses the building-management-system needs of a broad spectrum of buildings through a flexible architecture that allows networking of personal-computer-based subsystems. The System consists of up to 16 DeltaNet Micro Central/Excel Plus ("Micro Central") subsystems. A Honeywell Personal Computer (PC) is the IBM-compatible central in each subsystem. A subsystem consists of a PC that connects through a W7053 Gateway ("W7053") to distributed processors including the DeltaNet R7044 Excel Plus Controller ("R7044") and DeltaNet FS90 Fire & Security Systems ("FS90").

Flexible Architecture:

DeltaNetwork can be configured to handle very large, integrated systems (20,000 points maximum). This configuration includes up to 16 Micro Central configurations networked together via a network communication bus and/or a Leased-Line Interface (LLI) bus. Each Micro Central subsystem on the network supports all the hardware components of a Micro Central configuration. Subsystems can control just HVAC systems, just fire alarm systems, security systems, or integrated HVAC and Fire and Security (F&S) systems.

DeltaNetwork Micro Central/Excel Plus System Components.

Component	Description
Honeywell PC	Supports a color monitor, 132-column printer, 30- to 64-megabyte Winchester disk, 1.2-megabyte diskette, and dial in from a remote Honeywell PC or monochrome CRT. The PC is UL listed as a primary terminal in fire alarm systems.
W7053 Gateway ("W7053")	Microprocessor-based interface between the PC and buses (DeltaNetwork, R7044 peer, and/or F&S). The W7053 also offers ports for directly-connected operator terminals (monochrome CRTs and printers).
Peer Bus	Bus connecting R7044s. Bus devices use Honeywell Distributed Bus Control (HDBC) token-passing peer protocol.
DeltaNetwork Bus	Bus that connects Micro Central subsystems. It employs HDBC peer protocol.
F&S Bus	Redundant F&S bus connecting multiple F&S systems. Applies to F&S systems only.
R7044A Controller	Distributed control processor incorporating point-processing software (e.g., alarm detection and reporting), Direct Digital Control (DDC) programs, and a variety of energy conservation and control programs. Comes in Subpanel and Enclosure Models.
R7044B Controller	A higher-density R7044 with increased point capacity. Comes in Subpanel and Enclosure Models.
R7044C Controller	R7044 Input/Output Expansion Board (IOEB). It provides a 32-point addition to the R7044A.
R7044D Controller	R7044 with 40-point capacity.
R7044E Controller	R7044 with 64-point capacity.
Matrix Boards	Optional boards that attach to an R7044A or B to expand its digital input point capacity. Matrix Boards come in 8 x 2 and 8 x 8 configurations.
W1044 Excel Plus Operator Terminal (P.O.T.)	Optional hand-held or door-mounted, plug-in terminal for direct access to an R7044. Users can display and modify point and operation data.
W1045 Excel Plus Portable Programming Terminal (PPT)	Optional PC-based portable terminal that connects to an R7044 and allows users to change R7044 data, compile DDC programs, download them into the R7044, enable/disable them, and restore a previous program version.
FS90 F&S Panel	Microprocessor-based interface to fire alarm and security points. FS90 Systems supervise all lines for alarms, tampering, and trouble. Reporting is by zone or individual intelligent sensors. Functionality includes emergency audio, central fire command stations, security functions, secure/access switching, and UL Grade AA high-security line supervision.
Remote System Interface Unit (RSIU)	Optional microprocessor-based unit that allows a W7053 Gateway to communicate with a maximum of 6 R7044s via dialup or leased lines. See DeltaNet Micro Central/Excel Plus Dialup Specification Data Sheet 74-5814 for details. Can be used in configurations that also include W7053 Gateway dialup.

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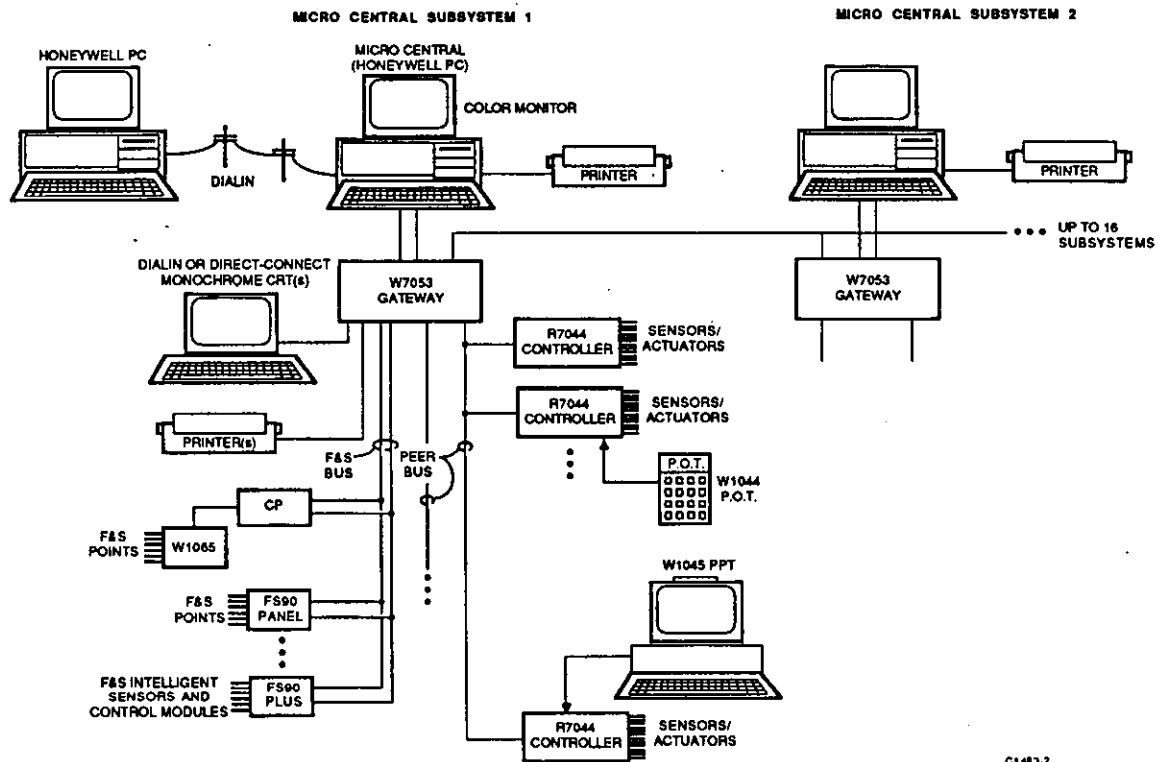
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DeltaNetwork Micro Central/Excel Plus System

DeltaNetwork Peer Bus, R7044 Peer Bus:

The DeltaNetwork bus and the R7044 bus employ a token-passing peer protocol that gives each device equal bus access. All devices have error-recovery and bus-initialization capabilities. In other protocols, bus communication stops when a central monitor goes off-

line. With peer protocol, it continues as long as there are at least two operating devices on the bus. Thus system communication continues even under severe conditions when multiple distributed processors go off-line due to power outages or other circumstances. Software treats an LLI bus just like an extension of a DeltaNetwork bus.



DeltaNetwork Micro Central/Excel Plus Configuration.

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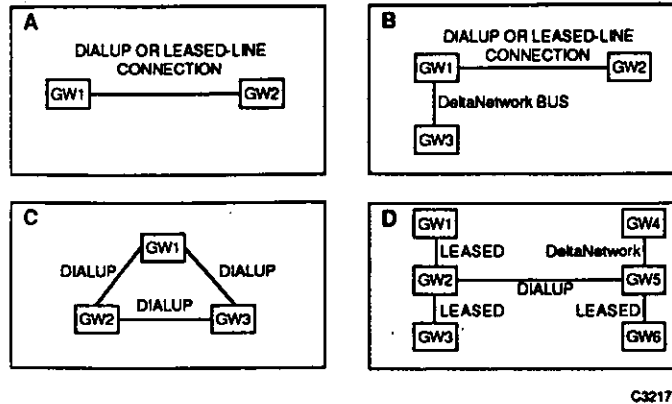
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Dialup and Leased-Line Connection to Remote W7053s:

W7053 subsystems can communicate via Hayes-compatible modems connected to W7053 ports in a variety of configurations that can include a DeltaNetwork bus, dialup, and/or leased-line buses. Any W7053 can talk to any other W7053 either directly or through an

intermediate W7053. User-defined parameter files specify communication data (e.g., primary and backup phone numbers, calling passwords, baud rate, times of day to call and report accumulated data, time interval between redials on unsuccessful calls, maximum number of redials).

DeltaNetwork Micro Central/Excel Plus System



Sample Communication Configurations (GW=W7053 Gateway).

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If desired, alarms of a user-specified criticality and/or priority can cause automatic dialup to other W7053s. Less important data can accumulate until the holding buffer is 80 percent full, one of the daily reporting times occurs, or an automatic dialup establishes a connection. Users can control connect charges by specification of the desired mix of automatic-dialup and buffered information. Also, a programmed idle time can cause automatic disconnect when activity ceases on a connection.

Interactive Operator Interface Software:

The conversational operator interface provides:

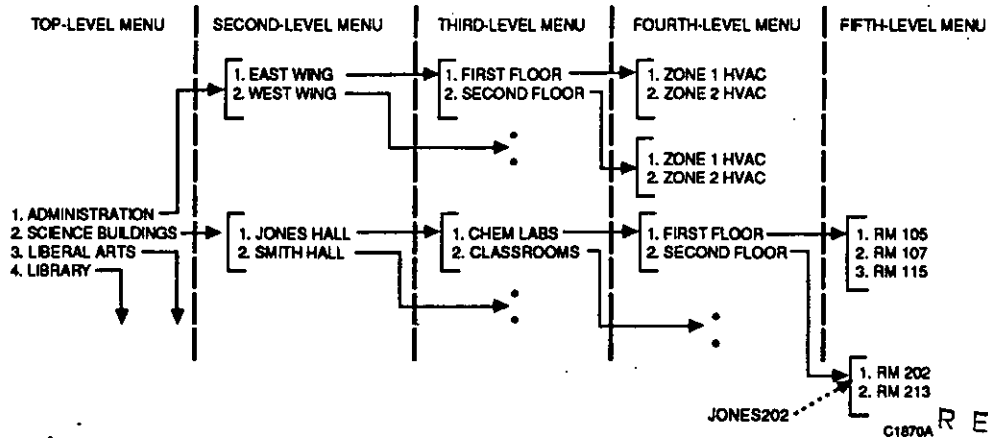
- Operator access procedure to inhibit unauthorized users; restricted access to menu items based on operator privilege level
- Text in English or other language; keynames for quick access
- Logical grouping of points; logical groups can include points from different subsystems
- Point data display and command; segregation of point messages based on point type and message type
- Access, if authorized, to any point in the system (any point in any subsystem)

- Prioritized alarm and trouble reporting; single and multiple alarm acknowledgement
- Alarm lockout based on state of origin point, programmed delay, or operator request
- On-line data modification and enable/disable of application programs
- Holiday programming
- Automatic daylight savings time changeover
- Wide variety of system reports including all system points, alarm summary, disabled points, commandable points, run-time summary, and trend
- On-line trace of application program point commands.

User-Language System Penetration:

Penetration to either site data or data modification templates is via easily understood menus in the user's own language. Proficient operators may wish to use rapid-penetration techniques, e.g., entering a unique keyname to reach a frequently displayed group of points. For example, the keyname for Room 202 in Jones Hall might be JONES202. Keynames are on-line modifiable. DeltaNetwork has a single menu penetration scheme. Operators who work at different terminals do not have to learn multiple penetration paths.

DeltaNetwork Micro Central/Excel Plus System



Sample Site Menu Penetration (Not All Menus Shown).

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Distributed Energy Management and Control Programs in R7044:

A library of energy conservation and control programs can execute in the R7044s. Programs can read shared inputs from other R7044s in the same subsystem. They command outputs in their own R7044s. Library programs are:

DUTY CYCLING

Reduces electrical energy consumption. A compensation algorithm measures deviation from comfort midpoint and adjusts equipment OFF as a function of the deviation. Staggered cycle periods of various Duty Cycling loads maintain total electrical load at a nominal level.

DISTRIBUTED POWER DEMAND CONTROL

Monitors and predicts the rate of energy usage. R7044s automatically shed preassigned, prioritized loads to avoid exceeding a maximum demand level and to avoid surcharges.

ENTHALPY CONTROL

Automatically selects the air source (outdoor or return) requiring the least cooling as the supply to the cooling coil.

LOAD RESET

Ensures that primary source temperatures are just high or low enough to satisfy the heating or cooling needs of the worst-case zone.

OPTIMUM STOP

Maintains a dynamic history of building temperature drift rate to determine optimum equipment shutoff time.

UNOCCUPIED PERIOD PROGRAMS

Includes three interrelated subprograms: Optimum Start, Night Cycle, and Night Purge. Using data from past start-ups, Optimum Start turns on heating or cooling equipment no sooner than necessary to prepare the building for occupancy. Night Cycle operates heating and cooling equipment to maintain a minimum low limit (heating) and/or high limit (cooling) during the unoccupied period. Night Purge uses early morning air, if appropriate, to precool a building before mechanical cooling begins.

ZERO ENERGY BAND

Shuts off heating and/or cooling energy sources whenever space temperatures fall within a predefined comfort zone.

DIRECT DIGITAL CONTROL PROGRAMS

Execute site-specific control sequences to control HVAC systems using Proportional (P), Proportional-Integral (PI), or Proportional-Integral-Derivative (PID) algorithms. Programs can include DDC "operators" like adaptive (self-tuning) control and pretested control loops like hot-water reset. On-line programming facilities permit users to change programs and downline load them.

DeltaNetwork Micro Central/Excel Plus System

RUN-TIME PROGRAMS

Monitor equipment and report when it exceeds the predefined total ON or OFF time or number of cycles (transitions from OFF to another state or from another state to OFF).

TIME/EVENT PROGRAMS (TEPs)

Issue point commands based on start/stop schedules, point alarm, or point change-of-state. Central TEPs perform the same functions on a system-wide basis that distributed TEPs perform in an R7044. In a central TEP, initiator and command points can be any points in any subsystem.

Distributed Fire and Security Monitoring and Control:

An F&S or integrated system can include one or more F&S products:

- Communications Processors, Input/Output Multiplexers, and W1065A Data Gathering Panels.
- DeltaNet FS90 F&S System with features that include zone alarm and disconnect; supervision/water flow indication; coding of audible signals; alarm verification and second detector functionality; time delay and time cutoff; alarm follow and alarm latch; municipal trip; supervised command outputs; security monitoring and control; secure/access switching; and UL Grade AA high-security line supervision.
- DeltaNet FS90 Fire Management System, which provides audio evacuation and communication functions. Features include all the features of FS90 F&S plus a Fire Command Station that gives fire fighters control over the fire situation through manual evacuation signaling, selective public address, override of automatic smoke control, and optional two-way telephone communication.
- DeltaNet FS90 F&S Plus System, which can monitor and control up to 975 individually addressable F&S devices. The intelligent interface on this System makes it possible to evaluate and respond to information from individual points rather than zones.

