

OPERATION AND MAINTENANCE MANUAL FOR MODEL 100PQ1 IMPULSE WRENCH

NOTICE

Model 100PQ1 Impulse Wrench is designed for assembly operations which require high speed rundown of fasteners with consistent torque delivery and reduced torque reaction. Ingersoll-Rand is not responsible for customer modification of tools for applications on which Ingersoll-Rand was not consulted.

⚠ WARNING

**IMPORTANT SAFETY INFORMATION ENCLOSED.
READ THIS MANUAL BEFORE OPERATING TOOL.**

**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 TOOL IN SERVICE

- Always operate, inspect and maintain this tool in accordance with American National Standards Institute Safety Code for Portable Air Tools (ANSI B186.1).
- For safety, top performance, and maximum durability of parts, operate this tool at 90 psig (6.2 bar/620 kPa) maximum air pressure at the inlet with 3/8" (10 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 tool, or before performing any maintenance on this tool.
- 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 tool.
- Do not lubricate tools with flammable or volatile liquids such as kerosene, diesel or jet fuel.
- Do not remove any labels. Replace any damaged label.

USING THE TOOL

- Always wear eye protection when operating or performing maintenance on this tool.
- Always wear hearing protection when operating this tool.
- Keep hands, loose clothing and long hair away from rotating end of tool.
- Anticipate and be alert for sudden changes in motion during start up and operation of any power tool.
- Keep body stance balanced and firm. Do not overreach when operating this tool. High reaction torques can occur at or below the recommended air pressure.
- Tool shaft may continue to rotate briefly after throttle is released.
- Air powered tools can vibrate in use. Vibration, repetitive motions or uncomfortable positions may be harmful to your hands and arms. Stop using any tool if discomfort, tingling feeling or pain occurs. Seek medical advice before resuming use.
- Use accessories recommended by Ingersoll-Rand.
- Use only impact sockets and accessories. Do not use hand (chrome) sockets or accessories.
- This tool is not designed for working in explosive atmospheres.
- This tool is not insulated against electric shock.

NOTICE

The use of other than genuine Ingersoll-Rand replacement parts may result in safety hazards, decreased tool 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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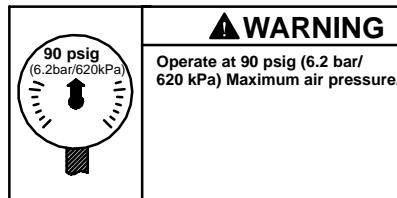
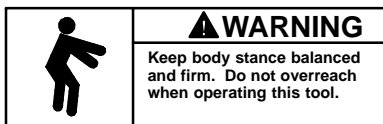
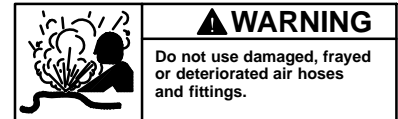
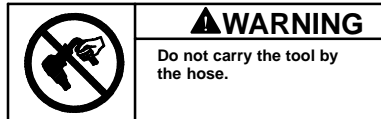
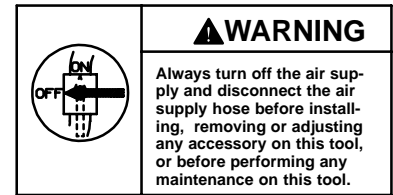
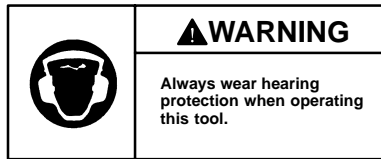
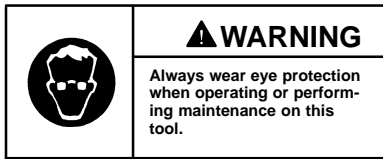
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WARNING LABEL IDENTIFICATION

⚠ WARNING

FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.



ADJUSTMENTS

TORQUE ADJUSTMENT

To adjust the torque on these Twin Blade Impulse Wrenches, proceed as follows:

1. Remove the Adjustment Hole Plug.
2. Rotate the Drive Shaft until the Torque Adjustment Screw is visible in the opening.
3. Using a 1.5 mm hex wrench, rotate the Adjustment Screw clockwise to increase the torque output and counterclockwise to decrease the torque output. Do not rotate the Oil Plug.

NOTICE

Make all final adjustments at the job.

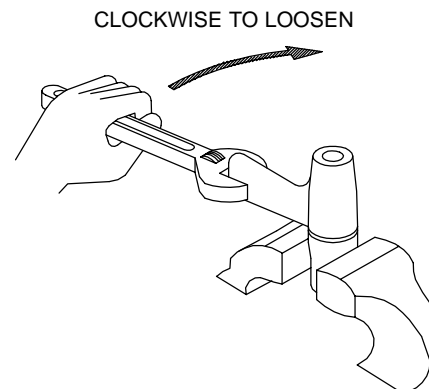
4. Replace the Adjustment Hole Plug.

CHANGING THE MECHANISM FLUID

To change the Mechanism Fluid in the Impulse Mechanism, proceed as follows:

1. Use a pointed probe to push the Spring Seat against the Retaining Sleeve Spring. While the Spring is compressed, use another pointed probe or thin blade screwdriver to remove the Retaining Ring. Lift the Spring Seat, Spring and Bit Retaining Sleeve off the Drive Shaft and remove the Bit Retaining Ball.

2. Using snap ring pliers, remove the Retaining Sleeve Spring Stop from the Drive Shaft.
3. Remove the Rubber Housing Boot.
4. Using copper-covered vise jaws, carefully grasp the flats of the Mechanism Cover with the output end of the Drive Shaft downward.
5. Using an adjustable wrench, unscrew the Motor Housing Assembly from the Mechanism Cover. This is a **left-hand thread**, rotate the Motor Housing **clockwise** to remove it. See Dwg. TPD1264.



(Dwg. TPD1264)

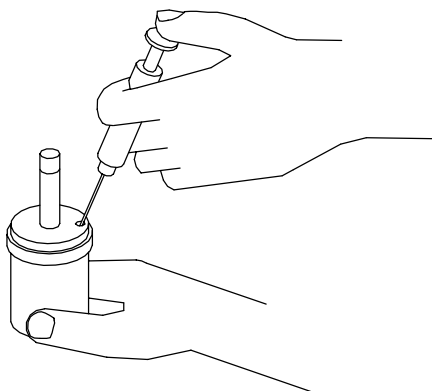
6. Lift the assembled motor off the Mechanism Cover and pull the mechanism assembly out of the Cover.

ADJUSTMENTS

- Using a 1.5 mm hex wrench, rotate the Torque Adjustment Screw clockwise until the Screw stops. Rotate the Screw counterclockwise until it stops or makes six complete revolutions.
- Using the special Tee Wrench furnished in the Tool Kit (Part No. 100PQ-99), remove the Oil Plug and Oil Plug Seal.
- With the oil plug opening downward over a container, rotate the Drive Shaft to purge the fluid from the mechanism.
- Using the syringe and fluid from the Fluid Replacement Kit (Part No. EQ106S-K400), fill the mechanism with the fluid furnished in the Kit. See Dwg. TPD1265.

NOTICE

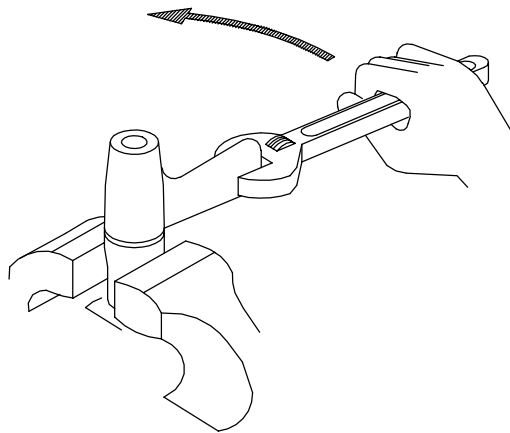
DO NOT SUBSTITUTE ANY OTHER FLUID. Failure to use the fluid provided could damage the tool, increase maintenance and decrease performance. Use only clean fluid in these tools.



(Dwg. TPD1265)

- Submerge the fill opening in the remainder of the fluid, and using a wrench, rotate the Drive Shaft to purge any remaining air from the system.
- Thread the Oil Plug with the Oil Plug Seal into the mechanism until it is snug.
- Using a 1.5 mm hex wrench, turn the Torque Adjustment Screw clockwise until it stops. This is the maximum torque position.
- Wipe the outside of the mechanism dry and clean and remove the Oil Chamber Plug. Using the syringe, withdraw 0.25 cc of fluid.
- Install the Oil Chamber Plug and tighten it between 20 and 25 in-lb (2.3 and 2.8 Nm) torque.
- Insert the mechanism assembly, output end leading, into the Mechanism Cover clamped in the vise jaws.
- Insert the hex end of the rotor shaft into the hex recess at the rear of the Drive Shaft and thread the assembled Motor Housing onto the Mechanism Cover. This is a **left-hand thread**. Rotate the Housing **counterclockwise** to tighten it. See Dwg. TPD1266.

COUNTERCLOCKWISE TO TIGHTEN



(Dwg. TPD1266)

PLACING TOOL IN SERVICE

LUBRICATION



Ingersoll-Rand No. 50



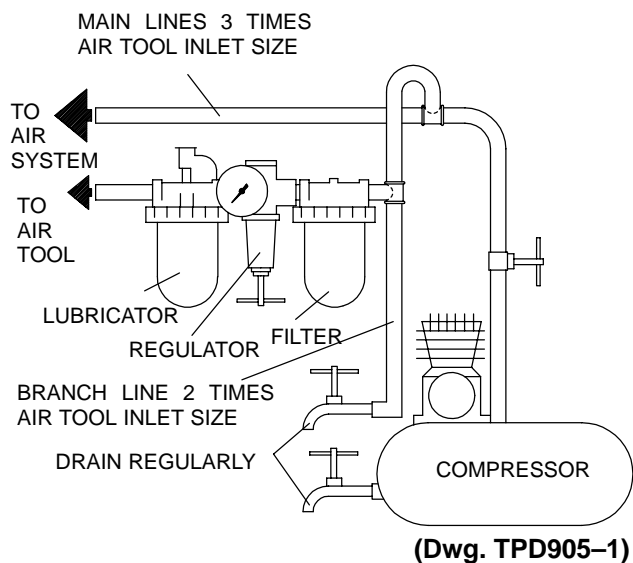
Ingersoll-Rand No. 67

**Ingersoll-Rand Fluid Part
No. EQ106S-400-1**

Always use an air line lubricator with these tools.
We recommend the following Filter-Lubricator-Regulator Unit:

For USA – No. C28-04-FKG0-28

After each 20 000 cycles, or as experience indicates, drain and refill the Impulse Unit Drive Assembly as instructed in this manual using the Fluid Replacement Kit (Part No. EQ106S-K400). Lubricate the hex drive and the output shaft before assembly.



