TOC

TPD1470

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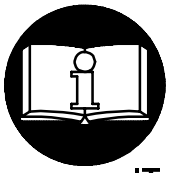
INSTRUCTIONS FOR MODELS P237A1 PS237A1 AND P237A3 SUMP PUMPS

NOTICE

Models P237A1, PS237A1 and P237A3 are designed for construction and maintenance applications where light weight, compactness, and low air consumption are prime factors. 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 all regulations (local, state, federal and country), that may apply to hand held/hand operated pneumatic pumps.
- For safety, top performance, and maximum durability of parts, operate this pump at 90 psig (6.2 bar/620 kPa) maximum air pressure at the inlet with 3/4" (19 mm) inside diameter air supply hose.
- 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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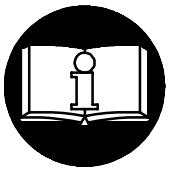
WARNING LABEL IDENTIFICATION

⚠ WARNING

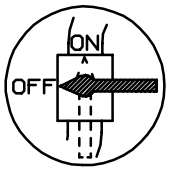
FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.



⚠ WARNING

Important information contained in Operation and Maintenance Manual for safe tool operation.

This material must be read prior to operating the tool.



⚠ WARNING

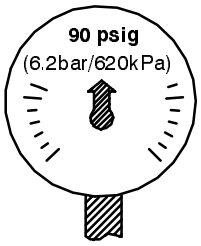
Always turn off the air supply and disconnect the air supply hose before installing, removing or adjusting any accessory on this tool, or before performing any maintenance on this tool.

⚠ WARNING

Always wear eye protection when operating or performing maintenance on this tool.

⚠ WARNING

Do not use damaged, frayed or deteriorated air hoses and fittings.



⚠ WARNING

Operate at 90 psig (6.2 bar/620 kPa) Maximum air pressure.

PLACING TOOL IN SERVICE

LUBRICATION

Ingersoll-Rand No. 50 **Ingersoll-Rand No. 100**

Before placing a Pump in service: Remove the Oil Chamber Plug and fill the oil chamber in the Backhead with oil. Inject about 3 cc of oil into the air inlet before attaching the air hose.

After each four hours of operation, unless an air line lubricator is used, replenish the chamber in the Backhead with oil.

The use of an air line lubricator is recommended for lubricating the Pump motor.

After each forty hours of operation, or as experience indicates, pump 10 or 15 strokes of grease from the No. P25-228 Grease Gun into the Grease Fitting on the Motor Housing.

Ingersoll-Rand Sump Pumps can be completely submerged but a watertight exhaust conduit to the surface of the sump liquid should be maintained at all times.

Under no circumstance should hose smaller than 1" I.D. be used as it will restrict the exhaust and impair the efficiency of the Pump.

When pumping from a ditch or sump, set the Pump on a board or flat stone or suspend it a few inches off the bottom of the sump. The less mud, sand and gravel pumped, the longer the Pump will last.

If the water is very dirty, protect the Pump by setting it in a mesh basket, or screen it in by some other method.

Should the Inlet become clogged, turn off the air supply and disconnect the air supply hose and lift the Pump from the water. Water running back through the discharge hose will usually flush the dirt from the Inlet.

IMPELLER ADJUSTMENT

For the most efficient operation of the Pump, particularly against high heads, it is necessary that the clearance between the Impeller and the Impeller Cover be limited. This clearance is set at .010" at the factory. When, due to wear, this clearance has increased to about 1/32", an adjustment can be made by removing enough of the Impeller Cover Shims to obtain the original .010" clearance. This simple adjustment will prolong the life of the Impeller and maintain the high efficiency of the Pump.

The Impeller Cover Shims are different colors to identify the various thicknesses. **White is .025", pink is .015", brown is .010", blue is .005" and green is .003".**

Impeller Shims are used as required between the Impeller and the Impeller Spacer to provide running clearance between the Impeller and the Housing.

When assembling a Pump, install only enough Impeller Shims to permit the Impeller to rotate without any drag.

TPD1470

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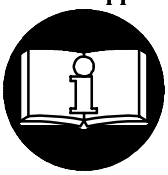
MODE D'EMPLOI DES POMPES D'ÉPUISEMENT MODÈLES P237A1–EU, PS237A1–EU ET P237A3–EU

NOTICE

Les pompes Modèles P237A1–EU, PS237A1–EU et P237A3–EU sont destinées aux applications de la construction et de l'entretien pour lesquelles la légèreté, le faible encombrement et la faible consommation d'air comprimé sont des facteurs principaux.
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.



⚠ WARNING

**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

- **Cette pompe doit toujours être exploitée, inspectée et entretenue conformément à toutes les réglementations (locales, départementales, fédérales et nationales), applicables aux pompes pneumatiques tenues/commandées à la main.**
- **Pour la sécurité, les performances optimales et la durabilité maximale des pièces, cette pompe doit être connectée à une alimentation d'air comprimé de 6,2 bar (620 kPa) maximum à l'entrée, avec un flexible de 19 mm de diamètre intérieur.**
- **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 fumes 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.**

NOTICE

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.

Refer All Communications to the Nearest Ingersoll–Rand ou distributeur le plus proche.

Imprimé aux É.U.

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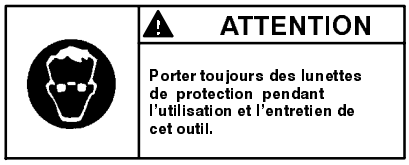
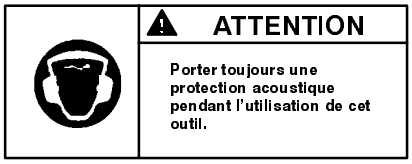
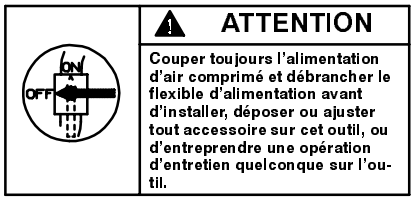
SIGNIFICATION DES ÉTIQUETTES D'AVERTISSEMENT

