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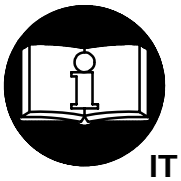
OPERATION AND MAINTENANCE MANUAL FOR MODELS 1100PS4 AND 1900PS4 TWIN BLADE SHUTOFF IMPULSE WRENCHES

NOTICE

Models 1100PS4 and 1900PS4 Impulse Wrenches are 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 6.2 bar/620 kPa 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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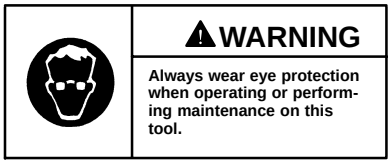
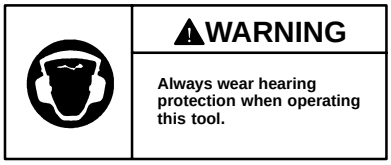
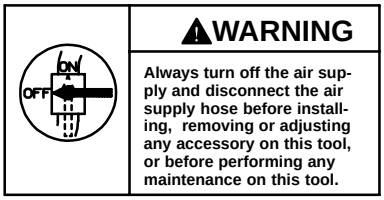
WARNING LABEL IDENTIFICATION

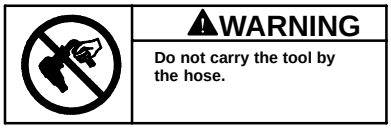
⚠ WARNING

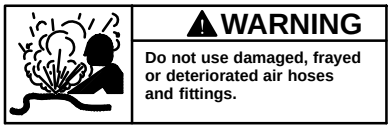
FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

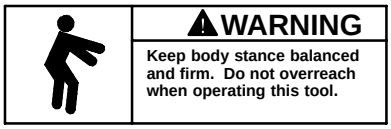


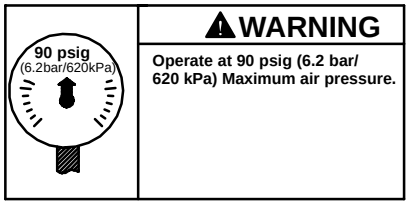












ADJUSTMENTS

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. There is no colored paint in the head of the Torque Adjustment Screw.
3. Using a 2 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.

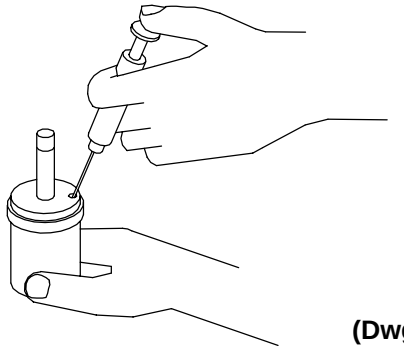
CHANGING THE MECHANISM FLUID

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

1. Using a hex wrench, remove the three Hammer Case Cap Screws and Lock Washers. Lift the Hammer Case off the Motor Housing over the Drive Shaft. Remove the Hammer Case Gasket.
2. Lift the assembled mechanism off the Rotor.
3. Using a 2.5 mm hex wrench, unscrew and remove the Oil Plug. Remove the Oil Plug Seal and Oil Plug Seal Support.
4. Using the 2 mm hex wrench furnished with the tool, rotate the Adjustment Screw without paint in the wrench hole counterclockwise until it stops.
5. With the oil plug opening downward over a container, rotate the Drive Shaft to purge the fluid from the mechanism.
6. Using the syringe and fluid from the Fluid Replacement Kit (Part No. EQ106S–K400), fill the mechanism with the fluid furnished in the Kit until the fluid overflows the fill hole. Model 1100PS4 will require 17 cc of fluid and Model 1900PS4, 30 cc. (Refer to Dwg. TPD1265.)

NOTICE

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



(Dwg. TPD1265)

7. Submerge the mechanism in a reservoir containing mechanism fluid, and using a wrench, rotate the Drive Shaft clockwise and counterclockwise to purge any remaining air from the system.

