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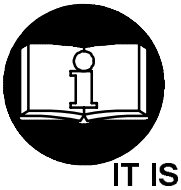
OPERATION AND MAINTENANCE MANUAL FOR MODELS PDA075, PDA125, PDA200 AND PDA30 AIR–OPERATED DIAPHRAGM PUMPS

NOTICE

The PDA Series of Diaphragm pumps are designed as suction and submersible pumps. They are especially recommended for those applications involving the pumping of either suspended particulate (wet or dry), heavily sedimented or viscous solutions, or those solutions containing solids up to the individual capacity of the pump.

Ingersoll–Rand is not responsible for customer modification of pumps for applications on which Ingersoll–Rand was not consulted.



⚠ WARNING

IMPORTANT SAFETY INFORMATION ENCLOSED.
READ THIS MANUAL BEFORE OPERATING PUMP.
IT IS THE RESPONSIBILITY OF THE EMPLOYER TO PLACE THE INFORMATION IN THIS MANUAL INTO THE HANDS OF THE OPERATOR.
FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

PLACING PUMPS IN SERVICE

- Always operate, inspect and maintain this pump in accordance with American Standards Institute Safety Code for Portable Air Tools (ANSI B186.1)
- For safety, top performance, and maximum durability of parts, operate this pump up to 110 psig (7.58 bar/758 kPa) maximum air pressure. Do not exceed 125 psig (8.61 bar/861 kPa) air pressure. Always use the proper size air hose, suction hose, and discharge hose as shown in Table 1.
- Always turn off the air supply and disconnect the air supply hose before installing, removing or adjusting any accessory on this pump, or before performing any maintenance on this pump.
- Do not use damaged, frayed or deteriorated air hoses and fittings.
- Be sure all hoses and fittings are the correct size and are tightly secured. See Dwg. TPD905–1 for a typical piping arrangement.
- Always use clean, dry air at 90 psig maximum air pressure. Dust, corrosive fumes and/or excessive moisture can ruin the motor of an air pump.
- Do not lubricate pumps with flammable or volatile liquids such as kerosene, diesel or jet fuel.
- Do not remove any labels. Replace any damaged label.
- This pump is not designed for working in explosive atmospheres.
- This pump is not insulated against electric shock.

USING THE PUMP

- Always wear eye protection when operating or performing maintenance on this pump.
- Always wear hearing protection when operating this pump.
- Use accessories recommended by Ingersoll–Rand.
- Do not start or operate this pump unless it is submerged.

NOTICE

The use of other than genuine Ingersoll–Rand replacement parts may result in safety hazards, decreased pump performance, and increased maintenance, and may invalidate all warranties.

Repairs should be made only by authorized trained personnel. Consult your nearest Ingersoll–Rand Authorized Servicenter.

Refer All Communications to the Nearest Ingersoll–Rand Office or Distributor.

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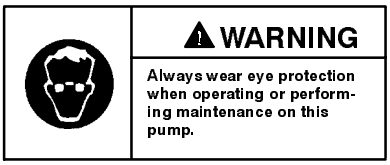
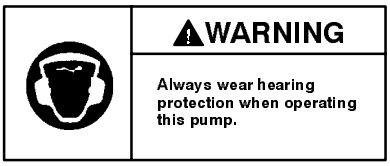
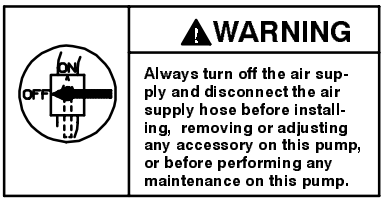
WARNING LABEL IDENTIFICATION

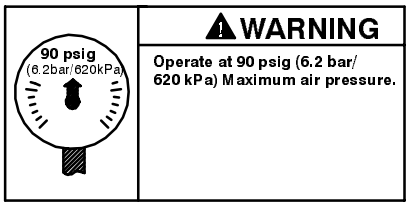
⚠ WARNING

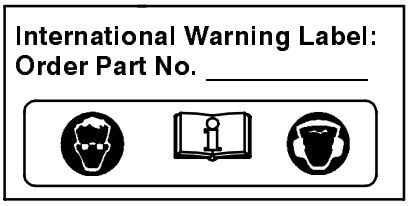
FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.











PLACING PUMP IN SERVICE

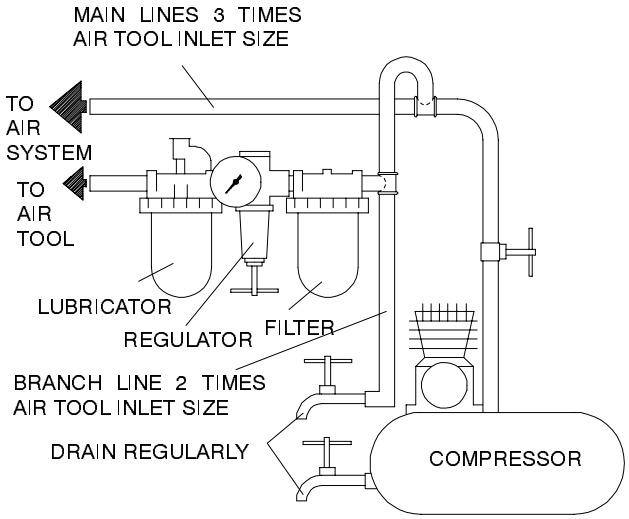
LUBRICATION

Ingersoll–Rand No. 10

Always use an air line lubricator with these pumps. We recommend the following Portable Air Line Lubricator:

Models PDA075 and PDA125:
International – No. 8LUB16C

Models PDA200 and PDA300:
International – No. 16LUB16C



(Dwg. TPD905–1)

INSTALLATION

All Models PDA075, and Models PDA125 and PDA200 with Teflon Diaphragms are furnished with a foot mounting inlet. Models PDA125 and PDA200 with Neoprene Diaphragms and all Models PDA300 are furnished with a screened inlet. For permanent installation, pumps with a foot mounting should be bolted to a mounting pad. All pumps should be attached to permanently installed piping by means of a flexible coupling to reduce pipe vibration. If the pump is used permanently submerged, remove the check valve and attach a hose to the air exhaust to pipe the exhaust above the level of the liquid being pumped.

⚠ CAUTION

Submerse the pumps only in non–corrosive materials.

If a suction hose is used, make certain that it is at least as large as specified in Table 1. If highly viscous materials are being pumped, the suction hose should be larger than specified. Make certain that all fittings and connections, particularly on the suction side of the pump are air tight. Loose connections will result in the reduction or loss of the suction capability of the pump.
These pumps will handle solids up to and including the sizes shown in Table 1. If a suction hose is used and there is any possibility of solids larger than those indicated, be certain to use a screen of the proper size on the end of the suction hose.

Hose and Solid Size									
Series	Air Inlet	Air Hose Size		Suction Size		Discharge Size		Solids Size	
		in.	mm	in.	mm	in.	mm	in.	mm
PDA075	1/4	1/4	6	1	25	3/4	19	1/8	3.1
PDA125	3/8	1/2	13	1–1/2	38	1–1/4	32	3/16	4.7
PDA200	1/2	1/2	13	2	51	2	51	1/4	6.3
PDA300	1/2	3/4	19	3	76	3	76	3/8	9.5

Table 1

OPERATION

The discharge rate of the pump can be controlled by one of two methods:

1. The preferred method is to limit the volume and/or pressure of the air supply to the pump by means of a pressure regulator or a gate valve installed at the air inlet of the pump.
2. When it is necessary to control the discharge rate at a remote location, install a valve in the discharge line. When the pump discharge is throttled down so that the discharge pressure equals the air supply pressure, the pump will stall out. No bypass or pressure relief is needed, and there will be no damage to the pump. The discharge rate of the pump can be determined by counting the number of strokes per minute, a stroke being 1/2 cycle or 1 air exhaust. The volume per stroke of each pump is shown in Table 2.

Volume per Stroke	
Pump	gallons/liter
PDA075	0.10/0.37
PDA125	0.31/1.17
PDA200	0.77/2.91
PDA300	1.38/5.22

Table 2

When the pump is used for moving thick materials, check the stroke rate to make certain that the pump is not operating at a rate faster than the material is capable of flowing. If the pump is operating at a speed too fast for the available flow, reduce the volume of air to the pump until the stroke rate corresponds to the discharge volume.

If the material being pumped is capable of solidifying or packing, always flush the pump after the pumping operation. The pump can be turned upside down and all liquid will be drained out.

APPLICATION

Few fluids are moved from one location to another without passing through a pump. Although these Diaphragm Pumps are primarily for the construction industry, there are going to be many applications – perhaps a derailed tank car – that involve fluids other than water. Because of this, it is extremely important that we understand the nature of certain chemicals and their effects on the materials used in these pumps.

To begin with, the major housing parts on these pumps are made of aluminum and are subject to corrosion by highly acidic and alkaline solutions. Use these pumps only within a pH factor range of pH6 – pH8.

⚠ WARNING

Halogenated solvents can, under certain conditions, corrode aluminum or galvanized parts. If the wet parts of a pressurized fluid system contain aluminum or galvanized parts, this corrosive action could cause an explosion.

Manufacturers typically add inhibitors to halogenated solvents. There is no known inhibitor that will prevent the corrosion reaction under all conditions. Do not use these pumps for pumping these materials. Typical examples of halogenated hydrocarbons (HHC) include, but are not limited to, the following:

Trichlorethane	**Trichlorethylene**
Methylene Chloride	**Methyl Chloride**
Carbon Tetrachloride	**Chloroform Dichlorethylene**

When pumping volatile liquids, such as gasoline or naphtha, special considerations must be given to the amount of suction lift and the size of the suction line used.

⚠ WARNING

The suction lift, whether actual vertical lift or pipe line friction, must be kept as low as possible and should never exceed 12 feet (3.6 m). Pumping rates should not exceed 20 gallons per minute.

PLACING PUMP IN SERVICE

When pumping any of the liquids shown in Table 3, always use a pump equipped with Viton or Teflon diaphragms, ball valves, and ball valve seats.

Ketones and Aldehydes	Acetates	Aromatic Hydrocarbons
1. Ethyl methyl ketone	1. Ethyl acetate	1. Benzene
2. Methylacetone	2. Isopropyl acetate	2. Toloul (toluene)
3. Acetone	3. Amyl acetate	3. Xylene (xyol)
4. Formaldehyde	4. Butyl acetate	4. Benzol
		5. Hexane
		6. Cyclohexane
		7. Naphthalene

Table 3

HOW TO ORDER A DIAPHRAGM PUMP

Model	Weight lb. (kg)	Pipe Tap (in.)		Suction Lift		Maximum Size Solids in. (mm)
		Discharge NPT (BSP)	Inlet NPT (BSP)	Dry ft. (m)	Wet ft. (m)	
NEOPRENE DIAPHRAGM with FOOT MOUNTING BASE						
PDA075A1F	22 (9.9)	3/4 (-)	3/4 (-)	18 (5.5)	25 (7.6)	1/8 (3)
PDA075A3F	22 (9.9)	- (3/4)	- (3/4)	18 (5.5)	25 (7.6)	1/8 (3)
TEFLON DIAPHRAGM with FOOT MOUNTING BASE						
PDA075T1F	22 (9.9)	3/4 (-)	3/4 (-)	12 (3.7)	25 (7.6)	1/8 (3)
PDA075T3F	22 (9.9)	- (3/4)	- (3/4)	12 (3.7)	25 (7.6)	1/8 (3)
PDA125T1F	35 (15.9)	1-1/4 (-)	1-1/2 (-)	12 (3.7)	25 (7.6)	3/16 (5)
PDA125T3F	35 (15.9)	- (1-1/4)	- (1-1/2)	12 (3.7)	25 (7.6)	3/16 (5)
PDA200T1F	72 (32.6)	2 (-)	2 (-)	13 (4.0)	20 (6.1)	1/4 (6)
PDA200T3F	72 (32.6)	- (2)	- (2)	13 (4.0)	20 (6.1)	1/4 (6)
NEOPRENE DIAPHRAGN with SCREEN BASE						
PDA125A1S	35 (15.9)	1-1/4 (-)	1-1/2 (-)	22 (6.7)	27 (8.2)	3/16 (5)
PDA125A3S	35 (15.9)	- (1-1/4)	- (1-1/2)	22 (6.7)	27 (8.2)	3/16 (5)
PDA200A1S	72 (32.6)	2 (-)	2 (-)	20 (6.1)	25 (7.6)	1/4 (6)
PDA200A3S	72 (32.6)	- (2)	- (2)	20 (6.1)	25 (7.6)	1/4 (6)
PDA300A1S	120 (54.4)	3 (-)	3 (-)	20 (6.1)	25 (7.6)	3/8 (9.5)
PDA300A3S	120 (54.4)	- (3)	- (3)	20 (6.1)	25 (7.6)	3/8 (9.5)
VITON DIAPHRAGN with SCREEN BASE						
PDA300V1S	120 (54.4)	3 (-)	3 (-)	20 (6.1)	25 (7.6)	3/8 (9.5)
PDA300V3S	120 (54.4)	- (3)	- (3)	20 (6.1)	25 (7.6)	3/8 (9.5)

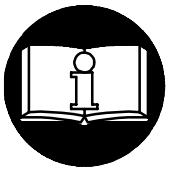
F

MANUEL D'EXPLOITATION ET D'ENTRETIEN POMPES À MEMBRANES PNEUMATIQUES MODÈLES PDA075, PDA125, PDA200 ET PDA300

NOTE

La série PDA de pompes à membranes est une famille de pompe d'épuisement et submersibles. Elles sont particulièrement recommandées pour les applications nécessitant le pompage de particules en suspension (humides ou sèches), les solutions à forte teneur en sédiments ou visqueuses, ou les solutions contenant des matières solides jusqu'à la capacité individuelle de la pompe.

Ingersoll–Rand ne peut être tenu responsable de la modification des pompes par le client pour les adapter à des applications qui n'ont pas été approuvées par Ingersoll–Rand.



⚠ ATTENTION

**D'IMPORTANTES INFORMATIONS DE SÉCURITÉ SONT JOINTES.
LIRE CE MANUEL AVANT D'UTILISER LA POMPE.
L'EMPLOYEUR EST TENU DE COMMUNIQUER LES INFORMATIONS DE CE MANUEL AUX EMPLOYÉS UTILISANT CET OUTIL.
LE NON RESPECT DES AVERTISSEMENTS SUIVANTS PEUT CAUSER DES BLESSURES.**

MISE EN SERVICE DES POMPES

- **Toujours exploiter, inspecter et entretenir cet outil conformément au Code de sécurité des outils pneumatiques portatifs de l'American National Standards Institute (ANSI B186.1).**
- **Pour des raisons de sécurité, et pour obtenir les performances et la durabilité maximales des pièces, cette pompe doit être alimentée avec de l'air comprimé à une pression maximum de 7,58 bar (758 kPa). Ne pas dépasser une pression d'air supérieure à 8,61 bar (861 kPa). Utiliser toujours un flexible d'air comprimé, un flexible d'aspiration et un flexible de refoulement aux dimensions correctes indiquées dans le Tableau 1.**
- **Couper toujours l'alimentation d'air comprimé et débrancher le flexible d'alimentation avant d'installer, déposer ou ajuster toute accessoire sur cette pompe, ou d'entreprendre une opration d'entretien quelconque sur la pompe.**
- **Ne pas utiliser des flexibles ou des raccords endommagés, effilochés ou détériorés.**
- **S'assurer que tous les flexibles et les raccords sont correctement dimensionnés et bien serrés. Voir Plan TPD905–1 pour un exemple type d'agencement des tuyauteries.**
- **Utiliser toujours de l'air sec et propre à une pression maximum de 6,2 bar. La poussière, les fumées corrosives et/ou une humidité excessive peuvent endommager le moteur d'une pompe pneumatique.**
- **Ne jamais lubrifier les pompes avec des liquides inflammables ou volatiles tels que le kérosène, le gasol ou le carburant d'aviation.**
- **Ne retirer aucune étiquette. Remplacer toute étiquette endommagée.**
- **Cette pompe n'est pas conçue pour fonctionner dans des atmosphères explosives.**
- **Cette pompe n'est pas isolée contre les chocs électriques.**

UTILISATION DE LA POMPE

- **Porter toujours des lunettes de protection pendant l'utilisation et l'entretien de cette pompe.**
- **Porter toujours une protection acoustique pendant l'utilisation de cette pompe.**
- **Utiliser les accessoires recommandés par Ingersoll-Rand.**
- **Ne pas exploiter cette pompe lorsqu'elle n'est pas submergée.**

NOTE

L'utilisation de rechanges autres que les pièces d'origine Ingersoll–Rand peut causer des risques d'insécurité, réduire les performances de la pompe et augmenter l'entretien, et peut annuler toutes les garanties.

Les réparations ne doivent être effectuées que par des réparateurs qualifiés autorisés. Consultez votre Centre de Service Ingersoll–Rand le plus proche.

Adressez toutes vos communications au Bureau Ingersoll–Rand ou distributeur le plus proche.

Imprimé aux É.U.