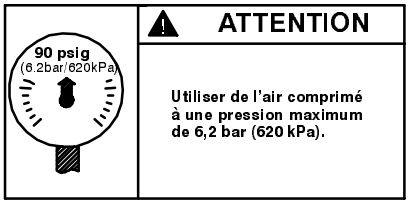
⚠ WARNING

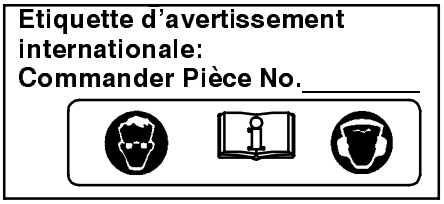
LE NON RESPECT DES AVERTISSEMENTS SUIVANTS PEUT CAUSER DES BLESSURES











RÉGLAGES

RÉGLAGE DE L'IMPULSEUR

Pour obtenir le fonctionnement le plus efficace de la pompe, en particulier dans le cas des hauteurs de refoulement élevées, il convient de maintenir le jeu correct entre l'impulseur et le couvercle d'impulseur. Ce jeu est réglé en usine à 0,010". Lorsqu'à cause de l'usure, ce jeu atteint 1/32", le jeu d'origine doit être rétabli en enlevant suffisamment de cales d'épaisseur du couvercle. Ce simple réglage prolongera la durée de vie de l'impulseur et maintiendra le haut rendement de la pompe. Les différentes épaisseurs de cales du couvercle d'impulseur sont identifiées par un code couleur. **Blanc : 0,025", Rose : 0,015", Marron : 0,010", Bleu : 0,005", Vert : 0,003".** Les cales d'impulseur sont utilisées selon les besoins entre l'impulseur et l'entretoise d'impulseur pour donner un jeu de fonctionnement entre l'impulseur et le corps de pompe. Lors de l'assemblage d'une pompe, installer juste assez de cales d'épaisseur pour permettre à l'impulseur de tourner sans frottement.

MISE EN SERVICE DES POMPES

LUBRIFICATION

Ingersoll-Rand No. 50 **Ingersoll-Rand No. 80**
La graisse de pompe à eau

Ne jamais utiliser de la graisse ordinaire car elle s'émulsionne dans l'eau. La graisse de pompe à eau automobile ne convient pas non plus car elle est destinée à être utilisée dans de l'eau chaude et est beaucoup trop dure dans l'eau froide.

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

International - No. 16LUB16C

Avant de mettre une pompe en service : Retirer le bouchon de la chambre à huile et remplir d'huile la chambre d'huile. Injecter environ 3 cm^3 d'huile dans le raccord d'admission avant de connecter le flexible d'alimentation.

Toutes les quatre heures de fonctionnement, si un lubrificateur de ligne n'est pas utilisé, remplir d'huile la chambre de la tête arrière.

L'utilisation d'un lubrificateur de ligne est recommandé pour lubrifier le moteur de la pompe.

MISE EN SERVICE DES POMPES

Toutes les quarante heures de fonctionnement, ou en fonction de l'expérience, pomper 10 à 15 coups de graisse avec le pistolet de graissage No. P25–228 dans le raccord de graissage du corps de moteur.

Les pompes d'épuisement Ingersoll–Rand peuvent être totalement submergées pour autant qu'une tuyauterie d'échappement étanche à l'eau et sortant au–dessus du niveau du liquide à pomper soit installée. **Le flexible d'échappement ne doit jamais avoir un diamètre intérieur inférieur à 25 mm sous peine de resteindre l'échappement et d'affecter le rendement de la pompe.**

Pour le pompage dans un caniveau ou dans un puisard naturel, poser la pompe sur une planche ou une pierre plate, ou la suspendre à quelques centimètres du fond du puisard. La durée de service de la pompe sera nettement prolongée lorsque la quantité de boue, sable et gravier est limitée.

Si l'eau est très sale, protéger la pompe en la plaçant dans un panier grillagé ou en installant une crépine appropriée.

En cas de blocage de l'admission de la pompe, couper l'alimentation d'air comprimé, débrancher le flexible et sortir la pompe de l'eau. L'eau s'écoulant par le flexible de refoulement suffira normalement à rincer toute saleté accumulée dans l'admission.

SPÉCIFICATIONS

Modèle	Dimensions de l'ouverture nécessaire au passage de la pompe.		Corps de pompe	Niveau de son dB (A)		
	pouces	mm		Echappement avec conduit d'evacuation	Echappement libre	
				■Pression	■Pression	•Puissance
P237A1–EU	8–3/4 x 8–3/4	222 x 222	Fonte	74.9	104.4	117.4
P237A3–EU	8–3/4 x 8–3/4	222 x 222	Fonte	74.9	104.4	117.4
PS237A1–EU	8–3/4 x 8–3/4	222 x 222	Acier inoxydable	74.9	104.4	117.4

■ Vérifié conformément à la norme ANSI S5.1–1971 à 30,5 m (100 pi) de la colonne d'eau (environ 3 bars/300 kPa (43,5 psig) de refoulement).

• ISO3744

TPD1470

E

INSTRUCCIONES PARA BOMBAS DE ACHIQUE MODELOS P237A1–EU, PS237A1–EU Y P237A3–EU

NOTICE

Los Modelos PA237A1–EU, PS237A1–EU y P237A3–EU están diseñados para aplicaciones de construcción y mantenimiento en las que los factores principales son peso ligero, compacidad y baja consumición de aire.
Ingersoll–Rand no aceptará responsabilidad alguna por la modificación de las bombas efectuada por el cliente para las aplicaciones que no hayan sido consultadas con Ingersoll–Rand.

⚠ WARNING

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

- **Use, inspeccione y mantenga esta bomba siempre de acuerdo con todas las normativas (locales, estatales, federales y nacionales), que se apliquen a las bombas neumáticas de utilización manual o que se sujeten con la mano.**
- **Para mayor seguridad, rendimiento óptimo y larga vida útil de las piezas, use esta bomba con una presión de aire máxima de 90 psig (6.2 bar/620kPa) con una manguera de toma de aire con diámetro interno de 19 mm.**
- **Corte siempre el suministro de aire y desconecte la manguera de suministro de aire antes de instalar, desmontar o ajustar cualquier accesorio de esta bomba, o antes de realizar cualquier operación de mantenimiento de la misma.**
- **No utilice mangueras de aire y racores dañados, desgastados o 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 vapores corrosivos y/o el exceso de humedad pueden estropear el motor de una bomba neumática.**
- **No lubrique las bombas con líquidos inflamables o volátiles tales como queroseno, gasoil 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 cuando utilice, o realice operaciones de mantenimiento en esta bomba.**
- **Lleve siempre protección para los oídos cuando maneje esta bomba.**
- **Utilice únicamente los accesorios Ingersoll–Rand recomendados.**
- **No arranque ni haga funcionar la bomba si no está sumergida.**

NOTICE

El uso de piezas de recambio que no sean las auténticas piezas Ingersoll–Rand podría 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.