SPECIFICATIONS

Model	Type of Handle	Chuck/Drive in.	Free Speed rpm	Recommended Torque Range	
				Soft Draw ft-lb (Nm)	Hard Slam ft-lb (Nm)
100PQ1	pistol	1/4" square dr.	9,300	3-6 (4-8)	3-8 (4-11)

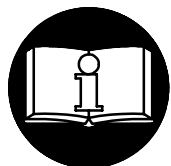
MANUEL D'EXPLOITATION ET D'ENTRETIEN DE LA CLÉ HYDRO-PNEUMATIQUE MODÈLE 100PQ1

NOTE

La clé hydro-pneumatique Modèle 100PQ1 est destinée aux opérations d'assemblage nécessitant un vissage rapide des fixations avec un couple de serrage constant et une réaction réduite sur l'opérateur.

Ingersoll-Rand ne peut être tenu responsable de la modification des outils 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 L'OUTIL.
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 DE L'OUTIL**

- 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 la sécurité, les performances optimales et la durabilité maximale des pièces, cet outil doit être connecté à une alimentation d'air comprimé de 6,2 bar (620 kPa) maximum à l'entrée, avec un flexible de 10 mm de diamètre intérieur.
- Couper toujours l'alimentation d'air comprimé et débrancher le flexible d'alimentation avant d'installer, déposer ou ajuster tout accessoire sur cet outil, ou d'entreprendre une opération d'entretien quelconque sur l'outil.
- 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'un outil pneumatique.
- Ne jamais lubrifier les outils avec des liquides inflammables ou volatils tels que le kérosène, le gasoil ou le carburant d'aviation.
- Ne retirer aucune étiquette. Remplacer toute étiquette endommagée.

- UTILISATION DE L'OUTIL**
- Porter toujours des lunettes de protection pendant l'utilisation et l'entretien de cet outil.
 - Porter toujours une protection acoustique pendant l'utilisation de cet outil.
 - Tenir les mains, les vêtements flous et les cheveux longs, éloignés de l'extrémité rotative de l'outil.
 - Prévoir, et ne pas oublier, que tout outil motorisé est susceptible d'à-coups brusques lors de sa mise en marche et pendant son utilisation.
 - Garder une position équilibrée et ferme. Ne pas se pencher trop en avant pendant l'utilisation de cet outil. Des couples de réaction élevés peuvent se produire à, ou en dessous, de la pression d'air recommandée.
 - La rotation des accessoires de l'outil peut continuer pendant un certain temps après le relâchement de la gâchette.
 - Les outils pneumatiques peuvent vibrer pendant l'exploitation. Les vibrations, les mouvements répétitifs et les positions inconfortables peuvent causer des douleurs dans les mains et les bras. N'utiliser plus d'outils en cas d'inconfort, de picotements ou de douleurs. Consulter un médecin avant de recommencer à utiliser l'outil.
 - Utiliser les accessoires recommandés par Ingersoll-Rand.
 - N'utiliser que les douilles et les accessoires pour clés à chocs. Ne pas utiliser les douilles et accessoires (chromés) de clés manuelles.
 - Cet outil n'est pas conçu pour fonctionner dans des atmosphères explosives.
 - Cet outil n'est pas isolé contre les chocs électriques.

NOTE

L'utilisation de rechanges autres que les pièces d'origine Ingersoll-Rand peut causer des risques d'insécurité, réduire les performances de l'outil 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.

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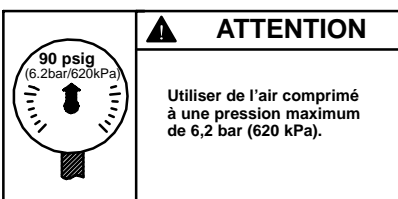
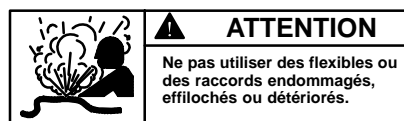
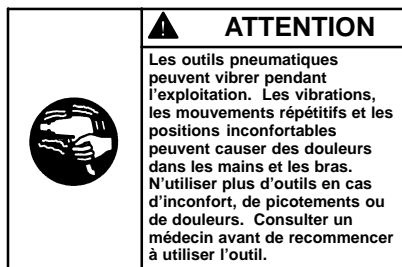
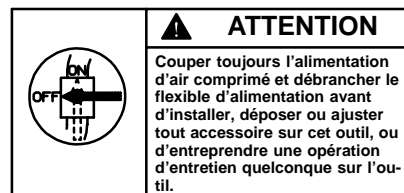
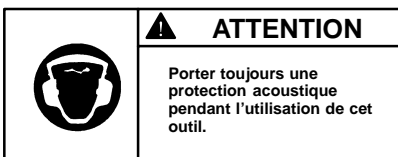
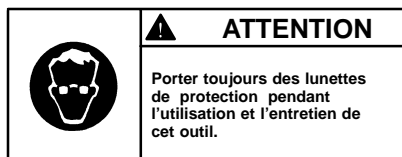
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SIGNIFICATION DES ÉTIQUETTES D'AVERTISSEMENT

ATTENTION

LE NON RESPECT DES AVERTISSEMENTS SUIVANTS PEUT CAUSER DES BLESSURES.



RÉGLAGES

RÉGLAGE DU COUPLE

Pour ajuster le couple sur ces clés à impulsions à double palette, procéder comme suit:

1. Déposer le bouchon du trou de réglage.
2. Tourner l'arbre d'entraînement jusqu'à ce que la vis de réglage de couple soit visible dans l'ouverture.
3. A l'aide d'une clé pour six pans creux de 1,5 mm, tourner la vis dans le sens des aiguilles d'une montre pour augmenter le couple de serrage, ou dans le sens inverse des aiguilles d'une montre pour réduire le couple. Ne pas tourner le bouchon d'huile.

NOTE

Effectuer tous les réglages finaux sur l'écrou à serrer.

4. Remonter le bouchon dans le trou de réglage.

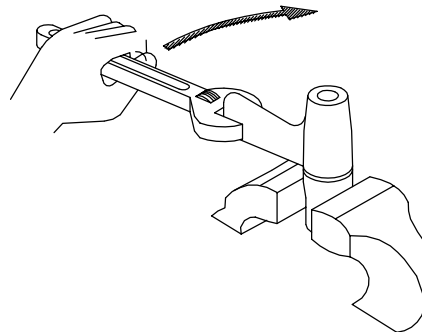
CHANGEMENT DU FLUIDE DU MÉCANISME

Le fluide du mécanisme d'impulsion est changé de la façon suivante :

1. Utiliser un outil pointu pour pousser le siège de ressort contre le ressort du manchon de retenue. Lorsque le ressort est comprimé, utiliser un autre outil pointu ou un tournevis à lame fine pour déposer la bague de retenue. Retirer le siège de ressort, le ressort et le manchon de retenue d'embout de l'arbre d'entraînement et retirer la bille de retenue d'embout.

2. A l'aide d'une paire de pinces à circlips, déposer la butée de ressort du manchon de retenue de l'arbre d'entraînement.
3. Déposer la gaine en caoutchouc du corps.
4. Serrer soigneusement les plats du couvercle du mécanisme dans un étau équipé de mordaches en cuir ou en cuivre, côté sortie de l'arbre d'entraînement dirigé vers le bas.
5. A l'aide d'une clé à molette, dévisser l'ensemble du corps de moteur du couvercle du mécanisme. **Ce filetage a un pas à gauche**, tourner le corps de moteur dans le sens des aiguilles d'une montre pour le dévisser. Voir Plan TPD1264.

SENS DES AIGUILLES D'UNE MONTRE
POUR DESSERRER



(Plan TPD1264)

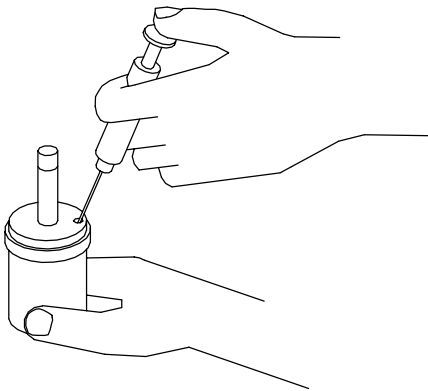
6. Retirer le moteur assemblé du couvercle du mécanisme et extraire le mécanisme du couvercle.

RÉGLAGES

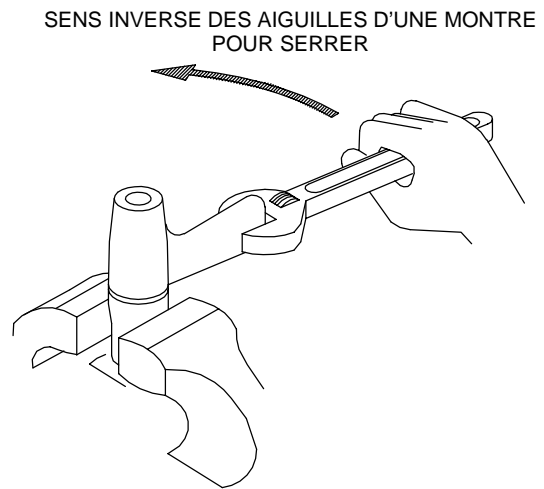
7. A l'aide d'une clé pour six pans creux de 1,5 mm, tourner la vis de réglage de couple dans le sens des aiguilles d'une montre jusqu'à ce qu'elle vienne en butée. Tourner la vis dans le sens inverse des aiguilles d'une montre jusqu'à ce qu'elle vienne en butée, ou après six tours complets.
8. Utiliser la clé en T spéciale fournie dans le nécessaire d'outillage (Réf. No. 100PQ-99) et déposer le bouchon d'huile et le joint du bouchon.
9. Tout en tenant le trou du bouchon d'huile vers le bas au-dessus d'un récipient, tourner l'arbre d'entraînement pour purger le fluide contenu dans le mécanisme.
10. A l'aide de la seringue et du fluide fourni dans le nécessaire de fluide de remplacement (Réf. No. EQ106S-K400), remplir le mécanisme avec le fluide fourni dans le nécessaire. Voir Plan TPD1265.
11. Submerger l'ouverture de remplissage dans le reste du fluide et, à l'aide d'une clé, tourner l'arbre d'entraînement pour purger tout l'air du système.
12. Visser le bouchon équipé du joint dans le mécanisme et le serrer fermement.
13. A l'aide d'une clé pour six pans creux de 1,5 mm, tourner la vis de réglage de couple dans le sens des aiguilles d'une montre jusqu'à ce qu'elle vienne en butée. C'est la position de couple maximum.
14. Essuyer l'extérieur du mécanisme pour le sécher et déposer le bouchon de la chambre d'huile. A l'aide de la seringue, retirer 0,25 cm³ de fluide.
15. Remonter le bouchon de la chambre d'huile et le serrer à un couple de 2,3 à 2,8 Nm.
16. Insérer le mécanisme, côté sortie en premier, dans le couvercle de mécanisme serré dans les mâchoires de l'étau.
17. Insérer l'extrémité hexagonale de l'arbre de rotor dans l'emmanchement hexagonal à l'arrière de l'arbre d'entraînement et visser le corps de moteur assemblé sur le couvercle du mécanisme. **Ce filetage a un pas à gauche.** Tourner le corps **dans le sens inverse des aiguilles d'une montre** pour le serrer. Voir Plan TPD1266.