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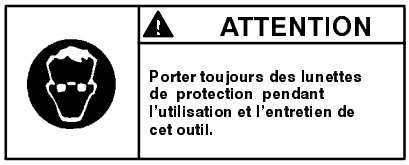
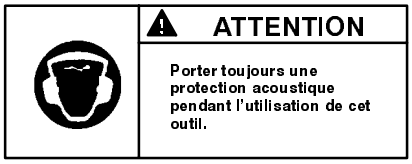
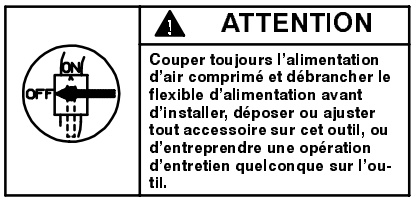
SIGNIFICATION DES ETIQUETTES D'AVERTISSEMENT

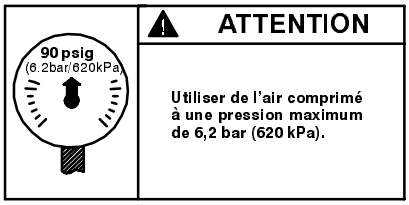
⚠ ATTENTION

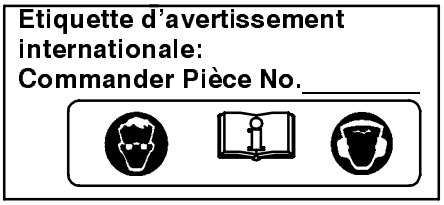
LE NON RESPECT DES AVERTISSEMENTS SUIVANTS PEUT CAUSER DES BLESSURES











MISE EN SERVICE DES POMPES

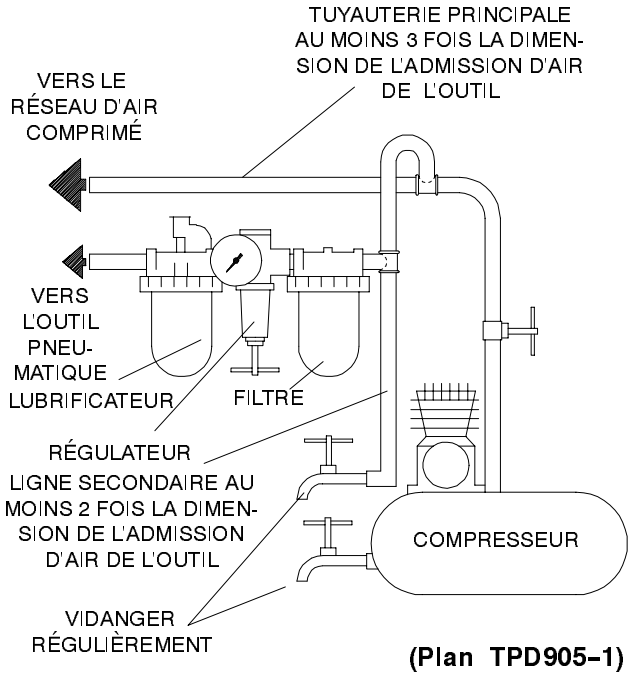
LUBRIFICATION

Ingersoll–Rand No. 10

Utiliser toujours un lubrificateur avec ces pompes. Nous recommandons le lubrificateur d'air comprimé portable suivant :

Pour les modèles PDA075 et PDA125:
International – No. 8LUB16C

Pour les modèles PDA200 et PDA300:
International – No. 16LUB16C



(Plan TPD905–1)

INSTALLATION

Tous les Modèles PDA075, PDA125 et PDA200 fournis dotés de membranes en Téflon sont fournis avec un orifice d'admission monté dans le pied de la pompe. Les modèles PDA125 et PDA200 dotés d'une membrane en néoprène et les Modèles PDA300 sont fournis avec un orifice d'admission à crépine. Pour les installations permanentes, les pompes dotées d'un pied doivent être boulonnées sur une embase de montage. Toutes les pompes doivent être connectées à des tuyauteries fixes par l'intermédiaire d'un accouplement flexible pour réduire la vibration des tuyauteries. Si la pompe est utilisée de façon permanente en position submergée , déposer le clapet anti–retour et connecter un flexible sur le raccord d'échappement d'air pour acheminer l'échappement au–dessus du niveau liquide à pomper.

AVERTISSEMENT

La pompe ne doit être submergée que dans des liquides non corrosifs.

Lorsqu'un flexible d'aspiration est employé, vérifier que son diamètre est au–moins égal à celui spécifié dans le Tableau 1. Pour le pompage de matériaux très visqueux, le diamètre du flexible d'aspiration doit être supérieur à celui spécifié.
S'assurer que les raccords et connexions, en particulier sur le côté aspiration de la pompe, sont étanches à l'air. Des connexions libres conduiront à une réduction ou une perte de la capacité d'aspiration de la pompe.
Ces pompes sont capables de pomper des matières solides jusqu'aux dimensions indiquées dans le Tableau 1. Lorsqu'un flexible d'aspiration est employé et si des solides de dimension supérieure à celle spécifiée risquent d'être pompés, installer une crépine de taille correcte à l'extrémité du flexible d'aspiration.

Dimensions des flexibles et des solides

Série	Admission d'air	flexible		aspiration		refoulement		solides	
		pouces.	mm	pouces.	mm	pouces.	mm	pouces.	mm
PDA075	1/4	1/4	6	1	25	3/4	19	1/8	3,1
PDA125	3/8	1/2	13	1-1/2	38	1-1/4	32	3/16	4,7
PDA200	1/2	1/2	13	2	51	2	51	1/4	6,3
PDA300	1/2	3/4	19	3	76	3	76	3/8	9,5

Tableau 1

FONCTIONNEMENT

Le débit de refoulement de la pompe peut être contrôlé de deux façons différentes :

1. La méthode préférée est de limiter le volume et/ou la pression de l'alimentation d'air comprimé de la pompe au moyen d'un régulateur de pression ou d'un robinet-vanne monté sur l'admission d'air de la pompe.
2. Lorsque le débit de refoulement doit être contrôlé à un endroit éloigné de la pompe, monter une vanne sur le circuit de refoulement. Lorsque le refoulement de la pompe est réduit jusqu'à ce que la pression de refoulement soit égale à la pression d'air comprimé, la pompe calera. Il n'est pas nécessaire de prévoir un bypass ou une soupape de sûreté, et la pompe ne risque pas d'être endommagée. Le débit de refoulement de la pompe peut être déterminé en comptant le nombre de courses par minutes, une course étant égale à 1/2 cycle ou 1 échappement d'air. Le volume par course de chaque pompe est indiqué dans le Tableau 2.

Volume par course	
Pompe	gallons/litres
PDA075	0,10/0,37
PDA125	0,31/1,17
PDA200	0,77/2,91
PDA300	1,38/5,22

Tableau 2

Lorsque la pompe est utilisée pour le transfert de matériaux épais, vérifier la cadence des courses de la pompe pour s'assurer que la pompe ne fonctionne pas à un débit plus rapide que celui possible pour l'écoulement du matériau. Si la vitesse de la pompe est trop rapide pour le matériau pompé, réduire le volume d'air d'alimentation de la pompe jusqu'à ce que la cadence de la pompe corresponde au volume de refoulement.
Si le matériau à pomper risque de se solidifier ou de se compacter, rincer la pompe après chaque pompage. La pompe peut être retournée pour vidanger tout le liquide qu'elle contient.

APPLICATION

Peu de fluides sont déplacés d'un endroit à un autre sans l'aide d'une pompe. Bien que ces pompes à membranes soient destinées principalement à l'industrie du bâtiment, elles peuvent être utilisées dans de nombreuses applications mettant en cause des fluides autres que de l'eau, comme par exemple, lors du déraillement d'un wagon-citerne. Par conséquent, il est important de bien comprendre la nature de certains porduits chimiques et leurs effets sur les matériaux employés dans la construction de ces pompes.
Pour commencer, les pièces principales du corps de ces pompes sont fabriquées en aluminium et sont sujettes à corrosion en présence de solutions acides ou alcalines. Ces pompes ne peuvent donc être utilisées que dans une plage de fluides ayant un ph compris entre 6 et 8.

⚠ ATTENTION

Les solvants halogénés peuvent, dans certaines conditions, attaquer les pièces en aluminium ou galvanisées. Si les parties humides d'un circuit de fluide pressurisé contiennent des pièces en aluminium ou galvanisées, cette action corrosive pourrait causer une explosion.

Les fabriquants ajoutent normalement des inhibiteurs dans les solvants halogénés. Aucun inhibiteur connu n'empêchera la corrosion dans toutes les conditions. Ne jamais utiliser ces pompes avec ces matériaux. Parmi les hydrocarbures halogénés (HHC) on trouve à titre d'exemple seulement:

Trichloroéthane **Trichloréthylène**
Chlorure de méthane **Chlorure de méthyle**
Tétrachlorure de carbone **Bichloréthylène de chloroforme**

Des considérations spéciales doivent être prises pour le pompage de liquides volatiles, tels que l'essence ou le naphta, au niveau de la hauteur d'aspiration et du diamètre des tuyaux d'aspiration.

⚠ ATTENTION

La pression d'aspiration , que ce soit la hauteur verticale réelle ou le frottement dans la tuyauterie, doit être maintenue aussi basse que possible et ne doit en aucun cas dépasser 3,6 m. Les débits de pompage ne devraient pas dépasser 90 litres/mn.

MISE EN SERVICE DES POMPES

Pour le pompage des liquides indiqués dans le Tableau 3, utiliser toujours une pompe équipée de membranes, de vannes sphériques et de sièges de vanne en Viton ou en Téflon.

Cétones et Aldéhydes	Acétates	Hydrocarbures aromatiques
1. Cétone éthyle méthyle	1. Acétate d'éthyle	1. Benzène
2. Méthylacétone	2. Acétate isopropylique	2. Toluène
3. Acétone	3. Acétate d'amyle	3. Xylène
4. Formaldéhyde	4. Acétate butylique	4. Benzol
		5. Hexane
		6. Cyclohexane
		7. Naphtalène

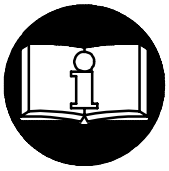
Tableau 3

E

MANUAL DE FUNCIONAMIENTO Y MANTENIMIENTO BOMBAS NEUMÁTICAS DE DIAFRAGMA MODELOS PDA075, PDA125, PDA200 Y PDA300

NOTA

Las bombas de diafragma de la serie PDA están diseñadas como bombas de aspiración y sumergibles. Se recomiendan especialmente para aquellas aplicaciones que incluyan el bombeo de partículas en suspensión (seco o mojado), soluciones muy sedimentadas o viscosas, o aquellas soluciones que contengan sólidos hasta la capacidad individual de la bomba.
Ingersoll–Rand no aceptará responsabilidad alguna por las modificaciones de las bombas efectuadas por el cliente para aplicaciones que no hayan sido consultadas con Ingersoll–Rand.



⚠ AVISO

SE ADJUNTA INFORMACIÓN IMPORTANTE DE SEGURIDAD.
LEA ESTE MANUAL ANTES DE USAR LA BOMBA
ES RESPONSABILIDAD DE LA EMPRESA ASEGURARSE DE QUE EL OPERARIO ESTÉ AL TANTO DE LA INFORMACIÓN QUE CONTIENE ESTE MANUAL.
EL HACER CASO OMISO DE LOS AVISOS SIGUIENTES PODRÍA OCASIONAR LESIONES.

PARA PONER LA BOMBA EN SERVICIO

- **Utilice, examine y mantenga siempre esta herramienta conforme al código de seguridad para herramientas neumáticas portátiles de la American National Standards Institute (ANSI B186.1).**
- **Utilice, inspeccione y mantenga esta bomba siempre de acuerdo con todas las normativas locales y nacionales que se apliquen a las bombas neumáticas de operación manual o que se sujeten con la mano.**
- **Para mayor seguridad, óptimo rendimiento y larga vida útil de las piezas, utilice esta bomba hasta una presión de aire de 110 psig (7,58 bar/758 kPa). La presión de aire no debe exceder los 125 psig (8,61 bar/861 kPa). Las mangueras de aire, de aspiración y de descarga deben ser del tamaño apropiado como se indica en el cuadro 1.**
- **Corte siempre el suministro de aire y desconecte la manguera de suministro de aire antes de instalar, desmontar o ajustar un accesorio de la bomba, o antes de realizar trabajos de mantenimiento de la misma.**
- **No utilice mangueras de aire y racores dañados, desgastados ni deteriorados.**
- **Asegúrese de que todos los racores y mangueras sean del tamaño correcto y estén bien apretados. El Esq. TPD905–1 muestra una disposición característica de las tuberías.**
- **Use siempre aire limpio y seco a una presión máxima de 90 psig (6,2 bar/620 kPa). El polvo, los gases corrosivos y el exceso de humedad pueden estropear el motor de una bomba neumática.**
- **No lubrique la bomba con líquidos inflamables o volátiles tales como queroseno, diesel o combustible para motores a reacción.**
- **No saque ninguna etiqueta. Sustituya toda etiqueta dañada.**
- **Esta bomba no ha sido diseñada para trabajar en ambientes explosivos.**
- **Esta bomba no está aislada contra descargas eléctricas.**

UTILIZACIÓN DE LA BOMBA

- **Lleve siempre protección ocular al utilizar la bomba o realizar trabajos de mantenimiento en la misma.**
- **Lleve siempre protección para los oídos al utilizar esta bomba.**
- **Utilice únicamente los accesorios recomendados por Ingersoll–Rand.**
- **No arranque ni utilice la bomba si no está sumergida.**

NOTA

El uso de piezas de recambio que no sean las auténticas piezas Ingersoll–Rand puede poner en peligro la seguridad, reducir el rendimiento de la bomba y aumentar los cuidados de mantenimiento necesarios, así como invalidar toda garantía.

Las reparaciones sólo se deben encomendar a personal debidamente cualificado y autorizado. Consulte con el centro de servicio autorizado Ingersoll–Rand más próximo.

Toda comunicación se deberá dirigir a la oficina o al distribuidor Ingersoll–Rand más próximo.

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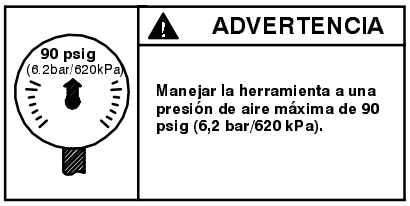
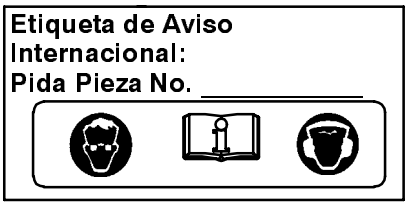
ETIQUETAS DE AVISO

⚠ AVISO

EL HACER CASO OMISO DE LOS AVISOS SIGUIENTES PODRÍA OCASIONAR LESIONES.





PARA PONER LA BOMBA EN SERVICIO

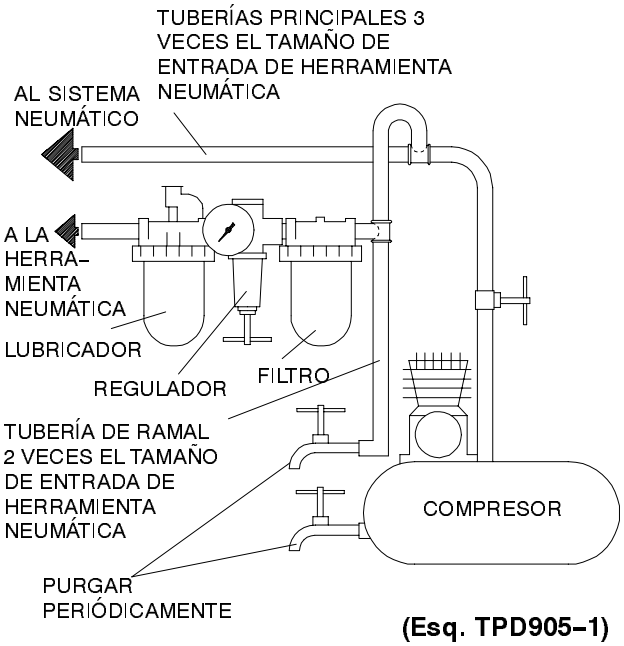
LUBRICACIÓN

Ingersoll-Rand N°. 10

Utilice siempre un lubricador de aire comprimido con esta bomba. Recomendamos el siguiente lubricador portátil de aire comprimido:

Para los modelos PDA075 y PDA125:
Internacional - N°. 8LUB16C

Para los modelos PDA200 y PDA300:
Internacional - N°. 16LUB16C



(Esq. TPD905-1)

INSTALACIÓN

Todos los modelos PDA075, así como los modelos PDA125 y PDA200 con diafragma de teflón, llevan una admisión con pedestal. Los modelos PDA125 y PDA200 con diafragma de neopreno y todos los modelos PDA300 llevan un tamiz de admisión. Para las instalaciones permanentes, las bombas con pedestal deben fijarse a una placa de montaje. Todas las bombas deben conectarse a un sistema de tuberías permanente por medio de un acoplamiento flexible para reducir la vibración de las tuberías. Si la bomba se usa permanentemente sumergida, saque la válvula antirretorno y conecte una manguera al escape para llevar el aire de escape más arriba del nivel del líquido que se bombea.

PRECAUCIÓN

Sumerja las bombas solamente en materiales no corrosivos.

Si utiliza una manguera de aspiración, asegúrese de que el diámetro de la misma no sea inferior al que se especifica en el cuadro 1. Si se está bombeando material muy viscoso, la manguera de aspiración debe ser más grande de lo especificado. Asegúrese de que todos los racores y conexiones sean herméticos, sobre todo los que están en el lado de aspiración de la bomba. Las conexiones flojas reducirán o anularán la capacidad de aspiración de la bomba.

Estas bombas manejan sólidos hasta los tamaños indicados en el cuadro 1. Si se utiliza una manguera de aspiración y existe la posibilidad de que haya sólidos mayores de los indicados, asegúrese de utilizar un tamiz del tamaño apropiado en el extremo de la manguera de aspiración.