All F&S systems continue stand-alone operation if communication with the central is lost. Local visual and/or audible signals operate in addition to alarm tones and displays.

FS90 F&S Systems connected to Micro Central subsystems also provide Logical Point Groups (LPGs) and event-initiated program functionality. An LPG consists of up to 15 points from various Boards whose alarms activate a logical point. Users can specify how

many of the 15 points must be in alarm before the logical point goes into alarm. Up to 255 event-initiated programs per FS90 Panel command 1 through 32 points each based on user-specified conditions (e.g., prealarm, alarm, no response, return to normal) of user-specified initiator points.

Fire and Security Point Reporting by Zone or Individual Sensor:

Traditional F&S systems report alarm and trouble conditions by zone. With DeltaNet FS90 F&S Plus System ("FS90 Plus"), each Micro Central subsystem can communicate with up to nine Intelligent Loop Interface Boards, each of which can have two 2-wire or one fault tolerant (4-wire) circuit. Each circuit can address 99 sensors plus 99 control modules (points). A Communication/Display Board reports their addresses, smoke sensor sensitivity level, and conditions individually to DeltaNetwork. Authorized operators can display point status and adjust alarm and prealarm thresholds and other parameters within UL limits and local code constraints. FS90 Plus can also evaluate analog information (e.g., smoke density), respond appropriately, and adjust alarm thresholds based on occupancy times.

Operator Privilege Levels and Segregation:

To select a menu item, one of an operator's personal access levels must match the menu item access level. Thus operators have access to all menus and templates necessary for their day-to-day assignments, but not to items beyond their expertise. As work assignments change, supervisors can change operator levels to provide access to the necessary menus.

A segregation scheme for displays and reports limits the points an operator is authorized to command. Operators, points, and CRTs are assigned to one or more segregation groups. These groups are user-defined and completely arbitrary. For example, they can be broad (all fire points, all physical education buildings) or narrow (all fume hood airflow sensors, greenhouse humidity sensors). On a request for a report, only those points with a segregation matching one of the operator's segregations appear in the output.

Full Colorgraphic Software Package:

A library of standard symbols and a graphics package using familiar icon techniques make on-line construction of graphics easy. Users can then assign points to graphics and specify the graphics associated with alarms. When an alarm occurs, operators press a function key to display the assigned graphic. Historical data can be put into pictorial form using the curve-plot and bar-chart features of a spreadsheet program.

DeltaNetwork Micro Central/Excel Plus System

Historical Storage and Data Management Software:

Through a menu interface, operators can enable storage of point data in a historical database and define report parameters. Reports cover the operator-specified time interval and type of point activity (e.g., alarms, returns to normal, all activity). With the selected data, users can spot patterns that help diagnose malfunctions or that indicate ways to improve building operation. Historical data also documents fire and security alarm occurrences for local authorities or insurance companies.

Historical data serves as the basis for energy auditing. Comparisons of energy usage can show the result of energy conservation measures and indicate where further efficiencies might lie.

Proven Third-Party Software Options:

While one DeltaNetwork window is dedicated to central operator interface functions, other windows can execute historical data collection or selected third-party software, such as spreadsheet or word processing programs. Operators can extract selected data from the data base for manipulation by selected third-party programs. Since it is easy to switch windows, operators maximize their productivity. Each Micro Central subsystem operates independently.

Interfaces to Existing Systems:

DeltaNetwork can interface to existing Sentara 324 and DeltaNet FS90 Fire & Security System product lines. Users with DeltaNet DELTA Professional Computer and DeltaNet Micro Central/Excel Systems can connect to the Honeywell PC so that access to DeltaNetwork is available from one window while access to other systems is available from others.

Software Licensing:

Before software delivery, the end user must execute a software license agreement.

SPECIFICATIONS

MICRO CENTRAL

Hardware:

Honeywell AP-X PC with a minimum of 640K of RAM, 30-megabyte (minimum) Winchester disk, 1.2-

megabyte diskette, Persyst DCP-88/VM* Distributed Communications Processing Module, and Tecmar Graphics Master color controller board

* Persyst is a registered trademark and DCP-88/VM is a trademark of Emulex Corporation

Environmental Limits:

Operating: 50 to 90F (10 to 32C)

Humidity: 20 to 80% rh noncondensing

Dimensions:

Height: 6.1 in. (155 mm)

Width: 21.2 in. (539 mm)

Depth: 16.5 in. (420 mm)

Weight: 39.5 lb (17.9 kg) for 1.2-megabyte diskette model

Software:

With W7053A: S959 Concurrent* DOS operating system, Access Manager* data file manager, DeltaNet PC Application Packages, terminal emulation, DeltaNet Pascal Compiler, and remote terminal dialin
With W7053B, C: S984 Concurrent* DOS operating system, Access Manager* data file manager, DeltaNet PC Application Packages, terminal emulation, DeltaNet Pascal Compiler, and remote terminal dialin

* Trademark of Digital Research, Inc

Optional Software:

Framework* integrated software program; 1-2-3† or SuperCalc§ spreadsheet programs
S501 DeltaNet Micro Central/Excel Plus Energy Auditor Spreadsheet (requires 1-2-3)
S502 DeltaNet Micro Central/Excel Plus Maintenance Manager
S799 DeltaNet Micro Central/Excel Plus Colorgraphic software
S966 DeltaNet Windowing Software I: Micro Central/Excel Plus and Micro Central/Excel
S967 DeltaNet Windowing Software II: Micro Central/Excel Plus and DeltaNet DELTA Professional Computer

* Trademark of Ashton-Tate

† Trademark of Lotus Development Corporation

§ Trademark of Sorcim Corporation

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DeltaNetwork Micro Central/Excel Plus System

Approvals:

Approval Agency	Approvals
Underwriters' Laboratories Inc. UL864	
Fire Alarm Control Units (Category UOJZ)	Yes, for NFPA 71, 72A, 72B, 72C, 72D
Fire Alarm Releasing Device Control Units (Category SYZV)	Yes
Critical and Noncritical Process Management (Category QVAX)	Yes
Energy Management (Category UDTZ)	Yes
UL1076	
Proprietary Burglar Alarm System Control Units (Category UOJZ)	Yes, also suitable for Grade AA service
Factory Mutual (FM)	Yes—W7053A Pending—W7053B, C
Federal Communications Commission (FCC) Energy Emissions (Part 15 Subpart J)	Yes

T754-1

PERIPHERALS

CRTs:

PC monitor: Honeywell PC color monitor

Monochrome terminal: Zentec ADM 12

PC monitor dimensions:

Height: 13 in. (331 mm)

Width: 15.2 in. (386 mm)

Depth: 16.2 in. (412 mm)

Weight: 28.2 lb (12.8 kg)

Printer:

GNI3014 Wide-Carriage System Printer

Dimensions:

Height: 5.0 in. (127 mm)

Width: 24.7 in. (628 mm)

Depth: 15.6 in. (397 mm)

Weight: 34 lb (15.4 kg)

W7053 GATEWAY

Processor:

MC68000-based, 16-bit processor

Environmental Limits:

Operating: 32 to 120F (0 to 49C)

Humidity: 10 to 95% rh noncondensing

Enclosure:

W7053A:

Standard ring cabinet

Dimensions:

Height: 37-1/4 in. (947 mm)

Width: 24 in. (610 mm)

Depth: 9 in. (229 mm)

W7053B, C:

Custom, floor-mounted PC enclosure

Dimensions:

Height: 24-1/2 in. (623 mm)

Width: 9 in. (229 mm)

Depth: 17-1/2 in. (445 mm)

Ports:

W7053A:

8 ports maximum: 2 for Honeywell PC and PC printer, others configurable for additional PCs, buses (peer, F&S, leased-line, dialup), and directly connected CRTs and printers

W7053B, C:

2 ports for Honeywell PC and PC printer, 14 other ports maximum configurable for additional PCs, buses (peer, F&S, leased-line, dialup), and directly connected CRTs and printers

Modems:

Dialup 2400 baud: Hayes SmartModem 2400

Leased line 2400 baud: UDS 201BC/AS

Software:

W7053A: S962 DeltaNetwork/Micro Central Gateway Operating System

W7053B, C: S979 W7052/3B, C Gateway

Coprocessor Software

S980 W7053B, C Communication Software

COMMUNICATION BUSES

DeltaNetwork Bus:

18 AWG (0.823 mm²), 4000 ft (1219 m) expandable to 16,000 ft (4880 m) with optional Peer Bus Extension Board 14506400; twisted wire pair; ac-coupled RS-485 port; 9600 bits per second, synchronous transmission

Up to 16 W7053 Gateways per bus

R7044 Peer Bus:

18 AWG (0.823 mm²), 4000 ft (1219 m) expandable to 16,000 ft (4880 m) with optional Peer Bus Extension Board 14506400; twisted wire pair; ac-coupled RS-485 port; 9600 bits per second, synchronous transmission

Up to 29 R7044 Excel Plus Controllers per bus

F&S Communication Bus:

18 AWG (0.823 mm²), 4000 ft (1219 m) maximum; twisted wire pair; redundant RS-422 dc-coupled bus; 9600 bits per second, asynchronous transmission

Up to 29 FS90 F&S Panels per bus

DeltaNetwork Micro Central/Excel Plus System

R7044 EXCEL PLUS CONTROLLERS

Models:

- R7044A Excel Plus Controller. Comes in Subpanel and Enclosure Models.
- R7044B Excel Plus Controller (high-density version). Comes in Subpanel and Enclosure Models.
- R7044C Input/Output Expansion Board only (32 points)
- R7044D Excel Plus Controller with 40-point capacity
- R7044E Excel Plus Controller with 64-point capacity

Processor:

MC68000-based, 16-bit processor

Points:

34 physical points per R7044A, 66 per R7044B, 32 per R7044C, 40 per R7044D, 64 per R7044E

Accessories:

- NEU-DK-16 Matrix Board (8 x 2) for up to 16 digital input points
- NEU-DK-64 Matrix Board (8 x 8) for up to 64 digital input points

Environmental Limits:

Operating: 32 to 122F (0 to 50C)
Humidity: 5 to 95% rh noncondensing

Enclosure:

- Subpanel (standard ring cabinet) model dimensions:
 - Height: 37-1/4 in. (947 mm)
 - Width: 24 in. (610 mm)
 - Depth: 9 in. (229 mm)
- Enclosure model dimensions:
 - Height: 18 in. (458 mm)
 - Width: 9-1/4 in. (235 mm)
 - Depth: 2-3/4 in. (70 mm)

Software:

- S963 R7044A, B Excel Plus Controller Operating System
- S982 R7044D, E Excel Plus Controller Operating System

FS90 F&S SYSTEM

Environmental Limits:

Temperature: 0 to 120F (-17 to 49C)
Humidity: 5 to 95% rh noncondensing

FS90 Panel:

- Up to four 14505102 Motherboards
- Up to 8 function boards per Motherboard

Enclosure:

- Single Enclosure:
 - Height: 24 in. (610 mm)
 - Width: 22-1/4 in. (566 mm)
 - Depth: 7-3/4 in. (197 mm)
- Double Enclosure:
 - Height: 38 in. (966 mm)
 - Width: 22-1/4 in. (566 mm)
 - Depth: 7-3/4 in. (197 mm)

Function Boards:

- AA—Initiator Board (two-wire); 4 points
- AB—Initiator Board (four-wire); 2 points
- AC—Initiator Board (four-wire); 4 points
- AD—Digital Input Board; 8 points
- AE—Intelligent Loop Interface Board
- AF—Security Initiating Board (with secure/access switches); 4 points
- AG—Security Initiating Board; 4 points
- AH—High-Security Line Monitor Board; 4 points
- BF—Indicator Board (two-zone, two-wire and two relays); 4 points
- BG—Indicator Board (two-zone, four-wire); 2 points
- CA—Control Board
- CC—Audio Control Board
- CE—Phone Control Board
- DA—Accessory Relay Board (normally open contacts only); 4 points
- DC—Accessory Relay Board (selectable normally open or normally closed contacts); 4 points
- DB—Remote Driver Board; 8 points
- LA—Communication Board
- LJ—Communication/Display Board
- SB—Audio Select, one-channel; 4 speaker circuits
- SH—Audio Select, two-channel; 4 speaker circuits
- SD—Phone Select; 4 phone circuits
- SF—HVAC two-position; 4 switches
- SK—HVAC three-position; 4 switches
- VA—Transmitter Board

Software:

- S958 DeltaNet FS90 Fire & Security Operating System
- S977 DeltaNet FS90 AE Intelligent Loop Interface Board Operating System
- S976 DeltaNet FS90 LJ Communication/Display Board Operating System

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DELTA NETWORK & ASSOCIATES, INC. 74-5251

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FITZPATRICK & ALCOCK, INC.

Honeywell

In the USA: Honeywell Plaza, Minneapolis, Minnesota 55408
In Canada: Scarborough, Ontario M1P 2V9
Subsidiaries and Affiliates Around the World

74-5251

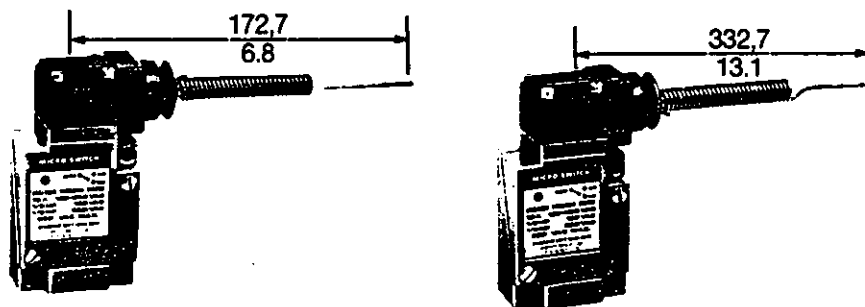
Commercial Bldg Group
MLF TAB: IV, O. 3.

Printed in USA

7-89

LZ Enclosed switches

WOBBLE ACTUATED SWITCHES



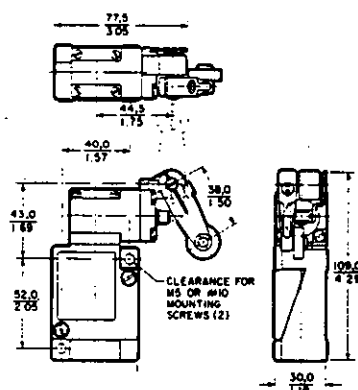
ORDER GUIDE

	Plastic Rod	Spring Wire
Complete Switch	LZJ3-7B	LZJ3-7M
Wobble Lever, Head and Body	LZZ7J3-7B	LZZ7J3-7M
Base Receptacle only	LZZ41	LZZ41

OPERATING CHARACTERISTICS

Pretravel, max.	25.4 mm (1.0 in.)	76.2 mm (3.0 in.)
Operating Force	1.95 Newtons (7.0 oz.)	1.11 Newtons (4.0 oz.)