NOTE

NE PAS UTILISER D'AUTRE FLUIDE. La non utilisation du fluide fourni pourrait causer l'endommagement de l'outil, augmenter l'entretien et réduire les performances. N'utiliser que du fluide propre dans ces outils.



(Plan TPD1265)



(Plan TPD1266)

MISE EN SERVICE DE L'OUTIL

LUBRIFICATION



Ingersoll-Rand No. 50



Ingersoll-Rand No. 67

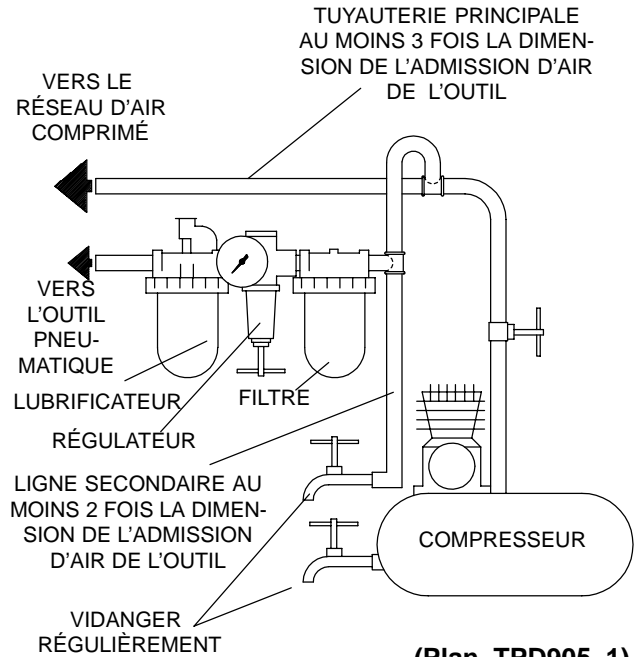


Fluide Ingersoll-Rand
Réf. No. EQ106S-400-1

Utiliser toujours un lubrificateur avec ces outils. Nous recommandons l'emploi du filtre-régulateur-lubrificateur suivant :

For USA – No. C28-04-FKG0-28

Tous les 20 000 cycles, ou en fonction de l'expérience, vider et remplir l'ensemble de mécanisme d'impulsion conformément aux instructions du manuel en utilisant le nécessaire de fluide de remplacement (Réf. No. EQ106S-K400). Lubrifier l'entraîneur hexagonal et l'arbre de sortie avant l'assemblage.



(Plan TPD905-1)

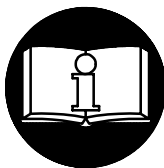
SPÉCIFICATIONS

Modèle	Poignée à levier	Limiteur/ Entraînement	Vitesse libre	Gamme de couples recommandée	
				Serrage élastique Nm	Serrage fort Nm
100PQ1	pistolet	1/4" entr. carré	9.300	4-8	4-11

MANUAL DE FUNCIONAMIENTO Y MANTENIMIENTO PARA LA LLAVE DE IMPACTO MODELO 100PQ1

NOTA

La llave de impulso modelo 100PQ1 está diseñada para operaciones de montaje que requieran alta velocidad de atornillado con un par consistente y reducida reacción de par. Ingersoll-Rand no aceptará responsabilidad alguna por la modificación de las herramientas efectuada por el cliente para las aplicaciones que no hayan sido consultadas con Ingersoll-Rand.



AVISO

**SE ADJUNTA INFORMACIÓN IMPORTANTE DE SEGURIDAD.
LEA ESTE MANUAL ANTES DE UTILIZAR LA HERRAMIENTA.**

**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 HERRAMIENTA 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).
- Para mayor seguridad, rendimiento óptimo y larga vida útil de las piezas, utilice esta herramienta a una presión de aire máxima de 90 psig (6,2 bar/620 kPa) con una manguera de suministro de aire con diámetro interno de 10 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 herramienta, 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 gases corrosivos y el exceso de humedad pueden estropear el motor de una herramienta neumática.
- No lubrique las herramientas con líquidos inflamables o volátiles tales como queroseno, gasoil o combustible para motores a reacción.
- No saque ninguna etiqueta. Sustituya toda etiqueta dañada.

UTILIZACIÓN DE LA HERRAMIENTA

- Lleve siempre protección ocular cuando utilice esta

herramienta o realice operaciones de mantenimiento en la misma.

- Lleve siempre protección para los oídos cuando utilice esta herramienta.
- Mantenga las manos, la ropa suelta y el cabello largo alejados del extremo giratorio de la herramienta.
- Anticipe y esté atento a los cambios repentinos en el movimiento durante la puesta en marcha y utilización de toda herramienta motorizada.
- Mantenga una postura del cuerpo equilibrada y firme. No estire demasiado los brazos al manejar la herramienta. Pueden darse elevados pares de reacción a la presión de aire recomendada, e incluso a presiones inferiores.
- El eje de la herramienta puede seguir girando brevemente después de haberse soltado el mando.
- Las herramientas neumáticas pueden vibrar durante el uso. La vibración, los movimientos repetitivos o las posiciones incómodas pueden dañarle los brazos y manos. En caso de incomodidad, sensación de hormigueo o dolor, deje de usar la herramienta. Consulte con el médico antes de volver a utilizarla.
- Utilice únicamente los accesorios Ingersoll-Rand recomendados.
- Utilice únicamente bocas y accesorios para llaves de impacto. No utilice bocas o accesorios manuales (cromados).
- Esta herramienta no ha sido diseñada para trabajar en ambientes explosivos.
- Esta herramienta no está aislada contra descargas eléctricas.

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 herramienta 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.


	<p>⚠ ADVERTENCIA</p> <p>Usar siempre protección ocular al manejar o realizar operaciones de mantenimiento en esta herramienta.</p>
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	<p>⚠ ADVERTENCIA</p> <p>Usar siempre protección para los oídos al manejar esta herramienta.</p>
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	<p>⚠ ADVERTENCIA</p> <p>Cortar siempre el suministro de aire y desconectar la manguera de suministro de aire antes de instalar, retirar o ajustar cualquier accesorio de esta herramienta, o antes de realizar cualquier operación de mantenimiento de la misma.</p>
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	<p>⚠ ADVERTENCIA</p> <p>Las herramientas neumáticas pueden vibrar durante el uso. La vibración, los movimientos repetitivos o las posiciones incómodas podrían dañarle los brazos y las manos. En caso de incomodidad, sensación de hormigueo o dolor, dejar de usar la herramienta. Consultar al médico antes de volver a utilizarla.</p>
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	<p>⚠ ADVERTENCIA</p> <p>No coger la herramienta por la manguera para levantarla.</p>
---	---

	<p>⚠ ADVERTENCIA</p> <p>No utilizar mangueras de aire y accesorios dañados, desgastados ni deteriorados.</p>
---	---

	<p>⚠ ADVERTENCIA</p> <p>Mantener una postura del cuerpo equilibrada y firme. No estirar demasiado los brazos al manejar la herramienta.</p>
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	<p>⚠ ADVERTENCIA</p> <p>Manejar la herramienta a una presión de aire máxima de 90 psig (6,2 bar/620 kPa).</p>
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AJUSTES

AJUSTE DE PAR

Para ajustar el par de estas llaves de impulso de doble paleta, proceda como sigue:

1. Saque el tapón del orificio de ajuste.
2. Gire el eje de accionamiento hasta que el tornillo de ajuste de par sea visible a través de dicho orificio.
3. Con una llave hexagonal de 1,5 mm, gire el tornillo de ajuste de par hacia la derecha para incrementar el par y hacia la izquierda para disminuirlo. No gire el tapón del aceite.

NOTA

Haga todos los ajustes finales trabajando.

4. Vuelva a poner en su sitio el tapón del orificio de ajuste.

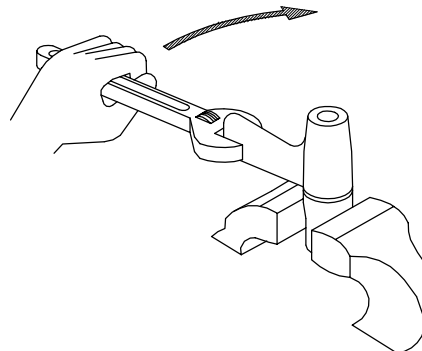
CAMBIO DEL LÍQUIDO DEL MECANISMO

Para cambiar el líquido del mecanismo de impulso, proceda como sigue:

1. Con una varilla puntiaguda, empuje el asiento de muelle contra el muelle del manguito retenedor. Mientras el muelle está comprimido, utilice otra varilla puntiaguda o un destornillador de hoja fina para sacar el aro retenedor. Saque el asiento de muelle, muelle y manguito retenedor de la broca fuera del eje de accionamiento, y saque la bola retenedora de la broca.