ADJUSTMENTS

8. Remove the mechanism from the fluid and rotate the Adjustment Screw clockwise until it stops.
9. Thread the Oil Plug with the Oil Plug Seal and Seal Support into the mechanism until it is snug.
10. Wipe the outside of the mechanism dry and clean and remove the Oil Chamber Plug. Using the syringe, withdraw 0.9 cc of fluid from 1100PS4 models and 1.5 cc from 1900PS4 models.
11. Install the Oil Chamber Plug and tighten it between 20 and 25 in–lb (2.3 and 2.8 Nm) torque.
12. Position a new Hammer Case Gasket on the Motor Housing and install the assembled mechanism on the rotor shaft.
13. Place the Hammer Case Cover over the Drive Shaft against the Housing and Gasket. Install the three Hammer Case Cap Screws and Lock Washers. Tighten each Screw between 45 an 50 in–lb (5.1 and 5.6 Nm) torque.
14. Test the tool for torque at maximum, minimum and mid–range torque settings. If the tool does not perform satisfactorily, repeat the refill procedure and pay particular attention to removing unwanted air from the fluid system. Refer to the section **TORQUE ADJUSTMENT** for specific adjustment procedures.
15. If the torque is satisfactory but the tool fails to shut off, only then, is it necessary to adjust the shutoff mechanism. If it should become necessary, proceed as follows:
    a. Remove the Adjusting Hole Plug from the Hammer Case.
    b. Using a pointed probe, pick the paint out of the wrench opening in the Adjustment Screw that is 180 degrees away from the Torque Adjustment Screw.
    c. Rotate the Screw counterclockwise not more than ten degrees.

NOTICE

Before operating the tool, mark the shutoff Adjustment Screw with a permanent marker or paint so that it can be distinguished for future adjustments.

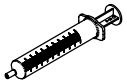
    d. Permanently mark the Screw for future identification and then retest the tool. Adjustments to the shutoff mechanism should only be made in five to ten degree increments.

PLACING TOOL IN SERVICE

LUBRICATION

Ingersoll–Rand No. 50

Ingersoll–Rand No. 67

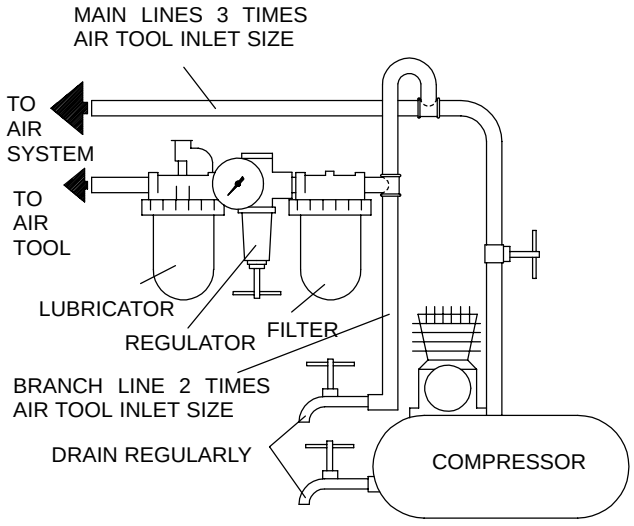


Ingersoll–Rand Fluid Part No. EQ106S–400–1

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

For USA – No. C18–03–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.



(Dwg. TPD905–1)

HOW TO ORDER AN IMPULSE WRENCH

Model	Type of Grip	Chuck/ Drive	Free Speed	Recommended Torque Range	
		in.		Soft Draw ft–lb (Nm)	Hard Slam ft–lb (Nm)
1100PS4	pistol	1/2	6,500	40–50 (54–68)	65–85 (90–115)
1900PS4	pistol	1/2	7,000	70–100 (108–136)	90–140 (122–190)

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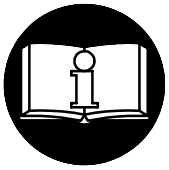
MANUEL D'EXPLOITATION ET D'ENTRETIEN DES CLÉS À IMPULSIONS ET COUPURE D'AIR À DOUBLE PALETTE MODÈLES 1100PS4 ET 1900PS4

NOTE

Les clés hydro–pneumatiques à double palette Modèles 1100PS4 et 1900PS4 sont destinées aux opérations d'assemblage nécessitant une grande vitesse de serrage avec une régularité du couple et un serrage virtuellement sans réaction.
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 SECURITÉ 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 (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 6,2 bar (620 kPa). 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 volatiles tels que le kérosène, le gasol 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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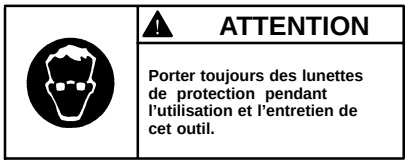
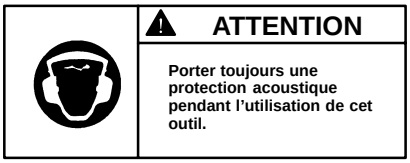
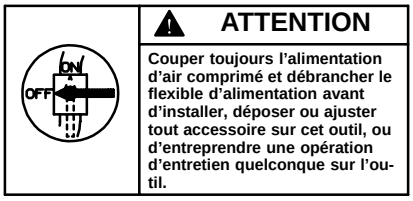
SIGNIFICATION DES ETIQUETTES D'AVERTISSEMENT