Tamaños de manguera y de sólidos

Serie	Admisión de aire	Tamaño manguera de aire		Tamaño manguera aspiración		Tamaño manguera descarga		Tamaño de sólidos	
		pulg.	mm	pulg.	mm	pulg.	mm	pulg.	mm
PDA075	1/4	1/4	6	1	25	3/4	19	1/8	3,1
PDA125	3/8	1/2	13	1-1/2	38	1-1/4	32	3/16	4,7
PDA200	1/2	1/2	13	2	51	2	51	1/4	6,3
PDA300	1/2	3/4	19	3	76	3	76	3/8	9,5

Cuadro 1

MANEJO

El caudal de descarga de la bomba puede regularse por uno de dos métodos:

1. El método preferido es el de limitar el volumen y/o la presión del aire suministrado a la bomba por medio de un regulador de presión o una válvula de corredera instalada en la admisión de aire de la bomba.
2. Cuando sea necesario regular el caudal de descarga desde una posición alejada, instale una válvula en la tubería de descarga. Cuando se disminuya la descarga de bomba y la presión de descarga iguale la presión del aire suministrado, la bomba se calará. No se necesita ninguna derivación ni descarga de presión, ni se dañará la bomba.
   El caudal de descarga de la bomba puede determinarse contando el número de carreras por minuto: una carrera representa 1/2 ciclo o 1 escape de aire. El volumen por carrera de cada bomba se muestra en el cuadro 2.

Volumen por carrera

Bomba	Galones/litros
PDA075	0,10/0,37
PDA125	0,31/1,17
PDA200	0,77/2,91
PDA300	1,38/5,22

Cuadro 2

Cuando se utiliza la bomba para trasladar materiales espesos, compruebe el ritmo de bombeo para asegurarse de que no esté funcionando a una velocidad superior a la velocidad a la que puede fluir el material. Si la bomba funciona a demasiada velocidad para el grado de fluidez del material, reduzca el volumen de aire que pasa a la bomba hasta que el ritmo de bombeo corresponda al caudal de descarga.
Si el material bombeado puede solidificarse o incrustarse, limpie siempre la bomba una vez terminada la operación de bombeo. La bomba puede ponerse boca abajo para drenar todo el líquido.

USO

Son pocos los líquidos que se desplazan de un lugar a otro sin intervención de una bomba. Si bien estas bombas de diafragma están encaminadas principalmente para el ramo de la construcción, habrá otras muchas aplicaciones –como puede ser el descarrilamiento de un coche cisterna– que implican líquidos que no sean del agua. Por ello es muy importante comprender la naturaleza de ciertos productos químicos y sus efectos sobre los materiales que se emplean en estas bombas.
Para empezar, las piezas principales de la carcasa de estas bombas son de aluminio y están sujetas a la corrosión, resultado de soluciones muy ácidas o alcalinas. Estas bombas sólo se deben utilizar dentro de la gama de factores pH de pH6 a pH8.

⚠ AVISO

En ciertas circunstancias los disolventes halogenados pueden corroer el aluminio o las piezas galvanizadas. Si las piezas mojadas de un sistema de líquido bajo presión contienen aluminio o piezas galvanizadas, esta acción corrosiva puede causar una explosión.

Los fabricantes suelen añadir inhibidores a los solventes halogenados. No hay ningún inhibidor conocido que pueda evitar la acción corrosiva en todas las condiciones. No utilice estas bombas para bombear estas materias. Los ejemplos típicos de hidrocarburos halogenados (HHC) incluyen pero no se limitan a lo siguiente:

Tricloretano	**Tricloroetileno**
Cloruro de metileno	**Cloruro de metilo**
Tetracloruro de carbono	**Dicloroetileno de cloroformo**

Al bombear líquidos volátiles tales como gasolina o nafta, deberá tener bien en cuenta la altura de elevación y el tamaño de la tubería de aspiración que se utiliza.

⚠ AVISO

La altura de elevación, se trata de la elevación vertical o de la fricción de la tubería, debe mantenerse en la mínima posible y no debe nunca exceder los 3,6 m. El caudal de bombeo no debe exceder los 20 galones por minuto.

PARA PONER LA BOMBA EN SERVICIO

Al bombear alguno de los líquidos indicados en el cuadro 3, utilice siempre una bomba equipada con diafragma, válvula de bola y asiento de válvula de bola de Teflón o Vitón.

Cetonas y aldehidos	Acetatos	Hidrocarburos aromáticos
1. Cetona etilmetílica	1. Acetato etílico	1. Benceno
2. Acetona metílica	2. Acetato isopropílico	2. Tolueno
3. Acetona	3. Acetato amílico	3. Xileno
4. Formaldehido	4. Acetato butílico	4. Benzol
		5. Hexano
		6. Ciclohexano
		7. Naftaleno

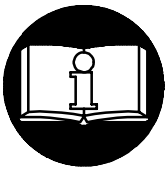
Cuadro 3

P

MANUAL DE FUNCIONAMENTO E MANUTENÇÃO
BOMBAS DE DIAFRAGMA PNEUMÁTICAS
MODELOS PDA075, PDA125, PDA200 E PDA300

AVISO

As bombas de Diafragma Séries PDA são concebidas como sendo bombas de sucção submersíveis. Elas são especialmente recomendadas para estas aplicações envolvendo o bombeamento de particulado suspenso (a sêco ou a húmido), pesadamente sedimentado ou soluções viscosas, ou aquelas soluções que contenham sólidos até a capacidade individual da bomba.
A Ingersoll–Rand não é responsável por modificações, feitas pelo cliente em ferramentas, nas quais a Ingersoll–Rand não tenha sido consultada.



⚠ ADVERTÊNCIA

INFORMAÇÃO DE SEGURANÇA IMPORTANTE EM ANEXO.
LEIA ESTE MANUAL ANTES DE OPERAR A FERRAMENTA.

É DA RESPONSABILIDADE DO EMPREGADOR COLOCAR A INFORMAÇÃO DESTE MANUAL NAS MÃOS DO OPERADOR.

O NÃO CUMPRIMENTO DAS SEGUINTES ADVERTÊNCIAS PODE RESULTAR EM FERIMENTOS.

COLOCANDO AS BOMBAS EM FUNCIONAMENTO

- **Sempre opere, inspeccione e mantenha esta ferramenta de acordo com o Código de Segurança do Instituto Americano de Padrões Nacionais para Ferramentas Pneumáticas Portáteis (ANSI B186.1).**
- **Para segurança, máximo desempenho e máxima durabilidade das peças, opere esta bomba com uma pressão de ar máxima de 7,58 bar/758 kPa (110 psig). Não exceda a pressão de ar acima de 8,61 bar/861 kPa (125 psig). Use sempre o tamanho apropriado de mangueira de ar, mangueira de sucção e mangueira de descarga como mostrado na Tabela 1.**
- **Desligue sempre a alimentação de ar e desligue a mangueira de alimentação de ar antes de instalar, remover ou ajustar qualquer acessório nesta ferramenta, ou antes de executar qualquer serviço de manutenção nesta ferramenta.**
- **Não use mangueiras de ar ou adaptadores danificados, gastos ou deteriorados.**
- **Certifique–se de todas as mangueiras e adaptadores são do tamanho correcto e estão seguramente apertados. Veja o Desenho TPD905–1 para a montagem normal da tubagem.**
- **Use sempre ar seco e limpo com uma pressão máxima de 90 psig. Pó, fumos corrosivos e/ou humidade excessiva podem arruinar o motor de uma bomba pneumática.**
- **Não lubrifique as bombas com líquidos inflamáveis ou voláteis tais como querosene, diesel ou combustível de jactos.**
- **Não remova nenhum rótulo. Substitua qualquer rótulo danificado.**

USANDO A FERRAMENTA

- **Use sempre óculos de proteção quando estiver operando ou executando algum serviço de manutenção nesta bomba.**
- **Use sempre protecção contra ruído quando operar esta bomba.**
- **Use acessórios recomendados pela Ingersoll–Rand.**
- **Não ligue ou opere esta bomba a não ser que ela esteja submersa.**
- **Esta Bomba não foi concebida para trabalhos em atmosferas explosivas.**
- **Esta Bomba não está isolada contra choques eléctricos.**

AVISO

O uso de peças de substituição que não sejam genuinamente da Ingersoll–Rand podem resultar em riscos de segurança, diminuição do desempenho da ferramenta, aumento da necessidade de manutenção e pode invalidar todas as garantias.

As reparações devem ser feitas somente por pessoal treinado autorizado. Consulte o Centro de Serviços da Ingersoll–Rand mais próximo.

Envie Todos os Comunicados Para o Distribuidor ou Escritório da Ingersoll–Rand Mais Próximo.

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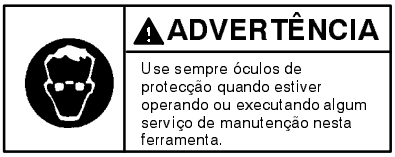
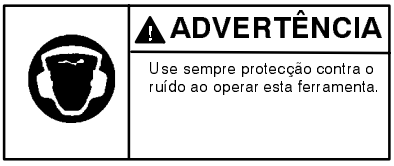
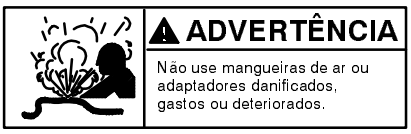
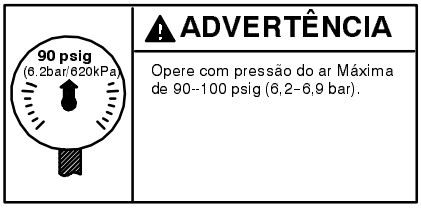
⚠ ADVERTÊNCIA

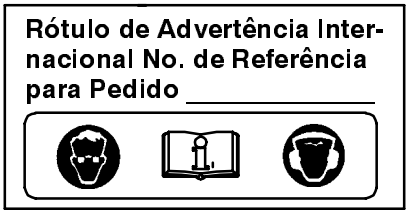
O NÃO CUMPRIMENTO DAS SEGUINTES ADVERTÊNCIAS PODE RESULTAR EM FERIMENTO.











COLOCANDO A FERRAMENTA EM FUNCIONAMENTO

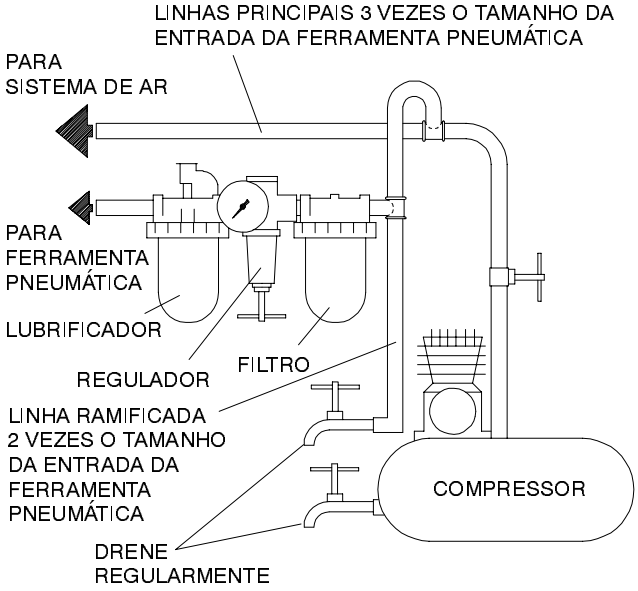
LUBRIFICAÇÃO

Ingersoll-Rand No. 10

Use sempre use um lubrificador de ar de linha com estas bombas. Nós recomendamos os seguintes Lubrificadores de Conduta de Ar Portáteis:

Para Modelos PDA075-EU e PDA125-EU:
Para Internacional - No. 8LUB16C

Para Modelos PDA200-EU e PDA300-EU:
Para Internacional - No. 16LUB16C



(Desenho TPD905-1)

INSTALAÇÃO

Todos os Modelos PDA075-EU, e Modelos PDA125-EU e PDA200-EU com Diafragmas de Teflon são fornecidos com uma entrada de montagem no pé de apoio. Modelos PDA125-EU e PDA200-EU com Diafragmas de Neoprene e todos os Modelos PDA300-EU são fornecidos com uma entrada vedada por uma tela. Para instalação permanente, as bombas com um pé de apoio para montar devem ser aparafusadas no painel de montagem. Todas as bombas devem ser acopladas a uma tubagem instalada permanentemente por meio de um acoplamento flexível para reduzir a vibração do tubo. Se a bomba for usada permanentemente submersa, remova a válvula de verificação e acople uma mangueira ao escape de ar para conectar com tubos o escape acima do nível do líquido a ser bombeado.

⚠ CUIDADO

As bombas devem ser submersas somente em materiais não-corrosivos.

Se a bomba de sucção for usada, certifique-se de que ela seja no mínimo como especificado na Tabela 1. Se materiais altamente viscosos estiverem sendo bombeados, a mangueira de sucção deve ser maior que o especificado. Esteja certo de que todos os adaptadores e conexões, particularmente aqueles no lado de sucção onde a bomba está apertada pneumaticamente. Conexões frouxas resultarão na redução ou perda de capacidade de sucção da bomaba.

Estas bombas irão lidar com sólidos até e inclusive os tamanhos mostrados na Tabela 1. Se a mangueira de sucção for usada e houver qualquer possibilidade dos sólidos serem maiores do que aqueles indicados, certifique-se de que uma tela do tamanho apropriado seja usada na extremidade da mangueira de sucção.

ESPECIFICAÇÕES

Mangueira e Tamanho do Sólidos									
Séries	Entrada de Ar	Tamanho da Mangueira de Ar		Tamanho da Mangueira de Sucção		Tamanho da Mangueira de Descarga		Tamanho dos Sólidos	
		mm	pol.	mm	pol.	mm	pol.	mm	pol.
PDA075–EU	1/4	6	1/4	25	1	19	3/4	3,1	1/8
PDA125–EU	3/8	13	1/2	38	1–1/2	32	1–1/4	4,7	3/16
PDA200–EU	1/2	13	1/2	51	2	51	2	6,3	1/4
PDA300–EU	1/2	19	3/4	76	3	76	3	9,5	3/8

Tablela 1

OPERAÇÃO

A taxa de descarga da bomba pode ser controlada por um dos dois método:

1. O método preferido é limitar o volume e/ou a pressão de alimentação de ar para a bomba por meio de uma regulador de pressão ou uma válvula de vedação instalada na entrada de ar da bomba.
2. Quando for necessário controlar a taxa de descarga em um local remoto, instale uma válvula na linha de descarga. Quando a descarga da bomba for diminuída de modo que a pressão de descarga se iguale à pressão de alimentação de ar, a bomba irá engasgar. Nenhum desvio ou alívio de pressão é necessário, e não haverá dano algum à bomba.

   A taxa de descarga da bomba pode ser determinada pelo número de impactos por minuto, um impacto sendo 1/2 ciclo ou um escape de ar. O volume de impacto de cada bomba é mostrado na Tabela 2.

Volume por Impacto	
Bomba	galões/litros
PDA075–EU	0,10/0,37
PDA125–EU	0,31/1,17
PDA200–EU	0,77/2,91
PDA300–EU	1,38/5,22

Tablela 2

Quando a bomba for usada para mover materiais espessos, verifique a taxa de impacto para se certificar de que a bomba não está operando em uma taxa mais rápida do que o material é capaz de fluir. Se a bomba estiver operando em velocidade rápida demais para o fluxo disponível, reduza o volume de ar para a bomba até que a taxa de impacto corresponda ao volume de descarga.

Se o material sendo bombeado for capaz de solidificar ou formar "pacotes", limpe sempre a bomba depois da operação da bomba. A bomba pode se virada de cabeça para baixo e todo o líquido será drenado.

APLICAÇÃO

Poucos fluídos são movidos de um lugar para outro sem passar por uma bomba. Embora está Bombas de Diafragma sejam primariamente para a indústria de construção, muitas aplicações estão sendo utilizadas – talvez um carro de tanque fora do trilho – que envolvem fluídos que não sejam a água. Por causa disto, é extremamente importante que nós compreendamos a natureza de certos materiais químicos e seus efeitos em materiais usados nestas bombas.

Para começar, a maioria das peças do corpo destas bombas é feita de alumínio e está sujeita a corrosão por soluções altamente ácidas ou alcalinas. Use estas bombas somente dentro de um intervalo de factor de pH de 6 a8.

⚠ ADVERTÊNCIA

Solventes halogenados podem, sob certas condições, corroerem peças de alumínio ou galvanizadas. Se peças húmidas de sistema de fluido contiver alumínio ou peças galvanizadas, esta ação corrosiva pode causar explosão.

Os fabricantes adicionam tipicamente solventes halogenados. Não há nenhum inibidor que irá previnir a reação de corrosão sob todas as condições. Não use estas bombas para bombear estes materiais. Exemplos típicos de hidrocarbonos halogenados (HHC) incluem, mas não são limitados aos seguintes:

Tricloretano	**Tricloroetileno**
Cloreto de Metileno	**Cloreto de Metil**
Tetracloreto de Carbono	**Dicloroetileno de Clorofórmio**

Ao bombear líquidos voláteis, tais como gasolina ou nafta, considerações especiais devem ser dadas à quantidade de levante de sucção e o tamanho da conduta de sucção utilizada.

⚠ ADVERTÊNCIA

O levante de sucção, quer seja um levante vertical real ou fricção de conduta de tubo, deve ser mantido tão baixo quanto possível e nunca deve exceder 3,6m (12 pés). Taxas de Bombeamento não devem exceder a 20 galões por minuto.

