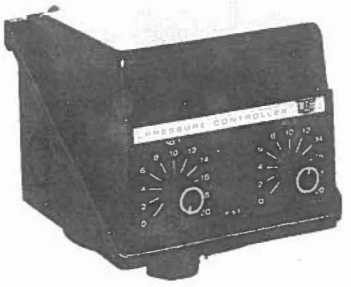


300 SERIES PRESSURE CONTROLLERS

ON-OFF TYPES H300, H302, H303, J300, J302, J303

PROPORTIONING TYPES SH300, SH302, SH303, SJ300, SJ302, SJ303, SSH302, SSH303, SSJ302, SSJ303

INSTALLATION AND MAINTENANCE INSTRUCTIONS

IM-300
Rev. D

OPERATION

As pressure changes, a diaphragm, bellows, or piston sensor actuates 1, 2, or 3 snap switches or positions the wiper of a proportioning potentiometer. The controller settings are determined by positioning the switches or potentiometer by means of internally located adjustment screws (J types) or external knobs (H types).

PART I—INSTALLATION—ALL TYPES

1. Remove Cover
   — Cover is held on by two captive screws located below the blue panel.
   — On calibrated controls first pull off the knob (s).

2. Knockout Electrical Entrance
   Three cast-in knockouts for ½" conduit are located in the sides and back of the enclosure. These can be easily knocked out with a screwdriver. Place the end in groove and rap it sharply with a hammer.

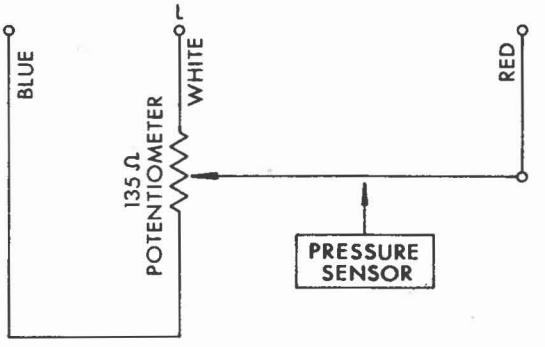
3. Mount the Controller
   Mount the case in any position. Locate it where vibration, shock and ambient temperature fluctuations are minimal. Mount it directly to a pipe via the pressure connection or to panel as follows (See mounting diagrams—Fig. 1.):

   To Surface Mount: Use the two holes in the mounting bracket supplied. For front side or top mounting, the bracket may be removed and repositioned on the base casting. In lieu of the bracket the case may be used. Knock them out in accordance with step 2.
   To Panel Mount: Position the bracket for front mounting, prepare a rectangular cutout in the panel to reveal the knob and scale, and drill two holes to clear #¼ screws.
   To Pipe Mount: Mount via the NPT pressure connection. Always hold a wrench on the hex or flat portion of the diaphragm piston or bellows housing when tightening.

4. Make Wiring Connections
   A. On-Off Switch Types
      Connect conduit to the case and wire directly to the switch terminals in accordance with the job wiring requirements. Bring the wires up to the terminals from the rear of the case allowing enough slack so as not to retard switch movement when making setting adjustments. See Fig. 2.
      If manual reset switch is used lead wires are supplied, color coded as follows:

Common	White
Normally Closed	Blue
Normally Open	Black

   B. Proportioning Potentiometer Types
      Follow same procedure and caution as paragraph 4A above, except utilize wire nuts to connect wiring to leads of potentiometer. Wiring as follows:



   C. Combination Switch & Potentiometer Types
      Follow procedure of paragraph 4A & 4B above.

5. Adjust Settings for Internal Adjustment Types
   See adjustment procedure Part II

6. Replace Cover (and knobs if supplied)

PART II—ADJUSTMENTS—ON-OFF TYPES ONLY

SEE FIGURE 2

1. Non-Calibrated J300 Only
   Remove cover. Switch has screw adjustment inside enclosure. To raise the pressure setting turn the screw in (clockwise), one full turn corresponds to 10% of range on diaphragm and piston models, and 20% of range on bellow models. When making adjustments do not exceed the proof pressure rating on the nameplate.

2. Types—J302,J303
   Remove cover. Follow same procedure as paragraph above. Switches may be set together or apart up to 100% of scale range. On dual switch models either switch may be set high. On 3-switch models, the third (or middle) switch has no over-travel mechanism and must always be set at the highest pressure when the switches are set apart. Altering the setting of one switch will usually have negligible effect on the other(s), however it's recommended that all settings be checked after each adjustment.

3. Calibrated Types—H300, H302, H303
   Dials are factory calibrated for maximum accuracy at the scale midpoint. Recalibration of knob zero point may be desired at a critical pressure setting or after changing a switch or diaphragm, etc. Proceed as follows:

a) Turn the knob (s) to the desired calibration pressure.
b) Remove the knob (s) and cover.
c) Adjust screws per paragraph (1) until switch (es) trips at the knob setting.
d) Replace cover and knob (s).

4. Types With Adjustable On-Off Differential Switches
a) Types J300D, J302D, J303D.
Differentials are varied by rotating the wheel using the switch mounting screw as an index. Increasing letters correspond to a wider differential. See Fig. 3A.
b) Types H300D, H302D, H303D.

Differentials are varied by rotating the wheel. Clockwise turning corresponds to a wider differential. See Fig. 3B.

5. Types With Extra Wide On-Off Differential Switches

Follow same procedure as in paragraph 4a, above.
a) Types J300F1, J302F1, J303F1(1 and 2 switch only): Differentials are adjustable from approximately 2 to 40% of range.
b) Types J300F2, J302F2, J303F2(1 and 2 switch only): Differentials are adjustable from approximately 40% to 80% of range.

6. Types With Manual Reset
Some models (suffix "G") incorporate a snap switch that, when actuated, remains tripped until pressure changes, and the reset button is depressed to reset position manually. On multi-switch controls, this switch must be set highest.

PART III—ADJUSTMENTS—PROPORTIONING TYPES ONLY

Potentiometers register 35% coil resistance at set point

SEE FIGURES 2 & 3C

1. General—Internal Adjustment Types SJ300 Only
Remove cover. Potentiometer has hex screw adjustment inside cover. To raise the pressure setting turn the screw in (clockwise), one full turn corresponds to 20% of range on bellows models. When making adjustments do not exceed the proof pressure rating on the nameplate.