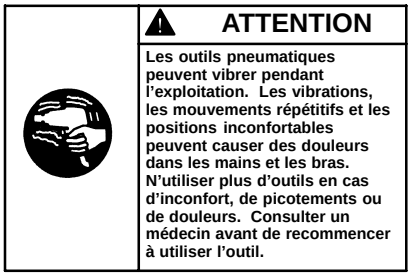
⚠ ATTENTION

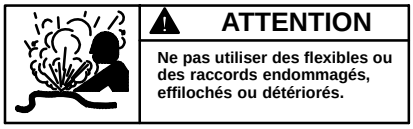
LE NON RESPECT DES AVERTISSEMENTS SUIVANTS PEUT CAUSER DES BLESSURES

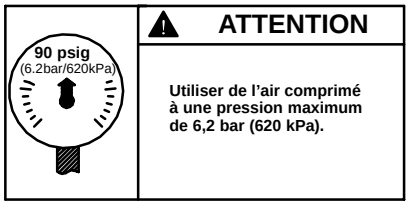












RÉGLAGES

RÉGLAGE DU COUPLE

Pour ajuster le couple sur ces clés à impulsion bi–lame, 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. Il n'y a pas de peinture couleur dans la tête de la vis de réglage de couple.
3. A l'aide d'une clé pour six pans creux de 2 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.

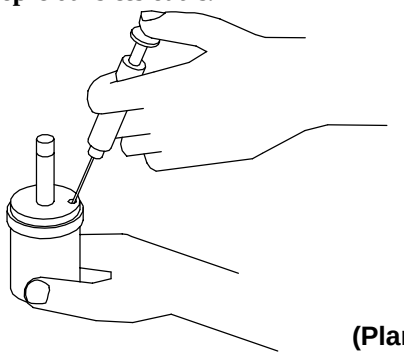
CHANGEMENT DU FLUIDE DU MECANISME

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

1. A l'aide d'une clé pour six pans creux, déposer les trois vis du carter de marteau et les rondelles frein. Soulever le carter de marteau du corps de moteur et de l'arbre d'entraînement. Déposer le joint du carter de marteau.
2. Retirer le mécanisme assemblé du rotor.
3. A l'aide d'une clé pour six pans creux de 2.5 mm, dévisser et déposer le bouchon d'huile. Déposer le joint du bouchon d'huile et le support de joint du bouchon d'huile.
4. A l'aide de la clé pour six pans creux de 2 mm fournie avec l'outil, tourner la vis de réglage sans peinture dans le trou de la clé, dans le sens inverse des aiguilles d'une montre jusqu'à ce qu'elle vienne en butée.
5. 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.
6. 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 jusqu'à ce qu'il déborde du trou de remplissage. Le Modèle 1100PS4 nécessite 17 cm^3 de fluide et Modèle 1900PS4 nécessite 30 cm^3. (Voir TPD1265).

NOTE

NE PAS UTILISER D'AUTRE FLUIDE. La non utilisation du fluide de mécanisme hydro–pneumatique 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)

RÉGLAGES

7. Submerger le mécanisme dans un récipient contenant du fluide de mécanisme et, à l'aide d'une clé, tourner l'arbre d'entraînement dans le sens des aiguilles d'une montre et dans le sens inverse de manière à purger tout l'air qui pourrait être emprisonné dans le système.
8. Retirer le mécanisme du fluide et tourner la vis de réglage dans le sens des aiguilles d'une montre jusqu'à ce qu'elle vienne en butée.
9. Visser le bouchon, équipé du joint et de son support, dans le mécanisme et le serrer fermement.
10. Essuyer l'extérieur du mécanisme pour le sécher et déposer le bouchon de la chambre d'huile. A l'aide de la seringue, retirer 0,9 cm^3 de fluide sur le modèle 1100PS4 et 1,5 cm^3 sur le modèle 1900PS4.
11. Remonter le bouchon de la chambre d'huile et le serrer à un couple de 2,3 à 2,8 Nm.
12. Placer une nouvelle garniture de carter de marteau sur le corps de moteur et installer le mécanisme assemblé sur l'arbre du rotor.
13. Placer le couvercle de carter de marteau sur l'arbre d'entraînement et contre le corps et son joint. Monter les trois vis à six pans creux du carter de marteau et les rondelles frein. Serrer chaque vis à un couple de 5,1 à 5,6 Nm.
14. Tester le couple de l'outil aux positions de réglage de couple maximum, minimum et milieu de gamme. Si l'outil ne donne pas satisfaction, répéter la procédure de remplissage en vérifiant soigneusement que tout l'air est purgé du circuit. Voir section **RÉGLAGE DU COUPLE** pour la méthode précise de réglage.
15. Si le couple est satisfaisant, mais si l'outil ne s'arrête pas, et seulement dans ce cas, il sera nécessaire de régler le mécanisme d'arrêt. Si ce réglage est nécessaire, procéder comme suit :
    a. Déposer le bouchon du trou de réglage du carter de marteau.
    b. A l'aide d'une pointe à tracer, enlever la peinture de l'ouverture de la vis de réglage de la clé qui se trouve à 180º de la vis de réglage de couple.
    c. Tourner la vis dans le sens inverse des aiguilles d'une montre d'une quantité ne dépassant pas dix degrés.