Impreso en EE. UU.

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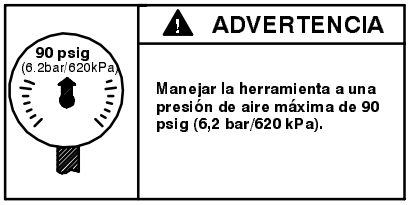
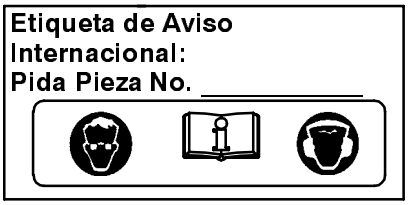
ETIQUETAS DE AVISO

⚠ WARNING

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





AJUSTES

AJUSTE DEL IMPULSOR

Para conseguir el funcionamiento más eficaz de la bomba, especialmente cuando se trata de grandes alturas de elevación, se necesita limitar la holgura entre el impulsor y la tapa de impulsor. Esta holgura se fija en fábrica a 0,010 pulg. (0,25 mm). Cuando, debido al desgaste, la holgura se incremente hasta 1/32 pulg. (0,63 mm), se puede realizar un ajuste sacando los suficientes calzos de la tapa del impulsor para conseguir la holgura original de 0,010 pulg. (0,25 mm). Este sencillo ajuste prolongará la vida útil del impulsor y mantendrá una gran eficacia de la bomba. Los calzos de la tapa del impulsor son de diferentes colores para poder identificar los distintos grosores. **Blanco indica 0,025 pulg. (0,63 mm), rosa 0,015 pulg. (0,06 mm), marrón 0,010 pulg. (0,25 mm), azul 0,005 pulg. (0,13 mm), y verde 0,003 pulg. (0,08 mm)** Los calzos del impulsor se utilizan entre el impulsor y el distanciador del impulsor según sea necesario para proporcionar la holgura de funcionamiento entre impulsor y carcasa. Cuando monte una bomba, instale solamente los calzos de impulsor necesarios para permitir que el impulsor se mueva libremente.

PARA PONER LA BOMBA EN SERVICIO

LUBRICACIÓN

Ingersoll-Rand Nº 50 **Ingersoll-Rand Nº 80**
Grasa para bomba de agua

No use nunca grasa semisólida ordinaria, puesto que se emulsiona con el agua. La grasa de bomba de agua para automoción no sirve en este caso, puesto que está hecha para utilizarse con agua caliente y resulta demasiado dura para usar en agua fría.

Use siempre un lubricante de línea de aire comprimido con estas bombas. Recomendamos el siguiente lubricador de línea de aire comprimido portátil:

Internacional - Nº. 16LUB16C
Para EE.UU. - Nº 16LUB16C

Ante de poner la bomba en servicio: Saque el tapón de la cámara de aceite y llene de aceite la cámara de aceite situada en la cubierta trasera. Inyecte aproximadamente 3 cc de aceite en la admisión de aire antes de conectar la manguera de aire.
Después de cada cuatro horas de funcionamiento, a menos que se use un lubricante de línea de aire, vuelva a llenar de aceite la cámara situada en la cubierta trasera.
Se recomienda la utilización de un lubricador de línea de aire para lubricar el motor de la bomba.

PARA PONER LA BOMBA EN SERVICIO

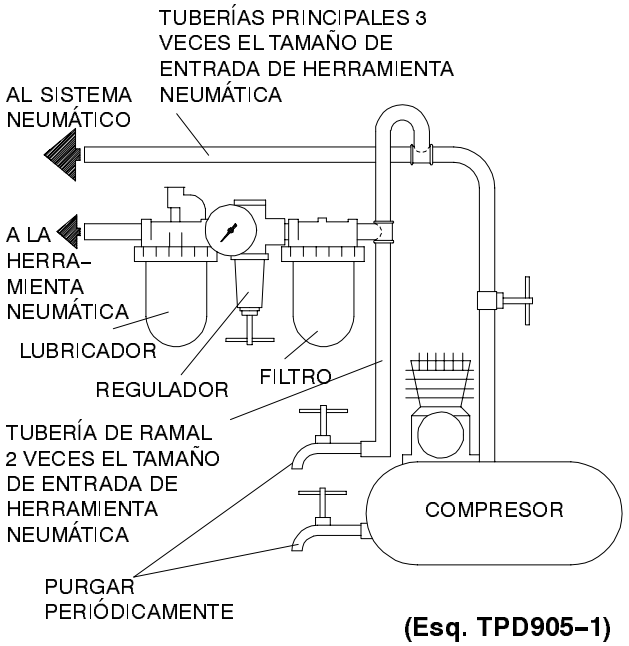
Después de cada cuarenta y ocho horas de funcionamiento, o como indique la experiencia, ponga 10 o 15 disparos de grasa con la pistola engrasadora Nº. P25–228 en el engrasador situado en la carcasa del motor.

Las bombas de achique Ingersoll–Rand pueden sumergirse completamente, pero deberá mantenerse siempre un conducto de escape que llegue hasta la superficie del líquido que se esté achicando. **Bajo ninguna circunstancia deberá usarse una manguera cuyo diámetro interior sea menor de 1 pulg. (0,25 mm), puesto que si no se hiciera así se restringiría el escape y se disminuiría la eficacia de la bomba.**

Cuando bombee líquido de una fosa o colector natural, coloque la bomba sobre una tabla o piedra plana o suspéndala a unas pulgadas de distancia del fondo de dicha fosa. Cuanto menos lodo, arenilla y escombros se bombee, más larga será la vida útil de la bomba.

Si el agua está muy sucia, proteja la bomba poniéndola en una cesta de malla, o fíltrela de cualquier otro modo antes de que entre en la bomba.

Si se atascara la admisión, desconecte el suministro de aire y la manguera de suministro de aire y saque la bomba del agua. El contraflujo de líquido a través de la manguera de descarga limpiará normalmente la suciedad que haya en la admisión.