2. Dual Potentiometer Internal Adjustment Type SSJ300 Only
Remove cover and follow procedure in above paragraph. Potentiometers may be set together or apart up to 100% of scale range; either potentiometer may be set high. Altering the setting of one potentiometer will usually have negligible effect on the other, however, it's recommended that all settings be checked after each adjustment.

3. Calibrated Proportioning—Types SH300 & SSH302
Dials are factory calibrated for maximum accuracy at the scale midpoint. Recalibration of the knob zero point may be desired at a critical pressure setting or after changing a potentiometer or sensor, etc. Proceed as follows:

a) Turn the knob (s) to the desired calibration pressure.
b) Remove the knob (s) and cover.
c) Adjust screws per paragraph (1) until potentiometer (s) matches the knob setting.
d) Replace cover and knob (s).

PART IV—ADJUSTMENTS—COMBINATION ON-OFF/PROPORTIONING TYPES

1. Internal Adjustment Types SJ302, SSJ303, SJ303—follow procedure for Internal Switch (Part II) and Internal Potentiometer (Part III) adjustments above.

2. External Adjustment—Types SH302, SSH303, SH303—follow procedure for External Calibrated Switch (Part II) and External Calibrated Potentiometer (Part III) adjustments above.

PART V—REPLACEMENT PARTS

Components most likely to require replacement are the diaphragm, piston or bellows sensors and the switches or potentiometers. Replace as follows:

Switch Replacement
1. Disconnect Leadwires.
2. Remove the two mounting screws. On multi-switch controls first remove switch bias spring. See Fig. 2.
3. Insert replacement switch and replace screws.
4. Check switch set point and recalibrate if required. See Adjustments Part II.

Potentiometer Replacement
1. Disconnect Leadwires wire nuts.
2. Remove potentiometer mounting screws on multi-potentiometer controls, first remove potentiometer bias spring just as switch replacement above (Fig. 2).
3. Insert replacement potentiometer, replace mounting screws, reconnect wires with wire nuts.
4. Check control set points and recalibrate if required, following Adjustment procedure—Part III.

Diaphragm Replacement
1. Remove the 6 pressure cap screws.
2. Insert new diaphragm as shown in Fig. 4.
3. Replace pressure cap and screws. Make sure they are tight.
4. Check set point (s) and recalibrate if required. See Adjustments Part II, III, or IV.

CAUTION: TO INSURE AGAINST POSSIBLE LEAK, BE SURE O'RING IS PROPERLY SEATED BEFORE TIGHTENING SCREWS.

Bellows and Piston and Assembly Replacement
1. Bellows: Unscrew the bellows housing from the casting. Retain the plunger. Piston: Unscrew tip of pressure connection only.
2. Screw in the new bellows or piston assembly.
3. Check set point (s) and recalibrate if required. See Adjustments Part II, III, or IV.