NOTE

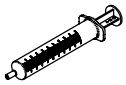
Avant de mettre l'outil en marche, marquer la vis de réglage d'arrêt avec un marqueur permanent ou de la peinture de manière à ce qu'elle puisse facilement être identifiée pour les réglages futurs.

    d. Marquer la vis de façon permanente pour toute identification future et tester de nouveau l'outil. Les réglages du mécanisme d'arrêt ne doivent être effectués qu'en étapes de cinq à dix degrés.

MISE EN SERVICE DE L'OUTIL

LUBRIFICATION

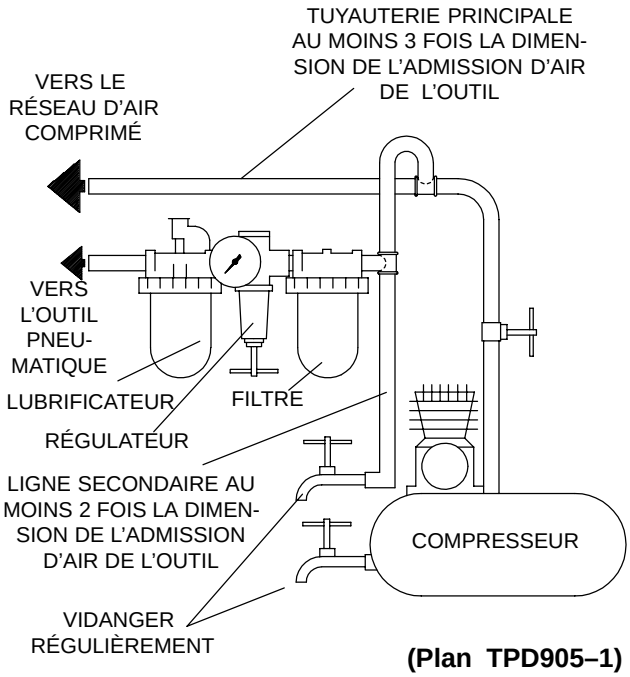
Ingersoll–Rand Nº. 50 **Ingersoll–Rand Nº. 67**



Fluide Ingersoll–Rand
Réf. EQ106S–400–1

Utiliser toujours un lubrificateur avec ces outils. Nous recommandons l'emploi du filtre–régulateur–lubrificateur suivant:
É.U. – Nº. C18–03–FKG0–28

Tous les 20 000 cycles, ou en fonction de l'expérience, vider et remplir l'ensemble du 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)

E

MANUAL DE INSTRUCCIONES DE MANEJO Y MANTENIMIENTO PARA LLAVES DE IMPULSOS DE DOBLE PALETA DE PARADA AUTOMÁTICA MODELOS 1100PS4 Y 1900PS4

NOTA

Las llaves de impulso modelos 1100PS4 y 1900PS4 estás diseñadas para operaciones de montaje que requieren una alta velocidad de fijación a un par de apriete constante y una reacción de par reducida.

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 USAR 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 ni deteriorados.**
- **Asegúrese de que todos los racores y mangueras sean del tamaño correcto y estén bien apretados. El Esq. TPD905–1 muestra una disposición característica de las tuberías.**
- **Use siempre aire limpio y seco a una presión máxima de 90 psig (6,2 bar/620 kPa). El polvo, los gases corrosivos y el exceso de humedad pueden estropear el motor de una 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

- **Use siempre protección ocular cuando utilice esta herramienta o realice operaciones de mantenimiento en la misma.**
- **Use 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 ocurrir elevados pares de reacción a la presión recomendada de aire, e incluso a presiones inferiores.**
- **El eje de la herramienta puede seguir girando brevemente después de haberse soltado la palanca de mando.**
- **Las herramientas neumáticas pueden vibrar durante el uso. La vibración, los movimientos repetitivos y 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 recomendados por Ingersoll–Rand.**
- **Utilice únicamente bocas y accesorios para llaves de impacto. No utilice bocas o accessorios 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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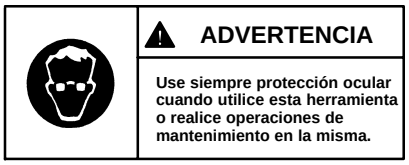
ETIQUETAS DE AVISO