(Esq. TPD905–1)

ESPECIFICACIONES

Modelo	Tamaño de apertura en la que puede entrar la bomba		Material de la carcasa de la bomba	Nivel se sonido dB (A)		
	pulg.	mm		Escape Tubulado En Dirección Opuesta	Escape No–Tubulado En Dirección Opuesta	
				■Presión	■Presión	•Potencia
P237A1–EU	8–3/4 x 8–3/4	222 x 222	Hierro	74.9	104.4	117.4
P237A3–EU	8–3/4 x 8–3/4	222 x 222	Hierro	74.9	104.4	117.4
PS237A1–EU	8–3/4 x 8–3/4	222 x 222	Acero inoxidable	74.9	104.4	117.4

■ Probado en conformidad con ANSI S5.1–1971 a una altura de caída de 30.5 m (100 pies) [una contrapresión de aproximadamente 3.0 bar/300 kPa (43.5 psig)].

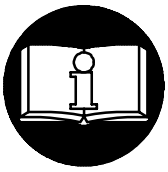
• ISO3744

P

INSTRUÇÕES PARA BOMBAS CENTRÍFUGAS MODELOS P237A1–EU, PS237A1–EU E P237A3–EU

NOTICE

Os modelos P237A1–EU, PS237A1–EU e P237A3–EU são concebidos para aplicações de construção e manutenção onde pesos leves, compacidade e o baixo consumo de ar são factores primários.
A Ingersoll–Rand não e responsável por modificações, feitas pelo cliente em ferramentas, nas quais a Ingersoll–Rand não tenha sido consultada.



⚠ WARNING

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

- Opere, inspeccione e mantenha sempre esta bomba de acordo com todas regulamentações (local, estadual, federal e do país), que possam ser aplicadas as bombas pneumáticas operadas manualmente ou seguras com as mãos.
- Para segurança, máximo desempenho e máxima durabilidade das peças, opere esta ferramenta com uma pressão de ar máxima de 6.2 bar/620 kPa (90 psig) na entrada da mangueira de alimentação de ar com diâmetro interno de 19 mm (3/4").
- 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.

NOTICE

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.

Refer All Communications to the Nearest

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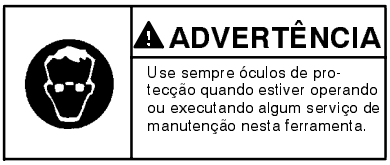
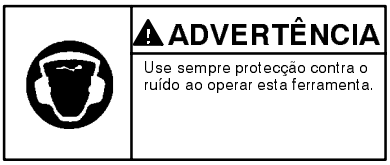
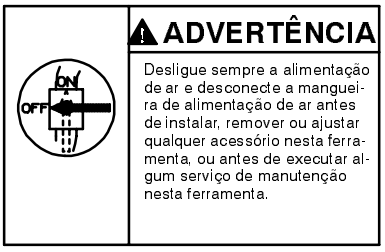
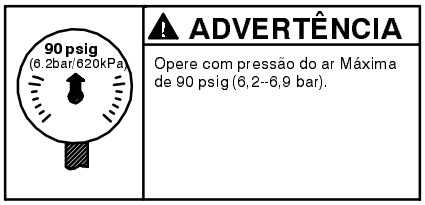
⚠ WARNING

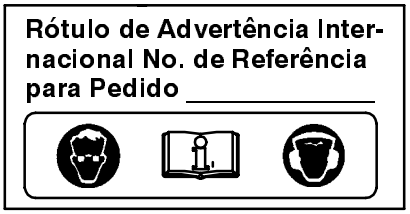
O NÃO CUMPRIMENTO DAS SEGUINTES ADVERTÊNCIAS PODE RESULTAR EM FERIMENTOS.











AJUSTES

AJUSTE DO IMPULSOR

Para a operação mais eficiente da Bomba, particularmente contra pontos altos, é necessário que a distância entre o Impulsor e a sua Cobertura seja mantida. Esta distância é ajustada de fábrica como sendo 0,010". Quando, devido ao desgaste, esta distância tiver aumentado cerca de 1/32", um ajuste pode ser feito ao remover suficiente das Juntas da Cobertura do Impulsor para obter 0,010" de distancia. Este simples ajuste prolongarâ a vida util do Impulsor e irá manter a eficiéncia da Bomba. As Juntas da Cobertura do Impulsor são de diferentes cores para ajudar na identificação das espessuras. Branca é 0,025", rosa é 0,015", castanho é 0.010", azul é 0,005" e verde 0,003". As Juntas do Impulsor são usadas quando necessárias entre o Impulsor e o Espaçador para fornecer uma distancia ideal entre o Impulsor e o Corpo. Quando montando a Bomba, instale Juntas de Impulsor suficientes para permitir que o Impulsor gire sem nenhuma resistencia.

COLOCANDO A FERRAMENTA EM FUNCIONAMENTO

LUBRIFICAÇÃO

Ingersoll-Rand No. 50 **Ingersoll-Rand No. 80 Massa Lubrificadora de Bomba D'Água**

Nunca use massa lubrificadora comum, porque ela engordura a água. A massa lubrificadora comum não é satisfatoria porque ela foi feita para use com água quente e é muito dura para usar em água quente e é muito dura para usar em água fria.

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

Para Internacional - No. 16LUB16C

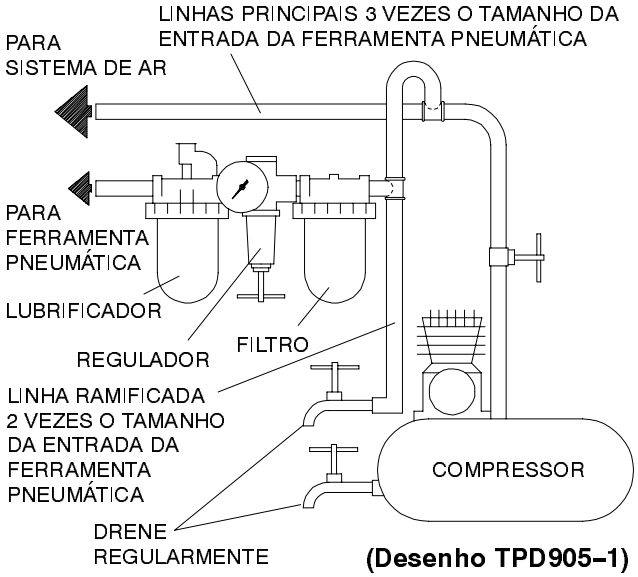
Antes de colocar a Bomba em serviço: Remova o Bujão da Cãmara de Oleo e preencha a cãmara de óleo, na traseira, com óleo. Injecte cerca de 3 cc de óleo na entrada de ar antes de acoplar a mangueira de ar.