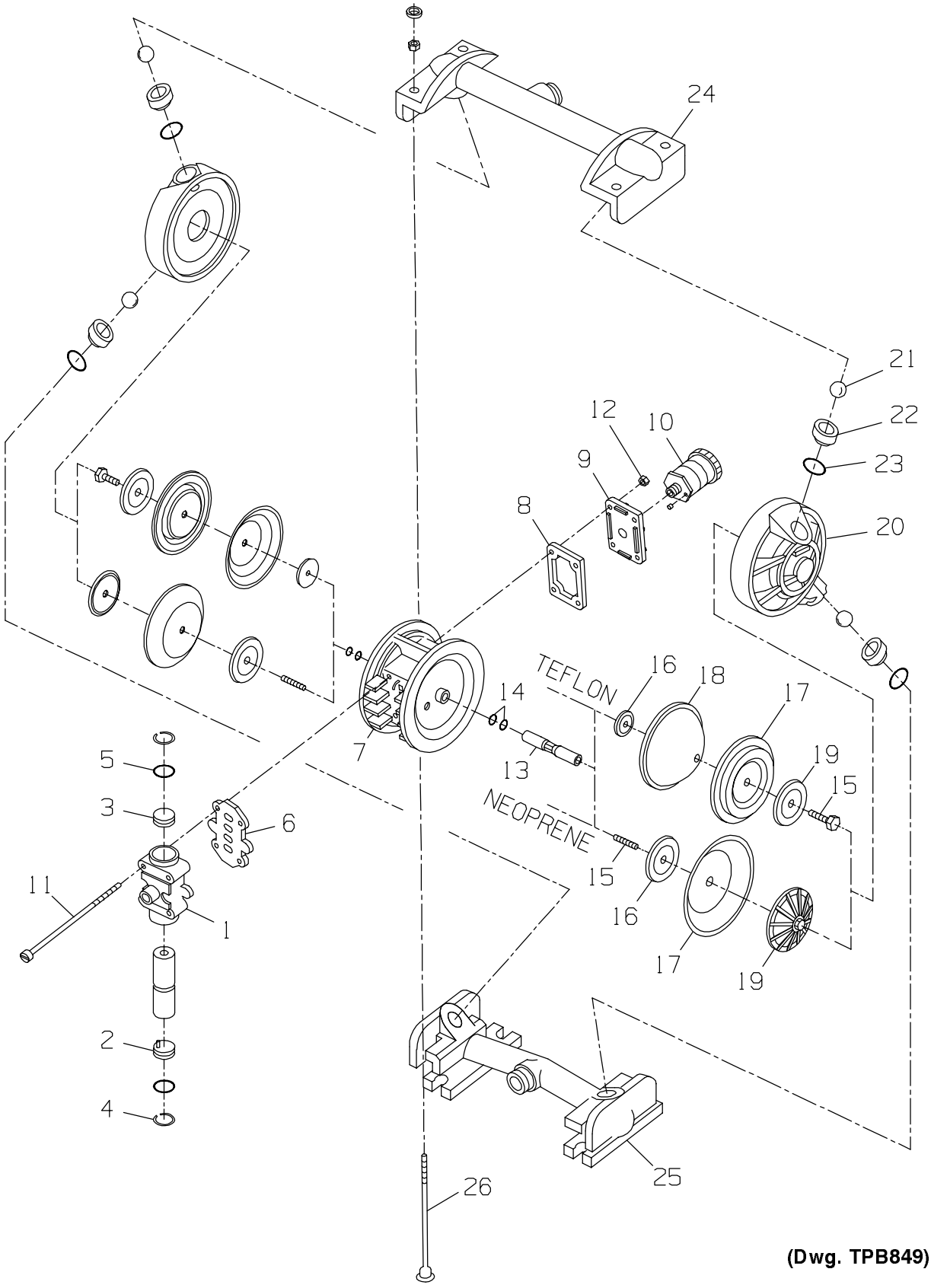
COLOCANDO A BOMBA EM FUNCIONAMENTO

Ao bombear qualquer destes líquidos mostrados na Tabela 3, use sempre uma bomba equipada com Diafragmas de Teflon ou Viton, válvulas de esferas e assentos de válvula de esferas.

Acetonas e Aldeídos	Acetatos	Hidrocarbonos Aromáticos
1. Etil metil acetona	1. Acetato Etílico	1. Benzeno
2. Metilacetona	2. Acetato Isopropílico	2. Toloul (Tolueno)
3. Acetona	3. Amyl acetato	3. Xileno (xylol)
4. Formolaldeído	4. Butil acetato	4. Benzol
		5. Hexano
		6. Ciclohexano
		7. Naftaleno

Tablela 3

Series PDA075

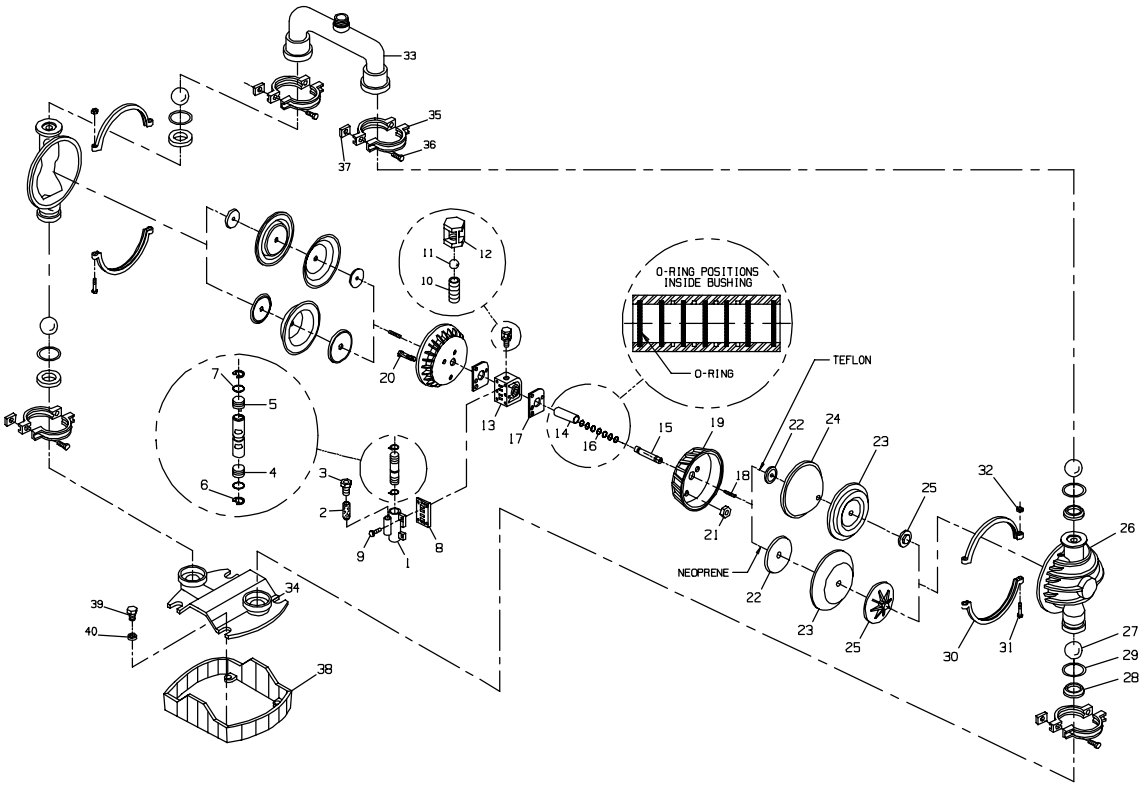


(Dwg. TPB849)

		PART NUMBER FOR ORDERING			PART NUMBER FOR ORDERING
1	Air Valve Body (includes piston) .	PDA075–LF80A	19	Outer Piston (2)	
2	Bottom Air Valve Cap	PDA075–80S		for models with Neoprene	
3	Top Air Valve Cap (includes			Diaphragm	PDA075–B81B
	guide)	PDA075–80RS		for models with Teflon	
4	Valve Cap Retaining Ring (2)	PDA075–80T		Diaphragm	PDA075–T81B
5	Valve Cap O–ring (2)	PDA075–2D	20	Water Chamber (2)	PDA075–85
6	Air Valve Gasket	PDA075–80B	21	Ball Valve (4)	
7	Center Block	PDA075–80HA		Neoprene	PDA075–91
8	Muffler Plate Gasket	PDA075–80MG		Teflon	PDA075–TF91
9	Muffler Plate	PDA075–80M	22	Ball Valve Seat (4)	PDA075–A90
10	Muffler	PDA075–70C	23	Valve Seat O–ring (4)	
11	Air Valve Body Mounting			Neoprene	PDA075–90B
	Screw (4)			Teflon	PDA075–90T
	for models with Neoprene		24	Discharge Manifold	
	Diaphragm	PDA075–80AS		with 3/4” National Pipe	
	for models with Teflon			Thread	PDA075–86NPT
	Diaphragm	PDA075–S80AS		with 3/4” British Standard	
12	Mounting Screw Nut (4)	PDA075–S62C		Pipe	PDA075–86BSP
13	Diaphragm Shaft		25	Inlet Manifold	
	for models with Neoprene			with 3/4” National Pipe	
	Diaphragm	PDA075–81A		Thread	PDA075–87NPT
	for models with Teflon			with 3/4” British Standard	
	Diaphragm	PDA075–T81A		Pipe	PDA075–87BSP
14	Diaphragm Shaft O–ring (4)	PDA075–LF80JH	26	Manifold Bolt Assembly (consists	
15	Piston Shaft (2)			of Bolt, Washer and Nut) (4)	
	for models with Neoprene			for models with Neoprene	
	Diaphragm	PDA075–81F		Diaphragm	PDA075–84
	for models with Teflon			for models with Teflon	
	Diaphragm	PDA075–81AN		Diaphragm	PDA075–S84
16	Inner Piston (2)		*	Nameplate	
	for models with Neoprene			for models ending in –EU . .	PDA200–EU–301
	Diaphragm	PDA075–81C		for all other models	PDA200–301
	For models with Teflon		*	Caution Label	
	Diaphragm	PDA075–T81C		for models ending in –EU . .	EU–99
17	Diaphragm (2)			for all other models	PDA075–33
	Neoprene	PDA075–83	*	Tune–up Kit (for models with	
	Teflon	PDA075–TF83		Neoprene Diaphragms) (includes	
18	Back–up Diaphragm (for models			illustrated items 14[4], 17[2],	
	with Teflon Diaphragm) (2)	PDA075–TF83B		21[4] and 23[4])	PDA075–TK2

* Not illustrated.

Series PDA125



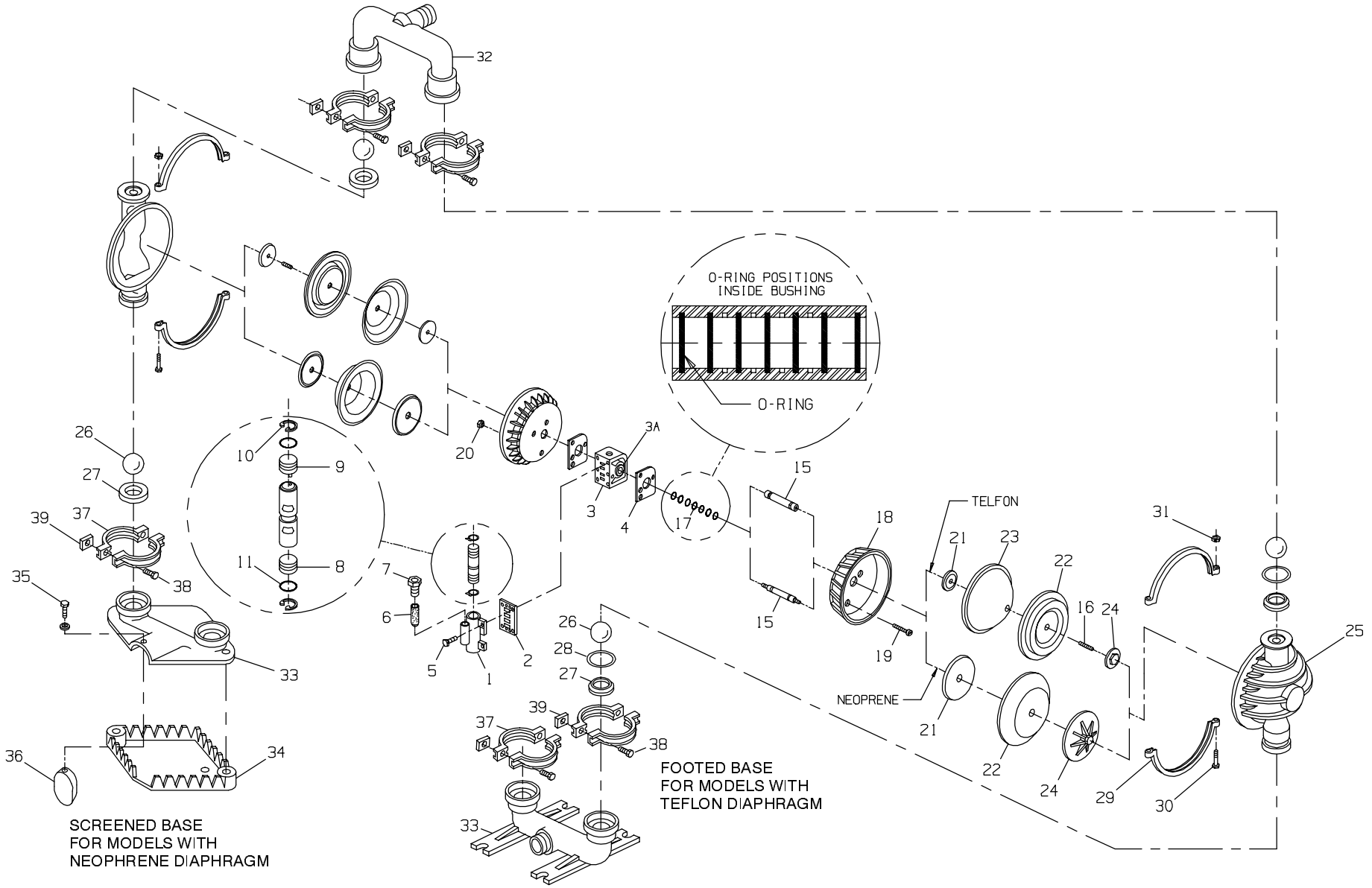
(Dwg. TPA1234)

	PART NUMBER FOR ORDERING			PART NUMBER FOR ORDERING	
1	Air Valve Body (includes piston) . . .	PDA125-LF60A	16	Diaphragm Shaft O-ring (7)	PDA125-LF20J
2	Air Valve Screen	PDA125-60E	17	Center Block Gasket (2)	PDA125-60P
3	Reducer Bushing	PDA125-60AP	18	Diaphragm Shaft Stud (2)	
4	Bottom Air Valve Cap	PDA125-60S		for models with Neoprene	
5	Top Air Valve Cap (includes guide) .	PDA125-60R		Diaphragm	PDA125-T21F
6	Valve Cap Retaining Ring (2)	PDAl25-60T		for models with Teflon	
7	Valve Cap O-ring (2)	PDA125-60U		Diaphragm	PDA125-T61F
8	Air Valve Gasket	PDA125-P60B	19	Air Chamber (2)	PDA125-62
9	Air Valve Body Mounting		20	Air Chamber Mounting Screw (3) . .	PDA125-63B
	Screw (4)	PDA125-60AS	21	Chamber Mounting Screw Nut (3) .	PDA125-62C
10	Nipple	PDA125-20F	22	Inner Piston (2)	
11	Check Ball	PDA125-20M		for models with Neoprene	
12	Check Body	PDA125-20K8		Diaphragm	PDA125-61C
13	Center Block	PDA125-LF60H		for models with Teflon	
14	Center Block Bushing	PDA125-60N		Diaphragm	PDA125-TB61C
15	Diaphragm Shaft		23	Diaphragm (2)	
	for models with Neoprene			Neoprene	PDA125-63
	Diaphragm	PDA125-61A		Teflon	PDA125-TF63
	for models with Teflon		24	Back-up Diaphragm (for models	
	Diaphragm	PDA125-T61A		with Teflon Diaphragm) (2)	PDA125-TF63B

		PART NUMBER FOR ORDERING			PART NUMBER FOR ORDERING
25	Outer Piston (2)		35	Manifold Clamp (consists of two halves (4)	
	for models with Neoprene Diaphragm	PDA125-B61B		for models with Neoprene Diaphragm	PDA125-69
	for models with Teflon Diaphragm	PDA125-T61B		for models with Teflon Diaphragm	PDA125-S69
26	Water Chamber (2)	PDA125-65	36	Manifold Clamp Bolt (8)	
27	Ball Valve (4)			for models with Neoprene Diaphragm	PDA125-69B
	Neoprene	PDA125-71		for models with Teflon Diaphragm	PDA125-S69B
	Teflon	PDA125-TF71	37	Manifold Clamp Nut (8)	
28	Ball Valve Seat (4)			for models with Neoprene Diaphragm	PDA125-62C
	for models with Neoprene Diaphragm	PDA125-70		for models with Teflon Diaphragm	PDA125-S62C
	for models with Teflon Diaphragm	PDA125-A70	38	Manifold Housing Screen (for models with Neoprene Diaphragm)	PDA125-68
29	Valve Seat O-ring (for models with Teflon Diaphragm) (4)	PDA125-70T	39	Housing Screen Mounting Screw (for models with Neoprene Diaphragm) (4)	PDA125-68A
30	Water Chamber Clamp (consists of two halves) (2)		40	Screen Mounting Screw Washer (for models with Neoprene Diaphragm) (4)	PDA125-68B
	for models with Neoprene Diaphragm	PDA125-MP64	*	Nameplate	
	for models with Teflon Diaphragm	PDA125-MPS64		for models ending in -EU	PDA200-EU-301
31	Chamber Clamp Bolt (4)			for all other models	PDA200-301
	for models with Neoprene Diaphragm	PDA125-64C	*	Caution Label	
	for models with Teflon Diaphragm	PDA125-S64C		for models ending in -EU	EU-99
32	Chamber Clamp Nut (4)			for all other models	PDA075-33
	for models with Neoprene Diaphragm	PDA125-64D	*	Tune-up Kit (for models with Neoprene Diaphragm) (includes illustrated parts 16[7], 23[2], 27[4], and 28[4])	PDA125-TK2
	for models with Teflon Diaphragm	PDA125-S39C			
33	Discharge Manifold				
	with 1-1/4" National Pipe Thread	PDA125-66NPT			
	with 1-1/4" British Standard Pipe	PDA125-66BSP			
34	Inlet Manifold				
	with 1-1/2" National Pipe Thread	PDA125-67NPT			
	with 1-1/2" British Standard Pipe	PDA125-67BSP			

* Not illustrated.