SIDE LEVER ACTUATED SWITCHES



The lever bracket may be positioned with the lever swivel pivot facing up, down, to the right or to the left.

When the complete switch is ordered, it is furnished with a LZZ56C lever (nylon roller) assembled to the bracket. The lever swivel pivot faces up, as shown in the photo. To specify other assembled positions, contact your nearest MICRO SWITCH Sales Office.

Levers can also be ordered separately. See order guide.

ORDER GUIDE

Complete Switch (w/LZZ56C lever)	LZL1-6C
Operating Head and Lever Bracket Only (w/o lever)	LZZ1M*
Switch Body	LZZ21
Base Receptacle Only	LZZ41

*To order lever, refer to chart below.

**When force is applied to long axis of LZZ56 lever.

LEVERS FOR SIDE LEVER SWITCHES

Description	Catalog Listing
Standard lever with nylon roller	LZZ56C
Lever with sintered steel roller	LZZ56D

OPERATING CHARACTERISTICS

	Rotary Mode	Linear Mode**
Pretravel, max.	9.5°	6.2 mm (.24 in.)
Differential Travel, max.	0.5°	0.3 mm (.012 in.)
Overtravel, min.	15°	10.3 mm (.41 in.)
Operating Force/Torque, max.	Torque: 0.25 Nm (2.25 in. lb.)	Force: 6.6 Newtons (24 oz.)

GENERAL INFORMATION

Low force wobble actuated switches have flexible levers which may be operated by any movement, except direct pull.

The "operating head only" for these forms cannot be ordered separately, because of required factory adjustment of the operating head. However, the wobble lever, head, and body can be ordered as an assembled unit. See order guide.

When the complete switch or the wobble lever, head and body unit is ordered, the head is factory assembled with the actuator to the right side (when looking at the switch nameplate). To specify other assembled conditions, contact your nearest MICRO SWITCH Sales Office.

Use the plastic rod to avoid scratching or marring by the actuator. The spring wire version may be formed to meet special needs.

REPLACEMENT PARTS

Description	Catalog Listing
Std. neoprene plunger boot	LZZ44
Side lever bracket assembly (without lever)	LZZ43

ADAPTER PLATE

An adapter plate is available for retrofitting MICRO SWITCH BZE6 or BZG types and other enclosed switches.

Adapter Plate	LZZ42
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SWITCHES FOR SPECIAL APPLICATIONS

LZ switches are also available with all-fluorocarbon seals. Fluorosilicone seal boots can be furnished for low temperature use. Refer to Catalog 40.

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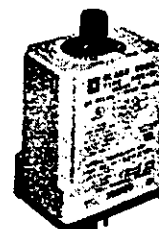
GENERAL PURPOSE TIMING RELAYS

SOLID STATE - TYPE JCK

CLASS 9050

Class 9050 Type JCK timing relays are designed to provide low cost timing in a plug-in housing. A CMOS integrated circuit on the Types JCK-11 thru -59 provides an accurate time delay. These timers are directly interchangeable with many other 8 and 11 pin tube base timers.

- Variable or Fixed Time Delay
- Transient Protected
- DPDT Contacts
- Programmable Range/Mode



Type JCK-11

VARIABLE TIME DELAY

Knob Adjustable Timing Range	On Delay	Price	Off Delay	Price	Interval	Price	One Shot	Price	Repeat Cycle	Price
0.1-10 Seconds	JCK-11	\$38.	JCK-21	\$48.	JCK-31	\$38.	JCK-41	\$48.	JCK-51	\$38.
0.3-30 Seconds	JCK-12	38.	JCK-22	48.	JCK-32	38.	JCK-42	48.	JCK-52	88.
0.6-60 Seconds	JCK-13	38.	JCK-23	48.	JCK-33	38.	JCK-43	48.	JCK-53	88.
1.2-120 Seconds	JCK-14	38.	JCK-24	48.	JCK-34	38.	JCK-44	48.	JCK-54	88.
1.8-180 Seconds	JCK-15	38.	JCK-25	48.	JCK-35	38.	JCK-45	48.	JCK-55	88.
0.1-10 Minutes	JCK-16	42.	JCK-26	52.	JCK-36	42.	JCK-46	52.	JCK-56	72.
0.3-30 Minutes	JCK-17	42.	JCK-27	52.	JCK-37	42.	JCK-47	52.	JCK-57	72.
0.6-60 Minutes	JCK-18	42.	JCK-28	52.	JCK-38	42.	JCK-48	52.	JCK-58	72.
1.2-120 Minutes	JCK-19	42.	JCK-29	52.	JCK-39	42.	JCK-49	52.	JCK-59	72.

Class 8501 Sockets for all Type JCK Timers are shown on page 258.

FIXED TIME DELAY

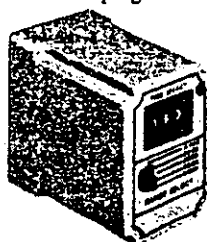
Timing Mode	Class 9050 Type	Timing Range (Seconds)	Price†
On Delay	JCK-1-F (XXXX)*	1 to 180 181 to 3600	\$38. 42.
Off Delay	JCK-2-F (XXXX)*	1 to 180 181 to 3600	48. 52.
Interval	JCK-3-F (XXXX)*	1 to 180 181 to 3600	38. 42.
One Shot	JCK-4-F (XXXX)*	1 to 180 181 to 3600	48. 52.
Repeat Cycle	JCK-5-F (XXXX)Δ	1 to 180 181 to 3600	68. 72.

* (XXXX) denotes desired timing period in seconds. Example: Class 9050 Type JCK-1-F60 is an On Delay timer fixed at 60 seconds.
Δ Fixed repeat cycle timers are supplied with the same On time and Off time.
† Orders must be in quantities of 5 or more.

PROGRAMMABLE TIMERS

Class 9050 Type JCK programmable timers are microprocessor controlled to provide flexibility with accurate timing. The Type JCK-60 is an On Delay timer that has 5 programmable timing ranges. The Type JCK-70 has 5 programmable timing modes and 5 programmable timing ranges.

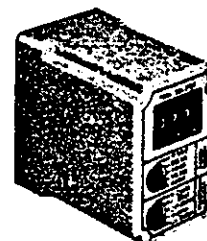
Timing Modes	Timing Ranges	Type	Price
On Delay	.05 to 9.99 sec. .1 to 99.9 sec. .1 to 999 sec. .1 to 99.9 min. 1 to 999 min.	JCK-60	\$74.



Type JCK-60

A 5 position rotary switch is used to select the timing ranges. The three pushbutton thumbwheels are used to select the time value.

Timing Modes	Timing Ranges	Type	Price
On Delay	.05 to 9.99 sec.	JCK-70	\$84.
Off Delay	.1 to 99.9 sec.		
Interval	.1 to 99.9 sec.		
One Shot	.1 to 99.9 min.		
Repeat Cycle	1 to 999 min.		



→ Type JCK-70

Two 5 position rotary switches are used to select the timing mode and timing range. The three pushbutton thumbwheels are used to select the time value.

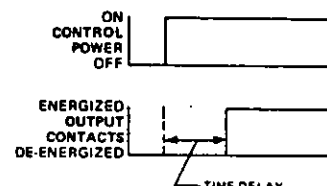
To program the timers, remove power and select the timing range and timing mode.

Settings of less than .05 second are not recommended due to the response time of the electromechanical outputs.

TIMING MODES

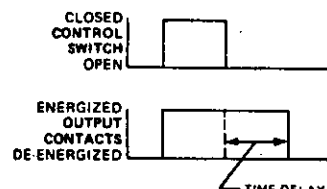
On Delay

When control power is applied, the time delay begins. At the end of the time delay, the output contacts energize. To reset, remove control power.



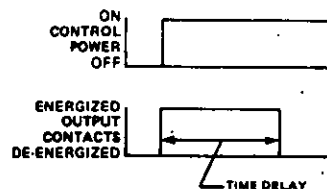
Off Delay

Control power is applied continuously. When the control switch is closed, the output contacts energize. Reopening the control switch begins the time delay. At the end of the time delay, the output contacts de-energize.



Interval

When control power is applied, the time delay begins and the output contacts energize. At the end of the time delay, the output contacts de-energize. To reset, remove control power.



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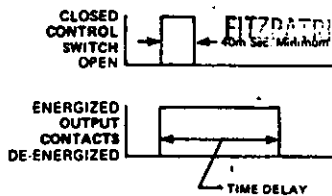
MAY 07 1992

GENERAL PURPOSE TIMING RELAYS

SOLID STATE - TYPE JCK

CLASS
9050

TIMING MODES

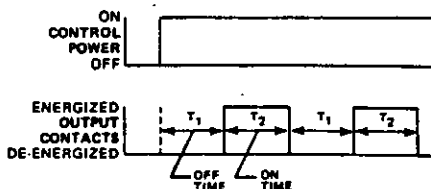


One Shot

Control power is applied continuously. When the control switch is momentary closed for at least 40 ms, the time delay begins and the output contacts energize. At the end of the time delay, the output contacts de-energize.

Repeat Cycle

When control power is applied, the T1 off-time begins. At the end of the T1 off-time, the output contacts energize and the T2 on-time begins. At the end of the T2 on-time, the output contact de-energizes and the T1 off-time begins again. This cycle will continue until control power is removed.



For the Type JCK-20 and -40 series, the normally open control switch is wired from terminal 5 through the control switch to terminal 6 or terminal 7. For the Type JCK-70, the control switch is wired from terminal 5 through the control switch to terminal 6.

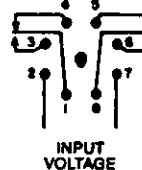
APPLICATION DATA

CONTACT RATINGS

AC Volts	AC Amperes				HP	DC Volts	DC Amperes		
	Inductive 35% P.F.			Res. 75% P.F. Make Break and Continuous			Inductive		Res. Make Break and Continuous
	Make	Break	Continuous				Make	Break	
120	30	3	10	10	1/3	30	3	3	10
240	15	1.5	10	10	1/2				

Type:
JCK-11 thru -19
JCK-21 thru -39
JCK-41 thru -59
JCK-60

Type:
JCK-21 thru -29
JCK-41 thru -49
JCK-70



INPUT VOLTAGE



INPUT VOLTAGE

— terminal 5 and terminal 10 are internally jumpered

TYPE JCK-11 THRU -59

Operating Voltages: 120VAC/110VDC, 48VAC/DC, 24VAC/DC and 12VAC/DC are available. The timers are dual rated AC/DC. This allows a timer to operate on either an AC or DC voltage.

Voltage Range: AC operation, + 10%, - 15% of nominal at 50 thru 400 Hz

DC operation, + 10%, - 20% of nominal

Repeat Accuracy: $\pm 1\%$ for constant voltage and temperature. $\pm 10\%$ for any variation of voltage and temperature within specifications.

Reset Time: On Delay, Interval and Repeat Cycle, 100 milliseconds typical and 125 milliseconds maximum. Off Delay and One Shot, 40 milliseconds.

Dial: At minimum setting the actual time delay may be less than specified and at maximum setting, the time delay may be up to 25% more than specified at 180 seconds or less and 35% more than specified for time delays greater than 180 seconds.

Output Contacts: DPDT Silver cadmium oxide

Burden: Maximum of 2 VA

Ambient Temperature Range:

Operating: -10°C to $+55^{\circ}\text{C}$ (14°F to 131°F)

Storage: -55°C to $+85^{\circ}\text{C}$ (-67°F to $+185^{\circ}\text{F}$)

Transient Protection: 2,000 volts for 100 microseconds

UL: Type JCK timing relays are UL Component Recognized under File E42259(M) Guide NKCR2

Input Compatibility: The Type JCK timer is not compatible with 2-wire AC input sensors. A hard contact relay (i.e. general purpose relay) must be interposed.

TYPE JCK-60 AND -70

Repeat Accuracy: $\pm 1\%$, $\pm .01$ seconds over specified timing range.

Setting Accuracy: $\pm 1\%$ of set time, $\pm .01$ seconds

Reset Time: 50 ms max. by power interrupt.

Operating Voltage: 120VAC, 24VAC $\pm 10\%$. 50/60 Hz, (For other voltages contact your local field office. 8 week delivery for non-stock voltages.)

Burden: 1.2VA max.

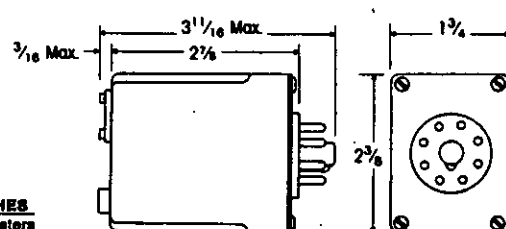
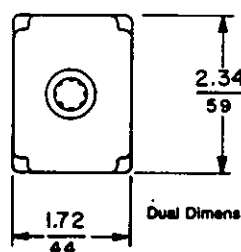
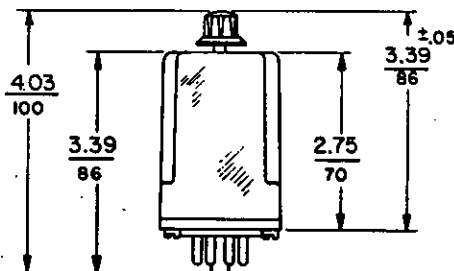
Ambient Temperature Range:

Operating: -23.3°C to $+54^{\circ}\text{C}$ (-10°F to $+130^{\circ}\text{F}$)

Storage: -23.3°C to $+71^{\circ}\text{C}$ (-10°F to $+160^{\circ}\text{F}$)

Output Contacts: DPDT

Transient Protected: 30 joule metal oxide varistor
UL Listed and CSA Certified.



Dual Dimensions: INCHES
Millimeters

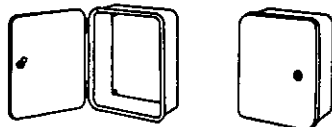
Class 8501 Sockets for all Type JCK Timers are shown on page 258.