Depois de colocar a Bomba de operação, ao menos que um lubrificador de ar de linha esteja sendo usado, encha novamente a cãmara, na traseira, com óleo.

O uso de um lubrificador de ar de linha é recomendado para lubrificar o motor da Bomba.

COLOCANDO A FERRAMENTA EM FUNCIONAMENTO

Depois de quarenta horas de operação, ou como a experiéncia indicar, bombe 10 ou 15 medidas de massa lubrificadora do Canhão de Massa No. P25-228 no Adaptador de Massa Lubrificadora no Corpo do Motor.
As Bombas Centrifugas da Ingersoll-Rand podem ser completamente submersas, mas uma conduta de escape impermeável da superficie do liquido a bombear deve ser sempre antido. **Em nenhuma circunstância, uma mangueira menor que 1" de diâmetro interno deve ser usada ja que a mesma ira restringir o escape e prejudicar a eficiéncia da Bomba.**
Ao bombear de um furo ou acude, ajuste a Bomba numa plataforma, ou rocha plana ou suspenda a bomba algumas polegadas acima do fundo do acude. Quanto menos lama, areia e detritos forem bombeados mais tempo a Bomba ira durar.
Se a agua for muito suja, proteja a Bomba ao adaptar um ralo, ou uma rede.
Se a Entrada ficar entupida, desligue a alimentacao de ar e desligue a mangueira de alimentação de ar e retire a Bomba da água. Agua corrente da parte traseira através da mangueira de descarga irá expelir naturalmente a sujidade da Entrada.



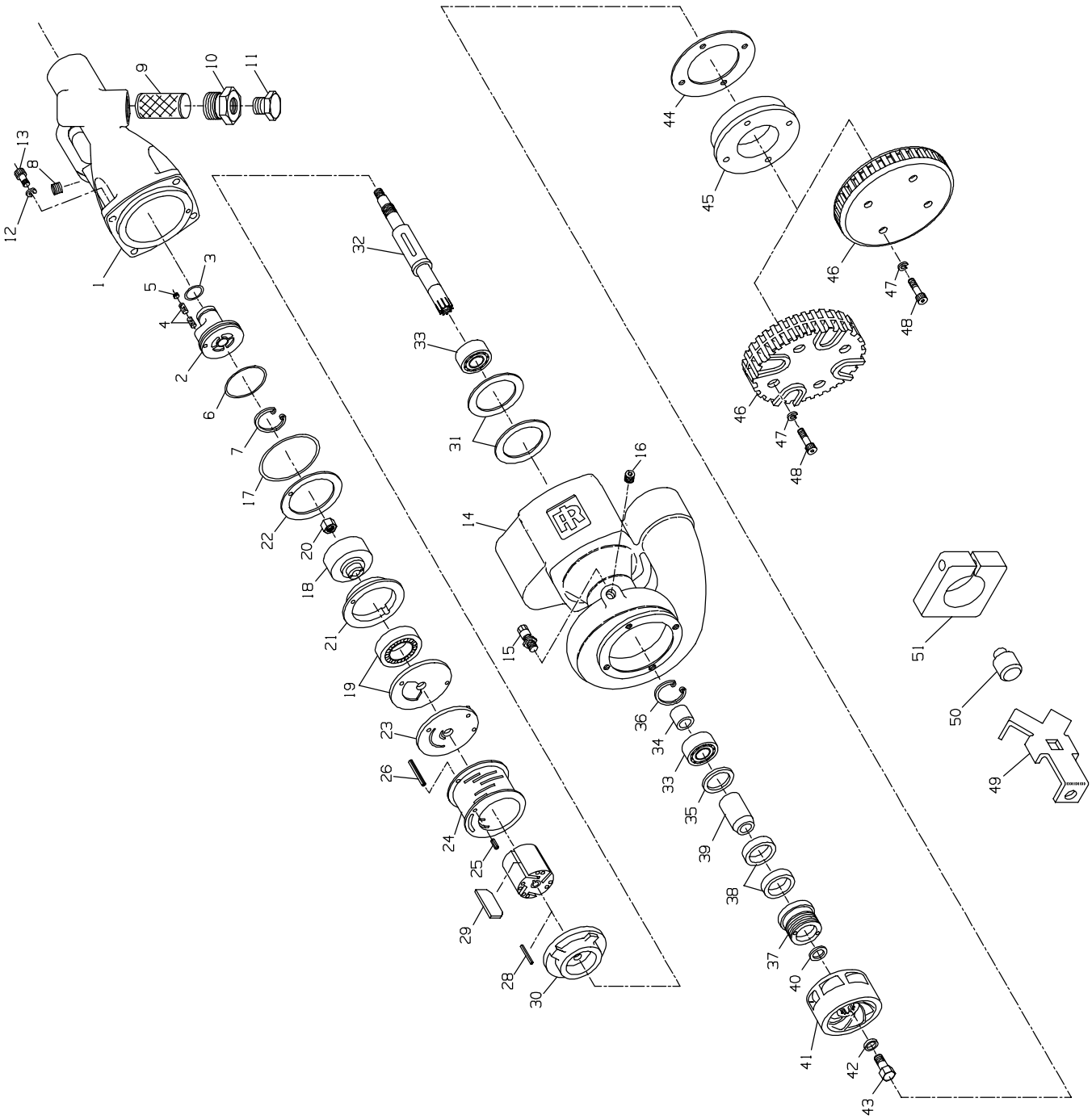
(Desenho TPD905-1)

ESPECIFICAÇÕES

Modelo	Tamanho da Abertura que a Bomba irá passar através		Material do corpo da Bomba	Nível de Ruído dB (A)		
				Com Conduta de Escape	Sem conduta de Escape	
	mm	pol.		■ Pressão	■ Pressão	•Potência
P237A1-EU	8-3/4 x 8-3/4	222 x 222	Ferro	74,9	104,4	117,4
P237A3-EU	8-3/4 x 8-3/4	222 x 222	Ferro	74,9	104,4	117,4
PS237A1-EU	8-3/4 x 8-3/4	222 x 222	Aço Inoxidável	74,9	104,4	117,4