2. Utilizando unos alicates de anillo de retención, saque el tope del manguito retenedor del eje de accionamiento.
3. Saque la funda de carcasa de caucho.
4. Sujete con cuidado los lados planos de la cubierta del mecanismo en un tornillo de banco con mordazas cubiertas de cobre o cuero, con el extremo de salida del eje de accionamiento hacia abajo.
5. Utilizando una llave ajustable, desatornille el conjunto de la carcasa del motor de la cubierta del mecanismo. Puesto que se trata de una **rosca hacia la izquierda**, gire la carcasa del motor **hacia la derecha** para quitarla. Vea Esq. TPD1264

GIRAR HACIA LA DERECHA PARA AFLOJAR



(Esq. TPD1264)

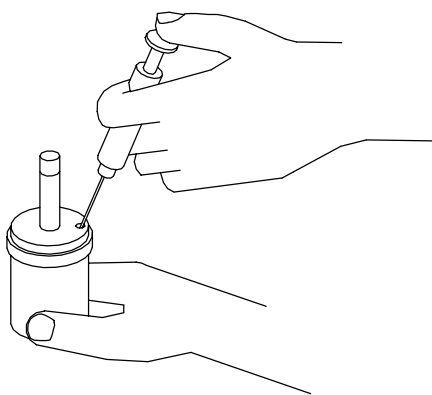
6. Levante el motor ensamblado y sáquelo tirando de todo el conjunto fuera de la cubierta.

AJUSTES

7. Con una llave hexagonal de 1,5 mm, gire el tornillo de ajuste de par hacia la derecha hasta que se pare. Gire el tornillo hacia la izquierda hasta que se pare o dé seis vueltas completas.
8. Utilizando la llave en "T" especial suministrada con el juego de herramientas (Pieza N° 100PQ-99), saque el tapón del aceite y el retén de dicho tapón.
9. Con el orificio del tapón del aceite apuntando hacia abajo sobre un contenedor, gire el eje de accionamiento para purgar el líquido del mecanismo.
10. Con la jeringuilla y el líquido del juego de cambio de líquido (Pieza N° EQ106S-K400), llene el mecanismo con el líquido suministrado con dicho juego. Vea Esq. TPD1265.

NOTA

NO SUSTITUYA CON NINGÚN OTRO LÍQUIDO. Si no se usa el líquido suministrado, se podría dañar la herramienta, incrementar su mantenimiento y disminuir su rendimiento. Use solamente líquido limpio con estas herramientas.

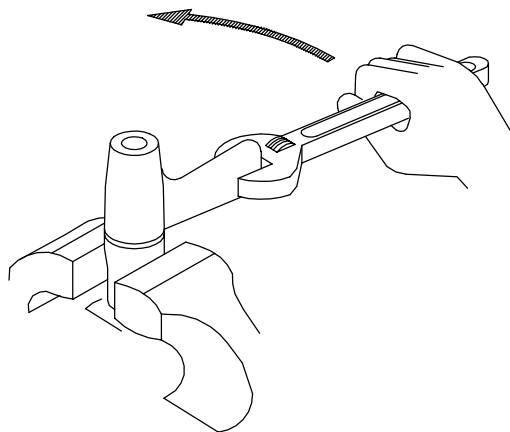


(Esq. TPD1265)

11. Sumerja el orificio de llenado en el resto del líquido y, utilizando una llave, gire el eje de accionamiento para purgar el aire que pudiera quedar en el sistema.

12. Enrosque el tapón del aceite, con el retén del tapón del aceite, en el mecanismo hasta que quede bien ajustado.
13. Con una llave hexagonal de 1,5 mm, gire el tornillo de ajuste de par hacia la derecha hasta que se pare. Ésta es la posición de máximo par.
14. Limpie la parte de fuera del mecanismo y séquelo, y saque el tapón de la cámara de aceite. Utilizando la jeringuilla, saque 0,25 cc de líquido.
15. Instale el tapón de la cámara de aceite y apriételo entre 20 y 25 pulg.-lb (2,3 a 2,8 Nm) de par.
16. Introduzca el conjunto del mecanismo, con el extremo de salida por delante, en la cubierta del mecanismo fijado en un tornillo de banco.
17. Inserte el extremo hexagonal del eje rotor en el receso hexagonal de la parte trasera del eje de accionamiento, y enrosque la carcasa del motor ensamblado en la cubierta del mecanismo. Se trata de una **rosca hacia la izquierda**. Gire la carcasa **hacia la izquierda** para apretarla. Vea Esq. TPD1266.

GIRAR HACIA LA IZQUIERDA PARA APRETAR



(Esq. TPD1266)

PARA PONER LA HERRAMIENTA EN SERVICIO

LUBRICACIÓN



Ingersoll-Rand N° 50



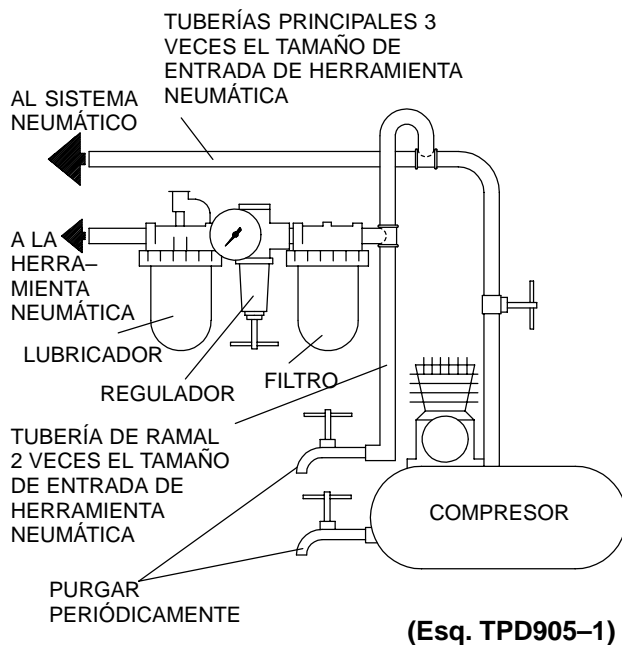
Ingersoll-Rand N° 67

Líquido Ingersoll-Rand
N° EQ106S-400-1

Utilice siempre un lubricador de aire comprimido con estas herramientas. Recomendamos utilizar el siguiente conjunto de filtro-lubricador-regulador:

For USA – No. C28-04-FKG0-28

Después de cada 20 000 ciclos, o según indique la experiencia, drene y vuelva a llenar el conjunto de accionamiento del mecanismo impulsor tal y como se indica en este manual, utilizando el juego de cambio de líquido (Ref. N° EQ106S-K400). Lubrique el eje de salida y el de accionamiento hexagonal antes del montaje.



ESPECIFICACIONES

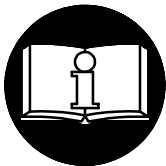
Modelo	Tipo de Empuñadura	Portabroca/Accionamiento	Velocidad Libre	Gama de par recomendada	
				Retroceso Suave ft-lbs (Nm)	Golpe Fuerte ft-lbs (Nm)
		pulg.	rpm		
100PQ1	pistola	1/4" pulg. broca de inserción	9.300	3-6 (4-8)	3-8 (4-11)

MANUAL DE FUNCIONAMENTO E MANUTENÇÃO PARA A CHAVE DE IMPULSO 100PQ1

P

AVISO

A Chave Dinamométrica de Impulso Modelo 100PQ1 é concebida para operações de montagem que exijam velocidade de aperto elevada com torque exercido consistente e reacção de torque reduzida. 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 SEGUINTE ADVERTÊNCIAS PODE
RESULTAR EM FERIMENTOS.**

COLOCANDO A FERRAMENTA EM FUNCIONAMENTO

- Sempre opere, inspecione 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 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 10 mm (3/8").
- Desligue sempre a alimentação de ar e desconecte 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 que todas as mangueiras e adaptadores sejam do tamanho correcto e estejam apertados com firmeza. Veja o Desenho TPD905-1 para um arranjo típico de tubagem.
- Use sempre ar seco e limpo com pressão máxima de 90 psig. Pó, fumos corrosivos e/ou humidade excessiva podem arruinar o motor de uma ferramenta pneumática.
- Não lubrifique as ferramentas com líquidos inflamáveis ou voláteis tais como querosene, diesel ou combustível de jactos.
- Não remova nenhum rótulo. Reponha qualquer rótulo danificado.

USANDO A FERRAMENTA

- Use sempre óculos de protecção quando estiver operando ou executando serviço de manutenção nesta ferramenta.
- Use sempre protecção contra ruído ao operar esta ferramenta.
- Mantenha as mãos, partes do vestuário soltas e cabelos compridos afastados da extremidade em rotação.
- Antecipe e esteja alerta a mudanças repentinas no movimento quando ligar e operar qualquer ferramenta motorizada.
- Mantenha a posição do corpo equilibrada e firme. Não exagere quando operar esta ferramenta. Torques de reacção elevados podem ocorrer na ou abaixo da pressão de ar recomendada.
- O eixo da ferramenta pode continuar a girar brevemente após a pressão tenha sido aliviada.
- Ferramentas accionadas pneumáticamente podem vibrar em uso. Vibração, movimentos repetitivos ou posições desconfortáveis podem ser prejudiciais às mãos e aos braços. Pare de usar a ferramenta caso ocorra algum desconforto, sensação de formigueiro ou dor. Procure assistência médica antes de retornar ao trabalho.
- Use acessórios recomendados pela Ingersoll-Rand.
- Use somente soquetes e acessórios de impacto. Não use soquetes ou acessórios de mão (cromo).
- Esta Ferramenta não foi concebida para trabalhos em atmosferas explosivas.
- Esta Ferramenta 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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IDENTIFICAÇÃO DO RÓTULO DE ADVERTÊNCIA


▲ ADVERTÊNCIA


O NÃO CUMPRIMENTO DAS SEGUINTE ADVERTÊNCIAS PODE RESULTAR EM FERIMENTOS.