NEMA INSTRUMENT ENCLOSURES

NEMA TYPE 12 INSTRUMENT ENCLOSURES



Designed to house a variety of electrical and electronic controls, instruments and components in indoor environments where dust, dirt, oil, water, or other contaminants may be encountered. Extra-deep cover is ideal for mounting meters or gauges. Smooth, blended surfaces and attractive finish complement high tech electronic equipment. Units drawn 16-gauge steel with no welded seams or sharp corners, holes or conduit knockouts. Covers removable and interchangeable with lift-off hinges with low-profile oil-tight quarter-turn latches which hold cover securely closed. They also feature oil-resistant gaskets, and weldnuts are provided for mounting optional panels. Order optional type A panels separately on this page. Finished with textured beige polyester powder coating inside and out, over phosphatized surfaces. Units meet industry standards IEC 529, IP65.

Stock No.	Type	HxWxD	Type A Panel	Each
89F5305	D-664IS	6.00x6.00x4.00"	A-6P6	25.01
89F5306	D-664IS	6.00x6.00x4.00"	A-8P6	27.34
89F5307	D-1064IS	10.00x6.00x4.00"	A-10P6	31.21
89F5308	D-12104IS	12.00x10.00x4.00"	A-12P10	38.57
89F5309	D-666IS	6.00x6.00x6.00"	A-6P6	27.85
89F5400	D-666IS	6.00x6.00x6.00"	A-8P6	30.86
89F5401	D-1066IS	10.00x6.00x6.00"	A-10P6	37.22
89F5402	D-12106IS	12.00x10.00x6.00"	A-12P10	44.76
89F5403	D-12108IS	12.00x10.00x8.00"	A-12P10	49.89

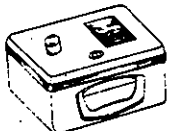
NEMA TYPE 12 & 13 LATCH BOXES



Designed to house electrical and electronic controls, instruments and components in indoor environments where dust, dirt, oil, water or other contaminants may be encountered. Feature lift-off hinges and quick-release latches that assure a tight seal. Oil-resistant gasket. Removable and interchangeable covers. Weldnut provides for mounting optional panels; which are ordered separately on this page. Finish: textured beige polyester powder coating inside and out over phosphatized surfaces. Units meet industry standards NEMA type 12 and 13, UL 508, IEC 529, IP65.

Stock No.	Type	HxWxD	Type A Panel	Each
89F5386	D-664DLB	6.00x6.00x4.00"	A-6P6	23.84
89F5387	D-664DLB	6.00x6.00x4.00"	A-8P6	25.87
89F5388	D-1064DLB	10.00x6.00x4.00"	A-10P6	31.21
89F5389	D-12104DLB	12.00x10.00x4.00"	A-12P10	37.42
89F5390	D-666DLB	6.00x6.00x6.00"	A-6P6	26.33
89F5391	D-666DLB	6.00x6.00x6.00"	A-8P6	28.39
89F5392	D-1066DLB	10.00x6.00x6.00"	A-10P6	35.22
89F5393	D-12106DLB	12.00x10.00x6.00"	A-12P10	43.33
89F5394	D-12108DLB	12.00x10.00x8.00"	A-12P10	47.19

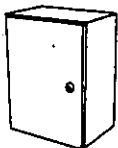
HANDLE KIT FOR DEEP DRAWN INSTRUMENT ENCLOSURES



Non-metallic handle for enclosures which contain portable equipment. Kit includes four rubber bumpers which mount on back of enclosure to protect exterior finish. All mounting hardware and complete installation instructions are provided. Handle shown is mounted on enclosure, for display purposes and is not included.

89F5410, Type D-HDLK Each 8.75

NEMA TYPES 4, 12 & 13 SINGLE-DOOR ENCLOSURES



Enclosures protect equipment from dirt, dust, oil, water or other contaminants. Also suitable in areas which may be regularly hoisted down. Units feature 16 gauge steel bodies and doors. Finished with textured beige polyester powder coating inside and out over phosphatized surfaces. Collar studs or panel mounting brackets are supplied with the enclosure for optional type A panel, which is ordered separately on this page. Units meet industry standards IEC 529 and IP65.

Stock No.	Type	HxWxD	Type A Panel	Each
89F5437	D-3L12H1206LPB	12.00x12.00x6.00"	A-12DLP12	84.41
89F5438	D-3L18H1206LPB	18.00x12.00x6.00"	A-16P12	95.44
89F5439	D-3L18H1606LPB	18.00x16.00x6.00"	A-16P16	102.81
89F5440	D-3L20H1606LPB	20.00x16.00x6.00"	A-20P16	110.17
89F5441	D-3L20H2006LPB	20.00x20.00x6.00"	A-20P20	118.89
89F5442	D-3L20H1608LPB	20.00x16.00x8.00"	A-20P16	116.21
89F5443	D-3L24H1608LPB	24.00x16.00x8.00"	A-24P16	117.82
89F5444	D-3L18H2006LPB	18.00x20.00x6.00"	A-20P18	116.21
89F5445	D-3L20H2006LPB	20.00x20.00x6.00"	A-20P20	125.58
89F5446	D-3L24H2006LPB	24.00x20.00x6.00"	A-24P20	134.97

1054 NEWARK

TYPE A STEEL PANELS

14 gauge steel with a white enamel finish. Complete with mounting hardware.

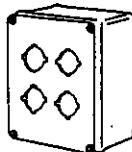
Stock No.	Type	HxW	Fits Box Size	Each
89F5421	A-6P6	4.86x4.88"	6.00x6.00x4.00, 6.00x6.00x6.00"	1.74
89F5422	A-8P6	4.86x6.75"	6.00x6.00x4.00, 6.00x6.00x6.00"	2.60
89F5423	A-10P6	6.86x6.75"	10.00x6.00x4.00, 10.00x6.00x6.00"	3.66
89F5424	A-12P10	8.86x10.75"	12.00x10.00x4.00, 12.00x10.00x6.00"	5.71
89F5425	A-12DLP12	9.00x9.00"	12.00x12.00x6.00"	6.00
89F5426	A-16P12	9.00x13.00"	16.00x12.00x6.00"	9.65
89F5427	A-16P16	13.00x13.00"	16.00x16.00x6.00"	11.70
89F5428	A-20P16	13.00x17.00"	20.00x16.00x6.00"	14.86
89F5429	A-20P20	17.00x17.00"	20.00x20.00x6.00"	16.86
89F5430	A-24P16	13.00x21.00"	24.00x16.00x6.00"	16.76
89F5431	A-24P20	21.00x17.00"	24.00x20.00x6.00"	21.80

TYPE A STEEL RACK PANELS

12 gauge steel with a white enamel finish. Order mounting hardware separately below.

Stock No.	Type	HxWxD	Each
89F5432	A-18RP6U	10.50x19.00"x24.00"	11.66
89F5433	A-18RP9U	15.75x19.00"x24.00"	13.76
89F5434	A-18RP12U	21.00x19.00"x24.00"	16.46
89F5435	A-18RP16U	26.00x19.00"x24.00"	22.30
89F7616	D-L10325	Mounting Hardware	8.66

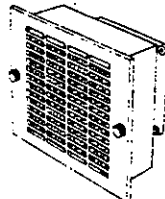
NEMA TYPE 4X PUSHBUTTON ENCLOSURES



NEMA type 4X pushbutton enclosures are designed to insulate and house standard "4-way" or miniature "4-way" pushbuttons in wet, dusty, and corrosive environments. Units feature high impact-resistant light gray polycarbonate bodies and molded-in polyurethane labyrinth gasket provides oil-resistant, water-tight and dust-tight seals. Units meet industry standard NEMA 4, 4X, 6, 12, and 13; IEC 529, IP67.

Stock No.	Type	Style	Holes	HxWxD	Each
89F5377	E-1PBCP7	Standard	1	3.99x2.81x3.10"	15.71
89F5378	E-2PBCP7	Standard	2	6.35x2.81x3.10"	21.62
89F5379	E-3PBCP7	Standard	3	8.72x2.81x3.10"	24.27
89F5380	E-4PBCP7	Standard	4	8.30x5.12x3.46"	26.64
89F5381	E-6PBCP7	Standard	6	8.66x5.12x3.46"	28.20
89F5382	E-1PBC7M	Miniature	1	3.99x2.81x2.31"	12.37
89F5383	E-2PBC7M	Miniature	2	5.17x2.81x2.31"	18.43
89F5384	E-3PBC7M	Miniature	3	6.35x2.81x2.31"	20.80
89F5385	E-4PBC7M	Miniature	4	8.72x2.81x2.31"	23.30

COOLING FAN PACKAGES



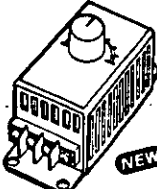
Designed for use in enclosures where space is limited and reliable cooling is required. Units powered by 115 or 230 volts AC, 50/60 Hz single phase motors and available with nominal airflows of 100, 240, 500 cubic feet per minute (CFM). The cooling fan package is designed to be the air inlet of a cooling system, while the exhaust grille and filter is the air outlet. Order exhaust grilles and filters separately below.

Stock No.	Type	CFM @ 50/60Hz	Watts	Volt- age	Ampe	Motor RPM	Each
89F5371	A-PA4AXFN	85/100	21	115	.29	2500/3000	67.20
89F5372	A-PA4AXFN2	85/100	22	230	.16	2500/3000	71.32
89F5373	A-PA6AXFN	200/240	33	115	.31	2850/3400	114.60
89F5374	A-PA6AXFN2	200/240	43	230	.19	2850/3400	118.80
89F5375	A-PA10AXFN	480/560	36	115	.35	1350/1650	169.25
89F5376	A-PA10AXFN2	480/560	36	230	.19	1350/1650	169.25

EXHAUST GRILLES AND FILTERS

Stock No.	Type	Description	Each
89F7613	A-EXGR4	For 85/100 CFM	31.79
89F7614	A-EXGR6	For 200/240 CFM	38.70
89F7615	A-EXGR10	For 480/560 CFM	44.75

TEMPERATURE CONTROL SWITCH

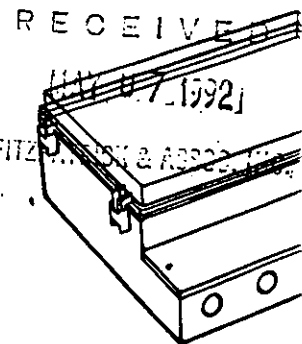


Designed to regulate Hoffman fan and blower packages. Temperature switch has an adjustable set point range of 70°F to 140°F (20°C to 60°C). When enclosure reaches the designated temperature, contacts in controller close and the fan starts. Housing is anodized aluminum. Three #10-32 UNF self-tapping screws are furnished for mounting. Terminal block has two #6-32 screw terminals with barriers. UL recognized.

89F7617 Type D-TEMA, Each 57.00

NEMA INST

NEMA TYPE 12 "PC5" INSTRUMENT ENCLOSURES



Designed to insulate and house ventilation controls, controls, humidity monitors, process controls, security systems in wet, dusty or corrosive environments. A board slots and 3-point mounting provisions, and a non-molded polycarbonate material which is easily removed. Removable polyamide hinges allow hinging clear polycarbonate cover to open 180°. Polycarbonate gasket assure water-tight and dust-tight seal, as well as components. Meet industry standards for enclosure IEC 529, IP65.

Stock No.	Type	HxWxD	Each
89F5353	A-975PC5	9.75x5.53x3.10"	4.86
89F5435	A-12105PC5	12.00x10.00x5.53"	7.48
89F5436	A-15136PC5	15.00x13.00x5.53"	8.86

NEMA TYPE 4, 4X, 12 & 13 "PC3" ENCLOSURES

Designed for use as insulated electrical junction boxes, terminal wiring boxes, instrument housings, electrical control boxes and pushbutton housings in wet, dusty or corrosive environments. Made from injection-molded polycarbonate material which can be easily punched, drilled, filed, or sawed. Threaded terminal pads are provided for mounting optional galvanized steel panels (order separately below), rail, and other components. Stainless steel screws included. Choose from opaque polycarbonate or injection-molded clear covers. Meet industry standards for enclosure flammability ratings. Rated UL94-V0 and IEC 529, IP67, NEMA type 4, 4X, 12 & 13.

ENCLOSURES WITH OPAQUE C

Stock No.	Type	HxWxD	Each
89F5359	A-685PC3	6.85x5.53x3.10"	6.85
89F5360	A-1185PC3	11.85x5.53x3.10"	10.39
89F5361	A-1585PC3	15.85x5.53x3.10"	14.33
89F5362	A-11115PC3	11.11x5.53x3.10"	10.12x
89F5363	A-15115PC3	15.11x5.53x3.10"	14.08x
89F5364	A-22115PC3	22.11x5.53x3.10"	21.14x

ENCLOSURES WITH CLEAR C

Stock No.	Type	HxWxD	Each
89F5365	A-685PC3CC	6.85x5.53x3.10"	6.85
89F5366	A-1185PC3CC	11.85x5.53x3.10"	10.39
89F5367	A-1585PC3CC	15.85x5.53x3.10"	14.33
89F5368	A-11115PC3CC	11.11x5.53x3.10"	10.12x
89F5369	A-15115PC3CC	15.11x5.53x3.10"	14.08x
89F5370	A-22115PC3CC	22.11x5.53x3.10"	21.14x

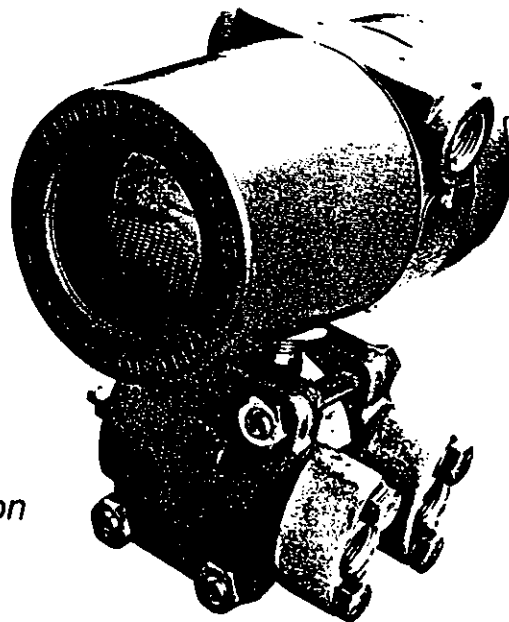
TYPE A GALVANIZED STEEL F

Stock No.	Type	HxWxD	Each
89F5443	A-68P3	5.83x5.83"x3.10"	6.85
89F5444	A-118P3	9.37x5.83"x3.10"	10.39
89F5445	A-158P3	13.31x5.83"x3.10"	14.33
89F5446	A-1111P3	9.37x9.37"x3.10"	10.12
89F5447	A-1511P3	13.31x9.37"x3.10"	14.08
89F5448	A-2211P3	20.35x9.37"x3.10"	21.14

Rosemount Inc. Measurement Division

Model 1151DP Alphaline® Differential Pressure Transmitter

- Ranges from 0-5 inH₂O to 0-750 inH₂O
- Compatible with any 2-wire system
- Solid-state, plug-in circuit boards
- Compact, rugged, impervious to vibration
- External span and zero adjustments
- 0.2% accuracy
- Up to 600% elevation and 500% suppression
- Adjustable damping



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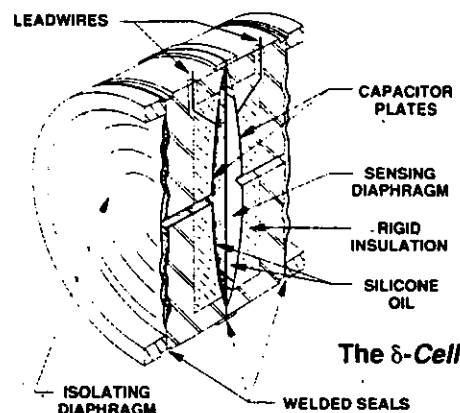
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FEATURES

The Alphaline® Differential Pressure Transmitter* brings true precision to the measurement of flow, level, low gage pressure, vacuum, and specific gravity. Direct electronic sensing with the completely sealed δ -Cell™ capacitance sensing element allows significant improvement in differential pressure measurement. Because mechanical force transfer is eliminated, performance is dramatically improved and problems with shock and vibration are drastically reduced. Welded stress isolation clamping in the sensor housing prevents introduction of errors due to stresses and torques on the process flanges and minimizes effects of line pressure and overpressure to 2000 psi (13.79 MPa).