FIG. 1
MOUNTING DIAGRAM

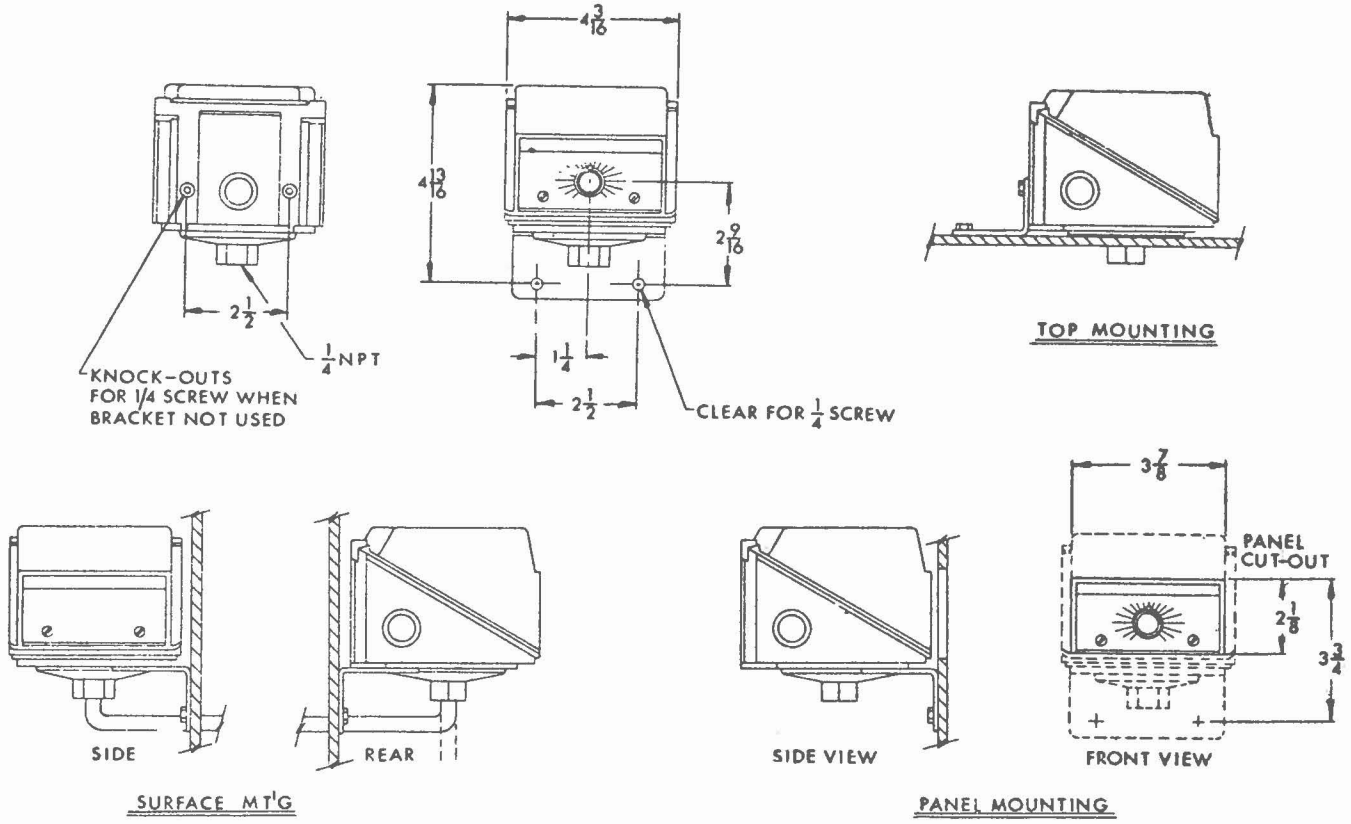


FIG. 2 GENERAL LAYOUT

NOTE: The middle switch assembly is omitted in dual switch controllers. The outer two switch assemblies are omitted in single switch controllers. "J" series controllers have internal screw adjustments. "H" series controllers have cam assemblies for external calibrated adjustment.