Series PDA200



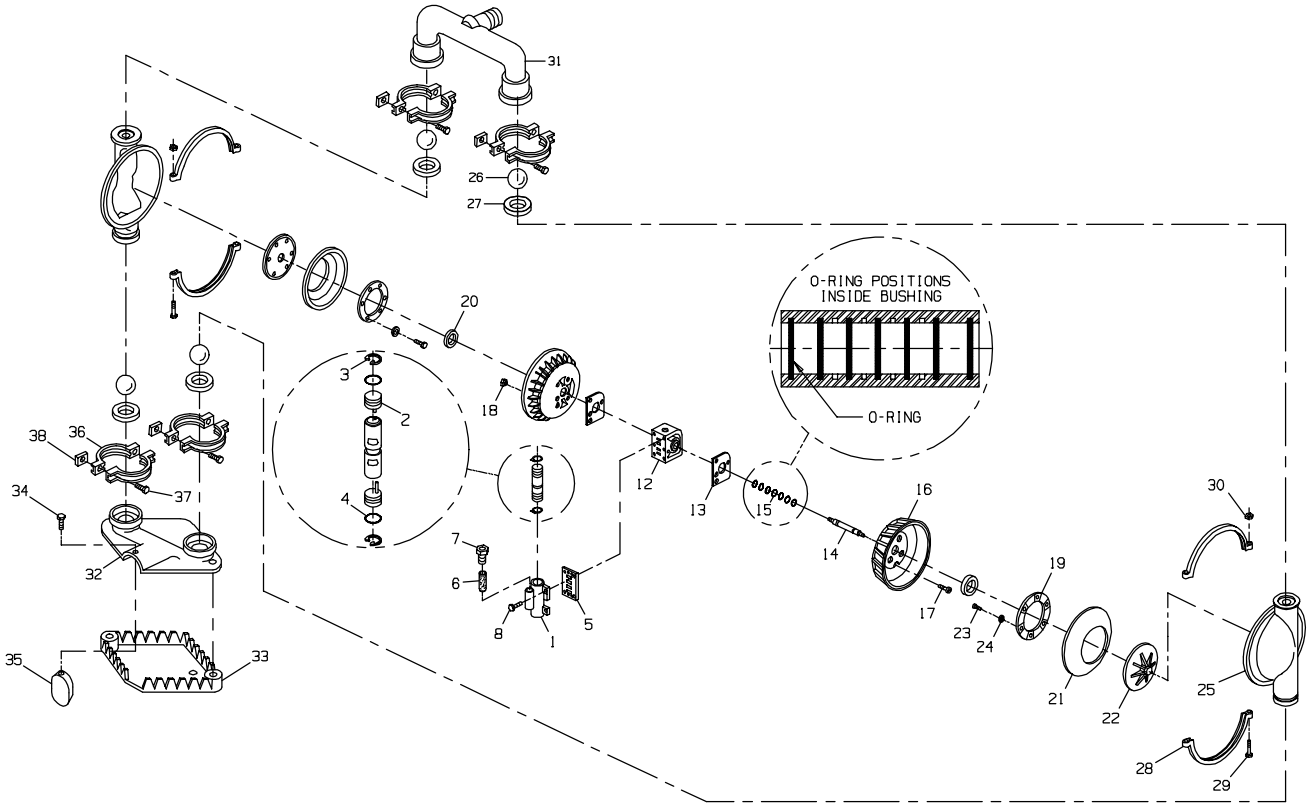
(Dwg. TPA1235–1)

		PART NUMBER FOR ORDERING			PART NUMBER FOR ORDERING
	Air Valve Assembly	PDA200–LF20	23	Back–Up Diaphragm (for models with	
1	Air Valve Body (includes piston)	PDA200–LF20A		Teflon Diaphragm) (2)	PDA200–TF24B
2	Air Valve Gasket	PDA200–20B	24	Outer Piston (2)	
3	Center Block Assembly	PDA200–P20H		for models with Neoprene Diaphragm	PDA200–B21B
4	Block Gasket (2)	PDA200–20P		for models with Teflon Diaphragm	PDA200–T21B
5	Air Valve Body Mounting Screw (4)	PDA200–20AS	25	Water Chamber (2)	PDA200–35
6	Air Valve Screen	PDA200–20E	26	Ball Valve (4)	
7	Reducer Bushing	PDA200–20AP		Neoprene	PDA200–41
8	Bottom Air Valve Cap	PDA200–20S		Teflon	PDA200–TF41
9	Top Air Valve Cap (includes guide)	PDA200–20R	27	Ball Valve Seat (4)	
10	Valve Cap Retaining Ring (2)	PDA200–520T		for models with Neoprene Diaphragm	PDA200–40
11	Valve Cap O–ring (2)	PDA200–20U		for models with Teflon Diaphragm	PDA200–A40
15	Diaphragm Shaft		28	Valve Seat O–ring (for models with	
	for models with Neoprene Diaphragm	PDA200–21A		Teflon Diaphragm) (4)	PDA200–40T
	for models with Teflon Diaphragm	PDA200–T2lA	29	Water Chamber Clamp (consists of two	
16	Diaphragm Shaft Stud (for models with			halves) (2)	
	Teflon Diaphragm) (2)	PDA200–T21F		for models with Neoprene Diaphragm	PDA200–30
17	Diaphragm Shaft O–ring (7)	PDA200–LF20JH		for models with Teflon Diaphragm	PDA200–S30
18	Countersunk Air Chamber (2)	PDA200–22B	30	Chamber Clamp Bolt (4)	
19	Air Chamber Mounting Screw (3)	PDA200–22C		for models with Neoprene Diaphragm	PDA200–30C
20	Air Chamber Mounting Nut (3)	PDA200–22D		for models with Teflon Diaphragm	PDA200–S30C
21	Inner Piston (2)		31	Chamber Clamp Nut (4)	
	for models with Neoprene Diaphragm	PDA200–21B		for models with Neoprene Diaphragm	PDA200–30D
	for models with Teflon Diaphragm	PDA200–T21C		for models with Teflon Diaphragm	PDA200–S30D
22	Diaphragm (2)		32	Discharge Manifold	
	Neoprene	PDA200–24		with 2” National Pipe Thread	PDA200–36NPT
	Teflon	PDA200–TF24		with 2” British Standard Pipe	PDA200–36BSP

		PART NUMBER FOR ORDERING			PART NUMBER FOR ORDERING
33	Inlet Manifold Housing		38	Manifold Clamp Bolt (8)	
	with screened base for models			for models with Neoprene Diaphragm ...	PDA200-39B
	having Neoprene Diaphragms			for models with Teflon Diaphragm	PDA200-S39B
	with 2" National Pipe Thread	PDA200-37NPT	39	Manifold Clamp Nut (8)	
	with 2" British Standard Pipe	PDA200-37BSP		for models with Neoprene Diaphragm ...	PDA200-39C
	with footed base for models having			for models with Teflon Diaphragm	PDA200-S39C
	Teflon Diaphragms		*	Nameplate	
	with 2" National Pipe Thread	PDA200-37FNPT		for models ending in -EU	PDA200-EU-301
	with 2" British Standard Pipe	PDA200-37FBSP		for all other models	PDA200-301
34	Manifold Housing Screen (for models with		*	Caution Label	
	Neoprene Diaphragm)	PDA200-38		for models ending in -EU	EU-99
35	Housing Screen Mounting Screw (for			for all other models	PDA075-33
	models with Neoprene Diaphragm)(3)	PDA200-38A	*	Tune-up Kit (for models with Neoprene	
36	Suction Hook-Up Cover (for models with			Diaphragms only)(includes illustrated items 17[7],	
	Neoprene Diaphragm)	PDA200-42		22[2], 26[4] and 27[4])	PDA200-TK2
37	Manifold Clamp (consists of two halves)(4)				
	for models with Neoprene Diaphragm ..	PDA200-39			
	for models with Teflon Diaphragm	PDA200-S39			

* Not illustrated.

Series PDA300



(Dwg. TPA1236–1)

	PART NUMBER FOR ORDERING			PART NUMBER FOR ORDERING	
1	Air Valve Body (includes piston) .	PDA300–LF1A	22	Outer Piston (2)	PDA300–B2B
2	Air Valve Cap (2)	PDA300–1R	23	Piston Assembly Bolt (12)	PDA300–2G
3	Valve Cap Retaining Ring (2)	PDA300–1T	24	Assembly Bolt Washer (12)	PDA300–68B
4	Valve Cap O–ring (2)	PDA300–1U	25	Water Chamber (2)	PDA300–50
5	Air Valve Gasket	PDA300–1B	26	Ball Valve (4)	
6	Air Valve Screen	PDA300–20E		for models with Neoprene	
7	Reducer Bushing	PDA300–20AP		Diaphragm	PDA300–55
8	Air Valve Body Mounting			for models with Viton	
	Screw (4)	PDA300–20AS		Diaphragm	PDA300–TF55
12	Center Block Assembly	PDA300–P1H	27	Ball Valve Seat (4)	
13	Center Block Gasket (2)	PDA300–1P		for models with Neoprene	
14	Diaphragm Shaft	PDA300–2A		Diaphragm	PDA300–56
15	Diaphragm Shaft O–ring (7)	PDA300–LF1JH		for models with Viton	
16	Countersunk Air Chamber (2)	PDA300–3B		Diaphragm	PDA300–VT56
17	Air Chamber Mounting Screw (4) .	PDA300–3C	28	Water Chamber Clamp (consists of	
18	Air Chamber Mounting Nut (4) . . .	PDA300–22D		two halves) (2)	PDA300–11
19	Inner Piston (2)	PDA300–2C	29	Chamber Clamp Bolt (4)	PDA300–11C
20	Inner Piston Back–up Washer (2) .	PDA300–2E	30	Chamber Clamp Nut (4)	PDA300–11D
21	Diaphragm (2)				
	Neoprene	PDA300–5			
	Viton	PDA300–VT5			

		PART NUMBER FOR ORDERING			PART NUMBER FOR ORDERING
31	Discharge Manifold		38	Manifold Clamp Nut (8)	PDA300–30D
	with 3” National Pipe Thread .	PDA300–51NPT	*	Nameplate	
	with 3” British Standard Pipe .	PDA300–51BSP		for models ending in –EU	PDA200–EU–301
32	Inlet Manifold Housing (for screened base)			for all other models	PDA200–301
			*	Caution Label	
	with 3” National Pipe Thread .	PDA300–52NPT		for models ending in –EU	EU–99
	with 3” British Standard Pipe .	PDA300–52BSP		for all other models	PDA075–33
33	Inlet Manifold Housing Screen . . .	PDA300–53	*	Tune–up Kit (for models with Neoprene Diaphragm) (includes illustrated items 15[7], 21[2], 26[4] and 27[4])	PDA300–TK2
34	Housing Screen Mounting Screw (3)	PDA300–38A			
35	Suction Hook–up Cover	PDA300–57			
36	Manifold Clamp (consists of two halves) (4)	PDA300–54			
37	Manifold Clamp Bolt (8)	PDA300–54B			

* Not illustrated.

MAINTENANCE SECTION

⚠ WARNING

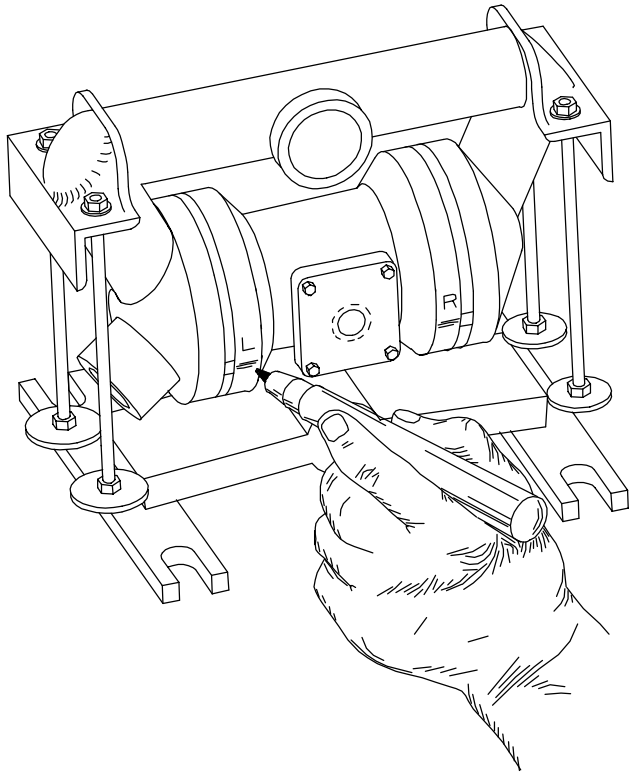
Always wear protective eyewear when operating or servicing one of these Pumps. If a diaphragm failure should occur, the material being pumped may be forced out the air exhaust.

DISASSEMBLY OF SERIES PDA075

⚠ WARNING

Before attempting any maintenance or repair, shut off the air supply and disconnect the air supply hose at the Pump. Failure to do so could result in injury.

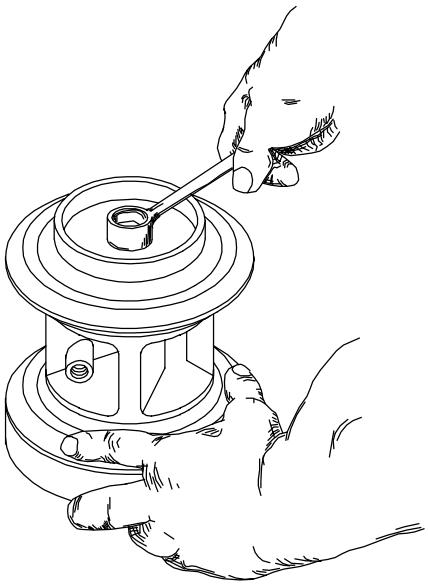
1. Disconnect all suction lines and discharge lines.
2. Stand the Pump upright on the workbench, with the discharge manifold nipple facing you.
3. Using a felt–tipped marking pen, draw an index line across the outer edge of the Water Chambers (20) and Center Block (7). Mark the left and right Water Chamber "L" and "R" respectively. These marks will help in alignment during assembly. Refer to Drawing TPD810–1.



(Dwg. TPD810–1)

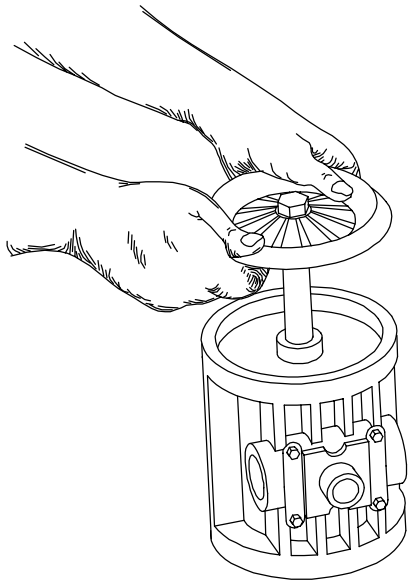
4. Using a 9/16" wrench, unscrew the four manifold bolt nuts and remove the four Manifold Bolt Assemblies (26) that hold the Pump together.
5. Lift off the Discharge Manifold (24).
6. Remove the two discharge Ball Valves (21), Ball Valve Seats (22) and Valve Seat O–rings (23).
7. Grasp both Water Chambers and lift the entire midsection from the Inlet Manifold (25).
8. Pull the two Water Chambers away from the center assembly.
9. Remove the two intake Ball Valves, Ball Valve Seats and Valve Seat O–rings.
10. Set the center assembly on end on the workbench.
    For Pumps with a Neoprene Diaphragm, using a wrench on the hex of the Outer Piston (19), unscrew the Outer Piston and remove the Diaphragm (17) and Inner Piston (16). Refer to drawing TPD811.

For Pumps with a Teflon Diaphragm, using a wrench on the hex of the Piston Shaft (15), unscrew the Shaft and remove the Outer Piston (19), Diaphragm (17), Back-Up Diaphragm (18) and Inner Piston (16). Refer to Drawing TPD811.



(Dwg. TPD811)

11. Turn the center assembly over and pull the remaining assembled Diaphragm along with the Diaphragm Shaft (13) away from the Center Block (7). Refer to Drawing TPD812-1.