Installation, calibration, and commissioning are simplified by compact design, external span and zero adjustments, and explosion-proof, weatherproof construction with separate compartments for electronics and wiring connections. Volumetric displacement of less than 0.01 cubic in. (0.16 cm³) prevents pumping of the process fluid and eliminates the need for condensate chambers and level pots. Tantalum, Hastelloy C, and Monel are available for corrosive service. Modular construction and plug-in printed circuit boards aid in troubleshooting and reduce parts stocking.



OPERATION

Process pressure is transmitted through isolating diaphragms and oil fill fluid to a sensing diaphragm in the center of the δ -Cell. The sensing diaphragm is a stretched spring element that deflects in response to differential pressure across it. The displacement of the sensing diaphragm, a maximum motion of 0.004 in. (0.10 mm), is proportional to the differential pressure. The position of the sensing diaphragm is detected by capacitor plates on both sides of the sensing diaphragm. The differential capacitance between the sensing diaphragm and the capacitor plates is converted electronically to a 2-wire, linear, 4-20 mA dc or 10-50 mA dc signal.

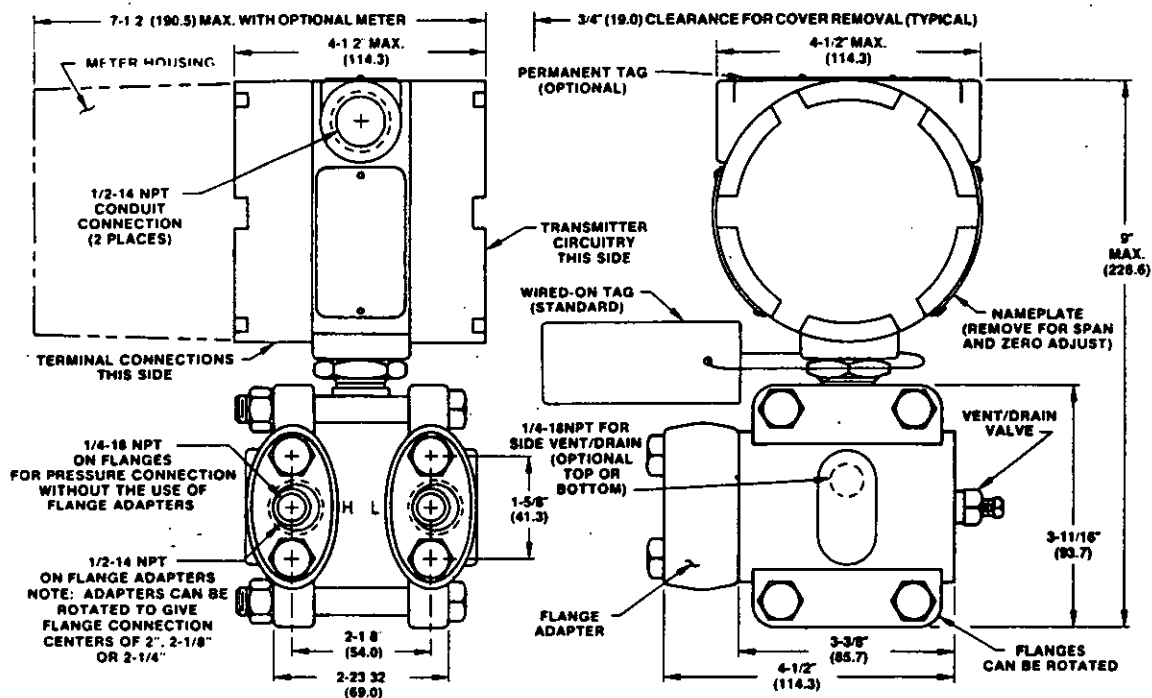
©Rosemount Inc., 1971, 1975, 1976, 1985, 1986, 1989.

*May be protected by one or more of the following U.S. Pat. Nos.

3,793,885; 3,800,413; 3,975,719; 4,339,750 and Re. 30,603. CANADA
PATENTED (BREVETE) 1974, 1975, 1976 and 1979.

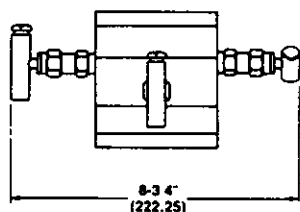
May Depend on Model. Other Foreign Patents Issued and Pending.

DIMENSIONAL DRAWINGS

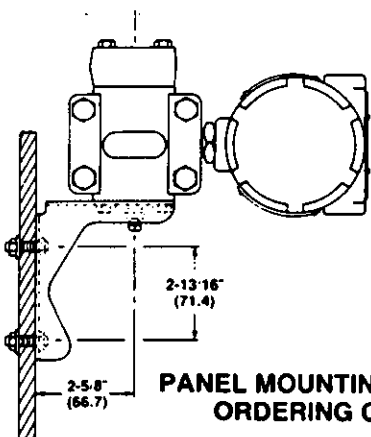


NOTE: MILLIMETERS IN PARENTHESES

OPTIONAL MOUNTING BRACKETS SHOWN IN TYPICAL MOUNTING CONFIGURATIONS

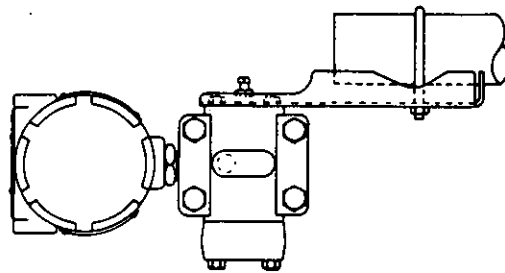
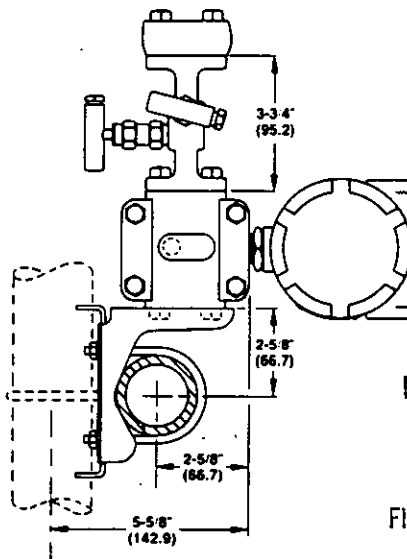


**MOUNTING BRACKET ORDERING CODE B1
AND OPTIONAL 3-VALVE MANIFOLD**



**PANEL MOUNTING BRACKET
ORDERING CODE B2**

NOTE: MILLIMETERS IN PARENTHESES



**FLAT MOUNTING BRACKET
ORDERING CODE B3**

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SPECIFICATIONS

FUNCTIONAL SPECIFICATIONS

Service

Liquid, gas, and vapor.

Ranges

0-5 to 0-30 inH₂O (0-1.24 to 0-7.46 kPa)

0-25 to 0-150 inH₂O (0-6.22 to 0-37.29 kPa)

0-125 to 0-750 inH₂O (0-31.08 to 0-186.45 kPa)

Outputs

4-20 mA dc or 10-50 mA dc.

Smart 4-20 mA dc (See PDS 2593).

1-5 V dc Low Power (See PDS 2447).

Power Supply

External power supply required.

4-20 mA dc: Transmitter operates on 12 to 45 V dc with no load.

10-50 mA dc: Transmitter operates on 30 to 85 V dc with no load.

1-5 V dc: Transmitter operates on 8 to 12 V dc with no load.

Load Limitations

See Figure 1.

Indication

Optional meter with 2 in. (50.8 mm) scale.

Indication accuracy is $\pm 2\%$.

Hazardous Locations

Factory Mutual (FM) Approvals

Explosion Proof: Class I, Divisions 1 and 2, Groups B, C, and D. Dust-Ignition Proof: Class II, Divisions 1 and 2, Groups E, F, and G. Suitable For Use In: Class III, Divisions 1 and 2. Indoor and outdoor use. NEMA 4X.

Canadian Standards Association (CSA) Approvals

Certified for Class I, Division 2, Groups A, B, C and D; Class I, Division 1, Groups C and D; Class II, Divisions 1 and 2, Groups E, F, and G; Class III hazardous locations; CSA enclosure 4, factory sealed.

Intrinsic Safety Approvals

FM and CSA certifications optional for specific Classes, Divisions, and Groups when connected with approved barrier systems. See summary in PDS 2360.

FM explosion proof tag is standard. Appropriate tag will be substituted if optional certification is selected.

Span and Zero

Continuously adjustable externally.

Zero Elevation and Suppression

Regardless of output specified, zero elevation and suppression must be such that neither the span nor the upper or lower range value exceed 100% of the upper range limit.

Maximum zero elevation is 600% of calibrated span.

Maximum zero suppression is 500% of calibrated span.

Temperature Limits

-20 to +200 °F (-29 to +93 °C) Amplifier operating.

-40 to +220 °F (-40 to +104 °C) Sensing element operating with silicone fill.

+32 to +160 °F (0 to +71 °C) Sensing element operating with inert fill.

-60 to +250 °F (-51 to +121 °C) Storage.

Static Pressure and Overpressure Limits

0 psia to 2000 psig (0 to 13.79 MPa) on either side without damage to the transmitter.

Operates within specifications between static line pressures of 0.5 psia and 2000 psig (3.44 kPa to 13.79 MPa) for silicone oil transmitters, and between atmospheric and 2000 psig (13.79 MPa) for inert fill transmitters.

10,000 psig (68.95 MPa) proof pressure on the flanges.

Humidity Limits

0 to 100% relative humidity.

Volumetric Displacement

Less than 0.01 cubic in. (0.16 cm³).

Damping

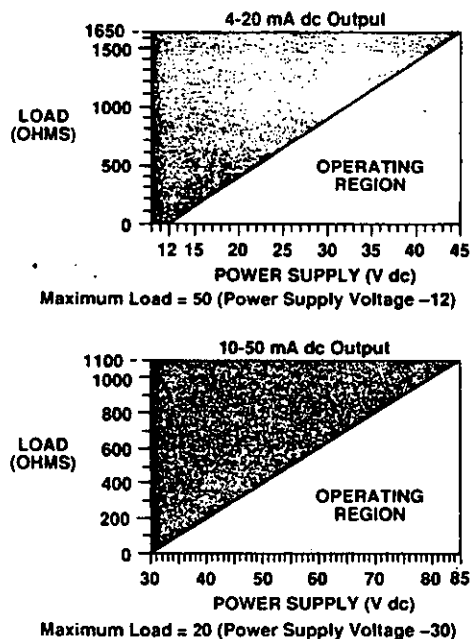
Time constant continuously adjustable between 0.2 and 1.67 seconds with silicone fill.

Inert fill: Higher time constant.

Turn-on Time

2 seconds. No warmup required.

FIGURE 1
LOAD LIMITATIONS



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PERFORMANCE SPECIFICATIONS

(Zero-based spans, reference conditions, silicone oil fill, 316 SST isolating diaphragms)

Accuracy

$\pm 0.2\%$ of calibrated span. Includes combined effects of linearity, hysteresis and repeatability.

Linearity

$\pm 0.1\%$ calibrated span.

Hysteresis

0.05% of calibrated span (0.1% for Range 5).

Dead Band

None.

Stability

$\pm 0.2\%$ of upper range limit for 6 months.

Temperature Effect

At maximum span: e.g., 0-150 inH₂O (0-37.29 kPa) for Range 4.

Zero Error: $\pm 0.5\%$ of span per 100 °F (55 °C).

Total effect including span and zero errors: $\pm 1.0\%$ of span per 100 °F (55 °C).

Note: Double the specified effect for Range 3.

At minimum span: e.g., 0-25 inH₂O (0-6.22 kPa) for Range 4.

Zero Error: $\pm 3.0\%$ of span per 100 °F (55 °C).

Total effect including span and zero errors: $\pm 3.5\%$ of span per 100 °F (55 °C).

Note: Double the specified effect for Range 3.

Static Pressure Effect

Zero Error: $\pm 0.25\%$ of upper range limit for 2000 psi (13.79 MPa). $\pm 0.5\%$ for Range 3. Correctable through rezeroing at line pressure.

Span Error: Correctable to $\pm 0.25\%$ of reading per 1000 psi (6.9 MPa), or to $\pm 0.5\%$ of reading per 1000 psi (6.9 MPa) for Range 3.

Vibration Effect

$\pm 0.05\%$ of upper range limit per g to 200 Hz in any axis.

Power Supply Effect

Less than 0.005% of output span per volt.

Load Effects

No load effect other than the change in power supplied to the transmitter.

Mounting Position Effect

Zero shift of up to 1 inH₂O (0.24 kPa) which can be calibrated out. No span effect. No effect in plane of diaphragm.

PHYSICAL SPECIFICATIONS

Materials of Construction†

Isolating Diaphragms

316L SST, Hastelloy C-276, Monel or tantalum.

Drain/Vent Valves

316 SST, Hastelloy C, or Monel.

Process Flanges and Adapters

Nickel or cadmium-plated carbon steel, 316 SST, Hastelloy C, or Monel.

Wetted O-rings

Viton. (Other materials also available)

Fill Fluid

Silicone oil or inert fill.

Bolts and Conduit Plug

Cadmium-plated carbon steel.

Electronics Housing

Low-copper aluminum. NEMA 4X.

Paint

Epoxy-polyester.