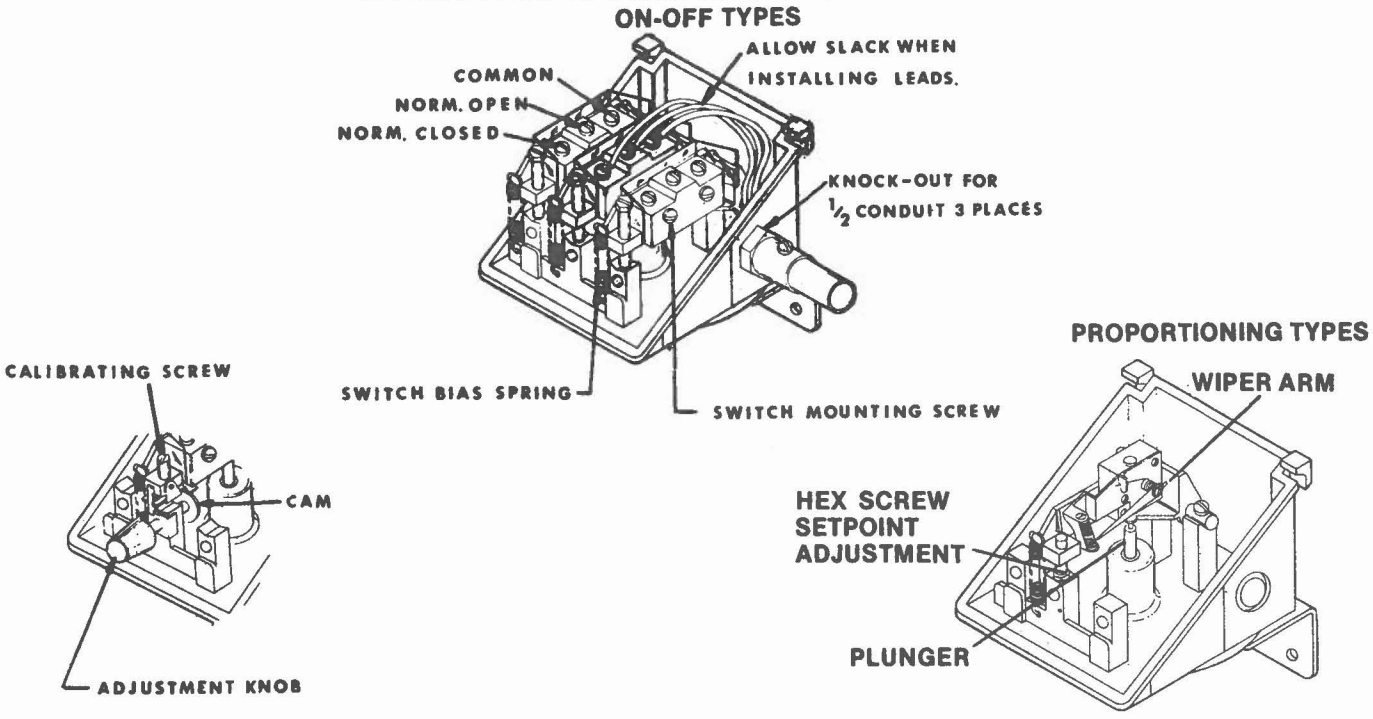


FIG. 3A

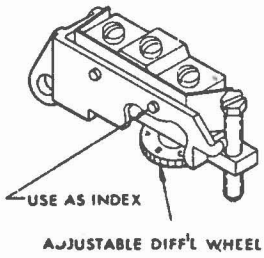


FIG. 3B

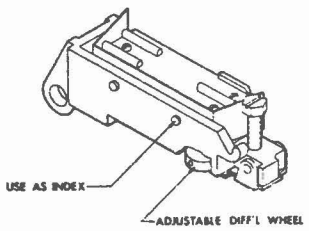


FIG. 3C

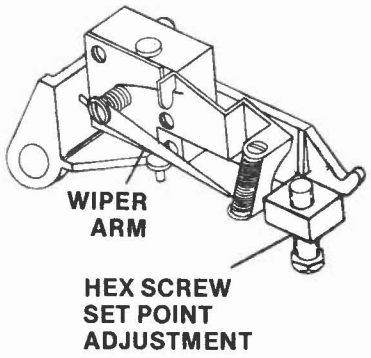
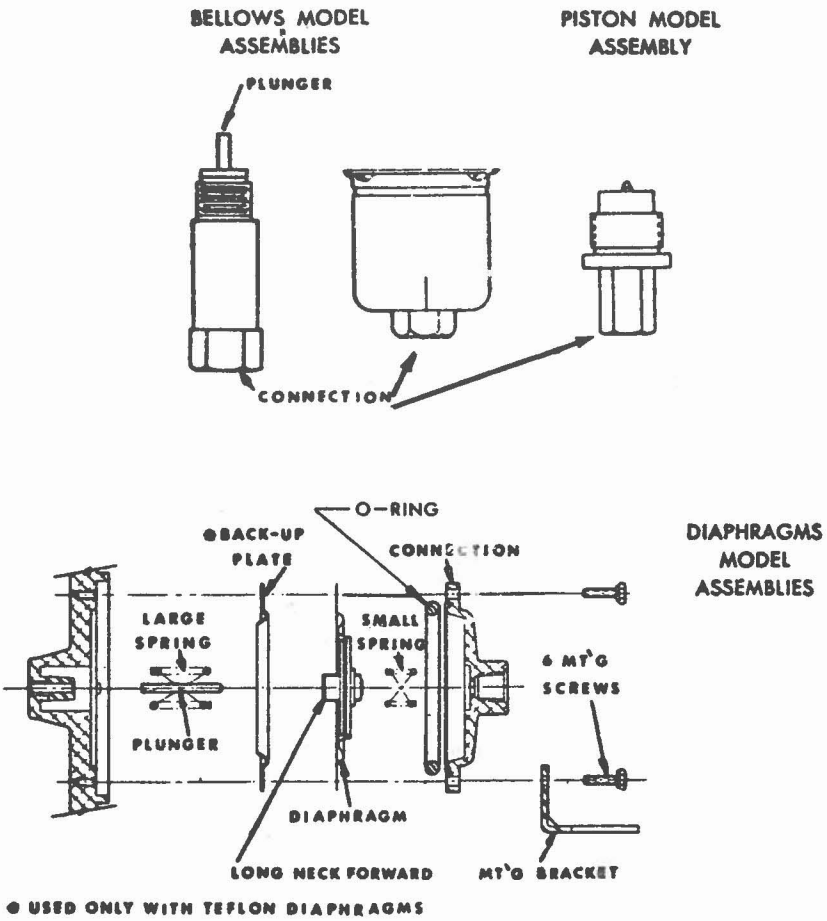


FIG. 4 SENSING ELEMENTS



300 SERIES AND 310 SERIES PRESSURE CONTROL SPECIFICATIONS

Types J300, J302, J303, H300, H302, H303, PJ310, PJ312, PJ313, PH310, PH312, PH313, PJ310R, PJ310J PJ310W, PH310R, PH310J, PH310W

SPEC–PR. 300

	300 SERIES	310 SERIES
Replacement Part No.	Snap Switch 6259-218	Pilot Valve: 62125-45 N. O. Relay: 62125-47 N. C. Relay: 62125-46 Dual Relay: 62125-46, 48
Ratings	15 amps 115/250 VAC Resistive	50 PSI MAX.

For installation and maintenance instructions see I & M Sheets:
I & M 300, I & M 310