■ Testado de acordo com a ANSI S5.1-1971 a 30,5 m (100 pés) do cabeçote (a uma pressão na traseira de aproximadamente 3,0 bar/300 kPa (43,5 psig))

• ISO3744


(Dwg. TPA1183–2)

			PART NUMBER FOR ORDERING
	1	Backhead Assembly	
		for P237	P237–A102
		for PS237	PS237–A102
	2	Oiler Body Assembly	88HL60–A198
♦•	3	Oiler Body O–ring (Small)	88L60–103
♦	4	Oiler Felt (2)	R1–75
	5	Oiler Adjusting Screw	R1–71A
♦•	6	Oiler Body O–ring (Large)	WFS182–210
	7	Oiler Body Retainer	88HL60–298
	8	Oil Chamber Plug	
		for P237	R2–227
		for PS237	PS237–227
♦	9	Air Strainer Screen	P25–61A
	10	Air Strainer Cap	
		for P237	P25–268
		for PS237	PS237–268
	11	Air Strainer Plug	
		for P237	P25–536
		for PS237	PS251–536
	12	Backhead Lock Washer (4)	
		for P237	34U–58
		for PS237	PS251–58
	13	Backhead Cap Screw (4)	
		for P237	834–638
		for PS237	PS237–638
	14	Housing	
		U. S. Standard 2 1/2" Pipe Tap Discharge	
		for P237A1	P237–A40
		for P237A1–EU	P237–EU–A40
		U. S. Standard 2 1/2" Pipe Tap Discharge	
		for PS237A1	PS237–A40
		for PS237A1–EU	PS237–EU–A40
		British 2 1/2" Pipe Tap Discharge	
		for P237A3	P237–A240
		for P237A3–EU	P237–EU–A240
	15	Grease Fitting	
		for P237	23–188
		for PS237	PB250A–188
	16	Housing Plug	
		for P237	R2–227
		for PS237	PS237–227
♦•	17	Housing Seal	P226–283A
	18	Controller Assembly	99V77–A524
	19	Rotor Bearing Seal Assembly	99V60–A28A
	20	Controller Retaining Nut	G8–120A
	21	Rotor Bearing Cage	99V60–107A
♦•	22	Rear End Plate Gasket	99V60–739
	23	Rear End Plate	99V60–A12
	24	Cylinder Assembly	99V60–A3
	25	End Plate Dowel	5040–6
	26	Cylinder Dowel	502B–120
	27	Rotor	99V60–53
♦	28	Rotor Key	R43F–70
♦•	29	Vane Packet (set of 4 Vanes)	99V60–42–4
	30	Front End Plate	99V60–11
	31	Motor Clamp Washer (2)	99V60–207
	32	Rotor Shaft	
		for P237	P226–204
		for PS237	PS237–204
	33	Shaft Bearing (2)	G57E–24
	34	Bearing Spacer	P226–265
	35	Seal Spacer	P226–100
	36	Housing Snap Ring	S12–118
	37	Water Seal Cap Assembly	P226–A115
♦	38	Water Seal (2)	P225–153
	39	Impeller Spacer	P225–152
	40	Impeller Shim (as required)	
		.010" thick	P25–151–10
		.025" thick	P25–151–25

♦ Indicates Tune–up Kit part.

• To keep downtime to a minimum, it is desirable to have on hand certain repair parts. We recommend that you stock one (pair or set) of each part indicated by a bullet (•) for every four tools in service.

		PART NUMBER FOR ORDERING
41	Impeller	
	for P237	P225-143
	for PS237	PS237-143
42	Impeller Retaining Washer	P225-157
43	Impeller Retaining Screw	P225-156
44	Impeller Cover Shim (as required)	
	.003" thick (green)	P225-145-3
	.005" thick (blue)	P225-145-5
	.010" thick (brown)	P225-145-10
	.015" thick (pink)	P225-145-15
	.025" thick (white)	P225-145-25
45	Impeller Cover	
	for P237	P225-144
	for PS237	PS237-144
46	Inlet	
	for P237	P225-148
	for PS237	PS237-148
47	Impeller Cover Lock Washer (4)	P225-67
48	Impeller Cover Cap Screw (4)	P225-146
49	Controller Wrench	99V60-950
50	Seal Pressing Tool for Controller	99V60-951
51	Bearing Clamp to release Controller	99V60-A952
*	Nameplate	
	for P237A1, PS237A1 and P237A3	P25-99
	for P237A1-EU, PS237A1-EU and P237A3-EU	P25-EU-99
*	Nameplate Screw (4)	PS251-302

		PART NUMBER FOR ORDERING
*	Perforated Bottom Plate	
	for P237	P225-147
	for PS237	PS237-147
*	Exhaust Hose Assembly	P225-A184
*	Exhaust Hose	P25-184
*	Exhaust Hose Nipple	P35-46
*	Air Strainer Nipple	P25-200
*	Air Inlet Valve	C10-283
*	Muffler	R21-674
+ *	Discharge Hose (50 feet of 2-1/2" Hose with male and female Coupling)	P25-182-50
+ *	Discharge Hose (50 feet of 2-1/2" Hose with female coupling)	P25-181-50
+ *	Fire Hose Adapter (for connecting Discharge Hose with Expansion Ring Coupling to Pump)	P25-183
+ *	Air Inlet Hose Nipple (1" hose to 1" male pipe)	P35-46
*	Grease Gun	P25-228
*	1" Pipe Line Valve	RC5-160
*	Discharge Nipple	P25-135
*	Expanding Coupling	P25-190
*	Blank Adapter	P25-192
*	Pipe Line Connector	R44-115
*	Kit (includes 99V60-950, 99V60-951 and 99V60-A952)	99V60-K950
*	Tune-up Kit (includes illustrated parts 3, 4 [2], 6, 9, 17, 22, 28, 29, and 38 [2])	226-TK1

* Not illustrated.

\+ For use with U. S. Pipe Tap.

⚠ WARNING

Always wear eye protection when operating or performing maintenance on this pump.
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.