⚠ AVISO

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



⚠ ADVERTENCIA

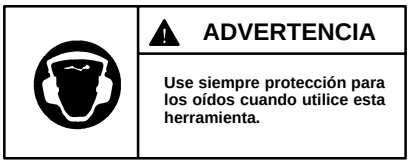
Use siempre protección ocular cuando utilice esta herramienta o realice operaciones de mantenimiento en la misma.

⚠ ADVERTENCIA

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.

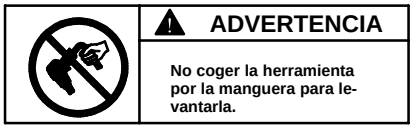
⚠ ADVERTENCIA

Mantener una postura del cuerpo equilibrada y firme. No estirar demasiado los brazos al manejar la herramienta.



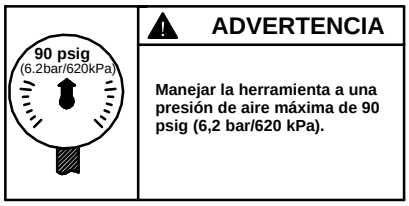
⚠ ADVERTENCIA

Use siempre protección para los oídos cuando utilice esta herramienta.



⚠ ADVERTENCIA

No coger la herramienta por la manguera para levantarla.



⚠ ADVERTENCIA

Manejar la herramienta a una presión de aire máxima de 90 psig (6,2 bar/620 kPa).

⚠ ADVERTENCIA

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.

⚠ ADVERTENCIA

No utilizar mangueras de aire y accesorios dañados, desgastados ni deteriorados.

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 se pueda ver el tornillo de ajuste de par a través del orificio. El tornillo de ajuste de par no tiene pintura de color en el hueco de la cabeza.
3. Con una llave hexagonal de 2 mm, gire el tornillo de ajuste a la derecha para incrementar el par y a la izquierda para disminuirlo. No gire el tapón de aceite.

NOTA

Haga todos los ajustes finales donde está trabajando.

4. Vuelva a colocar el tapón del orificio de ajuste.

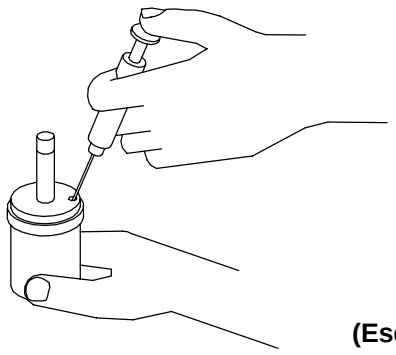
CAMBIO DEL LÍQUIDO DEL MECANISMO

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

1. Utilice una llave hexagonal para quitar los tres tornillos y arandelas de la carcasa de la maza. Saque la carcasa de la maza de la carcasa del motor por encima del eje de accionamiento. Retire la junta de la carcasa de la maza.
2. Retire el mecanismo armado del rotor.
3. Utilice una llave hexagonal de 2,5 mm para desenroscar el tapón de aceite. Saque el retén del tapón y el soporte del retén.
4. Utilice la llave hexagonal de 2 mm provista con la herramienta para girar en sentido antihorario hasta el tope el tornillo de ajuste que no tiene pintura en el hueco de la cabeza.
5. Con el orificio para el tapón de aceite hacia abajo sobre un recipiente, gire el eje de accionamiento para purgar el líquido del mecanismo.
6. Con la jeringuilla y el líquido del kit de cambio de líquido (pieza nº EQ106S–K400), llene de líquido el mecanismo hasta que rebose por el orificio de llenado. Para el modelo 1100PS4 se necesitarán 17 cc de líquido y para el modelo 1900PS4 30 cc. (véase el esquema TPD1265).

NOTA

NO SUSTITUYA NINGÚN OTRO LÍQUIDO.
Si no se usa el líquido suministrado, se podría dañar la herramienta, incrementar los cuidados de mantenimiento que requiere y reducir el rendimiento. Use solamente líquido limpio en estas herramientas.