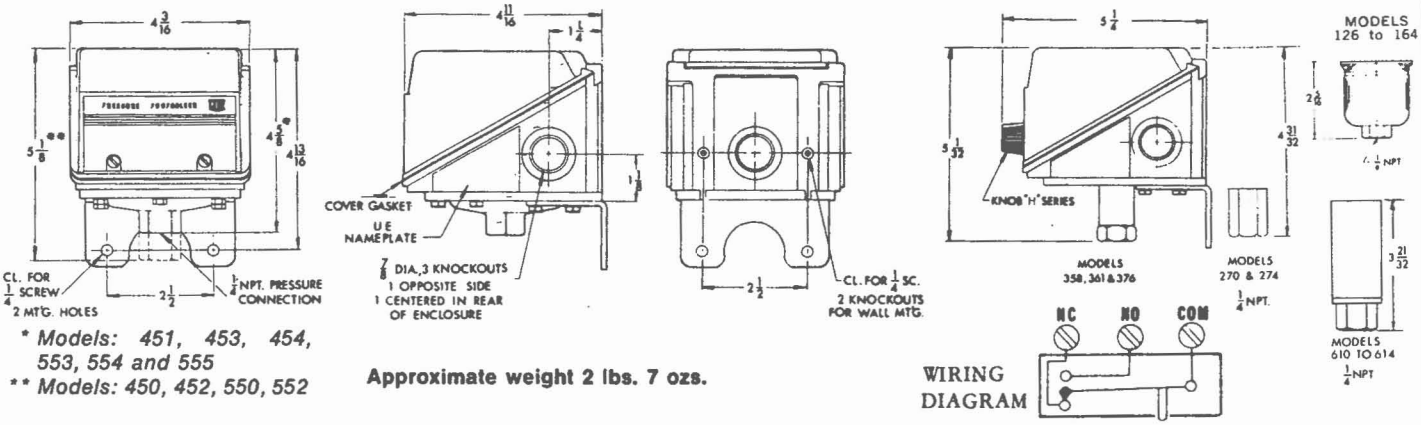
MODEL SPECIFICATIONS

STOCK NUMBER						CATALOG	ADJUSTABLE	ON-OFF DIFFERENTIAL				SENSOR
H300	H302	H303	J300	J302	J303	MODEL	RANGE	300 Series Min.	300 Series Max.	310 Series Min.	310 Series Max.	
--	--	--	--	--	--	448**	0 to 80" W C Vac	1.0	3.0"W C			
--	--	--	9553	--	--	449**	0 to 20" W C	1.0	2.0"W C			
9511	--	--	9560	9714	--	450	0 to 30" Hg Vac	.2	.4"Hg	.2	.4"Hg	Buna-N
9517	--	--	9574	9728	--	451**	0 to 80" W C	1.0	3.0"W C	1	2"W.C	Diaphragm
--	--	--	9588	--	--	451***	0 to 80" W C	.2	.8"W C			
--	9693	--	--	9754	--	452	30"Hg Vac to 20 PSI	.2	1.0"Hg	.2	.6"Hg	
9576	9710	--	9616	9765	9873	453	0 to 20	.1	.2	.1	.2	
--	9723	--	9629	9789	--	453***	0 to 20	.5	2.0"W C			
9609	--	--	--	9804	--	454	0 to 30	.1	.3	.1	.3	
--	--	--	--	--	--	550	0 to 30"Hg Vac	.2	.6" Hg	.2	.6"Hg	
--	--	--	--	--	--	551**	0 to 80" W C	1.5	3.5"W C			Teflon
--	--	--	--	--	--	551***	0 to 80" W C	.5	1" W C			Diaphragm
--	--	--	--	9811	--	552	30"Hg Vac to 20 PSI	.2	1.0"Hg	.2	1" Hg	
9633	9751	--	9657	9818	--	553	0 to 20	.1	.3	.1	.3	
--	--	--	--	9823	--	554	0 to 30	.1	.4	.1	.3	
9650	9779	--	9671	9832	9901	555	0 to 100	.25	.75	.2	.6	
--	--	--	--	--	--	126	0 to 30"Hg Vac	.2	.8"Hg††	.2	8"Hg	
--	--	--	--	--	--	134	30"Hg Vac to 20 PSI	.2	1"Hg††	.2	1"Hg	
--	--	--	--	--	--	137**	0 to 80" W C	4	6"WC††	4	6"WC	
--	--	--	--	--	--	144	0 to 20	.1	.3††	.1	.3	Brass
--	--	--	--	--	--	146	0 to 30	.1	.4††	.1	.4	Bellows
--	--	--	--	--	--	156	0 to 100	.2	.8††	.2	.8	
--	--	--	--	--	--	164	0 to 200	.3	1.2††	.3	1.2	
--	9786	--	9678	9839	--	270	0 to 200	1.5	5††	3	7	Brass
--	--	--	--	--	--	274	0 to 300	2.0	5††	3	7	Bellows
--	--	--	--	9844	--	358	0 to 200	1.5	5††	1.5	4	#347 St.St.
--	--	--	--	9846	--	361	0 to 300	2.0	5††	2	5	Bellows
--	--	--	9700	9860	--	376	0 to 500	3.0	9††	3	8	
--	--	--	--	--	--	610	100 to 1000	30	80	30	80	
--	--	--	--	--	--	611	200 to 2000	40	170	40	170	#303 St.St.
--	--	--	--	9881	--	612	200 to 3000	40	180	40	180	Piston
--	--	--	--	--	--	613	500 to 4000	50	200	50	200	
--	--	--	--	--	--	614	500 to 6000	50	300	50	300	

All units PSI unless otherwise noted
**Not available on Types H302, H303, PH312, PH313,
††Double max. differential figure for types J302, J303, H302, H303,
†Differentials are based on 20 PSI supply and are applicable only to snap acting controllers with relays. Differentials are fixed and non adjustable, except piston models differentials increase with increasing set points.
***Has 5 amp switch for electric versions.

OUTLINE DIMENSIONS

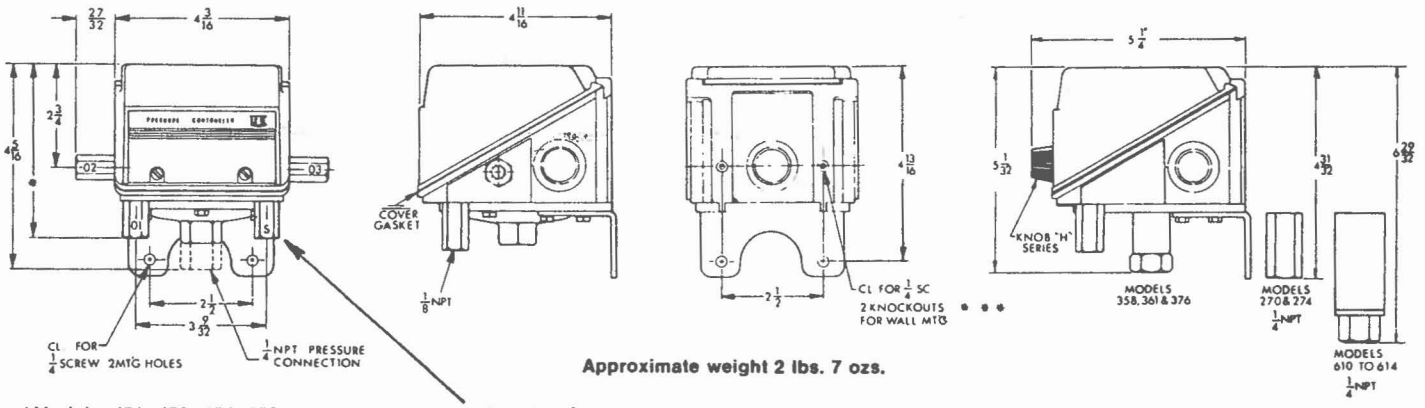
300 SERIES - ELECTRIC



* Models: 451, 453, 454, 553, 554 and 555
** Models: 450, 452, 550, 552

Approximate weight 2 lbs. 7 ozs.

310 SERIES - PNEUMATIC



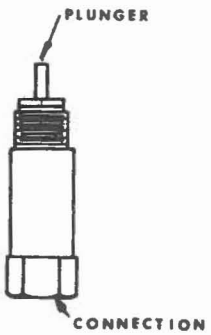
Approximate weight 2 lbs. 7 ozs.

*Models: 451, 453, 454, 553, 554 and 555
**Models: 450, 452, 550, 552
***Applicable only to types without relays.

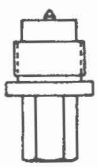
S = Supply
01 = Output One
02 = Output Two
03 = Output Three

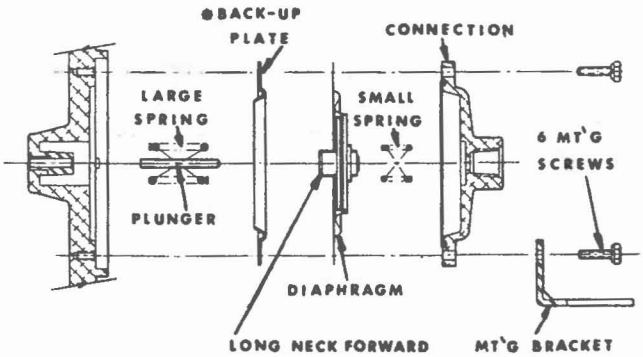
SENSING ELEMENTS

BELLOWS MODEL ASSEMBLIES



PISTON MODEL ASSEMBLY





DIAPHRAGMS MODEL ASSEMBLIES

* USED ONLY WITH TEFLON DIAPHRAGMS

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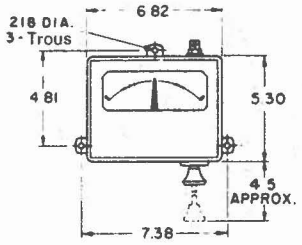
TELEX: 092-2445