(Dwg. TPD812-1)

12. Grip the Diaphragm Shaft in leather-covered vise jaws or clamp it between two wooden blocks with the Diaphragm upward.
    For Pumps with a Neoprene Diaphragm, using a wrench on the hex of the Outer Piston, unscrew the Outer Piston and remove the Diaphragm and Inner Piston.
    For Pumps with a Teflon Diaphragm, using a wrench on the hex of the Piston Shaft, unscrew the Shaft and remove the Outer Piston, Diaphragm, Back-Up Diaphragm and Inner Piston.
13. Using an O-ring pick, remove the four Diaphragm Shaft O-rings (14) from the grooves in the bushing in the Center Block.
14. Unscrew and remove the four Air Valve Mounting Screw Nuts (12) and pull the Muffler (10) and Muffler Plate (9) away from the Center Block. Remove the Muffler Plate Gasket (8).
15. Remove the four Air Valve Body Mounting Screws (11), Air Valve Body (1) and Air Valve Gasket (6) from the Center Block.

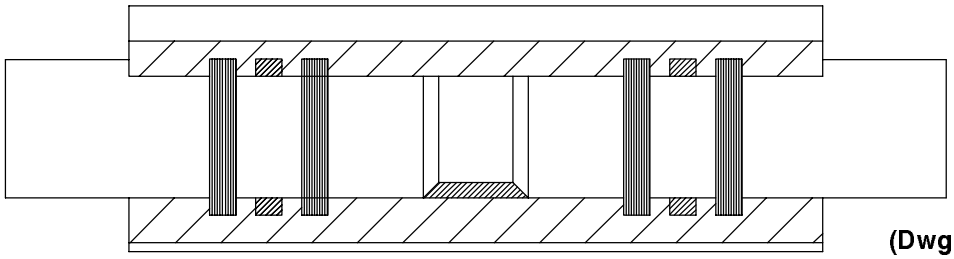
16. Inspect the air valve piston for wear and free movement in the bore in the Air Valve Body. The piston must move freely when the Air Valve Body is turned vertically end for end. The piston should have a dull anodized appearance, and be free of surface defects. If the anodized surface is worn through on the ported face, the piston is worn beyond tolerance and the entire assembled Air Valve must be replaced or returned to the factory for rebuilding.

NOTICE

New air valve pistons are not available as replacements for worn pistons. If the piston is worn beyond tolerance, the Air Valve Body is also worn beyond tolerance and installation of a new piston will result in erratic pump operation and excessive air consumption. A worn Air Valve Body can be rebuilt one time at the factory.

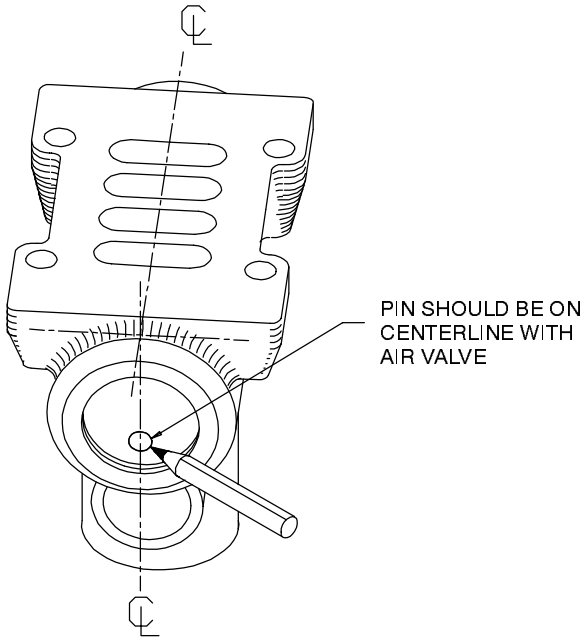
ASSEMBLY OF SERIES PDA075

1. Moisten four new Diaphragm Shaft O–rings (14) with O–ring lubricant, and install them in the grooves in the diaphragm shaft bushing. Note that there are six grooves in the bushing. Install the O–rings in grooves 1,3,4 and 6 starting from either end of the bushing. Refer to Drawing TPD813.



(Dwg. TPD813)

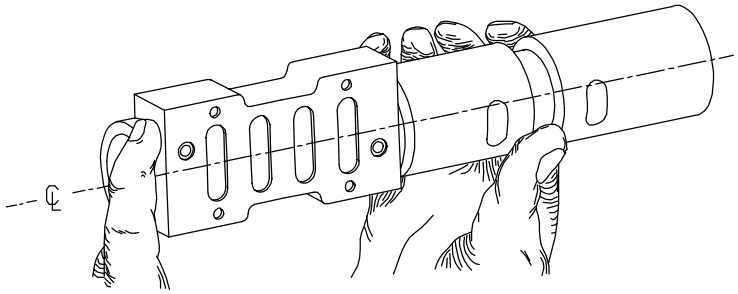
2. Using new Air Valve Cap O–rings (5), moisten them with O–ring lubricant and Install a new O–ring in each Air Valve Cap (2 and 3).
3. Install the Top Air Valve Cap with the guide pin in the Air Valve Body (1) as shown in Drawing TPD833. Do not replace the snap ring at this time.



(DWG. TPD833)

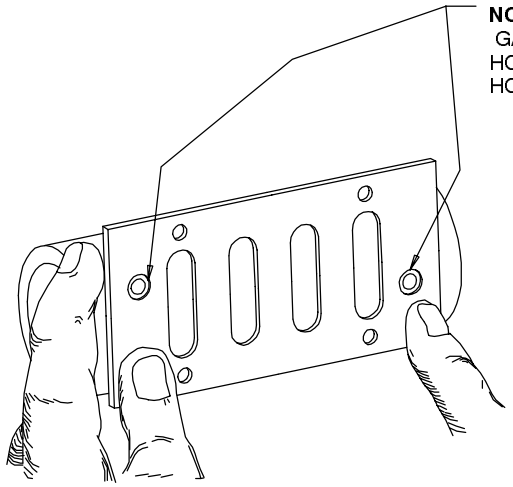
4. Slide the air valve piston into the bore of the Air Valve Body making certain to align the guide pin in the piston with the guide pin on the Top Air Valve Cap.

5. Look through the ports in the machined face of the Air Valve Body and see if the ports are aligned with the ports in the air valve piston. If the ports are not aligned, insert a drift pin in the hole in the bottom of the piston and rotate both the air valve piston and Top Air Valve Cap until the ports are aligned. Refer to Drawing TPD834.



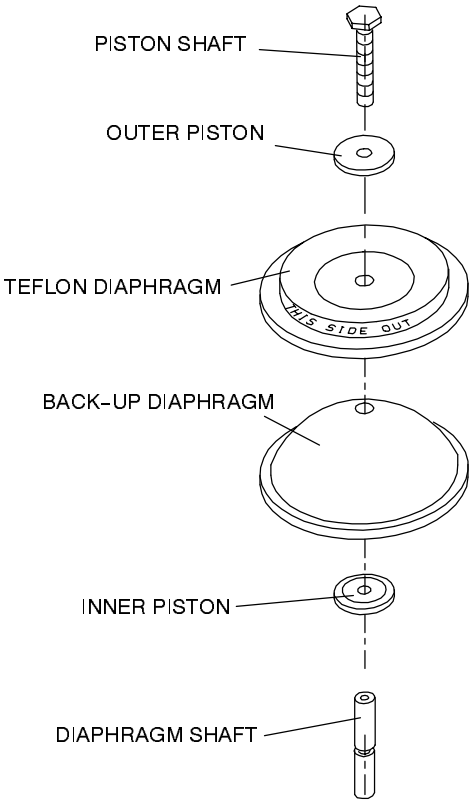
(Dwg. TPD834)

6. Install the Bottom Air Valve Cap (2) and both Valve Cap Retaining Rings (4).
7. Align the Air Valve Gasket (6) against the Air Valve Body, and secure the Air Valve Body and piston against the Center Block (7) with the four Air Valve Body Mounting Screws (11). Position the Muffler Plate Gasket (8) and Muffler Plate (9) against the opposite side of the Center Block. Refer to Drawing TPD835. Secure the assembly with the four Mounting Screw Nuts (12) and install the Muffler (10).

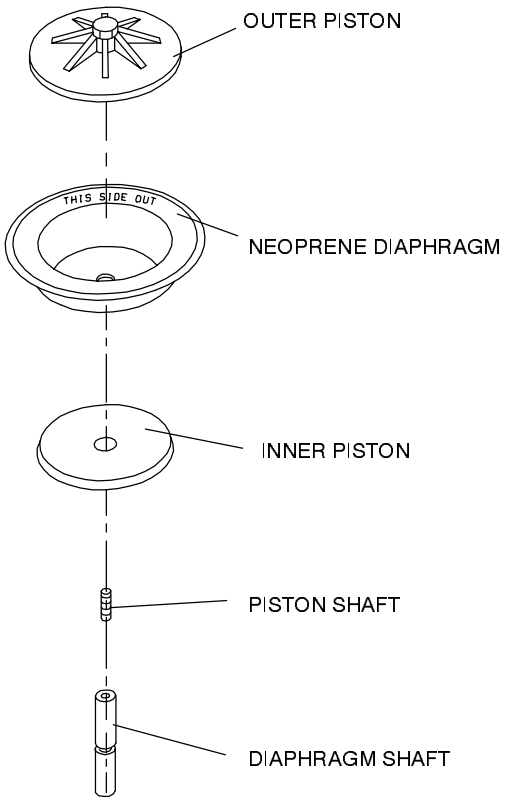


(Dwg. TPD835)

8. Note that one side of each Diaphragm (17) is marked "This Side Out". Install one Diaphragm and its associated parts on the Diaphragm Shaft (13) in the sequence and orientation shown in Drawing TPD814–1. Hand tighten the assembly.



Assembly of Neoprene Diaphragm



(Dwg. TPD814–1)

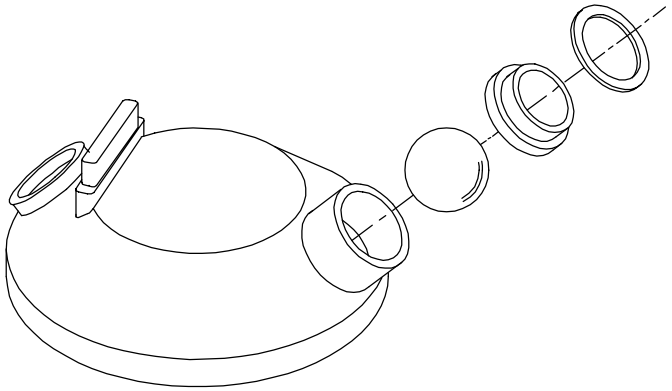
Assembly of Teflon Diaphragm

9. Set the assembled Diaphragm and Diaphragm Shaft on the workbench with the Diaphragm downward.
10. Wipe the Diaphragm Shaft with a thin film of Ingersoll–Rand No. 10 Oil.
11. Being careful not to damage the Diaphragm Shaft O–rings, slide the Center Block down over the Diaphragm Shaft.
12. Install the second Diaphragm and its associated parts in the sequence and orientation shown in drawing TPD814–1. Make certain that the side of the Diaphragm marked "This Side Out" faces away from the Diaphragm Shaft.
13. Using two wrenches, tighten both Outer Pistons or Piston Shafts by simultaneously turning the wrenches in opposite directions.

NOTICE

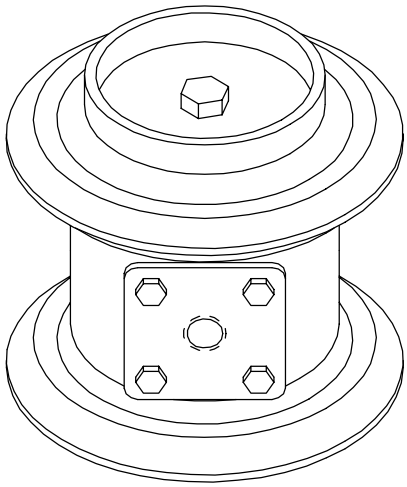
Tighten the Outer Pistons or Piston Shafts to 20 ft–lb (27 Nm) torque.

14. Install the Ball Valve (21), Ball Valve Seat (22) and Valve Seat O–ring (23) in the lower boss of each Water Chamber (20). Tap the Valve Seat with a mallet to firmly seat the parts. Refer to Drawing TPD816.



(Dwg. TPD816)

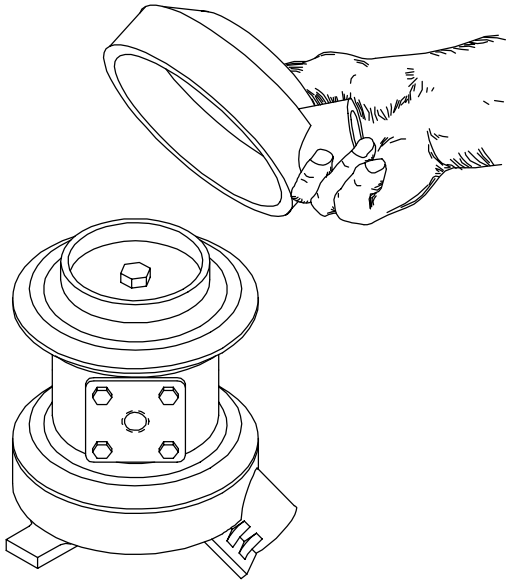
15. Push the right side Diaphragm Shaft into the Center Block to fully extend the Diaphragm on the left side. Make certain the outer bead of the Diaphragm is inside the groove in the center block face at the outer edge of the largest part of the Center Block. Refer to Drawing TPD818–1.



(Dwg. TPD818–1)

16. Position the left Water Chamber on the workbench surface with the diaphragm end upward.
17. Place the assembled Center Block, fully extended Diaphragm first, onto the left Water Chamber. Make certain the marks on the Center Block align with the marks on the Water Chamber.
18. While holding the Center Block against the left Water Chamber, insert a pry bar under the right Diaphragm and pull the Diaphragm Shaft through the Center Block to fully extend the right Diaphragm.
19. After removing the pry bar, make certain the outer bead of the right Diaphragm is inside the groove in the center block face at the outer edge of the largest part of the Center Block.

20. Place the right Water Chamber on on the Center Block making certain that the marks on the Center Block align with the marks on the Water Chamber. Refer to Drawing TPD819-1.

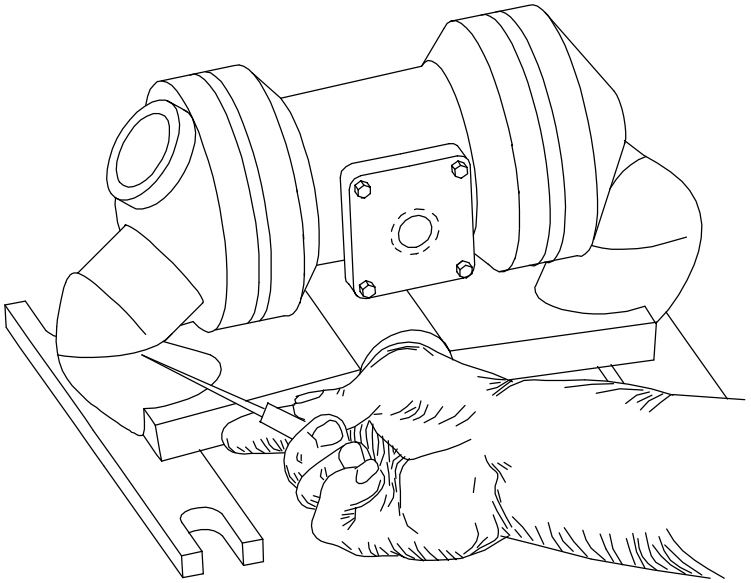


(Dwg. TPD819-1)

21. Place the Inlet Manifold (25) on the workbench so that the inlet nipple is **facing away from you.**
22. Carefully pick up the entire center assembly and place in on the Inlet Manifold so that the Muffler Plate (9) is **facing toward you.**

NOTICE

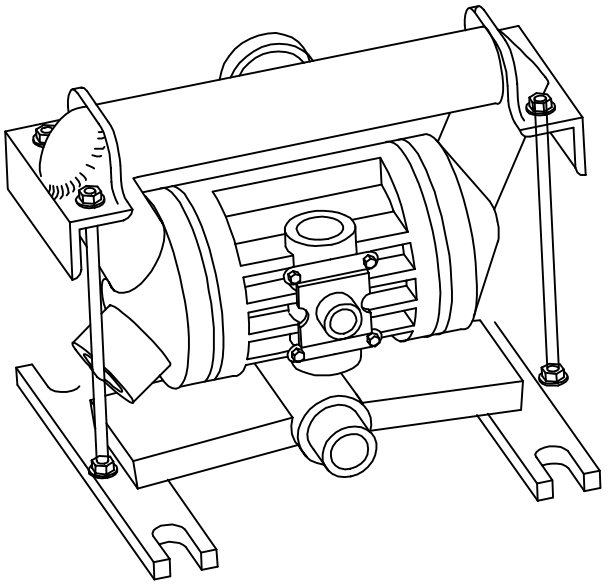
In order to facilitate final assembly of the Pump and to prevent leakage, make certain that the center assembly is aligned side-to-side and front-to-back on the Inlet Housing. This is very critical and must be done as exact as possible. Refer to Drawing TPD820-1.



(Dwg. TPD820-1)

23. Install the Ball Valves. Ball Valve Seats and Valve Seat O-rings in the Discharge Manifold (24), and set the Discharge Manifold on the Pump with the discharge nipple facing you. Carefully align the Discharge Manifold on the Water Chambers and press down firmly.