Process Connections

1/4 NPT on 2-1/8 in. (5.4 cm) centers on flanges. 1/2 NPT on 2 (5.08 cm), 2-1/8 (5.4 cm), or 2-1/4 in. (5.72 cm) centers with adapters.

Electrical Connections

1/2 in. conduit with screw terminals and integral test jacks compatible with miniature banana plugs (Pomona 2944, 3690 or equal).

Weight

12 pounds (5.44 kg) excluding options.

6-Cell, Alphaline, and Rosemount are registered trademarks of Rosemount Inc.

Terminology per SAMA Standard PMC20.1-1973.

†Monel is a trademark of International Nickel Co.

Hastelloy is a trademark of the Cabot Corp.

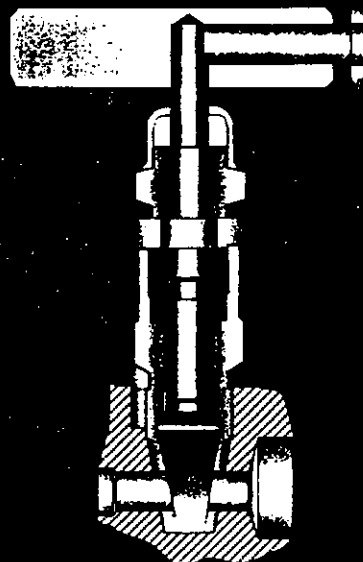
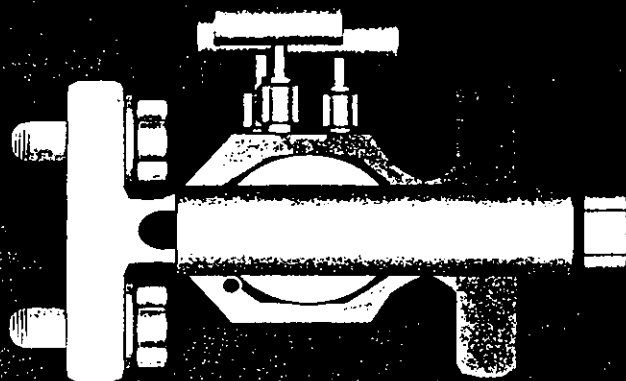
Viton is a trademark of E.I. Du Pont de Nemours & Co.

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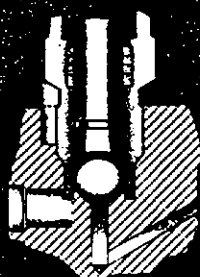
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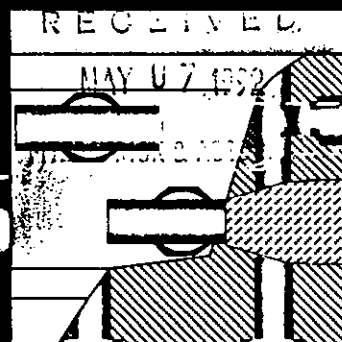
AGCO M6 Catalog



Soft Seat



Hard Seat



Anderson, Greenwood & Co.
A Subsidiary of Keystone International, Inc.

M6A, M6T, and M6TA Specifications

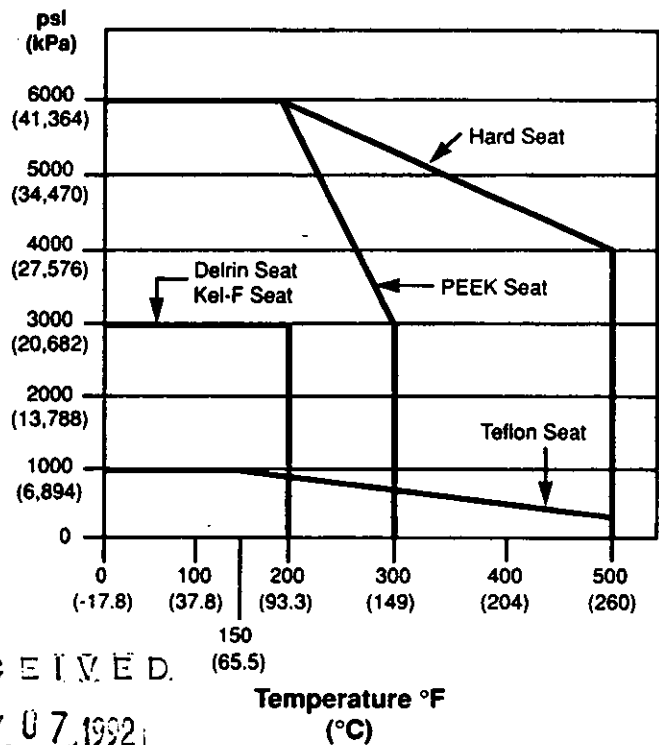
Technical Data

Pressure and Temperature Ratings		
Hard Seat	6000 psi @ 200°F	(41,364 kPa @ 93.3°C)
	4000 psi @ 500°F	(27,576 kPa @ 260°C)
Delrin & Kel-F Seat*	3000 psi @ 200°F	(20,682 kPa @ 93.3°C)
PEEK Seat	6000 psi @ 200°F	(41,364 kPa @ 93.3°C)
	3000 psi @ 300°F	(20,682 kPa @ 149°C)
Teflon Seat **	1000 psi @ 150°F	(6894 kPa @ 65.5°C)
	200 psi @ 500°F	(1378 kPa @ 260°C)

* May be rated 6000 psi @ 200°F without soft seats in the 3-valve by-pass arrangement.

** Process block valves only. Not available for by-pass valves.

Pressure vs. Temperature



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	Valve	Body**	Bonnet**	Stem Ball	Packing***	Seat
Hard Seat	C.S.	A108	A108	A581-303 17-4 PH	Teflon or Viton O-ring w/Teflon back up ring	---
	S.S.	A479-316	A479-316	A276-316 A276-316		
	S.G.			Monel 400 Monel K500		
Soft Seat	C.S.	A108	A108	A581-303 ---	Teflon or Viton O-ring w/Teflon back up ring	Delrin*
	S.S.	A479-316	A479-316	A276-316 ---		
	S.G.			Monel 400 ---		

* Kel-F, PEEK, and Teflon are available (Teflon packing patent protected).

** Carbon steel is Cadmium plated per Federal Spec. QQ-P-416, CL1, TPII. A105 body material for M6T and M6TA.

*** O-ring in equalizer valve is Buna-N.

Note: S.G. - Sour Gas - all Stainless Steel wetted parts are RC22 or less to meet requirements of NACE MR-01-75.

Manifold Ordering Information

	M6A	V	D	S	-	4	-	SG
Valve Type								
→ M6A - Pipe x Pipe								
M6T - Pipe x Flange								
M6TA - Flange x Flange								
M65A - Flange x Flange								
.375 Orifice (Standard)								
M65AR - Flange x Flange								
.405 Orifice (Optional)								
Packing								
→ V - Teflon*								
R - O-ring								
Seat								
<i>Soft:</i>								
V - Teflon (Block Valves only)								
→ D - Delrin								
E - PEEK								
K - Kel-F								
<i>Hard:</i>								
I - Integral (M6A, M6T, and M6TA only)								
S - Stainless Steel (M65A only)								
M - Monel (M65A only)								
Body Material								
C - Carbon Steel								
→ S - 316 Stainless Steel								
Process Connections								
M6A and M6T Only (Omit for M6TA, M65A, and M65AR)								
→ 4 - 1/2" FNPT								
Options Code/Description								
See Page 18								

* Patent Protected

Note: For Close Couple Fittings (NPT and Tube-Ended) and Adapter Kits, order by part number noted within respective tables or as part of ACCU-Mount System.

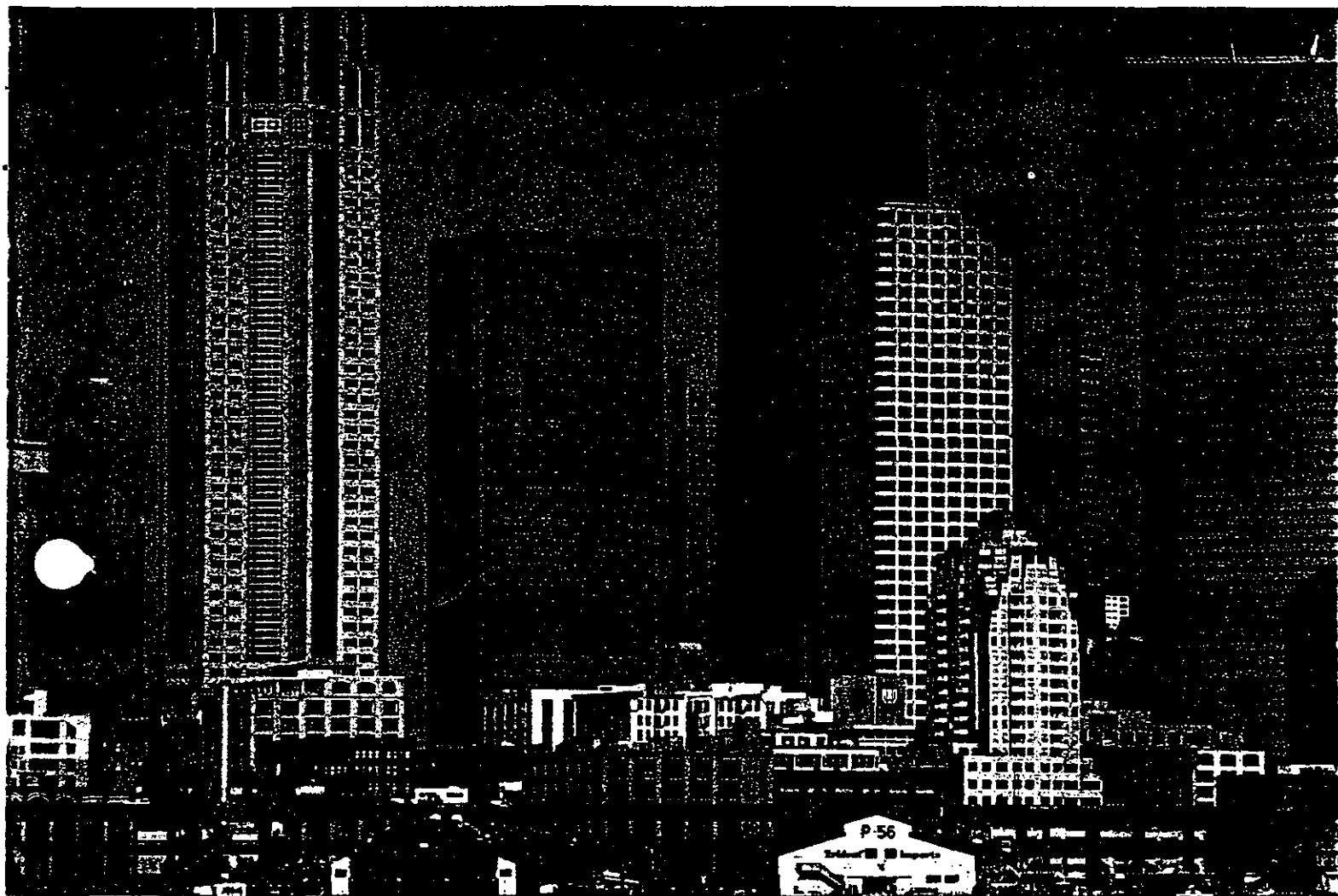
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INTERMATION & ALCOA, INC.

Teflon/Delrin - Products of DuPont
 Grafoil - A product of Union Carbide Corp.
 Kel-F - A product of 3M Company
 PEEK - A product of ICI Americas Inc.

Total air systems for climate control by Quincy



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FITZPATRICK & ALCOCK, INC.

Quincy

Compressor Division

Coltec Industries



Systems up to 1500 CFM

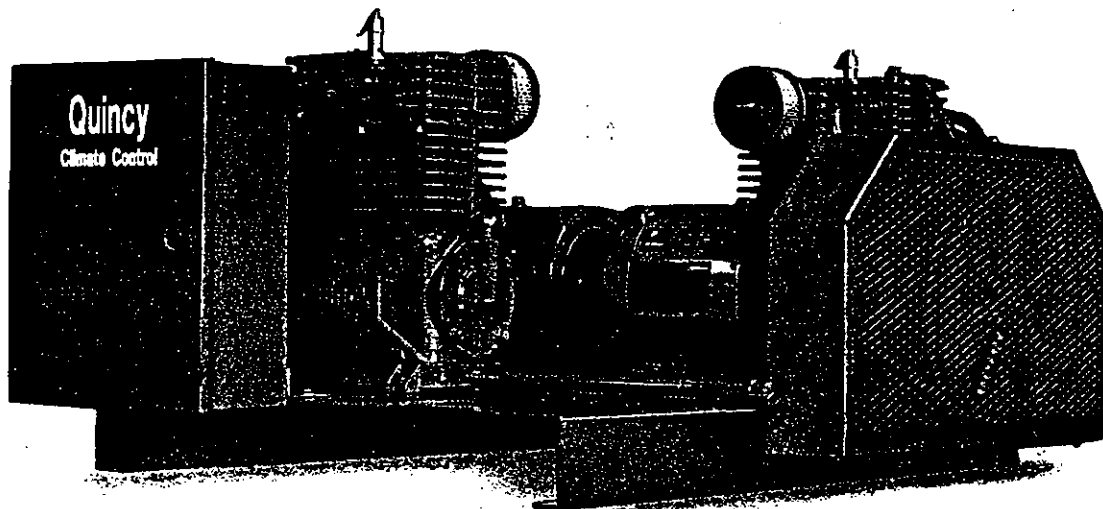
Duplex base-mount

- Pressure switch setting: lead compressor 70-90 psig; lag compressor 60-80 psig
- Rugged steel base
- High-efficiency motors

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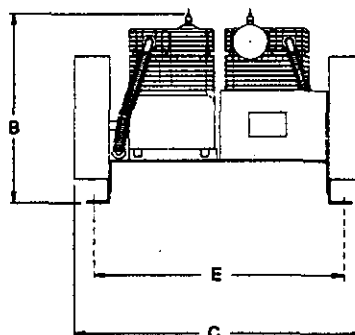
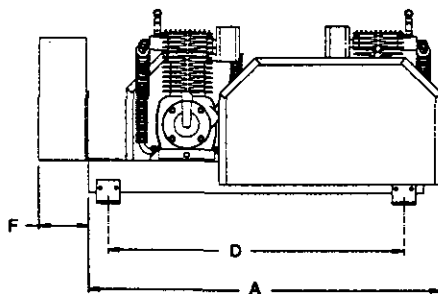
FITZPATRICK & ARBON, INC.