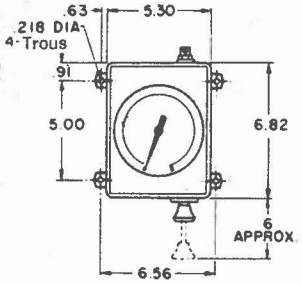
SYSTEMES DE LECTURE A DISTANCE PNEUMATIQUE

754F

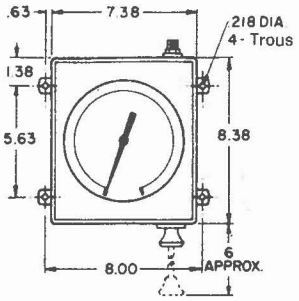
INSTALLATION



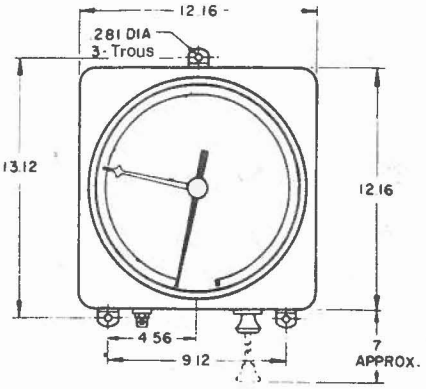
MODELE P5



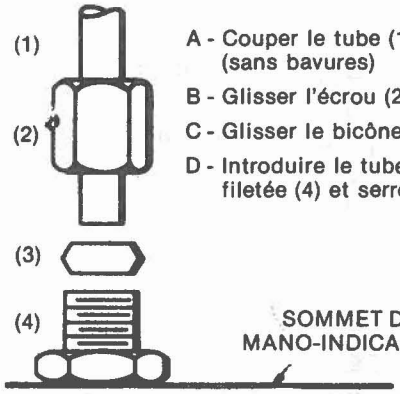
MODELE P11



MODELE P14



MODELE P29



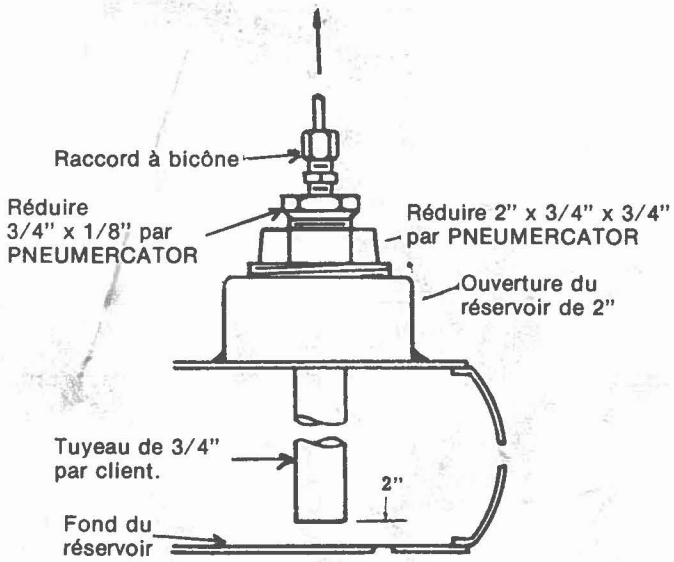
A - Couper le tube (1) à angle droit (sans bavures)

B - Glisser l'écrou (2) sur le tube

C - Glisser le bicône (3) sur le tube

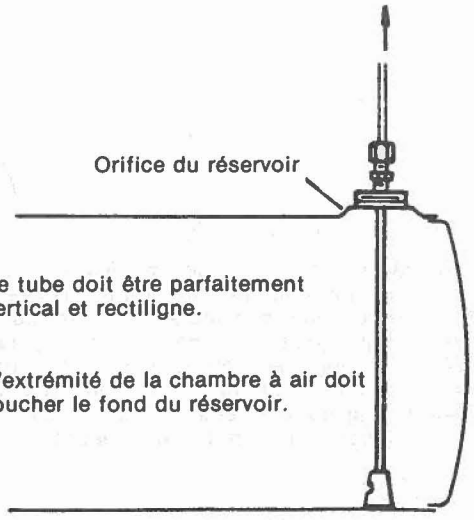
D - Introduire le tube dans la pièce filetée (4) et serrer l'écrou (2)

A L'INDICATEUR



POUR RESERVOIRS DE PLUS DE 10' DE DIAMETRE.

A L'INDICATEUR



POUR RESERVOIRS JUSQU'A 10' DE DIAMETRE.

POSE

Rectifier l'extrémité du tube communicant portant la chambre à air et la plonger par l'orifice du réservoir jusqu'au fond de celui-ci. Visser la réduction et le raccord à bicône qui assurent l'étanchéité entre le tube et la réduction. Ces accessoires sont montés sur le tube dans l'ordre de fixation. Faire courir ensuite le tube jusqu'à l'emplacement choisi pour le mano-indicateur et le raccorder à celui-ci. Fixer le tube au mur pour éviter de l'arracher ou de l'endommager.

PNEUMERCATOR

MANUFACTURE AU CANADA

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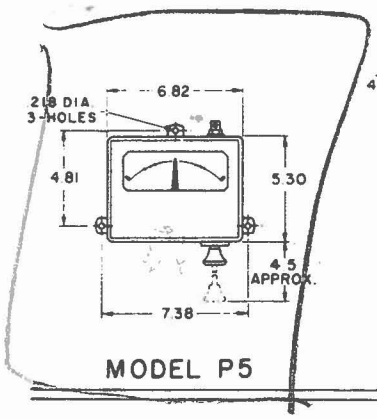
Tél.: 739-1432