24. Install the four Manifold Bolt Assemblies (26) on the Discharge Manifold. Thread the Nuts on two or three threads. Make no attempt to fit the Bolts into the Intake Manifold at this time. Refer to Drawing TPD821–1.

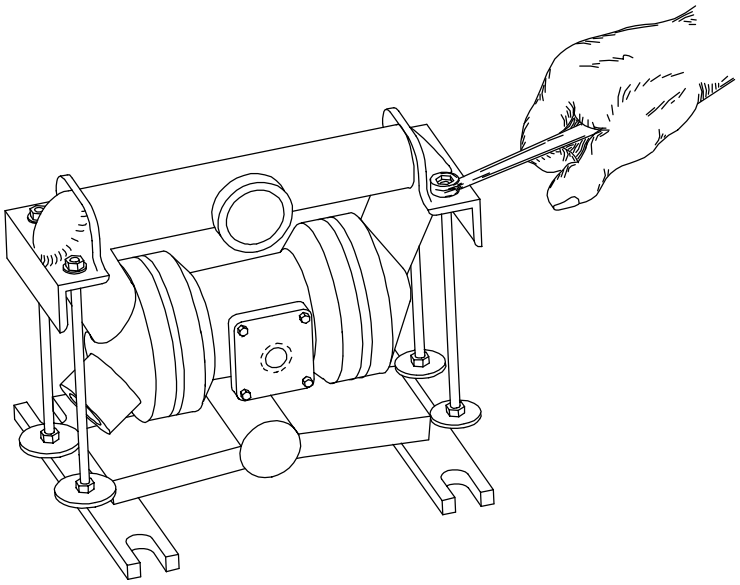


(Dwg. TPD821–1)

25. After all four Manifold Bolts have been installed, press down on the Discharge Manifold with one hand and, with the other hand, pull two of the Bolts on one side into their slots on the Intake Manifold, making certain both Bolts snap over their respective guide on the Water Chamber. Install the other two Manifold Bolts in the same manner.
26. Tighten the Manifold Bolt Nuts in a crisscross pattern, making certain to maintain the alignment between the Inlet Housing and Water Chambers, and the Discharge Manifold and Water Chambers. Refer to Drawing TPD822–1.

NOTICE

Tighten the Manifold Bolt Nuts to 15 ft–lb (20 Nm) torque.



(Dwg. TPD822–1)

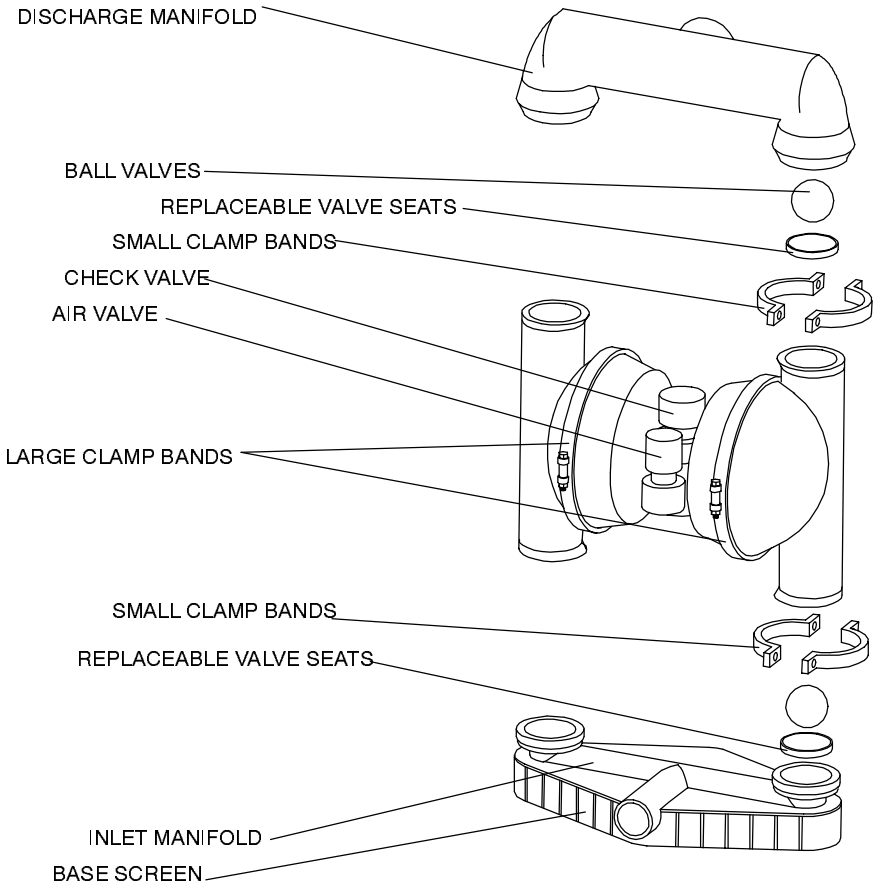
27. Test the Pump by connecting the air supply line and running it dry. You should have good suction at the inlet housing nipple, approximately 15 inches gauge for Pumps with Neoprene Diaphragms, and 10 inches gauge for Pumps with Teflon Diaphragms.

DISASSEMBLY AND ASSEMBLY OF SERIES PDA125, PDA200 AND PDA300

⚠ WARNING

Before attempting any maintenance or repair, shut off the air supply and disconnect the air supply hose at the Pump. Failure to do so could result in injury.

Do not disassemble one of these Pumps any further than necessary to replace worn or damaged parts. To replace the Ball Valves and Ball Valve Seats, it is necessary to remove only the Discharge Manifold and Inlet Manifold. If you are going to replace the Diaphragms, replace the Diaphragm on one side of the Pump and then reassemble that side of the Pump before replacing the other Diaphragm.



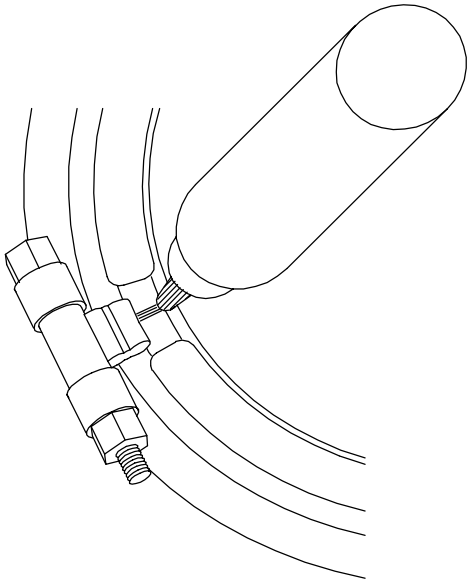
(Dwg. TPD823–1)

Replacement of the Ball Valves and Ball Valve Seats

1. Loosen the Small Band Clamps that secure the Discharge Manifold to the Water Chambers, and lift off the Discharge Manifold.
2. Lift off the Ball Valves, and withdraw the Ball Valve Seat from each Water Chamber.
3. Install a new Ball Valve Seat in each Water Chamber, and set a new Ball Valve on each Seat.
4. Replace the Discharge Manifold and secure it with the Small Band Clamps.
5. Loosen the Small Band Clamps that secure the Water Chambers to the Inlet Manifold, and lift off the upper portion of the Pump.
6. Lift off the Ball Valves, and withdraw the Ball Valve Seats from the Inlet Manifold.
7. Install a new Ball Valve Seat in each side of the Inlet Manifold, and set a new Ball Valve on each Seat.
8. Set the top portion of the Pump back onto the Inlet Manifold and secure it with the Small Band Clamps.

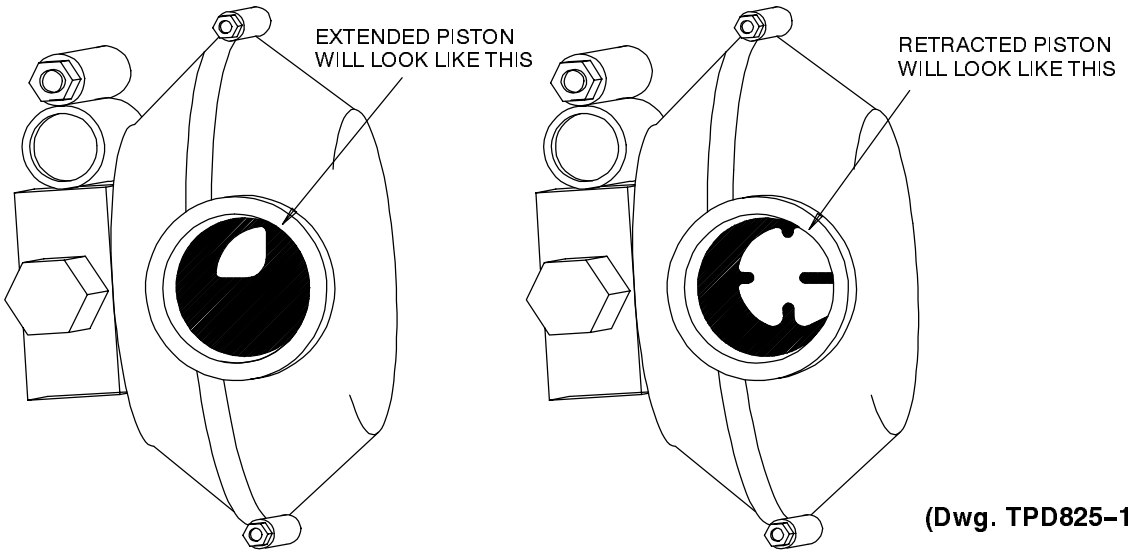
Replacement of the Diaphragms

1. Stand the Pump upright on the workbench, with the discharge manifold nipple facing you.
2. Using a felt-tipped marking pen, draw an index line across the outer edges of the Water Chambers and Air Chambers. Mark the left and right Chambers "L" and "R" respectively. These marks will help in alignment during assembly. Refer to Drawing TPD824.



(Dwg. TPD824)

3. Remove the two Small Band Clamps that attach the Discharge Manifold to the Water Chambers, and lift off the Discharge Manifold and the two Ball Valves.
4. Look down through the opening of both Water Chambers and see which chamber has the Diaphragm extended furthest toward the outer wall of the Water Chamber. This is the side which should be removed first since it will have the Diaphragm in its normal, unflexed position. Refer to Drawing TPD825-1.



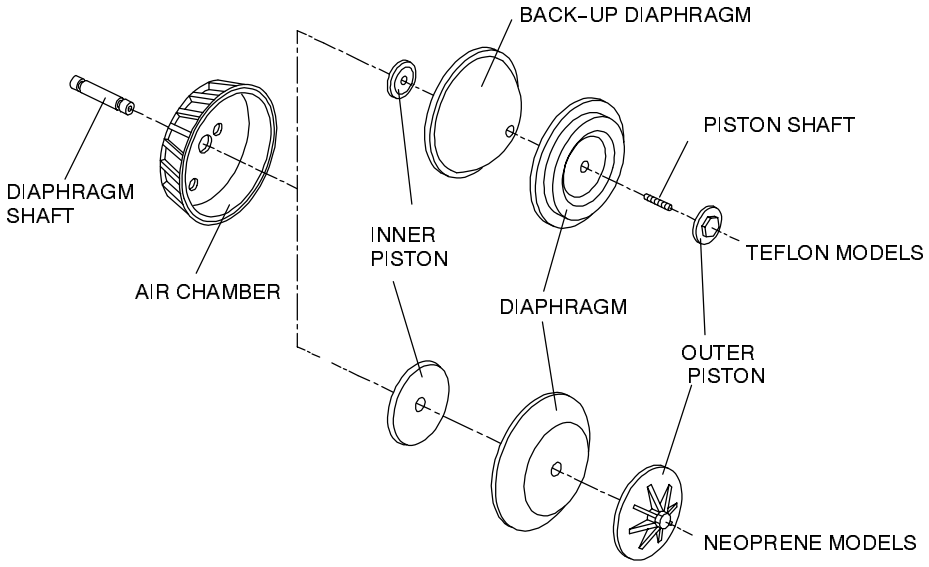
(Dwg. TPD825-1)

5. Remove the Large Band Clamp that secures the Water Chamber to the Air Chamber, and the Small Band Clamp that secures the Water Chamber to the Inlet Manifold.
6. Pull the Water Chamber away from the Air Chamber and examine the exposed Diaphragm.
7. If the Diaphragm needs replacement, unscrew and remove the Outer Piston.

8. Install the new Diaphragm and its associated parts on the end of the Diaphragm Shaft in the sequence and orientation shown in the appropriate following drawings.

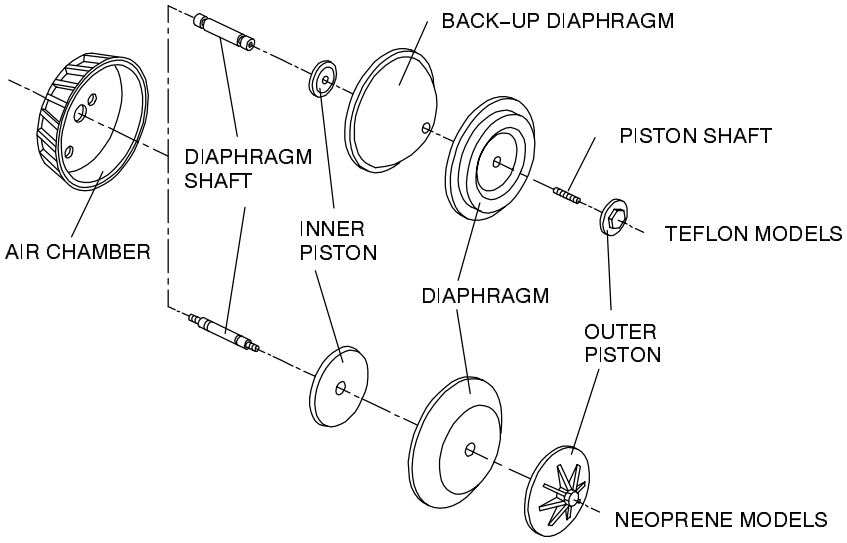
CAUTION

For Series PDA300 models, the twelve Piston Assembly Bolts (23) must be tightened to 18 ft-lb (25 Nm) torque.



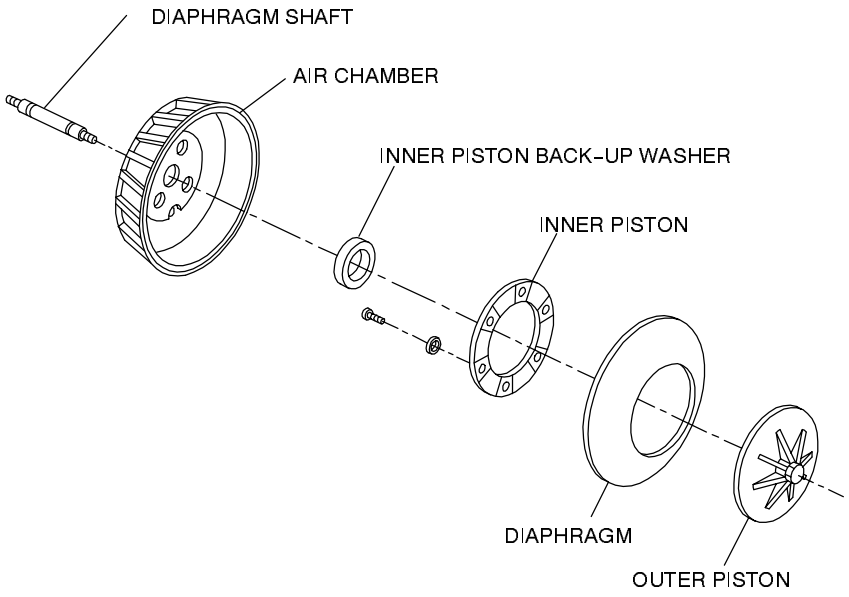
Installation of Diaphragm of Series PDA125

(Dwg. TPD826-1)



Installation of Diaphragm on Series PDA200

(Dwg. TPD827-1)



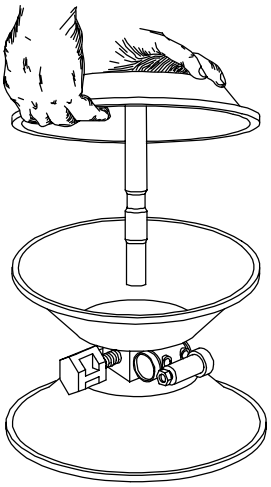
Installation of Diaphragm on Series PDA300

(Dwg. TPD829–1)

9. Set the intake Ball Valve on the Ball Valve Seat in the Intake Manifold.
10. Place the Water Chamber on the Inlet Manifold and secure it with the Small Band Clamp.
11. Install the large Band Clamp that secures the Water Chamber to the Air Chamber.
12. Replace the second Diaphragm as described in Steps 3 through 11.
13. After both Diaphragms have been replaced, set the discharge Ball Valves on the Ball Valve Seat in each of the Water Chambers.
14. Replace the Discharge Manifold and secure it with the Small Band Clamps.

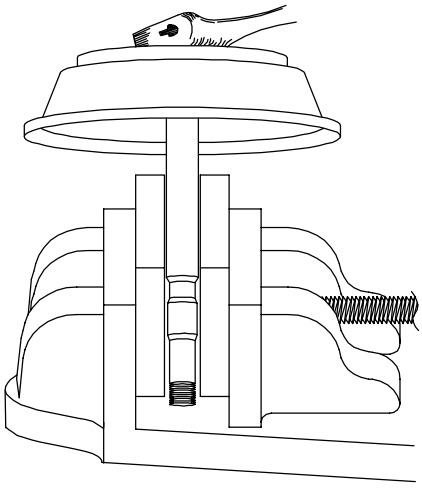
Disassembly of Series PDA125, PDA200 and PDA300

1. Remove one Diaphragm as described in Steps 1 through 7 of the section **Replacement of the Diaphragms.**
2. Remove the large Band Clamp that secures the Air Chamber to the second Water Chamber, and pull the Water Chamber away.
3. Grasp the remaining Diaphragm, and pull the Diaphragm and Diaphragm Shaft from the Center Block Assembly. Refer to drawing TPD830–1.