LUBRICATION

Each time a P237 Sump Pump is disassembled for maintenance and repair or replacement of parts, lubricate the Pump as follows:

1. Remove the Oil Chamber Plug (8) and fill the oil chamber in the Backhead (1) with Ingersoll–Rand No. 50 Oil.
2. Before attaching the air hose, inject about 3 cc of oil into the air inlet.
3. After each four hours of operation, unless an air line lubricator is used, fill the oil chamber in the Backhead with oil.
4. After each forty hours of operation, or as experience indicates, pump 10 or 15 strokes of Ingersoll–Rand Water Pump Grease No. 80 into the Grease Fitting (15) on the Motor Housing (14). Use the No. P25–228 Grease Gun.
5. We recommend the use of Ingersoll–Rand No. 8LUB12 Lubricator located in the air supply line as close to the Pump as practical. Keep the Lubricator filled with Ingersoll–Rand No. 50 Oil.

AIR STRAINER

Periodically, clean the Air Strainer Screen (9) as follows:

1. Shut off the air supply to the Pump.
2. Unscrew the Air Strainer Plug (11).
3. If the Screen still appears clogged, unscrew the Air Strainer Cap (10) and withdraw the Screen. Clean the Screen in a suitable cleaning solution in a well ventilated area.

DISASSEMBLY

General Instructions

1. Do not disassemble the Pump any further than necessary to replace or repair damaged parts.
2. Whenever grasping a part in a vise, always use leather–covered or copper–covered vise jaws to protectthe surface of the part and help prevent distortion. This is particularly true of threaded members and housings.
3. Do not remove any part which is a press fit in or on a subassembly unless the removal of that part is necessary for repairs or replacement.

Disassemble a P237 Pump as follows:

1. If the Air Strainer Screen (9) is to be cleaned or replaced, unscrew the Air Strainer Cap (10) and withdraw the Screen.
2. Unscrew and remove the Backhead Cap Screws (13). Lift off the Backhead.
3. If the oiler is to be disassembled, remove the Oiler Body Retainer (7) and withdraw the Oiler Body Assembly (2) from the Backhead.
4. Unscrew the Impeller Cover Cap Screws (48) and remove the Inlet (46) and Impeller Cover (45).
5. Sprag the Impeller (41) against rotation by inserting a long screwdriver through one of the suction ports and into the discharge port in the Housing (14).
6. Unscrew the Impeller Retaining Screw (43) and remove the Impeller.
7. While grasping the Controller (18) in one hand, gently tap on the impeller end of the Rotor Shaft (32) with a plastic hammer and withdraw the motor from the Housing.
8. The upper Rotor Shaft Bearing (33) and Bearing Spacer (34) usually come out with the motor. Slide them off the Rotor Shaft.

NOTICE

The Controller Retaining Nut (20) has a right–hand thread.

9. Grasp the Rotor Shaft vertically in copper–covered vise jaws, and unscrew the Controller Retaining Nut.

NOTICE

The Controller Assembly has a left–hand thread.

10. Using the No. 99V60–950 Controller Wrench, unscrew the Controller Assembly.

NOTICE

Do not attempt to disassemble the Controller. It is available only as a unit.

11. Lift off the Rear End Plate Gasket (22).
12. Set the Bearing Cage (21) on blocks on an arbor press. Using a metal sleeve that contacts only the outer race of the Rear Rotor Bearing (19), press off the Bearing Cage.
13. If it is necessary to remove the Rear Rotor Bearing, insert the Rear Rotor Bearing into the No. 99V60–A592 Bearing Clamp and tighten the nut on the fixture. Insert the No. 99V60–951 Seal Pressing Tool in the center.
14. Lift off the Rotor Bearing Seal (19) and Rear End Plate (23).
15. Lift off the Cylinder (24).
16. Remove the Vanes (29).

17. Withdraw the Rotor (27) and lift out the Rotor Key (28).
18. Lift off the Front End Plate (30).
19. Remove the Motor Clamp Washers (31).

NOTICE

The Water Seal Cap Assembly (37) has a left-hand thread.
Do not remove the Water Seals (38) from within the Water Seal Cap unless you have two new Seals on hand for installation. The Water Seals are always damaged during the removal process. Always check the Water Seals for wear or leakage.

20. Using a water seal cap spanner wrench, unscrew and remove the Water Seal Cap Assembly.
21. Withdraw the Seal Spacer (35).
22. The lower Shaft Bearing (33) can usually be pushed from the Housing with a wooden dowel. However, if the Water Seals were badly worn so that water got into and around the Bearing, it may be necessary to forcibly drive the Bearing from the Housing. If this is the case, make certain you have a new Bearing on hand for installation.

ASSEMBLY

General Instructions

1. Always press on the **inner** ring of a ball-type bearing when installing the bearing on a shaft.
2. Always press on the **outer** ring of a ball-type bearing when pressing the bearing in a bearing recess.
3. Whenever grasping a part in a vise, always use leather-covered or copper-covered vise jaws. This is particularly true of threaded members and housings.
4. Except for bearings, always clean every part, and wipe every part with a thin film of oil before installation.
5. Check every bearing for roughness. If an open bearing must be cleaned, wash it thoroughly in a **clean** solution and dry with a clean cloth. **Sealed or shielded bearings should not be cleaned.**
6. Apply a film of O-ring lubricant to all O-rings before installation.

Assemble a P237 Pump as follows:

1. If the Water Seals (38) were removed from the Water Seal Cap (37), install new Seals as follows:
   a. Press the first Seal, lip side first, into the Water Seal Cap until it bottoms against the shoulder.
   b. Press the second Seal, lip side trailing, into the Water Seal Cap until the trailing edge of the Seal is flush with the face of the Water Seal Cap.
   c. Insert the Impeller Spacer (39), beveled end first, through both Seals until its beveled end is flush with the threaded end of the Water Seal Cap.
2. Install the lower Shaft Bearing (33) followed by the Seal Spacer (35) in the bottom of the Housing (14) until the Bearing seats against the Housing Snap Ring (36).
3. Using a water seal cap spanner wrench, install the Water Seal Cap Assembly (37). Tighten the Water Seal Cap to 20 to 25 ft-lb (27 to 34 N m) torque.
4. Grasp the large diameter end of the Rotor Shaft (32) in leather-covered or copper-covered vise jaws so that the small diameter end is upward.
5. Slide the Front End Plate (30), bearing recess first, down over the Rotor Shaft.
6. Place the Rotor Key (28) in the keyslot in the Rotor Shaft.
7. Slide the Rotor (27) down over the Rotor Shaft, engaging the Rotor Key.
8. Place a Vane (29) in each vane slot.
9. Place the Cylinder (24), small dowel first, down over the Rotor so that the small dowel engages the alignment hole in the Front End Plate.
10. Place the Rear End Plate (23) over the Rotor Shaft and against the Cylinder, so that it engages the Cylinder Dowel (26).
11. Check the outside diameter and large inside diameter of the Rotor Bearing Seal (19) for wear. If the outside diameter of the hub is worn to 1.76" (29.881 mm) or smaller, and/or the large inside diameter is worn to 0.910" (23.122 mm) or larger, install a new Rotor Bearing Seal.