	▲ ADVERTÊNCIA Use sempre óculos de protecção quando estiver operando ou executando algum serviço de manutenção nesta ferramenta.
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	▲ ADVERTÊNCIA Use sempre protecção contra o ruído ao operar esta ferramenta.
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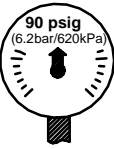
	▲ ADVERTÊNCIA Desligue sempre a alimentação de ar e desconecte a mangueira de alimentação de ar antes de instalar, remover ou ajustar qualquer acessório nesta ferramenta, ou antes de executar algum serviço de manutenção nesta ferramenta.
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	▲ ADVERTÊNCIA Ferramentas accionadas pneumáticamente podem vibrar em uso. Vibração, movimentos repetitivos ou posições desconfortáveis podem ser prejudiciais às mãos e aos braços. Pare de usar a ferramenta caso ocorra algum desconforto, sensação de formigamento ou dor. Procure assistência médica antes de retornar ao trabalho.
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	▲ ADVERTÊNCIA Não carregue a ferramenta segurando na mangueira.
---	---

	▲ ADVERTÊNCIA Não use mangueiras de ar ou adaptadores danificados, gastos ou deteriorados.
---	--

	▲ ADVERTÊNCIA Mantenha a posição do corpo equilibrada e firme. Não exagere quando operar esta ferramenta. Torques de reacção elevados podem ocorrer sob a pressão de ar recomendada.
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	▲ ADVERTÊNCIA Opere com pressão do ar Máxima de 90–100 psig (6,2–6,9 bar).
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AJUSTES

AJUSTE DE TORQUE

Para ajustar o torque nestas Chaves Dinamométricas de Impulsão de Lâminas Duplas, proceda da seguinte maneira:

1. Remova o Bujão do Furo de Ajuste.
2. Gire o Eixo de Comando até o Parafuso de Ajuste de Torque estar visível na abertura.
3. Usando uma chave Allen de 1,5 mm, gire o Parafuso de Ajuste no sentido horário para aumentar o torque de saída e no sentido anti-horário para diminuir o torque de saída. Não gire o Bujão de Óleo.

AVISO

Faça todos os ajustes finais no serviço.

4. Reponha o Bujão do Furo de Ajuste.

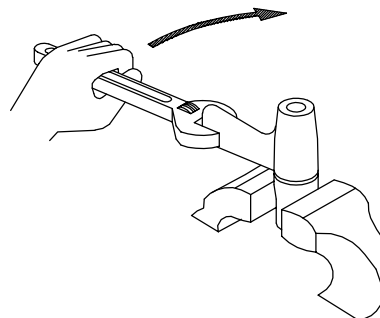
MUDANDO O FLUIDO DO MECANISMO

Para mudar o Fluido do Mecanismo no Mecanismo de Impulso, proceda da seguinte maneira:

1. Use uma ponta de prova para empurrar o Assento da Mola contra a Mola da Camisa Retentora. Enquanto a Mola for comprimida utilize uma outra ponta de prova ou chave de fenda de lâmina fina para remover o Anel de Retenção. Erga o Assento da Mola, a Mola e a Camisa de Retenção do bite para fora do Eixo de Comando e remova a Esfera de Retenção do Bite.

2. Usando um Alicates de Anel, remova a Paragem da Mola da Camisa de Retenção.
3. Remova o Calço do Corpo de Borracha.
4. Usando os mordentes de uma morsa revestidos de cobre ou couro, prenda com cuidado a pás da Capa do Mecanismo com a extremidade de saída do Eixo de Comando para baixo.
5. Usando uma chave ajustável, desparafuse o Conjunto do Corpo do Motor da Capa do Mecanismo. Esta é uma **rosca à esquerda**, gire o Corpo do Motor **no sentido horário** para removê-lo. Veja Desenho TPD1264.

SENTIDO HORÁRIO PARA SOLTAR



(Desenho TPD1264)

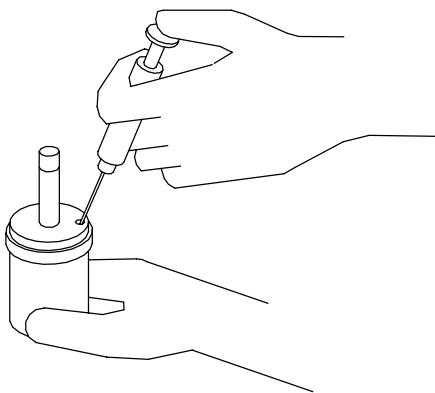
AJUSTES

6. Erga o motor montado para fora da Cobertura do Mecanismo e puxe o conjunto do mecanismo para fora da capa.
7. Usando uma chave Allen de 1,5 mm, gire o Parafuso de Ajuste de Torque no sentido horário até o Parafuso parar. Gire o Parafuso no sentido anti-horário até que ele pare ou execute seis voltas completas.
8. Usando uma Chave em T fornecida no Kit da Ferramenta, (Número de Pedido 100PQ-99), remova o Bujão de Óleo e Lacre do Bujão de Óleo.
9. Com a abertura do bujão de óleo para baixo sobre um recipiente, gire o Eixo de Comando para expelir o fluido do mecanismo.
10. Usando uma seringa e fluido do Kit de Reposição de Fluido (Número de Pedido EQ106S-K400), encha o mecanismo com fluido fornecido no Kit. Veja Desenho TPD1265.
11. A abertura de enchimento deve ser submersa no restante do fluido, e usando uma chave, gire o Eixo do Comando para expelir qualquer ar remanescente do sistema.
12. Rosqueie o Bujão de Óleo com o Lacre do Bujão de Óleo no mecanismo até que ele esteja apertado.
13. Usando uma chave Allen de 1,5 mm, gire o Parafuso de Ajuste de Torque no sentido horário até o Parafuso parar. Esta é a posição de máximo torque.
14. Limpe a parte externa do mecanismo a seco e limpe e remova o Bujão da Câmara de Óleo. Usando uma seringa, retire 0,25 cc de fluido.
15. Instale o Bujão da Câmara de Óleo e aperte-o com um torque de 2,3 a 2,8 Nm (20 a 25 pol-lb).
16. Insira o conjunto do mecanismo, com a extremidade de saída liderando, na Capa do Mecanismo grampeada nas garras vise.
17. Insira a extremidade hexagonal do eixo do rotor no recesso na traseira do Eixo de Comando e rosqueie o Corpo do Motor montado na Capa do Mecanismo. Esta é uma **rosca à esquerda**. Gire o Corpo **no sentido contrário ao dos ponteiros do relógio** para apertá-lo. Veja Desenho TPD1266.

AVISO

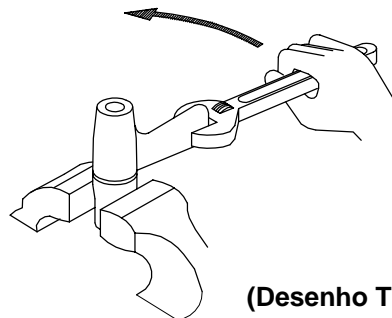
NÃO SUBSTITUA POR QUALQUER OUTRO FLUIDO.

O não cumprimento ao uso do fluido fornecido poderá danificar a ferramenta, aumentar a manutenção e diminuir a performance. Use somente fluido limpo nestas ferramentas.



(Desenho TPD1265)

SENTIDO CONTRÁRIO AO DOS PONTEIROS DO RELÓGIO PARA APERTAR



(Desenho TPD1266)

COLOCANDO A FERRAMENTA EM FUNCIONAMENTO

LUBRIFICAÇÃO



Ingersoll-Rand No. 50

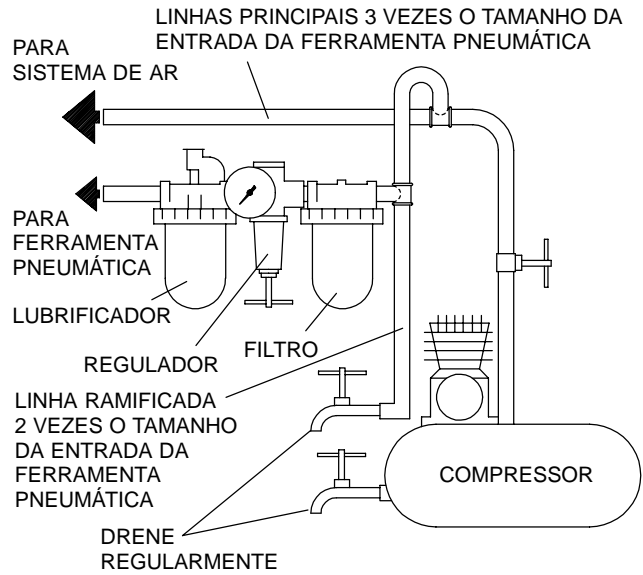


Ingersoll-Rand No. 67
Fluído Ingersoll-Rand
Número de Pedido
EQ106S-400-1

Use sempre um lubrificador de ar de linha com estas ferramentas. Nós recomendamos a seguinte Unidade Filtro-Lubrificador-Regulador:

For USA – No. C28-04-FKG0-28

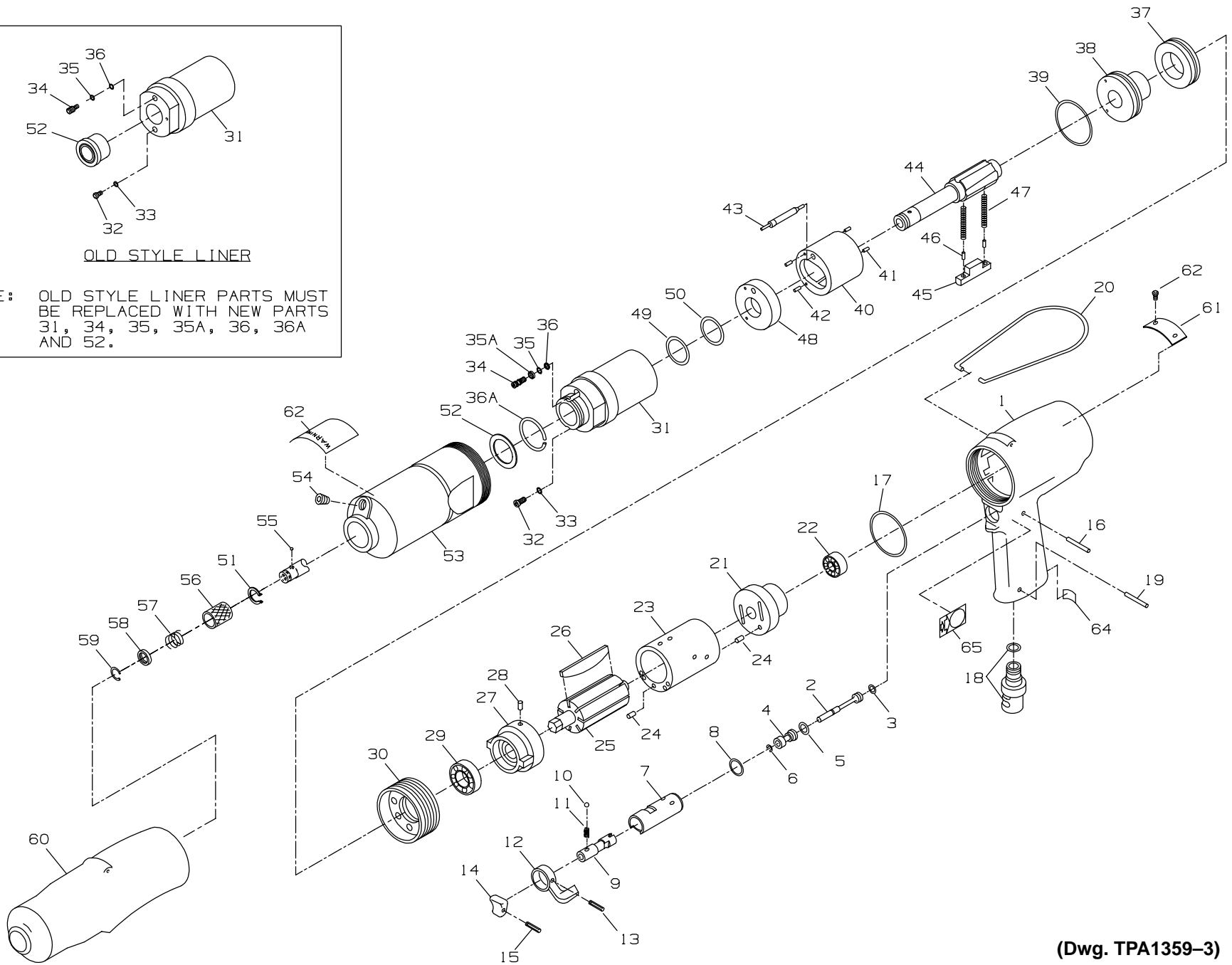
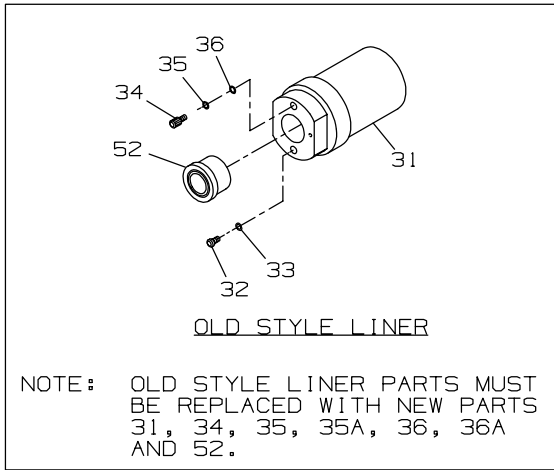
Depois de cada 20 000 ciclos, ou como a experiência indicar, drene e encha o Conjunto do Comando da Unidade de Impulso como instruído neste manual usando o Kit de Reposição de Fluído (Número de Pedido EQ106S-K400). Lubrifique o comando hexagonal e o eixo de saída antes de montar.



(Desenho TPD905-1)

ESPECIFICAÇÕES

Modelo	Tipo de Punho	Encabadouro/ Comando	Velocidade Livre	Intervalo de Torque Recomendado	
				Aperto Ligeiro Nm (pés-lb)	Batimento Duro Nm (pés-lb)
100PQ1	pistola	1/4" quadrada	9.300	3-6 (4-8)	3-8 (4-11)



MAINTENANCE SECTION

(Dwg. TPA1359-3)



PART NUMBER FOR ORDERING

PART NUMBER FOR ORDERING

	Motor Housing Assembly	100PQ-A40		Impulse Unit Drive Assembly	
1	Motor Housing	100PQ-40		for old style units	100PQ-A200
2	Throttle Rod Assembly	EQ112P-A302		for new style units	100PQ-A200A
3	Throttle Rod Seal	EQ106P-288	31	Liner Housing	
4	Throttle Valve Assembly	EQ106P-A304		for old style units	100PQ-31
5	Throttle Valve Seal	100PQ-288		for new style units	100PQ-31A
6	Throttle Valve Retainer	EQ106P-303	32	Oil Plug	180PQ-277
7	Throttle Bushing Assembly	100PQ-A503	33	Oil Plug Seal	EQ110P-288
8	Throttle Bushing Seal	EQ106P-283	34	Torque Adjustment Bolt Assembly	100PQ-A230A
9	Reverse Valve	100PQ-329	35	Adjustment Bolt Seal	EQ106S-288
10	Reverse Valve Detent Ball	EQ104S-929	35A	Seal Washer	04351631
11	Reverse Valve Detent Spring	100PQ-568	36	Seal Back-up Ring	380SQ-272
12	Reverse Lever	100PQ-328	36A	Adjustment Bolt Stop Ring (for new style units only)	04351623
13	Reverse Lever Retaining Pin	180SQ-152	37	Housing Cap	100PQ-207
14	Trigger	EQ106P-93	38	Rear Liner Cover Assembly	100PQ-A212
15	Trigger Retaining Pin	EQ106P-265	39	Rear Liner Cover O-ring	100PQ-236
16	Throttle Retaining Pin	100PQ-297	40	Liner Assembly	100PQ-A203
◆	Rear Motor Seal	380PQ-236	41	Liner Rear Pin (2)	180PQ-298
18	Exhaust Deflector Assembly	180PQ-A23	42	Liner Front Pin (2)	100SQ-298
19	Deflector Retaining Pin	EQ106P-152	43	Relief Valve	100PQ-222
20	Hanger	EQ106S-365	44	Drive Shaft	100PQ-626
21	Rear End Plate Assembly	100PQ-A12	45	Blade Assembly	100PQ-A627
◆	Rear Rotor Bearing	100PQ-22	46	Blade Spring Pin (2)	—
23	Cylinder Assembly	100PQ-A3			
24	End Plate Dowel (2)	100PQ-298			
25	Rotor	100PQ-53			
◆	Vane Packet (set of 7 Vanes)	100PQ-42-7			
27	Front End Plate Assembly	100PQ-A11			
28	End Plate Alignment Pin	100PQ-298			
◆	Front Rotor Bearing	500A-22			
30	Front End Plate Spacer	100PQ-41			

◆ Indicates Motor Tune-up Kit part.

PART NUMBER FOR ORDERING



PART NUMBER FOR ORDERING



47	Blade Spring (2)	100PQ-569	*	Forward Rotation Label (for models ending in -EU only)	7802R-EU-F99
48	Front Liner Cover Assembly	100PQ-A211			
49	Drive Shaft Seal	100PQ-237	*	Reverse Rotation Label (for models ending in -EU only)	7802R-EU-R99
50	Seal Back-up Ring	100PQ-272			
51	Retaining Sleeve Spring Stop	100PQ-303	64	Oil Daily Label	500P-69
52	Mechanism Cover Spacer for old style units for new style units	100PQ-274 04351656	65	Two Speed Trigger Label	180PQ-68
	Mechanism Cover Assembly	100PQ-A727	*	Fluid Replacement Kit (includes Fluid Syringe, Fill Tube and 4 oz. [31 mL] of Replacement Fluid)	EQ106S-K400
53	Mechanism Cover	100PQ-727	*	Replacement Fluid (4 oz.)	EQ106S-400-1
54	Adjustment Hole Plug	100PQ-95	*	Replacement Fluid (1 gal.)	EQ106S-BF400-1
	Bit Chuck Assembly	180PQ-A667	*	Motor Tune-up kit (includes illustrated items 17, 22, 26 and 29)	100PQ-K500
55	Bit Retaining Ball	EQ104S-929	*	Mechanism Tune-up Kit (includes illustrated items 33, 35, 35A, 36, 39, 47 [2], 49, 50, 52, 55 and 57)	100PQ-K600
56	Bit Retaining Sleeve	EQ104S-930	*	Repair Tool Kit (includes all the specialized tooling required to repair these tools and consists of two Spanner Plugs, a Tee Wrench with a special tip, an O-ring Installer Fixture and a pressing fixture that has a Disassembly Arbor and Pressing Sleeve)	100PQ-99
57	Retaining Sleeve Spring	EQ104S-931			
58	Spring Seat	EQ104S-932			
59	Retaining Ring	EQ104S-933			
60	Rubber Housing Boot	100PQ-2			
61	Nameplate for models ending in -EU for all other models	100PQ1-EU-301 100PQ-301			
62	Nameplate Screw (2)	100PQ-322			
63	Warning Label for models ending in -EU for all other models	EU-99 WARNING-2-99			

* Not illustrated.

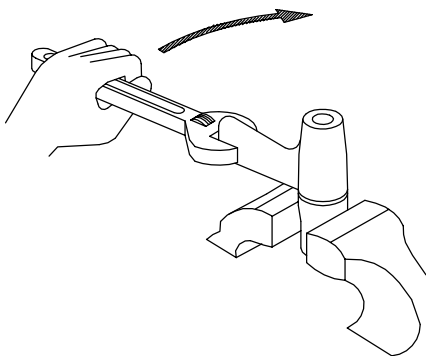
MAINTENANCE SECTION

— CHANGING THE MECHANISM FLUID —

To change the Mechanism Fluid in the Impulse Mechanism, proceed as follows:

1. Use a pointed probe to push the Spring Seat (58) against the Retaining Sleeve Spring (57). While the Spring is compressed, use another pointed probe or thin blade screwdriver to remove the Retaining Ring (59). Lift the Spring Seat, Spring and Bit Retaining Sleeve (56) off the Drive Shaft (44) and remove the Bit Retaining Ball (55).
2. Using snap ring pliers, remove the Retaining Sleeve Spring Stop (51) from the Drive Shaft.
3. Remove the Rubber Housing Boot (60).
4. Using copper-covered vise jaws, carefully grasp the flats of the Mechanism Cover (53) with the output end of the Drive Shaft downward.
5. Using an adjustable wrench, unscrew the Motor Housing Assembly (1) from the Mechanism Cover. This is a **left-hand thread**, rotate the Motor Housing **clockwise** to remove it. (Refer to Dwg. TPD1264.)