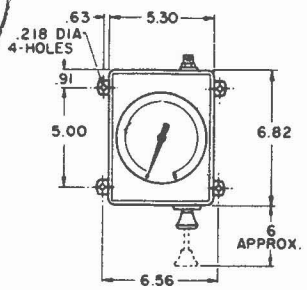
PNEUMATIC REMOTE READING SYSTEMS

F34E

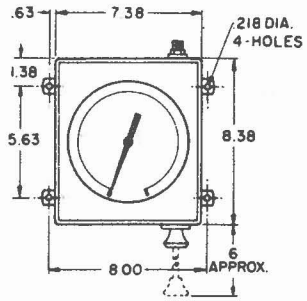
INSTALLATION



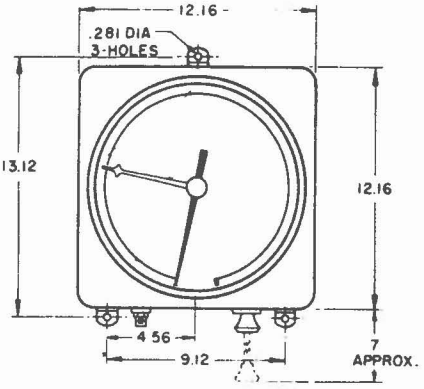
MODEL P5



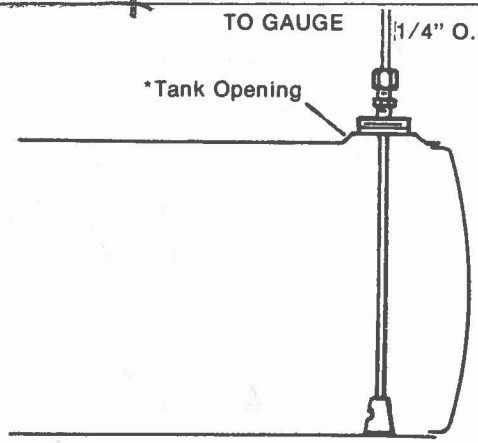
MODEL P11



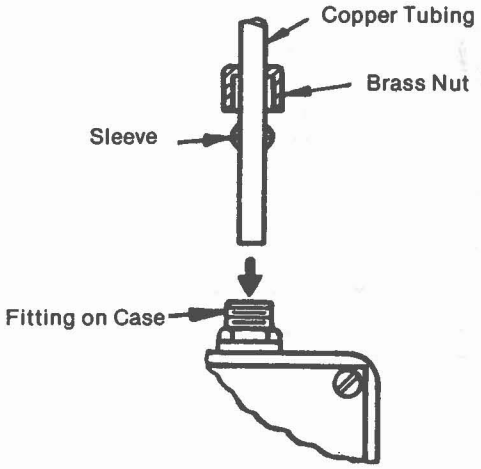
MODEL P14

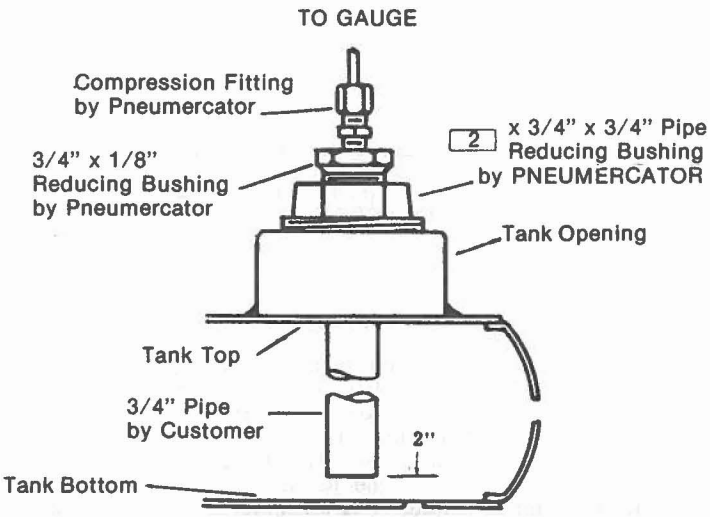


MODEL P29



No. 1 STANDARD INSTALLATION for TANKS UP TO 10'-6" in diameter





No. 2 RECOMMENDED INSTALLATION for TANKS over 10'-6" in diameter and No. 6 oil

INSTALLATION

Straighten out air chamber end of communicating tubing and insert straight through tank opening until it touches bottom of tank. Screw in reducing bushing and compression fitting which form a tight joint between tubing and reducing bushing. These fittings are on tubing in the order of attachment. Then run the tubing to the desired dial location and connect tubing to dial end. Attach, communicating tubing to wall to prevent it from being damaged.

PNEUMERCATOR

MANUFACTURED IN GANADA

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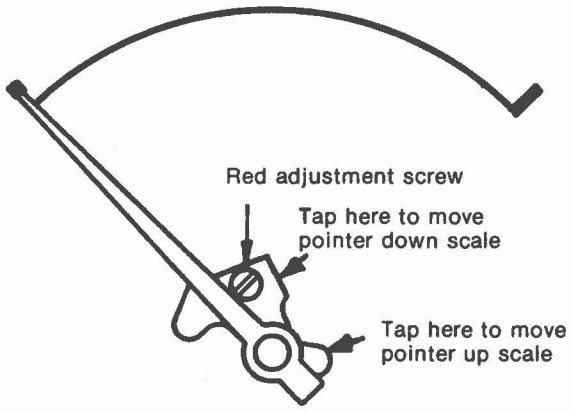
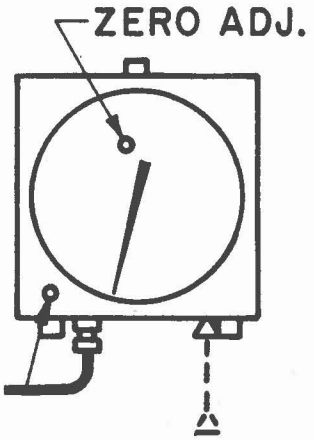
PNEUMERCATOR HYDROSTATIC GAUGES

These gauges are calibrated and adjusted at the factory specifically for the tanks on which they are to be installed. Further adjustment should not be required but due to minor variations in tank diameter it may be necessary to re-position the pointer to the empty position as follows:

ADJUSTMENT INSTRUCTIONS MODEL P-5



ADJUSTMENT INSTRUCTIONS FOR P29 OR P29A ONLY



ADJUSTMENT INSTRUCTIONS FOR P-11 AND P-14

1. Loosen compression nut which secures the tubing to the fitting on top of the gauge.
2. Remove 4 cover screws and cover.
3. The pointer is held to the hub by 2 — No. 1 — 72 screws. Loosen each screw slightly.
4. Re-position the pointer so that the pointer tip is in the center of the empty position.
5. Tighten the 1 — 72 screws and re-check the pointer position.
6. Replace cover and compression nut on top of gauge.