(Dwg. TPD830–1)

4. Grasp the Diaphragm Shaft in leather–covered vise jaws or between two blocks of wood, and remove the second Diaphragm. Refer to Drawing TPD831.



(Dwg. TPD831)

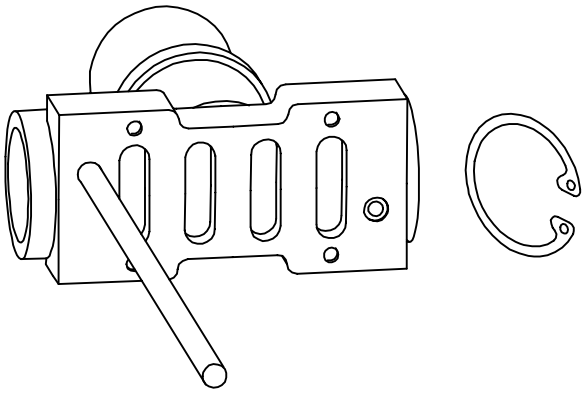
5. If there is any question about the age or condition of the Diaphragm Shaft O–rings in the Center Block Bushing, remove the O–rings with an O–ring pick.
6. Remove the four Air Valve Body Mounting Screws that attach the Air Valve Body and piston to the Center Block Assembly.
7. The anodized aluminum air valve piston should move freely in the bronze bushing. If the Piston does not move freely, immerse the complete Air Valve and piston into a nonflammable, nontoxic solvent. This should remove any accumulation of oil and dirt.
8. Remove the snap ring from the top end of the Air Valve Body and apply a jet of air to the 3/16" hole in the opposite end of the Body. This will cause the piston to strike the Air Valve Cap and drive it from the Air Valve Body.

⚠ WARNING

Make certain the Air Valve Cap and piston are expelled in a direction that will avoid injury. Directing the components into a corrugated pasteboard box or other cushioned area will minimize damage to the parts.

NOTICE

New air valve pistons are not available as replacements for worn pistons. If there is more than .010" clearance between the piston and the bore of the Air Valve Body or if the anodize is worn from the back of the piston, the complete Air Valve Assembly should be returned to the factory for rebuilding. Refer to drawing TPD832–1.

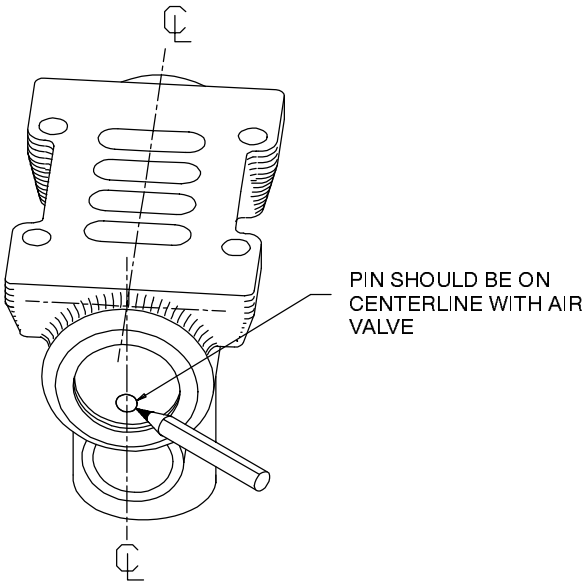


(Dwg. TPD832–1)

9. Remove the snap ring and push the Air Valve Cap from the other end of the Air Valve Body.
10. Remove and discard the O–rings from both Air Valve Caps.
11. Remove the air inlet bushing and withdraw the Air Valve Screen.
12. Wash the Air Valve Screen in a good nontoxic, nonflammable solvent and remove all dirt and scale.

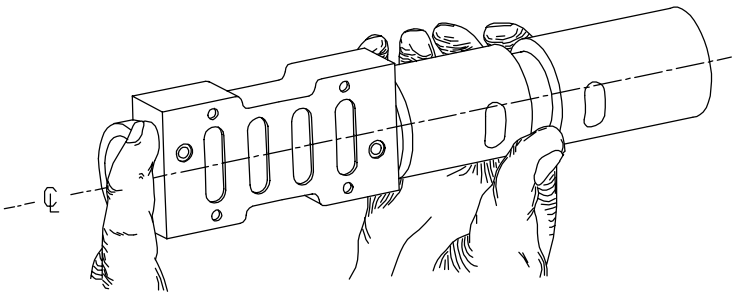
Assembly of Series PDA125, PDA200 and PDA300

1. Replace the Air Valve Screen. If the Air Valve Screen is damaged in any respect, or could not be unclogged, install a new Air Valve Screen.
2. Using new Air Valve Cap O–rings, moisten them with O–ring lubricant and install a new O–ring in each Air Valve Cap.
3. Install the Top Air Valve Cap with the guide pin in the Air Valve Body as shown in Drawing TPD833. Do not replace the snap ring at this time.



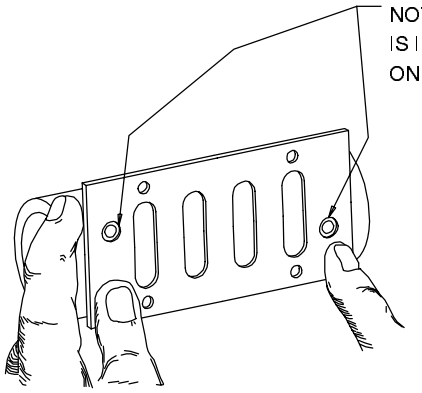
(Dwg. TPD833)

4. Slide the air valve piston into the bore of the Air Valve Body making certain to align the guide pin hole in the piston with the guide pin on the Top Air Valve Cap.
5. Look through the ports in the machined face of the Air Valve Body and see if the ports are aligned with the ports in the air valve piston. If the ports are not aligned, insert a drift pin in the hole in the bottom of the piston and rotate both the air valve piston and Top Air Valve Cap until the ports are aligned. Refer to Drawing TPD834.



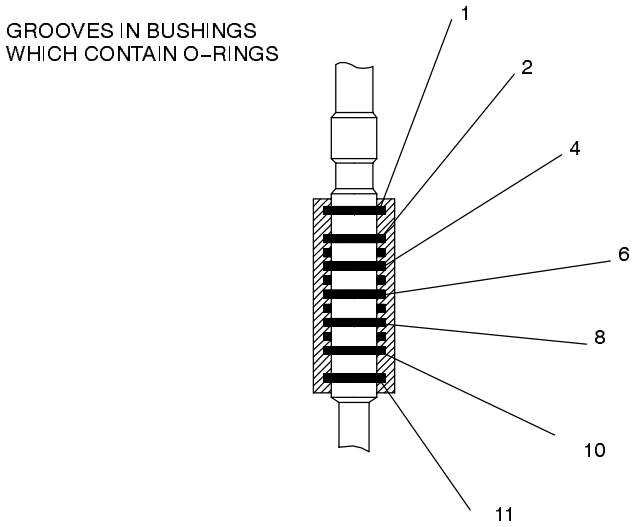
(Dwg. TPD834)

6. Install the Bottom Air Valve Cap and both Valve Cap Retaining Rings.
7. Align the Air Valve Gasket against the Air Valve Body, and secure the Air Valve Body and piston to the Center Block Assembly with the four Air Valve Body Mounting Screws and Mounting Screw Nuts. Refer to Drawing TPD835.



(Dwg. TPD835)

8. If the O–rings were removed from the Center Block Bushing, moisten new O–rings with O–ring lubricant and install them in grooves 1, 2, 4, 6, 8, 10 and 11, starting from either end of the Bushing. Refer to Drawing TPD836.



(Dwg. TPD836)

9. Grasp the Diaphragm Shaft in leather–covered vise jaws, or between two blocks of wood as shown in Drawing TPD831.
10. Install one Diaphragm on the end of the Diaphragm Shaft in the sequence and orientation shown in Drawing TPD826–1, TPD827–1 or TPD829–1.
11. Moisten the Diaphragm Shaft with Ingersoll–Rand No. 10 Oil, and insert it through the Center Block Bushing as shown in Drawing TPD830–1.
12. Remove the assembly from the vise. Turn the assembly over and push the Center Block downward to expose the unassembled end of the Diaphragm Shaft.
13. Install the second Diaphragm on the Diaphragm Shaft in the sequence and orientation shown in Drawing TPD826–1, TPD827–1 or TPD829–1.
14. Using two wrenches, tighten both Outer Pistons by simultaneously turning the wrenches in opposite directions.

NOTICE

Tighten the Outer Pistons of each pump to the following torques:

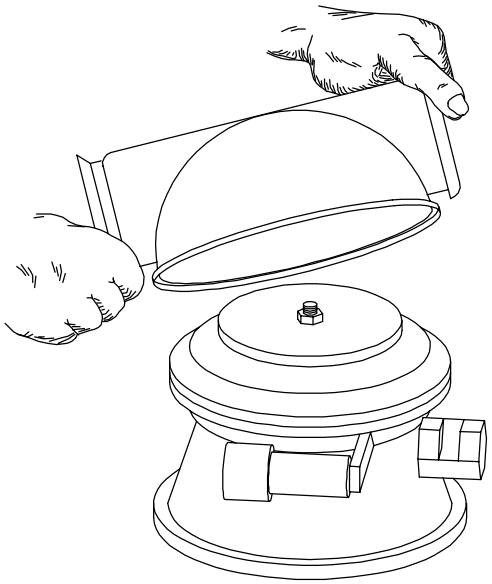
For Series PDA125 ..... 50 ft–lb (68 Nm) torque
For Series PDA200 ..... 75 ft–lb (102 Nm) torque
For Series PDA300 ..... 90 ft–lb (122 Nm) torque

15. With the Diaphragm in the full stroke position as shown in Drawing TPD837–1, pull the lip of the Diaphragm down into the groove in the Air Chamber.
16. While leaving the Diaphragm fully extended, install the Water Chamber to that side of the Pump, making certain to align the index mark on the Water Chamber with that on the Air Chamber. Secure it with a Large Band Clamp. Tap the Large Band Clamp with a soft mallet around the rim to assure positive and even seating.

NOTICE

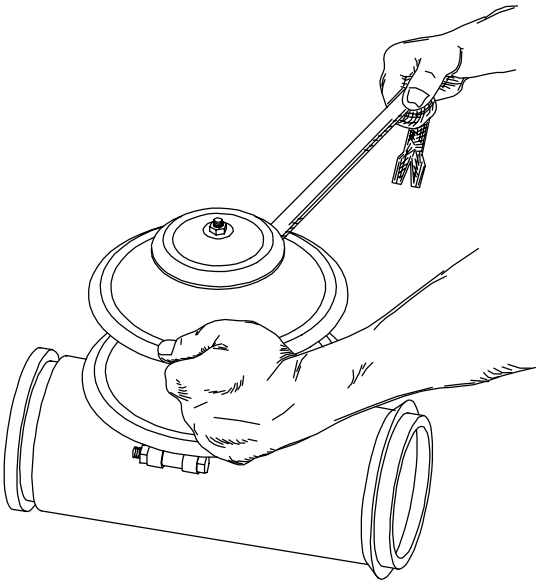
Tighten the Large Band Clamp fasteners of each pump to the following torques:

For Series PDA125 . . . . . 5 ft–lb (7 Nm) torque
For Series PDA200 . . . . . 20 ft–lb (27 Nm) torque
For Series PDA300 . . . . . 55 ft–lb (75 Nm) torque



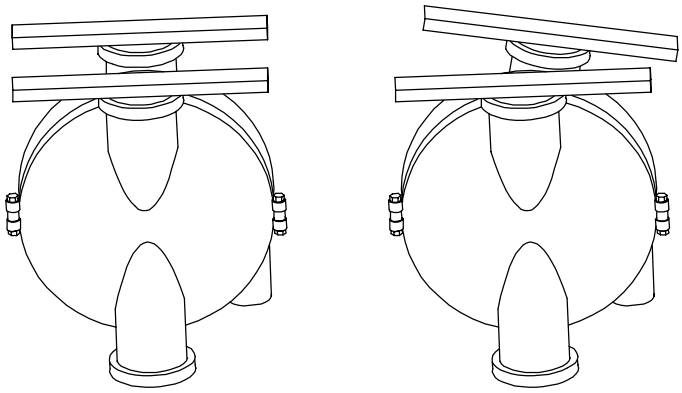
(Dwg. TPD837–1)

17. Turn the assembly over and using a claw–bar or similar lever, pull the Diaphragm Shaft through the bushing as far as possible. Refer to Drawing TPD838.



(Dwg. TPD838)

18. With the Diaphragm in the full stroke position as shown in drawing TPD837–1, pull the lip of the Diaphragm down into the groove in the Air Chamber.
19. Install the second Water Chamber, making certain the index mark on the Water Chamber is aligned with the index mark on the Air Chamber. Secure it with a Large Band Clamp. Tap the Large Band Clamp with a soft mallet around the rim to assure positive and even seating. Tighten the Large Band Clamp to the same torque as the previous Clamp.
20. If the Water Chambers have been installed correctly, the intake and discharge openings will be flat and parallel to each other. Place the assembly on a flat surface and check to make certain these members are properly aligned. Refer to Drawing TPD840.



(Dwg. TPD840)

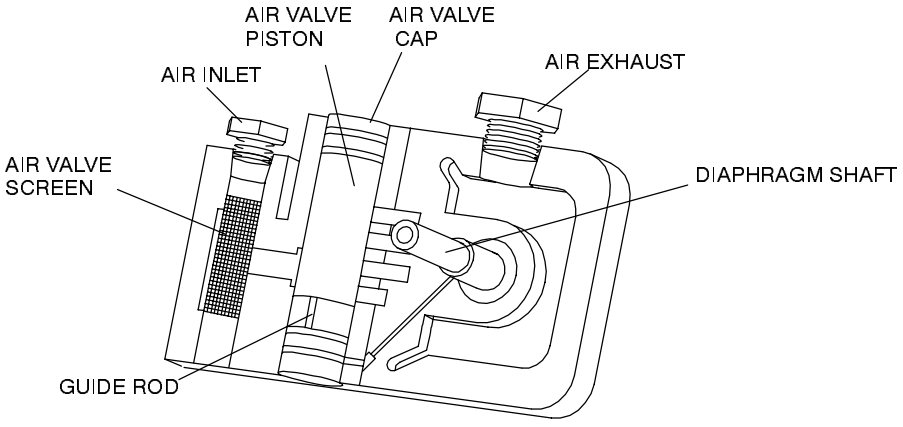
21. Install a Ball Valve Seat in each side of the Inlet Manifold, and set a Ball Valve on each Seat.
22. Set the assembled portion of the Pump on the Inlet Manifold, and secure it with the Small Band Clamps.

NOTICE

Tighten the Manifold Clamp fasteners of each pump to the following torques:

For Series PDA125	50 in–lb (6 Nm) torque
For Series PDA200	50 in–lb (6 Nm) torque
For Series PDA300	100 in–lb (11 Nm) torque

23. Install a Ball Valve Seat in each Water Chamber and set a Ball Valve on each Seat.
24. Set the Discharge Manifold on the Water Chambers, and secure it with the Manifold Clamps. Tighten the Manifold Clamps to the same torque as the previous Clamps.
25. The Pump is now ready for use. Connect a 1/2" air supply line to the Pump and, using 90 psig of air, run the Pump dry. It should cycle approximately 150 times a minute.



Cutaway View of Air Valve Assembly (Dwg. TPD841–1)

TROUBLESHOOTING GUIDE

Trouble	Probable Cause	Solution
Pump will not run or runs slowly.	Clogged Air Valve Screen	Remove the Air Valve Screen and clean it in good nonflammable, nontoxic solvent.
	Sticky Air Valve	Flush the Air Valve Screen by inserting some solvent in the air inlet and operating the Pump for a few minutes. After the Air Valve is loosened up, lubricate it by putting some Ingersoll-Rand No. 10 Oil in the air inlet.
	Worn Air Valve	Check the Air Valve Piston for wear. If it is worn, return the entire Air Valve Assembly to the factory for rebuilding.
	Center Block O-rings are worn	Install new O-rings
Pump runs but there is little or no flow.	Pump is pumping faster than material can flow	Check the stroke rate of the Pump and slow it down if necessary, to handle dry materials.
	Sticking Ball Valves	If the material being pumped is not compatible with the Ball Valve and Seats, these members may swell. Replace the Ball Valves and Seats with those of the proper material.
	Loose suction connections	Make certain all suction connections are airtight. Tighten the Small Band Clamps that secure the Water Chambers to the Inlet Housing.
Pump Air Valve freezes.	Excessive moisture in the air	Install a dryer for the compressed air, or fill the Oil Reservoir with an anti-freeze such as Tanner-gas or Killfrost.
Air bubbles in pump discharge.	Ruptured Diaphragm	Install a new Diaphragm if necessary.
	Band Clamps are loose	Tighten the Band Clamps, especially those that secure the Water Chambers to the Intake Housing.
Fluid comes out air exhaust.	Ruptured Diaphragm	Install new Diaphragm if necessary.

NOTICE

SAVE THESE INSTRUCTIONS. DO NOT DESTROY.