CLOCKWISE TO LOOSEN

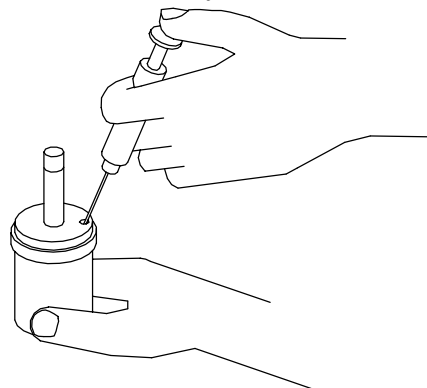


(Dwg. TPD1264)

6. Lift the assembled motor off the Mechanism Cover and pull the mechanism assembly out of the Cover.
7. Using a 1.5 mm hex wrench, rotate the Torque Adjustment Screw (34) clockwise until the Screw stops. Rotate the Screw counterclockwise until it stops in new style Liner Housings. Do not rotate the Screw more than 3-1/2 turns counterclockwise in old style Liner Housings or the Screw will fall out of the Housing.
8. Using the special Tee Wrench furnished in the Tool Kit (Part No. 100PQ-99), remove the Oil Plug (32) and Oil Plug Seal (33).
9. With the oil plug opening downward over a container, rotate the Drive Shaft to purge the fluid from the mechanism.
10. Using the syringe and fluid from the Fluid Replacement Kit (Part No. EQ106S-K400), fill the mechanism with the fluid furnished in the Kit. (Refer to Dwg. TPD1265.)

NOTICE

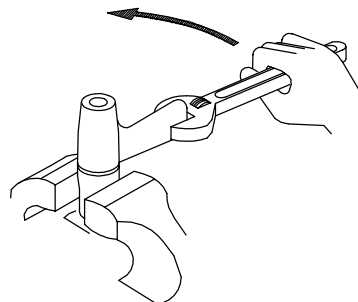
DO NOT SUBSTITUTE ANY OTHER FLUID. Failure to use the fluid provided could damage the tool, increase maintenance and decrease performance. Use only clean fluid in these tools.



(Dwg. TPD1265)

11. Submerge the fill opening in the remainder of the fluid, and using a wrench, rotate the Drive Shaft to purge any remaining air from the system.
12. Thread the Oil Plug with the Oil Plug Seal into the mechanism until it is snug.
13. Using a 1.5 mm hex wrench, turn the Torque Adjustment Screw clockwise until it stops. This is the maximum torque position.
14. Wipe the outside of the mechanism dry and clean and remove the Oil Chamber Plug. Using the syringe, withdraw .25 cc of fluid.
15. Install the Oil Chamber Plug and tighten it between 20 and 25 in-lb (2.3 and 2.8 Nm) torque.
16. Insert the mechanism assembly, output end leading, into the Mechanism Cover clamped in the vise jaws.
17. Insert the hex end of the rotor shaft into the hex recess at the rear of the Drive Shaft and thread the assembled Motor Housing onto the Mechanism Cover. This is a **left-hand thread**. Rotate the Housing **counterclockwise** to tighten it. (Refer to Dwg. TPD1266.)

COUNTERCLOCKWISE TO TIGHTEN



(Dwg. TPD1266)

MAINTENANCE SECTION

DISASSEMBLY

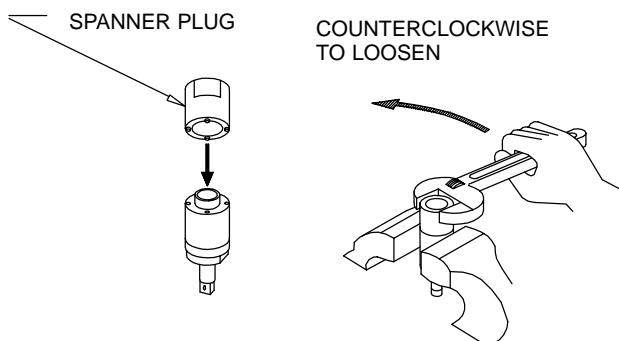
General Instructions

1. Do not disassemble the tool any further than necessary to replace or repair damaged parts.
2. When grasping a tool or part in a vise, always use leather-covered or copper-covered vise jaws to protect the 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 an assembly unless the removal of that part is necessary for repairs or replacement.
4. Do not disassemble the tool unless you have a complete set of new gaskets and O-rings for replacement.

Disassembly of the Impulse Mechanism

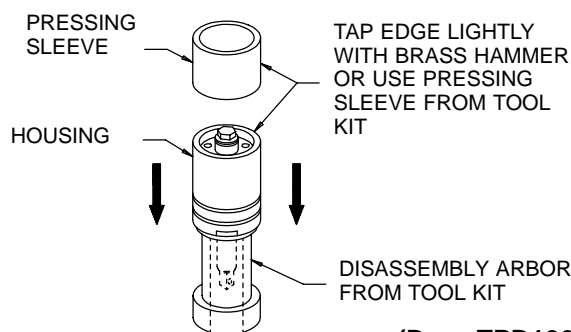
1. Use a pointed probe to push the Spring Seat (58) against the Retaining Sleeve Spring (57). While the Spring is compressed, use another pointed probe or thin blade screwdriver to remove the Retaining Ring (59). Lift the Spring Seat, Spring and Bit Retaining Sleeve (56) off the Drive Shaft (44) and remove the Bit Retaining Ball (55).
2. Using snap ring pliers, remove the Retaining Sleeve Spring Stop (51) from the Drive Shaft.
3. Remove the Rubber Housing Boot (60).
4. Using copper-covered vise jaws, carefully grasp the flats of the Mechanism Cover (53) with the output end of the Drive Shaft downward.
5. Using an adjustable wrench, unscrew the Motor Housing Assembly (1) from the Mechanism Cover. This is a **left-hand thread**, rotate the Motor Housing **clockwise** to remove it. (Refer to Dwg. TPD1264.)
6. Lift the assembled motor off the Mechanism Cover and pull the mechanism assembly out of the Cover. Remove the Bushing Spacer (52).
7. Using a 1.5 mm hex wrench, rotate the Torque Adjustment Screw (34) clockwise until the Screw stops. Rotate the Screw counterclockwise until it stops in new style Liner Housings. Do not rotate the Screw more than 3-1/2 turns counterclockwise in old style Liner Housings or the Screw will fall out of the Housing.
8. Using the special Tee Wrench furnished in the Tool Kit (Part No. 100PQ-99), remove the Oil Plug (32) and Oil Plug Seal (33).
9. With the oil plug opening downward over a container, rotate the Drive Shaft to purge the fluid from the mechanism.
10. Grasp the flats of the Housing Assembly (31) in vise jaws with the output end of the Drive Shaft downward.

11. Insert the pins of the spanner plug from the No. 100PQ-99 Tool Kit into the two holes in the Housing Cap (37). Using a wrench on the plug, unscrew and remove the Housing Cap from the Housing Assembly. (Refer to Dwg. TPD1267.)



(Dwg. TPD1267)

12. Stand the disassembly arbor from the Tool Kit, large end downward, on a workbench or the table of an arbor press. Insert the output end of the Drive Shaft into the central opening and either tap the Housing downward off the components or use the pressing sleeve in the Kit to press the Housing downward off the components. (Refer to Dwg. TPD1268.)



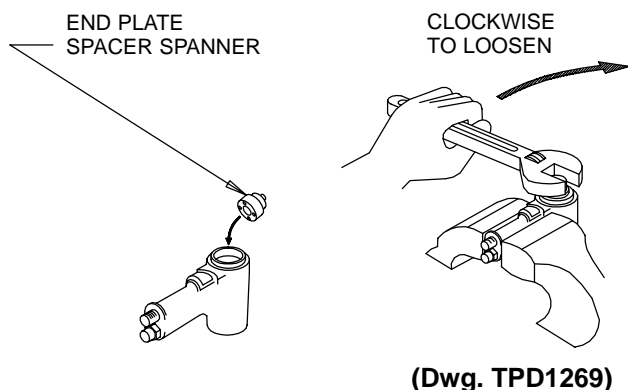
(Dwg. TPD1268)

13. Disassemble the components of the mechanism in the sequence shown in Drawing TPA1359-3 on Page 17.

Disassembly of the Motor

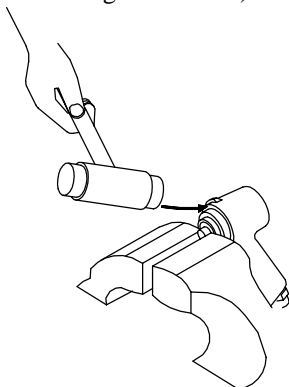
1. Grasp the Motor Housing (1) in vise jaws with the shaft of the Rotor (25) upward.
2. Insert the pins of the end plate spacer spanner into the holes in the Front End Plate Spacer (30). Using a wrench, unscrew and remove the Spacer. This is a **left-hand thread**; rotate the wrench **clockwise** to remove the Spacer. (Refer to Dwg. TPD1269.)

MAINTENANCE SECTION



(Dwg. TPD1269)

3. Reposition the Motor Housing in the vise jaws so that the vise jaws grip the end of the rotor shaft and the handle grip of the Housing is downward. Tap the edges of the Housing surrounding the motor bore with a plastic hammer to separate the Housing from the motor. (Refer to Dwg. TPD1270.)



(Dwg. TPD1270)

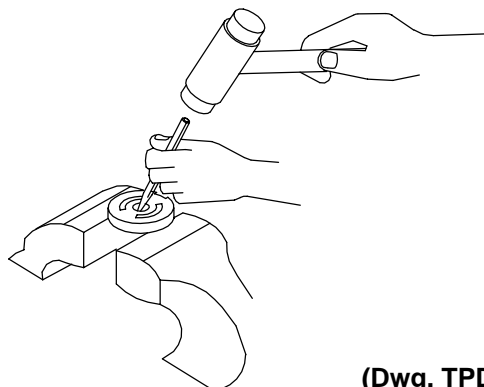
4. Remove the motor from the vise jaws and remove the Front End Plate (27), Front End Plate Bearing (29), Cylinder Assembly (25) and Vanes (26) from the Rotor.
5. Remove the Rear Motor Seal (17) from the Motor Housing.
6. On the table of an arbor press, support the Rear End Plate (21) with blocks as close to the Rotor as possible and press the Rotor out of the Rear End Plate and Rear Rotor Bearing (22).

NOTICE

In the following step, do not enlarge or damage the shaft hole in the End Plate when removing the Bearing.

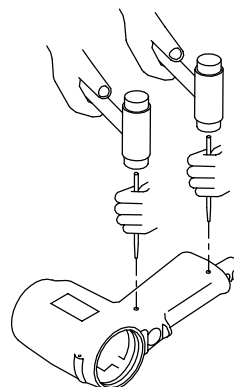
7. To remove the Rear Rotor Bearing from the Rear End Plate, use a small drift or pin punch through the central

opening of the Rear End Plate to tap the Bearing out of the End Plate. (Refer to Dwg. TPD1271.)



(Dwg. TPD1271)

8. Using a pin punch, tap the Throttle Retaining Pin (16) and the Deflector Retaining Pin (19) out of the Handle. The Throttle Retaining Pin is protected by an embossed circular pad of metal. Insert the pin punch into the middle of the pad to locate the Pin. (Refer to Dwg. TPD1272.)