(Esq. TPD1265)

AJUSTES

7. Sumerja el mecanismo en un recipiente que contenga líquido del mecanismo; utilice una llave para girar el eje de accionamiento hacia la derecha y la izquierda a fin de purgar del sistema todo el aire que pueda quedar.
8. Retire el mecanismo del líquido y gire el tornillo de ajuste hacia la derecha hasta el tope.
9. Enrosque el tapón de aceite, su retén y el soporte de éste en el mecanismo hasta que quede bien ajustado.
10. Seque la parte exterior del mecanismo; limpie el tapón de la cámara de aceite y retírelo. Utilizando la jeringuilla, saque 0,9 cc de fluido de los modelos 1100PS4 y 1,5 cc de los modelos 1900PS4.
11. Coloque el tapón de la cámara de aceite y apriételo a 2,3 – 2,8 Nm.
12. Coloque una nueva junta para la carcasa de la maza en la carcasa del motor e instale el mecanismo armado en el eje del rotor.
13. Ponga la carcasa de la maza encima del eje de accionamiento, contra la carcasa del motor y la junta. Coloque los tres tornillos y arandelas de la carcasa de la maza. Apriete cada tornillo a 5,1 – 5,6 Nm.
14. Pruebe el funcionamiento de la herramienta para verificar el par en los ajustes de par máximo, mínimo e intermedio. Si la herramienta no produce los resultados debidos, repita el procedimiento de llenado, prestando especial atención a la purga de aire del circuito del líquido. Para los procedimientos de ajuste específicos, véase la sección **AJUSTE DEL PAR**.
15. Si el par es satisfactorio pero la herramienta no se detiene, habrá que ajustar el mecanismo de parada. En tal caso, proceda de la forma siguiente:
    a. Quite el tapón del orificio de ajuste de la carcasa de la maza.
    b. Saque (escarbando con un útil con punta) la pintura del hueco de la cabeza del tornillo de ajuste que queda a 180 grados del tornillo de ajuste del par.
    c. Gire el tornillo hacia la izquierda no más de diez grados.

NOTA

Antes de accionar la herramienta, marque el tornillo de ajuste de detención con un marcador permanente o con pintura para poder distinguirlo para ajustes futuros.

    d. Marque de forma permanente el tornillo para fines de identificación y vuelva a probar la herramienta. Los ajustes del mecanismo de parada se deberán efectuar solamente en incrementos de cinco a diez grados a la vez.

PARA PONER LA HERRAMIENTA EN SERVICIO

LUBRICACIÓN

Ingersoll–Rand Nº. 50

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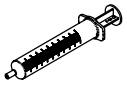
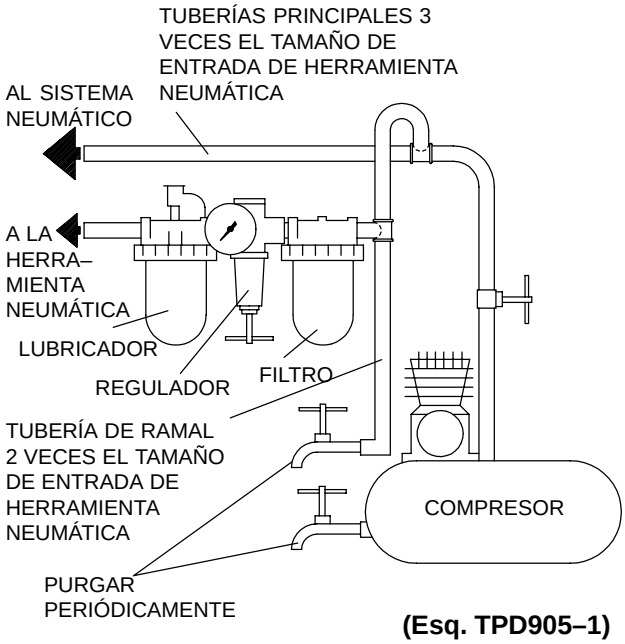


Líquido Ingersoll–Rand Nº. referencia EQ106S–400–1

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

EE.UU. – Nº. C18–03–FKG0–28

Después de cada 20 000 ciclos, o según indique la experiencia, drene y vuelva a llenar el mecanismo de impulso tal y como se indica en este manual, usando el kit de cambio de líquido (pieza nº EQ106S–K400). Lubrique el eje de salida y el cuadradillo hexagonal antes del montaje.



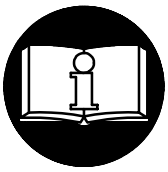
(Esq. TPD905–1)

P

MANUAL DE FUNCIONAMENTO E MANUTENÇÃO PARA AS CHAVES DE IMPULSO DE DESLIGAMENTO AUTOMÁTICO COM DUAS PALHETAS MODELOS 1100PS4 E 1900PS4

AVISO

As Ferramentas Pneumáticas de Impulso Modelos 1100PS4, e 1900PS4 são concebidas 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 SEGUINTES ADVERTÊNCIAS PODE RESULTAR EM FERIMENTOS.