Duplex base-mount

Duplex base-mount unit specifications

Model No.	HP	RPM	CFM FAD @ 80 psi	CIM FAD @ 80 psi	A	B	C	D	E	F	Unit shipping weight
QC005BBD	0.5	539	1.8	3110	44.75	14.62	20.00	44.50	15.69	6.00	250
QC010BBD	1.0	511	4.0	6912	44.75	21.00	20.00	44.50	15.69	6.00	440
QC015BBD	1.5	431	8.1	13996	45.10	24.50	37.00	34.75	32.00	7.00	615
QC020BBD	2.0	520	9.8	16934	45.10	24.50	37.00	34.75	32.00	7.00	650
QC030BBD	3.0	647	12.2	21081	45.10	24.50	37.00	34.75	32.00	7.00	680
QC050BBD	5.0	692	18.2	31449	45.10	30.50	37.00	34.75	32.00	7.00	760
QC075BBD	7.5	604	37.5	64800	64.65	37.88	39.56	59.62	30.50	N/A	1036
QC100BBD	10.0	682	42.3	73094	64.65	37.88	39.56	59.62	30.50	N/A	1080
QC150BBD	15.0	605	77.0	133056	72.00	37.92	49.75	59.32	45.75	N/A	2500
QC200BBD	20.0	680	86.6	149644	72.00	37.62	49.75	59.32	45.75	N/A	2600
QC250BBD	25.0	832	106.0	183168	72.00	37.62	49.75	59.32	45.75	N/A	2750



3/4" mounting holes

Standard features on Quincy total air systems

- State-of-the-art computer-aided design assures high efficiency, providing more CFM per kilowatt input.
- Heavy-duty cast iron construction for holding precise tolerances, and for long, trouble-free service life.
- Cast iron cylinders feature deep cooling fins to dissipate heat quickly and evenly, adding to long cylinder life and high efficiency performance.
- One-piece, double-throw, counter-weighted crankshaft (on models 1 h.p. and above) is supported by bearings on both ends for precise alignment, smooth operation, and long life.
- Automotive-style, two-piece connecting rods with oil dippers provide easy service and splash lubrication to the wrist pin area.
- Unique valve plate design and replaceable stainless steel valves (on models 1.5 h.p. and above) improve volumetric efficiency and supply more CFM per horsepower.
- Non-asbestos gaskets.
- High efficiency intercooler for interstage cooling improves compressor efficiency.
- Balanced flywheel for smooth operation.
- Basic compressor and motor are mounted on a slotted bedplate to simplify motor and belt adjustments.
- Metal beltguard meets OSHA standards.
- Oil in crankcase.
- Intake filter.
- High-efficiency motors.

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Total system features available

- Duplex control panel with state-of-the-art alternator, includes lead/lag selector switch and control transformer as standard
- Refrigerated air dryers, 5 to 100 CFM, mounted (through 35 CFM) or shipped loose
- Pre-filters
- Coalescing filters
- PRV stations
- Automatic tank drain
- Magnetic starters
- Electrical components include two power source supply, pilot lights, disconnects, NEMA boxes
- Vertical ASME-code and National Board-approved receiver tanks
- Isolation pads and springs
- Combination intake filter/silencer

Designed and built specifically for climate control systems

Don't let another company try to sell you a standard commercial compressor for your climate control needs. Quincy offers total air systems for climate control.

Our systems include a mounted and wired duplex control panel featuring magnetic starter, alternator, three-position selector switch, and control voltage transformer; mounted and piped refrigerated air dryer with filters and PRV stations, all in a powerful, high-quality package. Quincy systems are 100% American-made and asbestos-free.

Simply put, a Quincy total air system will make your job easier: easier to quote, easier to order, easier to install, and easier to service. That's why they're undeniably the world's finest.

Safe

With asbestos being a prime factor in a number of damage suits recently, we're pleased to offer products that contain no trace of this dangerous material. Quincy total air systems are absolutely asbestos-free, and come with a seal of certification guaranteeing it.

Freedom from stress

If you've ever received a midnight phone call from a customer whose system is down, or lain awake wondering when it was going to happen, you need the peace of mind a Quincy system can give you. Every compressor model has been specifically designed and built for climate control. Low rpm, special testing, and break-in time have minimized oil carryover levels from a respectable 4.8 ppm to an incredible 0.3 ppm, measured after 100 hours. We challenge any compressor manufacturer, U.S. or foreign, to match those standards.

Partnership

Quincy understands that more often than not, delivery is a critical factor in ordering a climate control system. Cranes could be waiting, workers may be scheduled, and construction deadlines can all depend on the arrival of the air system components. That's why we have the manufacturing flexibility to ship your system complete, within ten days or less.

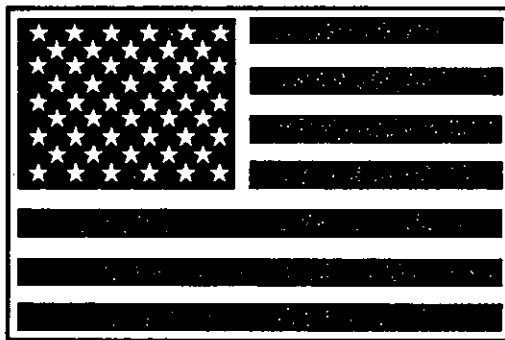
One phone call to Quincy's Climate Control Air Line (217-222-7700) can answer all your questions about sizing, pricing, order status, and, most importantly, after-market service. Shipping questions, warranty claims, and replacement part inquiries can now be channeled through a central factory phone number: just call and let our climate control specialists help.

Price

We pledge that Quincy total air systems will be priced competitively with any major systems supplier, each and every day.

American-made

While many competitors import their compressors, Quincy systems are 100% manufactured in the USA. The American flag on each unit symbolizes our strong commitment to American industry, and to American standards of excellence.

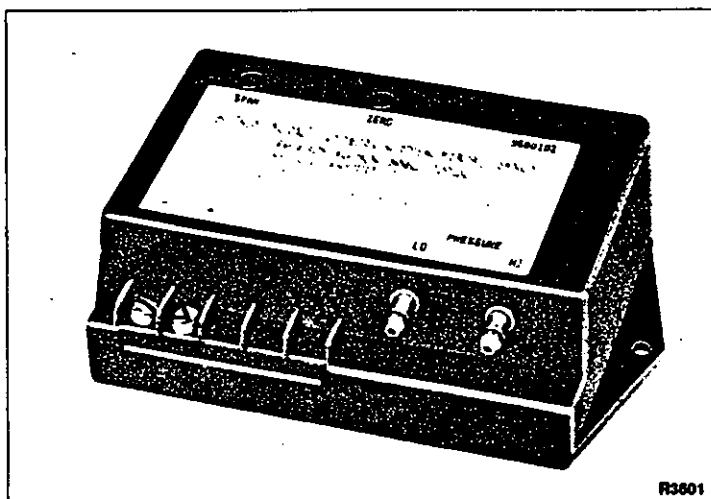


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FITZPATRICK & ASSOC. INC.

MODT30 Velocity and Differential Pressure Transmitter



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R3801

General

The MODT30 Velocity and Differential Pressure Transmitter converts differential pressure input signals to a 4 to 20 milliamper output signal for pressure ranges from 0.1 to 2.0 inches water column (0.025 to 0.497 kPa). Applications in airflow control systems include airflow (velocity pressure), space, and building differential measurement and control. The MODT30 is intended for use with the DeltaNet Micro Central/Excel Plus System; DeltaNet R7044D, E and F Excel Plus Controller; and DeltaNet MicroCel™.

Features

- Virtually position insensitive even at very low pressure (0.01 in. wc)
- Fast response time due to low internal volume
- No moving parts to wear out
- Solid-state circuitry for long life
- Compact size
- Low power consumption
- Measures differential, gage, or vacuum pressures
- Protected against reverse polarity

Description

The MODT30 Velocity and Differential Pressure Transmitter converts differential pressure input signals to a 4 to 20 milliampere output signal for pressure ranges from 0.1 to 2.0 inches water column (0.025 to 0.497 kPa). Applications in airflow control systems include airflow (velocity pressure), space, and building differential measurement and control. The MODT30 is intended for use with the DeltaNet Micro Central/Excel Plus System; DeltaNet R7044D, E and F Excel Plus Controller; and DeltaNet MicroCel™.

Specifications

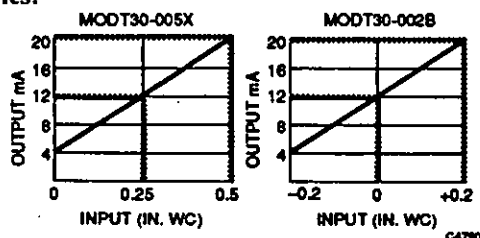
Models:

MODT30-*nnna*

√	 <i>nnna</i>	Range in In. wc	mA at 0 In. wc
	-001X	0 to 0.1	4 mA
	-001B	-0.1 to +0.1	12 mA
	-002X	0 to 0.2	4 mA
	-002B	-0.2 to +0.2	12 mA
	-003X	0 to 0.3	4 mA
	-005X	0 to 0.5	4 mA
	-010X	0 to 1.0	4 mA
	-020X	0 to 2.0	4 mA

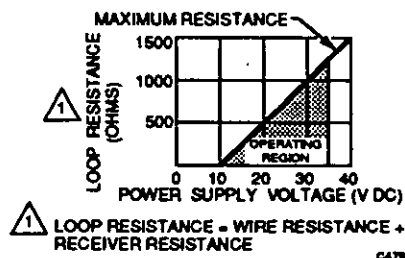
 X = Used for velocity pressure (airflow) measurement.
B = Used for space and building pressurization (static differential) measurement.

Examples:



Electrical:

Nominal loop resistance:
500 ohms
Maximum loop resistance:



Power Supply:
10 to 35V dc

Input/Output Signals:

Input: Differential pressure
Output: 4 to 20 mA (3.85 mA minimum, approximately 26 mA maximum)

Maximum Pressure:

8 times pressure range or 6 in. wc (whichever is greater)

Media Compatibility:

Air and inert gases

Environmental Operating Conditions:

Temperature: 32 to 125F (0 to 52C)
Humidity: 20 to 90% rh noncondensing
Shock resistance: 10G, 11 ms pulse
Vibration resistance: 5G from 6 to 50 Hz
Storage Temperature: -20 to 160F (-30 to 70C)

Span and Zero Adjustments:

20-turn potentiometers, non-interactive

Accuracy:

±1% of span (includes nonlinearity and hysteresis)

Air Connections:

Barb connectors suitable for 1/4-in. (4-mm) O.D. polyethylene tubing

Dimensions in Inches (mm):

5.15 (130.9) long x 3 (76.2) wide x 1.5 (38.1) high

Weight:

0.42 lb (0.19 kg)

Mounting:

Panel

Case Material:

Flame retardant, glass-reinforced NORYL™

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FLUORIDATION DIVISION

Honeywell

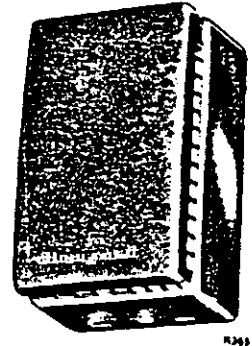
Commercial Buildings Group
Honeywell Inc.
Honeywell Plaza
Minneapolis, Minnesota 55408

Honeywell Limited
740 Ellesmere Road
Scarborough, Ontario
M1P 2V9

Helping You Control Your World

Honeywell

H7510A Humidity Sensor



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REL. HUMIDITY & HUMIDITY SENSORS

GENERAL

The H7510A Relative Humidity Sensor provides remote sensing of relative humidity in commercial and industrial installations.

The H7510A Relative Humidity Sensor is also used in all DeltaNet Systems.

NOTE: The H7510A should not be used where there may be a concentration of ketones in the ambient air.

FEATURES

- High accuracy
- Wide-range relative humidity sensing
- Contaminant resistant
- Factory calibrated

H7510A Humidity Sensor

DESCRIPTION

The H7510A Relative Humidity Sensor provides remote sensing of relative humidity in commercial and industrial installations.

The H7510A Relative Humidity Sensor is also used in all DeltaNet Systems.

NOTE: The H7510A should not be used where there may be a concentration of ketones in the ambient air.

Mounting:

Vertically on wall

Covers:

Beige plastic

Environmental Limits:

Operating:

Temperature: 32 to 122F (0 to 50C)

Humidity: 5 to 95% rh, noncondensing

Storage:

Temperature: -40 to 150F (-40 to 66C)

Dimensions:

3-1/4 in. (83 mm) high x 2 in. (51 mm) wide x 1-5/8 in. (41 mm) deep

Accessories:

Duct Sampling Chamber: 14002362-001

Seal Plate Assembly for Junction Box: 14002910-001

Terminations:

Three color-coded wire leads

(Red for V+, Wht for signal OUT, and Blk for ground)

SPECIFICATIONS

Power Supply:

20 to 32V, 50/60 Hz, or 16 to 28V dc

Power Consumption:

0.3 VA

Sensing Range:

10 to 90% rh

Sensing Element:

Capacitance type element

Output Signal:

2 to 10V dc corresponds to 0 to 100% rh

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In the USA: Honeywell Plaza, Minneapolis, Minnesota 55408
In Canada: Scarborough, Ontario M1P 2V9
Subsidiaries and Affiliates Around the World

77-3538

Commercial Bldg Group
MLF TAB: II. B. 5.

Printed in USA

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Honeywell

THE T4051, T6051, AND T6052 ARE HEAVY DUTY, LINE VOLTAGE THERMOSTATS USED TO CONTROL FAN COILS, FANS, MOTOR STARTERS, VALVES, CONTACTORS, AND CIRCULATOR MOTORS IN HEATING AND/OR COOLING SYSTEMS.

- ☐ T4051A is for heating control.
- ☐ T4051B is for cooling control.
- ☐ T4051D is for electric heat applications.
- ☐ T6051A and B may be used in heating systems, cooling systems, combination heat-cool systems (changeover must be provided), or as a series 60 controller for valves and motors.
- ☐ T6051B has special explosion-proof housing.
- ☐ T6052A is for 2-stage heating or 2-stage cooling systems.
- ☐ T6052B is for 1-stage heating-cooling systems with automatic changeover.
- ☐ Q651 Subbases are available to provide system and fan switching from the thermostat location.
- ☐ A locking cover is standard on all models.
- ☐ The set point knob locks in the desired setting and may be removed to prevent tampering.
- ☐ TRADELINE models may be vertically or horizontally mounted.