NOTICE

Take all measurements 90° to the left of the dowel hole when facing the hub side of the Seal.
Install the Rotor Bearing Seal (19), flat side first, so that the Cylinder Dowel engages the alignment hole in the Bearing Seal.

12. Press the Rear Rotor Bearing (19) onto the hub of the Controller (18).
13. Press the Controller Assembly into the hub side of the Rotor Bearing Cage (21) until it is within 1/8" (3 mm) of seating.

NOTICE

The Rotor Shaft has a left-hand thread; turn counterclockwise to install.

14. Using the No. 99V60-950 Controller Wrench, install the assembled Controller, Bearing and Cage on the Rotor Shaft.

NOTICE

Tighten the Controller to 8 to 10 ft-lb (10.8 to 13.5 Nm) torque. Do not exceed 10 ft-lb (13.5 Nm) torque. The Controller may be damaged if this torque is exceeded.

NOTICE

The Controller Retaining Nut has a right-hand thread.

15. Install the Controller Retaining Nut (20). Tighten the Nut to 6 to 9 in-lb (0.67 to 1.07 Nm) torque.
16. Remove the assembled motor from the vise.
17. Slide the upper Rotor Shaft Bearing (33) on the large diameter end of the Rotor Shaft until it seats against the shoulder on the Shaft.
18. Slide the Bearing Spacer (34) on the Rotor Shaft until it contacts the Bearing.
19. Stand the Housing (14) upright on the workbench.
20. Place the two Motor Clamp Washers (31), concave side first, in the bottom of the housing bore, so that the outer rim of the leading Washer contacts the Housing.
21. Install the assembled motor shaft end first into the Housing until the Front End Plate seats against the Motor Clamp Washers.
22. Place the Rear End Plate Gasket (22) on the face of the Rear Rotor Bearing Cage, aligning the dowel hole in the Gasket with the Cylinder Dowel.
23. If the Oiler Body Assembly (2) was disassembled, install two new Oiler Felts (4) in the Oiler Body, and retain them with the Oiler Adjusting Screw (5). Run the Screw in until its trailing face is flush with the face of the Oiler Body.
24. Install the Oiler Body O-rings (3) and (6) in their respective grooves on the Oiler Body.
25. Install the Oiler Body Assembly in the Backhead and retain it with the Oiler Body Retainer (7).
26. Place the Housing Seal (17) on the rim of the Housing.
27. Place the Backhead (1) on the Housing, making certain the Cylinder Dowel engages the dowel hole in the Backhead. Install the Backhead Cap Screws (13) and Lock Washers (12). Tighten them to 20 ft-lb (27 Nm) torque.
28. Lay the Pump on its side and slide the Impeller (41), hub side first, on the splined end of the Rotor Shaft. Manually rotate the Impeller. If it rubs against the Housing, install an Impeller Shim (40) or Shims as required to provide running clearance between the Impeller and Housing.
29. Install the Impeller Retaining Washer (42) and Screw (43). Tighten the Impeller Retaining Screw to 12 to 15 ft-lb (16.2 to 20.3 Nm) torque.
30. For the most efficient operation of the Pump, particularly against high heads, it is necessary that the clearance between the Impeller and Impeller Cover (45) be regulated at .010". Place the Impeller Cover on the base of the Housing, using the required Impeller Cover Shim (44) or Shims to obtain the desired clearance.
31. Place the Inlet (46) against the Impeller Cover and install the Impeller Cover Cap Screws (48) and Lock Washers (47). Tighten the Cap Screws to 9 to 12 ft-lb (12.2 to 16.2 Nm) torque.
32. Inject 10 or 15 strokes of Ingersoll-Rand No. 80 Water Pump Grease into the Grease Fitting (15) on the Motor Housing (14). Use the No. P25-228 Grease Gun.

TROUBLESHOOTING GUIDE

Trouble	Probable Cause	Solution
Low power or low free speed	Low air pressure at the Inlet	Check the air pressure at the Inlet. The pressure must not exceed 90 psig (6.2 bar/620 kPa).
	Plugged Inlet Bushing Screen or Air Strainer Screen	Clean the Screen in a clean, suitable, cleaning solution. If it cannot be cleaned, replace it. **⚠ WARNING** Never operate a Sump Pump without an Inlet Screen. Ingestion of dirt into the Sump Pump can, in some cases, cause an unsafe condition.
	Worn or broken Vanes	Replace the complete set of Vanes.
	Worn or broken Cylinder	Replace the Cylinder if it is worn or broken or if the bore is scored or wavy.
	Improper lubrication or dirt build–up in the motor.	Lubricate the Sump Pump as instructed in **LUBRICATION.** If lubrication does not result in satisfactory operation, disassemble the motor inspect and clean all parts.
Rough operation	Worn or broken Rear Rotor Bearing or Front Rotor Bearing	Examine each Bearing. Replace the Rear Rotor Bearing Seal Assembly if worn or damaged or replace the Front Rotor Bearing.
	Worn Rotor Key	Replace the Key. Check the Arbor and Rotor for keyslot wear and replace if necessary.
	Bent Arbor	Mount the Arbor on centers. Check the bearing diameter runout with an indicator. Replace the Arbor if runout exceeds .002” Total Indicator Reading.
Scoring of End Plates or Cylinder	Improper assembly	Make certain that all motor parts are properly aligned prior to clamping the motor assembly.
	Rotor Bearing Seal misalignment	Loosen the Cylinder Case Screws. Rotate the spindle by hand to align the seal. Re–tighten the Screws to 14 ft–lb (19 Nm) torque. The Spindle must rotate freely.
High free speed	Worn Rotor Bearing Seal	Replace the Rotor Bearing Seal if the outside high diameter of the hub is worn to 1.76” or smaller and/or the large inside diameter is worn 0.910” or larger.