(Dwg. TPD1272)

9. Grasp the Trigger (14) and pull the assembled throttle out of the Motor Housing.
10. Using a pin punch and without damaging the Trigger, remove the Trigger Pin (15).
11. Being careful not to lose the Reverse Valve Detent Ball (10) or Reverse Valve Detent Spring (11), slide the Throttle Bushing Assembly (7), Throttle Valve Assembly (4) and Throttle Rod Assembly (2) off the Reverse Valve (9).
12. Using a pin punch and without damaging the Reverse Lever (12), remove the Reverse Lever Retaining Pin (13) and separate the Lever from the Valve.
13. Using a thin blade screwdriver, remove the Throttle Valve Retainer (6) and slide the Throttle Valve Assembly off the shaft of the Throttle Valve Rod.
14. Grasp the Exhaust Deflector Assembly (18) and pull it out of the Housing.

MAINTENANCE SECTION

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 into a bearing recess.
3. When grasping a tool or part in a vise, always use leather-covered or copper-covered vise jaws to protect the surface of the part and help prevent distortion. This is particularly true of threaded members and housings.
4. Except for bearings and mechanism parts, always clean every part and wipe every part with a thin film of oil before installation.
5. Wipe a thin film of mechanism fluid on all internal mechanism components before installing them in the mechanism.
6. Apply a film of o-ring lubricant to every o-ring before installation.

Assembly of the Motor

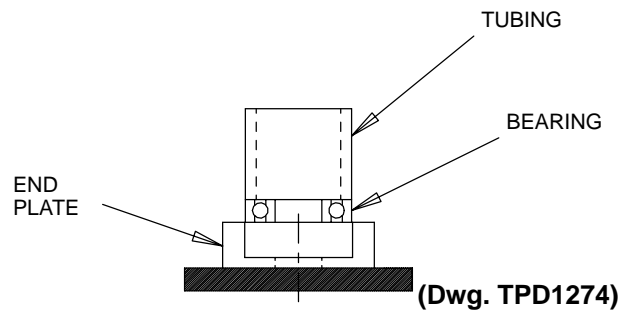
1. Position the Exhaust Deflector Assembly (18) in the bottom of the motor housing handle and install the Deflector Retaining Pin (19) to secure it in position.

NOTICE

It may be necessary to slide the Assembly in or out in order to align the groove in the Assembly with the pin hole.

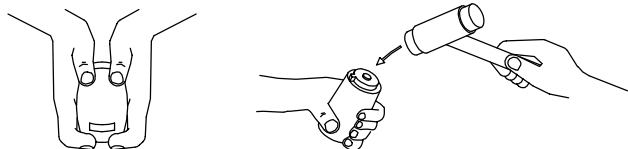
2. Install the Throttle Rod Seal (3) in the groove on the large hub of the Throttle Rod (2).
3. Install the Throttle Valve Seal (5) in the groove on the large hub of the Throttle Valve (4).
4. Slide the Throttle Valve, Valve Seal end first, onto the Throttle Rod.
5. Secure the Throttle Valve Assembly by installing the Throttle Valve Retainer (6) in the small groove on the Throttle Rod.
6. Install the Throttle Bushing Seal (8) on the hub end of the Throttle Bushing (7).
7. Position the Throttle Lever (12) on the Reverse Valve (9) and secure it by installing the Reverse Lever Retaining Pin (13).
8. Slide the Throttle Bushing Assembly, seal end leading, onto the shaft of the Throttle Rod.
9. Slide the Reverse Valve, lever end trailing, onto the shaft of the Throttle Rod and into the Throttle Bushing until the detent hole in the Valve reaches the end of the Bushing.
10. Install the Reverse Valve Detent Spring (11) followed by the Reverse Valve Detent Ball (10) in the hole in the Reverse Valve. While compressing the Spring with the Ball, continue sliding the Valve into the Bushing until the Detent Ball enters one of the detent pockets inside the Bushing.
11. Position the Trigger (14) on the shaft of the Throttle Rod and secure it by inserting the Trigger Retaining Pin (15) through the Trigger and shaft.

12. Insert the assembled Trigger into the Motor Housing. Make certain the widest end of the Trigger is nearest the motor bore and the notch across the outside of the Throttle Bushing aligns with hole in the Motor Housing for the Throttle Retaining Pin (16). Install the Pin making certain it captures and secures the assembled Trigger.
13. Using an arbor press and a piece of tubing that contacts the outer ring of the bearings, press the Front End Plate Bearing (29) into the Front End Plate (27) and the Rear End Plate Bearing (22) into the Rear End Plate (21). (Refer to Dwg. TPD1274.)



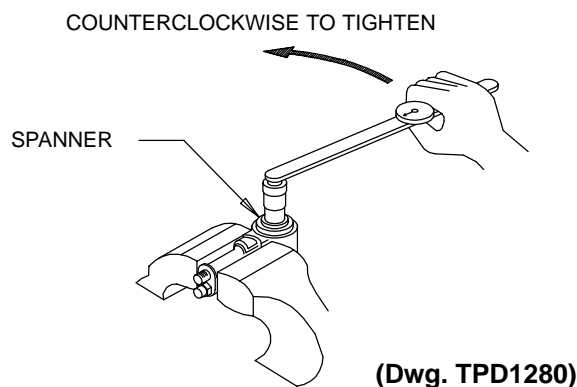
14. Stand the Rotor (25) on the table of an arbor press. It should be upright on a flat metal plate having a clearance hole for the shaft. The shaft with the hex must be downward.
15. Place a 0.001" (0.025 mm) shim on the upward surface of the large portion of the rotor body. Using a piece of tubing that contacts the inner ring of the bearing, press the Rear Rotor Bearing and Rear End Plate, End Plate leading, onto the shaft of the Rotor until the End Plate contacts the shim. Remove the shim.
16. Coat each Vane (26) with a thin film of oil and insert a Vane into each of the rotor vane slots with the straight edge of the Vane outward.
17. Install the Cylinder (23) over the Vanes and Rotor with the end of the Cylinder having the two holes in straight alignment nearest the end face positioned away from the Rear End Plate. Make certain the End Plate Dowel (24) enters the hole in the face of the Rear End Plate and not the porting slot.
18. Place the Front End Plate and Bearing against the face of the Cylinder, Bearing end trailing. Make certain the End Plate Dowel in that end of the cylinder enters the hole in the End Plate and not the porting slot.
19. Insert the Rear Motor Seal (17) in the bottom of the Housing motor bore.
20. Insert the assembled motor, Rear End Plate leading, into the Motor Housing making sure the End Plate Alignment Pin (28) enters the proper notch in the Housing. It may be necessary to tap the assembly into position with a brass or plastic hammer. (Refer to Dwg. TPD1279.)

MAINTENANCE SECTION



(Dwg. TPD1279)

21. Grasp the handle of the Motor Housing in vise jaws with the rotor shaft upward. Thread the Front End Plate Spacer (30) into the Housing and using the end plate spacer spanner, tighten the Spacer to 33 ft-lb (45 Nm) torque. This is a **left-hand thread**; rotate the wrench **counterclockwise** to tighten. (Refer to Dwg. TPD1280.)

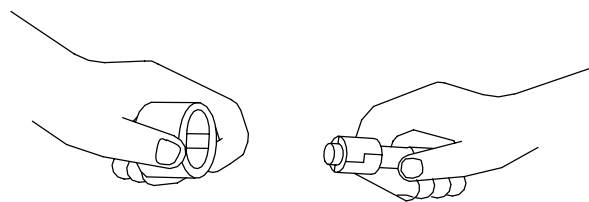


(Dwg. TPD1280)

22. After installing the Front End Plate Spacer, grasp the shaft of the Rotor and rotate it by hand. If the Rotor does not turn easily, disassemble the motor unit and determine where the assembly is binding. The motor must rotate freely before proceeding further with the assembly.

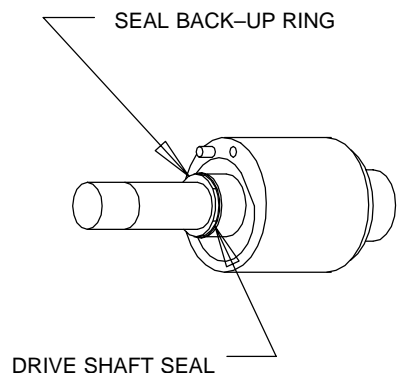
Assembly of the Impulse Mechanism

1. Install the Rear Liner Cover O-ring (39) in the annular groove around the Rear Liner Cover (38).
2. Insert the Relief Valve (43) into the Liner (40).
3. Place a Blade Spring (47) into each hole in one of the slots of the Drive Shaft (44).
4. Place the Blade (45) against the Springs so that each Spring encircles a Blade Spring Pin (46).
5. Compress the Springs with the Blade until the Blade is flush with the Drive Shaft and install the assembly in the Liner with the output end of the Drive Shaft protruding out the end of the Liner containing the Relief Valve. (Refer to Dwg. TPD1284.) Make certain the ends of the Blade are flush with the ends of the Liner.



(Dwg. TPD1284)

6. Place the Rear Liner Cover Assembly against the motor end of the Liner making sure that the two Liner Rear Pins (41) enter the holes in the Cover and the rear hub of the Drive Shaft enters the central opening of the Cover.
7. Install the Front Liner Cover Assembly (48) over the Drive Shaft against the spindle end of the Liner making sure that the two Liner Front Pins (42) enter the holes in the Cover and the Relief Valve aligns with the opening in the Cover.
8. Install the Drive Shaft Seal (49) followed by the Seal Back-up Ring (50) on the Drive Shaft against the hub. (Refer to Dwg. TPD1285.)



(Dwg. TPD1285)

9. Install the assembled Liner and Covers in the Liner Housing (31) making certain that the Relief Valve is in alignment with the opening for the Torque Adjustment Bolt (34).
10. Install the Adjustment Bolt Seal (35) followed by the Seal Washer (35A) and Seal Back-up Ring (36) on the Torque Adjustment Bolt and thread the assembled Bolt into the Liner Housing.
11. Install the Adjustment Bolt Stop Ring (36A) in the groove of the Liner Housing to keep the Bolt Assembly from backing out.
12. Install the Oil Plug (32) and Oil Plug Seal (33) in the liner housing hole 180 degrees from the Torque Adjustment Bolt.

NOTES

NOTES