NOTE: If inaccurate gauge readings are observed after the pointer has been re-positioned to the empty mark, the following procedure is suggested:

(a) Make certain the air bell is on the bottom of the tank.

(b) Check tank diameter and compare with the tank diameter specified on the purchase order.

(c) Check specific gravity or grade of fuel oil.

TROUBLE SHOOTING

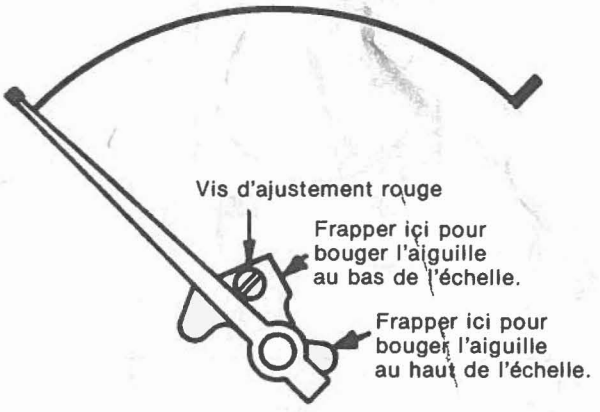
1. If the pointer oscillates between pump strokes and gradually comes to rest, check for a liquid accumulation in a low pocket of the tubing.
2. If the pointer remains on "Empty" while the pump is operated, make sure there is liquid in the tank, check for a leaking connection between tubing and gauge, check for damaged tubing and check that the air bell is on the bottom of the tank.
3. If the tank is partly empty and the pointer remains on "Full" between strokes of the pump, check for an obstruction in the tubing or crushed tubing.
4. It is possible to localize malfunctions in the tank and transmission assembly or in the gauge by disconnecting the tubing from the gauge. Place the thumb over the tubing connection and operate the pump to observe normal pointer travel.
5. If the pointer does not return to "Empty" after the tubing has been disconnected, rezero the gauge by following the procedure described in par. 2.3.
6. Additional repair or replacement of gauge parts in the field is not recommended. Return the gauge directly to the factory and attach a letter with your name, address and description of the trouble encountered.

CAUTION.
Do not use detergents, solvents, paint thinners, lighter fluids or chemical cleaning compounds to clean the gauge. Use only a damp, soft cloth and a mild soap.

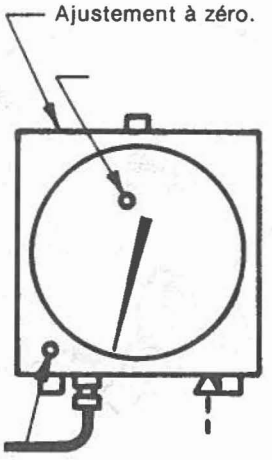
INDICATEURS HYDROSTATIQUES PNEUMERCATOR

Ces indicateurs-ci sont calibrés et ajustés à la manufacture spécifiquement pour les réservoirs sur lesquels ils doivent être installés. D'autres ajustements ne devraient pas être requis mais à cause de variations mineures dans le diamètre du réservoir il peut être nécessaire de replacer l'aiguille à la position 0.

DIRECTIVES POUR AJUSTEMENT MODELE P5



DIRECTIVES POUR AJUSTEMENT MODELES P29 OU P29A



DIRECTIVES POUR AJUSTEMENT. MODELS P11 ET P14.

1. Desserrer la noix de compression qui relie le tube à l'ajustement au haut de l'indicateur.
2. Enlever les quatre vis sur le couvert et le couvert lui-même.
3. L'aiguille est tenue au moyeu par deux vis. (No. 1.) Desserrer chacune légèrement.
4. Replacer l'aiguille de sorte que sa pointe soit au centre de la position "vide".
5. Serrer les deux vis No. 1. et revérifier la position de la pointe.
6. Replacer le couvert et la noix de compression sur le dessus de l'indicateur.

NOTE. Si des lectures non précises de l'indicateur sont observées après que la pointe ait été replacée à la position "vide", la procédure suivante est suggérée:

A. S'assurer que la cloche d'air est au fond du réservoir.

B. Vérifier le diamètre du réservoir et comparer avec le diamètre du réservoir spécifié sur l'ordre d'achat.

C. Vérifier la gravité spécifique de l'huile.

VERIFICATION (TROUBLE-SHOOTING)

1. Si l'aiguille oscille entre les coups de pompage et graduellement en vient à ne pas bouger, vérifier l'accumulation du liquide dans le tube.
2. Si l'aiguille demeure à "vide" pendant que la pompe fonctionne, s'assurer qu'il y a du liquide dans le réservoir, vérifier s'il y a une fuite entre le tube et l'indicateur, vérifier si le tube est en bon état et vérifier si la cloche d'air est au fond du réservoir.
3. Si le réservoir est partiellement vide et que l'aiguille demeure à "plein" entre les coups de pompage, vérifier s'il y a une obstruction dans le tube ou s'il est écrasé.
4. Il est possible de localiser des malformations dans le réservoir et dans l'ensemble de la transmission ou dans l'indicateur en disconnectant le tube de l'indicateur. Placer le pouce sur la connection du tube et pomper pour vérifier si l'aiguille bouge normalement.
5. Si l'aiguille ne retourne pas à "vide" après que le tube ait été disconnecté, remettre le pointeur à zéro, tel qu'indiqué précédemment.
6. Une réparation additionnelle ou le remplacement de parties de l'indicateur ne sont pas souhaitables. Retourner l'indicateur directement à la manufacture et y insérer une lettre avec vos nom, adresse et la description du trouble.

ATTENTION. Utiliser seulement un linge humide et un savon doux pour nettoyer l'indicateur.