COLOCANDO A FERRAMENTA EM FUNCIONAMENTO

- **Sempre opere, inspeccione e mantenha esta ferramenta de acordo com o Código de Segurança do Instituto Americano de Padrões Nacionais para Ferramentas Pneumáticas Portáteis (ANSI B186.1).**
- **Para segurança, máximo desempenho e máxima durabilidade das peças, opere esta 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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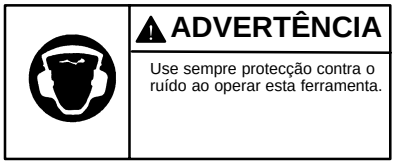
⚠ ADVERTÊNCIA

O NÃO CUMPRIMENTO DAS SEGUINTES ADVERTÊNCIAS PODE RESULTAR EM FERIMENTOS.

⚠ ADVERTÊNCIA

Use sempre óculos de protecção quando estiver operando ou executando algum serviço de manutenção nesta ferramenta.



⚠ ADVERTÊNCIA

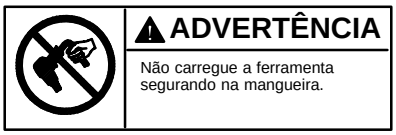
Use sempre protecção contra o ruído ao operar esta ferramenta.

⚠ 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.

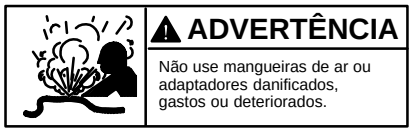
⚠ ADVERTÊNCIA

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 formigueiro ou dor. Procure assistência médica antes de retornar ao trabalho.



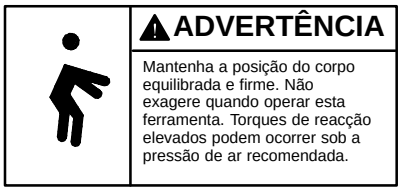
⚠ ADVERTÊNCIA

Não carregue a ferramenta segurando na mangueira.



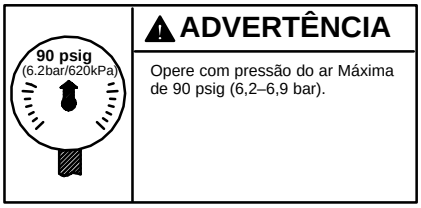
⚠ ADVERTÊNCIA

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.



⚠ ADVERTÊNCIA

Opere com pressão do ar Máxima de 90 psig (6,2–6,9 bar).

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. A cabeça do Parafuso de Ajuste de Binário não é pintada com tinta colorida.
3. Com uma chave sextavada de 2 mm, rode o Parafuso de Ajuste para a direita para aumentar o valor de binário e para a esquerda para diminuir o valor de binário. Não gire o Bujão de Óleo.

AVISO

Faça todos os ajustes finais no serviço.

4. Reponha o Bujão do Furo de Ajuste.

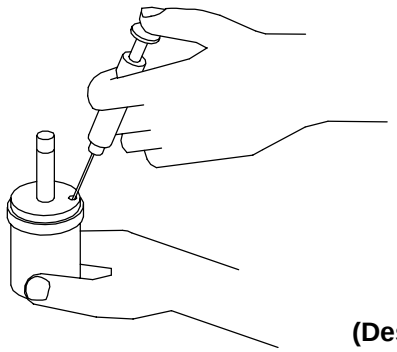
COMO MUDAR O FLUIDO PARA MECANISMO

Para mudar o Fluido para Mecanismo do Mecanismo de Impulso, proceda como segue:

1. Com uma chave sextavada, retire os três Parafusos Allen da Caixa do Martelo e as Contraporcas. Retire a Caixa do Martelo da Carcaça do Motor sobre o Veio de Accionamento. Retire a Junta da Caixa do Martelo.
2. Retire do Rotor o mecanismo montado.
3. Com uma chave sextavada de 2,5 mm, desaparafuse e retire o Bujão do Óleo. Retire o Vedante do Bujão do Óleo e o Suporte do Vedante do Bujão do Óleo.
4. Com a chave sextavada de 2 mm fornecida com a ferramenta, rode o Parafuso de Ajuste sem pintura na abertura da chave para a esquerda até ele parar.
5. Com a abertura do bujão do óleo voltada para baixo sobre um recipiente, rode o Veio de Accionamento para remover o fluido do mecanismo.
6. Usando a seringa e o fluido do Kit de Substituição de Fluido (Peça Nº EQ106S–K400), encha o mecanismo com o fluido fornecido no Kit até este transbordar o orifício de enchimento. O Modelo 1100PS4 requererá 17 cc de fluido e o Modelo 1900PS4, 30 cc.
(Consulte o Des. TPD1265.)