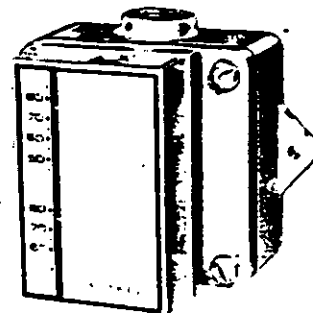
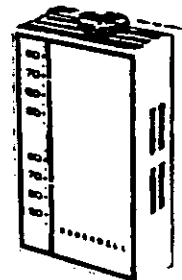
R.R.
REV. 5-79 (.14)

HEAVY DUTY THERMOSTATS

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FILIPINEN & ASSOCIATES



T4051A,B,D; T6051A,B; T6052A,B

Form Number

460-2008-2

SPECIFICATIONS

IMPORTANT

THE SPECIFICATIONS GIVEN IN THIS PUBLICATION DO NOT INCLUDE NORMAL MANUFACTURING TOLERANCES. THEREFORE, THIS UNIT MAY NOT MATCH THE LISTED SPECIFICATIONS EXACTLY. ALSO, THIS PRODUCT IS TESTED AND CALIBRATED UNDER CLOSELY CONTROLLED CONDITIONS, AND SOME MINOR DIFFERENCES IN PERFORMANCE CAN BE EXPECTED IF THOSE CONDITIONS ARE CHANGED.

TRADELINE MODELS

TRADELINE models are selected and packaged to provide ease of stocking, ease of handling, and maximum replacement value. TRADELINE model specifications are the same as those of standard models except as noted below.

TRADELINE MODELS AVAILABLE: T6051A, T6052A,B Heavy Duty Thermostats.

MOUNTING: Mount either vertically or horizontally on a standard outlet box. T6051A, T6052B can be mounted on a Q651 Subbase (see Accessories) to provide manual switching at thermostat.

RESISTIVE CURRENT (ELECTRIC HEAT APPLICATIONS) FOR T6051A (without Q651): 22 amp at 120/240V ac; 19 amp at 277V ac.

SCALE RANGE: 46 to 84 F; scale marked 50, 60, 70, and 80 [8 to 29 C; scale marked 10, 15, 20, 25].

ADDITIONAL FEATURES:

- Extra cover plate for horizontal mounting.
- T6051A may be used in electric heat systems (without Q651 Subbase).
- TRADELINE pack with cross reference label and special instruction sheet.

STANDARD MODELS

MODELS:

T4051A Heavy Duty Thermostat—heating only.
T4051B Heavy Duty Thermostat—cooling only.
T4051D Heavy Duty Thermostat—electric heating only.

T6051A Heavy Duty Thermostat—heating only, cooling only, or heating/cooling (external changeover switch required).

T6051B Explosion-proof, Heavy Duty Thermostat—heating only, cooling only, or heating/cooling (external changeover switch required).

T6052A Heavy Duty Thermostat—2-stage heating or cooling.

T6052B Heavy Duty Thermostat—heating/cooling with automatic changeover.

UNDERWRITERS LABORATORIES INC. LISTED:

T4051A (with or without Q651A,B,C), T4051B,D;
T6051A (with or without Q651A,B); T6052A, T6052B (with or without Q651C)—File No. E4436, Guide No. XAPX.

T6051B—File No. E12842, Guide No. XBDV.

Explosion-proof Enclosure—Class I, Groups C and

D and Class 2, Groups E, F, and G.

CANADIAN STANDARDS ASSOCIATION CERTIFIED:

T4051A,B,D; T6051A; T6052A,B—File No. LR1620.
T6051B—File No. LR30676-L.

ELECTRICAL RATINGS (AMPERES):

Voltage and Frequency—120/240V ac, 50/60 Hz.
(T4051B—120 or 240V ac, 50/60 Hz.)

All models except T6051B—

		120V AC	240V AC
T4051A,B,D ^a T6051A (heat) T6052A (N.C. contacts)	Full Load	16.0	8.0
	Locked Rotor	96.0	48.0
T6052B (auto changeover heat and cool)	Locked Rotor	96.0	48.0
T6051A (cool) T6052A (N.O. contacts)	Full Load	8.0	4.0
	Locked Rotor	48.0	24.0

(continued on page 3)

ORDERING INFORMATION

WHEN PURCHASING REPLACEMENT AND MODERNIZATION PRODUCTS FROM YOUR TRADELINE WHOLESALE OR YOUR DISTRIBUTOR, REFER TO THE TRADELINE CATALOG OR PRICE SHEETS FOR COMPLETE ORDERING NUMBER, OR SPECIFY—

1. Order number (TRADELINE, if desired).
2. Optional specifications, if desired. (Specify 120 or 240V ac when ordering T4051B.)
3. Accessories, if required.

IF YOU HAVE ADDITIONAL QUESTIONS, NEED FURTHER INFORMATION, OR WOULD LIKE TO COMMENT ON OUR PRODUCTS OR SERVICES, PLEASE WRITE OR PHONE:

1. YOUR LOCAL HONEYWELL RESIDENTIAL DIVISION SALES OFFICE (CHECK WHITE PAGES OF PHONE DIRECTORY).

2. RESIDENTIAL DIVISION CUSTOMER SERVICE
HONEYWELL INC., 1885 DOUGLAS DRIVE NORTH
MINNEAPOLIS, MINNESOTA 55422 (612) 542-7500

(IN CANADA—HONEYWELL CONTROLS LIMITED, 740 ELLESMERE ROAD, SCARBOROUGH, ONTARIO M1P 2V9)
INTERNATIONAL SALES AND SERVICE OFFICES IN ALL PRINCIPAL CITIES OF THE WORLD.

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T6051B Only--

		120V AC	240V AC
Heating	Full Load	10.2	6.5
	Locked Rotor	61.2	39.0
Cooling	Full Load	7.4	4.0
	Locked Rotor	44.4	24.0

†T4051D also has resistive rating—2 $\frac{1}{2}$ amp at 120/240V ac; 19 amp at 277V ac.

Pilot Duty Rating (all models)—125 VA.

DIFFERENTIAL:

T4051, T6051—1 F [0.6 C].

T6052A—

—stage 1 heat, stage 2 cool—2.5 F [1.4 C] (nominal).

—stage 2 heat, stage 1 cool—3.2 F [1.8 C] (nominal).

T6052B—

—stage 1 heat—2.5 F [1.4 C] (nominal).

—stage 2 cool—3.2 F [1.8 C] (nominal).

SWITCHING: Snap-acting switch makes on temperature fall for heating and on temperature rise for cooling. On T6052A, two switches make in sequence for 2-stage heating or cooling. On T6052B, two switches make in sequence for auto changeover.

SCALE RANGE:

Fahrenheit—46 to 84 F; scale marked 50, 60, 70, 80.
Celsius—8 to 29 C; scale marked 10, 15, 20, 25.

MOUNTING: All models except T6051B mount directly on standard outlet box. T6051B cast housing serves as outlet box.

COVER: Molded cover.

DIMENSIONS, IN INCHES [MILLIMETRES IN BRACKETS]: All models except T6051B—5 [127] high, 3-1/8 [79.4] wide, 1-5/8 [41.3] deep. Switches and wiring terminals protrude into outlet box 7/8 inch [22.2 mm]. T6051B—see Fig. 1.

OPTIONAL SPECIFICATIONS:

1. T6051A with WARMER-COOLER scale; moisture-fungus treated.
2. T6051A, 46 to 84 Fahrenheit scale, for horizontal mounting.
3. T6051A with Celsius scale. Mounts either horizontally or vertically.
4. T6052A with Celsius scale. Mounts either horizontally or vertically.
5. T6052B with Celsius scale. Mounts either horizontally or vertically.
6. T4051, T6051A, or T6052 with metal cover.
7. T4051, T6051A, or T6052 without thermometer.

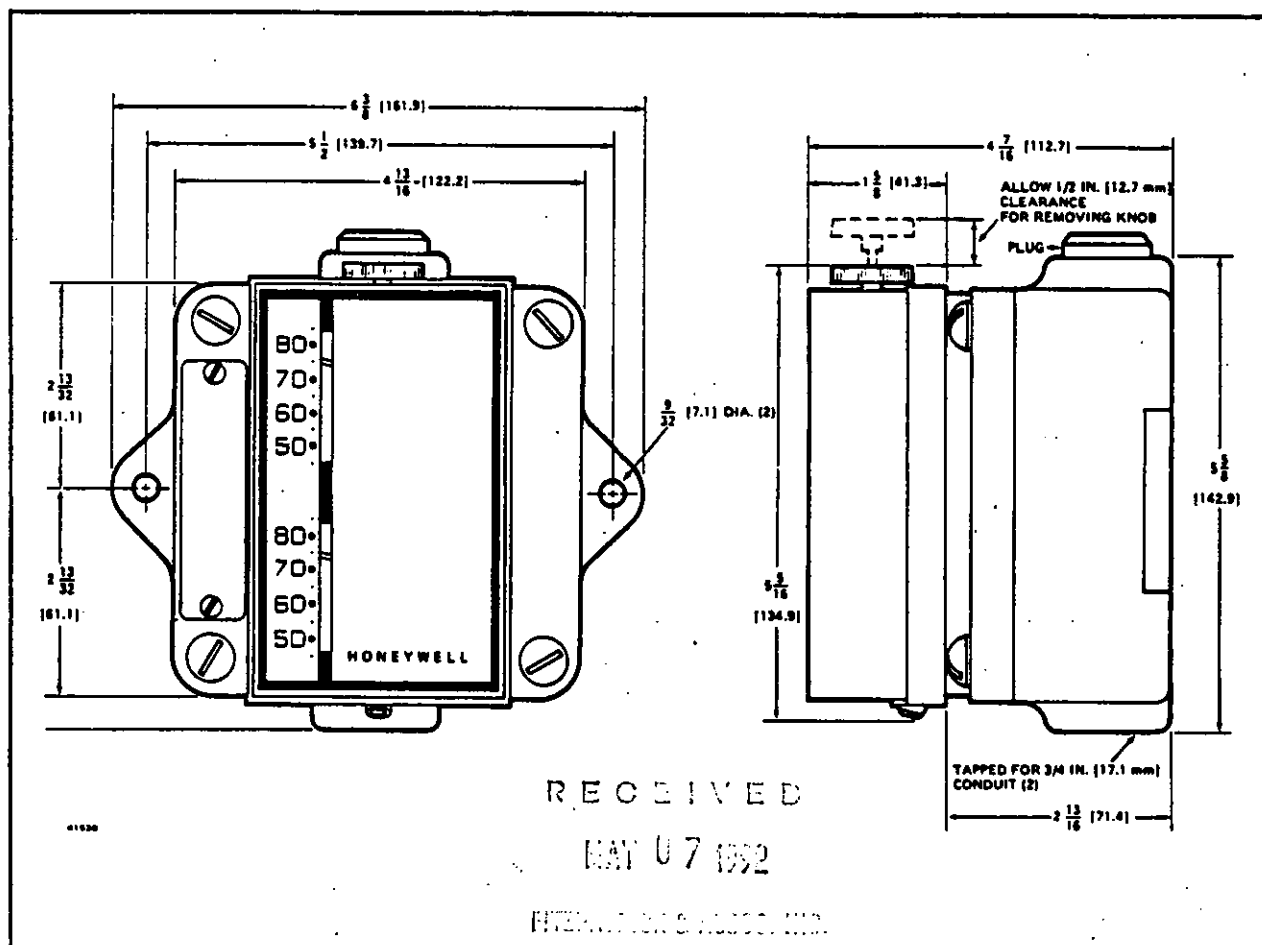


FIG. 1—MOUNTING DIMENSIONS FOR T6051B IN INCHES [MILLIMETRES SHOWN IN BRACKETS].

ACCESSORIES:

Q651 Subbase to provide switching at the thermostat location. Q651A,B are suitable for use with T4051A and T6051A thermostats. Q651C can be used with T4051A, T6051A, and T6052B thermostats. Q651 Subbase may be used with T6052A 2-stage thermostat but the T6052A-Q651 combination is not Underwriters Laboratories Inc. approved. Subbases mount either horizontally or vertically on a standard outlet box.

-Q651A provides HEAT-OFF-COOL; AUTO-OFF-ON or HEAT-OFF-FAN switching.

-Q651B provides AUTO-OFF-FAN switching.

-Q651C provides AUTO-OFF or HEAT-OFF switching.

133722D or 133723B Universal Thermostat Guards or 23394B Locking Guard. See thermostat guards specification sheet.

Explosion-proof Changeover Switches^a (T6051B);

-SPDT EFS Selector Switch—hub size 3/4 in.; Catalog No. EFS21271.

-DPDT EFS Selector Switch—hub size 3/4 in.; Catalog No. EFS21273.

^aWhen ordering, specify hub size and catalog num-

ber. Order explosion-proof changeover switches directly from:

Crouse-Hinds Co.

P.O. Box 131

Syracuse, New York 13201.

135653AB Blank Metal Cover (without set point scale, without thermometer). Polished chrome, T6051, T6052.

135653AA Metal Cover with thermometer and set point scale. Polished chrome. T6051, T6052.

135654AC Blank Metal Cover (without set point scale, without thermometer). Silver bronze. T6051, T6052.

135654AA Metal Cover with thermometer and set point scale. Silver bronze. T6051, T6052.

135654AB Metal Cover with set point scale, without thermometer. Silver bronze. T6051, T6052.

135652AA Blank Faceplate (without set point scale, without thermometer). T6051.

135651A Faceplate with set point scale, without thermometer. T6051.

135531D Horizontal Faceplate with set point scale and thermometer. T6051, T6052.

135499 Setting Knob.

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INSTALLATION

WHEN INSTALLING THIS PRODUCT...

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.

2. Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.

3. Installer must be a trained, experienced service technician.

4. After installation is complete, check out product operation as provided in these instructions.

CAUTION

Disconnect power supply before beginning installation to prevent electrical shock and equipment damage.

LOCATION

Install the thermostat in a location where it will sense the average room temperature. Mount the thermostat about 5 feet [1.5 metres] above the floor on an inside wall. Standard models must be mounted vertically unless supplied with a horizontal scaleplate. TRADELINE models may be mounted either horizontally or vertically.

If using a Q651 Subbase, refer to the instructions packed with the subbase.

MOUNTING

TRADELINE ONLY

The T6051A and the T6052A,B may either be mounted horizontally or vertically. If mounting horizontally, the cover plate must be changed. To remove vertical cover plate, bend 4 corner tabs to outside and push out cover. Place horizontal cover plate on frame and bend 4 corner tabs to inside (Fig. 2).

CAUTION

The T6052A has two-stage capability. Each stage's output contacts have a current rating of 16 amps at 120V ac (for a total of 32). The Q651 Subbase total contact rating is 16 amps at 120V ac. For this reason, the Q651/T6052A combination is not Underwriters Laboratories Inc. approved. If the T6052A is used with a Q651 Subbase, ensure that the actual contact current does not exceed the total (16 amps) contact rating of the Q651.

ALL STANDARD MODELS EXCEPT T6051B

1. Mount a 2 x 4 inch outlet box either vertically or horizontally, depending on the model used. Models with vertical faceplate mount on vertical outlet box; models with horizontal faceplate mount on horizontal outlet box.