AVISO

NÃO SUBSTITUA POR NENHUM OUTRO FLUIDO.
Se o fluido para mecanismo de impulso fornecido não for usado, a ferramenta poderá ser danificada, poderá aumentar a necessidade de manutenção e diminuir o desempenho. Use apenas fluido limpo nestas ferramentas.



(Des. TPD1265)

AJUSTES

7. Submerja o mecanismo num recipiente que contenha fluido para mecanismo e, com uma chave, rode o Eixo de Accionamento para a direita e para a esquerda para purgar qualquer ar restante no sistema.
8. Retire o mecanismo do fluido e rode o Parafuso de Ajuste para a direita até ele parar.
9. Aparafuse o Bujão do Óleo com o Vedante do Bujão do Óleo e o Suporte do Vedante no mecanismo até ficar seguro.
10. Seque o lado de fora do mecanismo, limpe e retire o Bujão da Câmara de Óleo. Com a seringa, retire 0,9 cc de fluido dos modelos 1100PS4 e 1,5 cc dos modelos 1900PS4.
11. Instale o Bujão da Câmara de Óleo e aperte–o com um valor de binário entre 2,3 e 2,8 Nm.
12. Posicione uma nova Junta da Caixa do Martelo sobre a Carcaça do Motor e instale o mecanismo montado sobre o veio do rotor.
13. Coloque a Tampa da Caixa do Martelo sobre o Veio de Accionamento contra a Carcaça e a Junta. Instale os três Parafusos Allen da Caixa do Martelo e as Contraporcas. Aperte cada parafuso com um valor de binário entre 5,1 e 5,6 Nm.
14. Teste a ferramenta quanto ao binário nos ajustes máximo, mínimo e médio de binário. Se a ferramenta não funcionar satisfatoriamente, repita o processo de enchimento e preste atenção especial à rehoção do ar indesejado do sistema de fluido. Consulte a secção **AJUSTE DE BINÁRIO** para o procedimento específico de ajuste.
15. Se o binário for satisfatório, mas a ferramenta não desligar, só então será necessário ajustar o mecanismo de desligamento. Se isto for necessário, proceda como segue:
    a. Retire o Bujão do Orifício de Ajuste da Caixa do Martelo.
    b. Com uma ferramenta pontiaguda, remova a tinta da abertura da chave no Parafuso de Ajuste que está a 180º do Parafuso de Ajuste de Binário.
    c. Rode o Parafuso para a direita, no máximo 10 graus.

AVISO

Antes de operar a ferramenta, marque o Parafuso de Ajuste de desligamento com uma caneta de tinta permanente ou com tinta, de forma a poder ser distinguido para ajustes futuros.

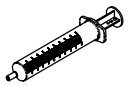
    d. Marque permanentemente o Parafuso para identificação futura e então volte a testar a ferramenta. Os ajustes ao mecanismo de desligamento só devem ser feitos em incrementos de cinco a dez graus.

COLOCANDO A FERRAMENTA EM FUNCIONAMENTO

LUBRIFICAÇÃO

Ingersoll–Rand No. 50

Ingersoll–Rand No. 67

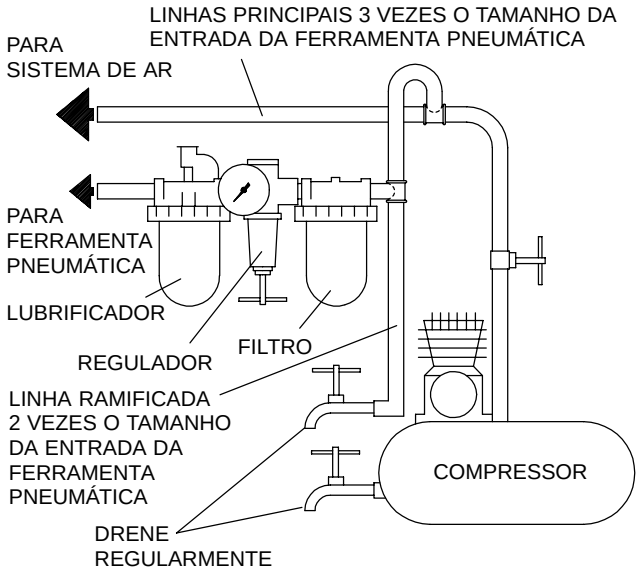


Fluído Ingersoll–Rand Número de Pedido EQ106S–400–1

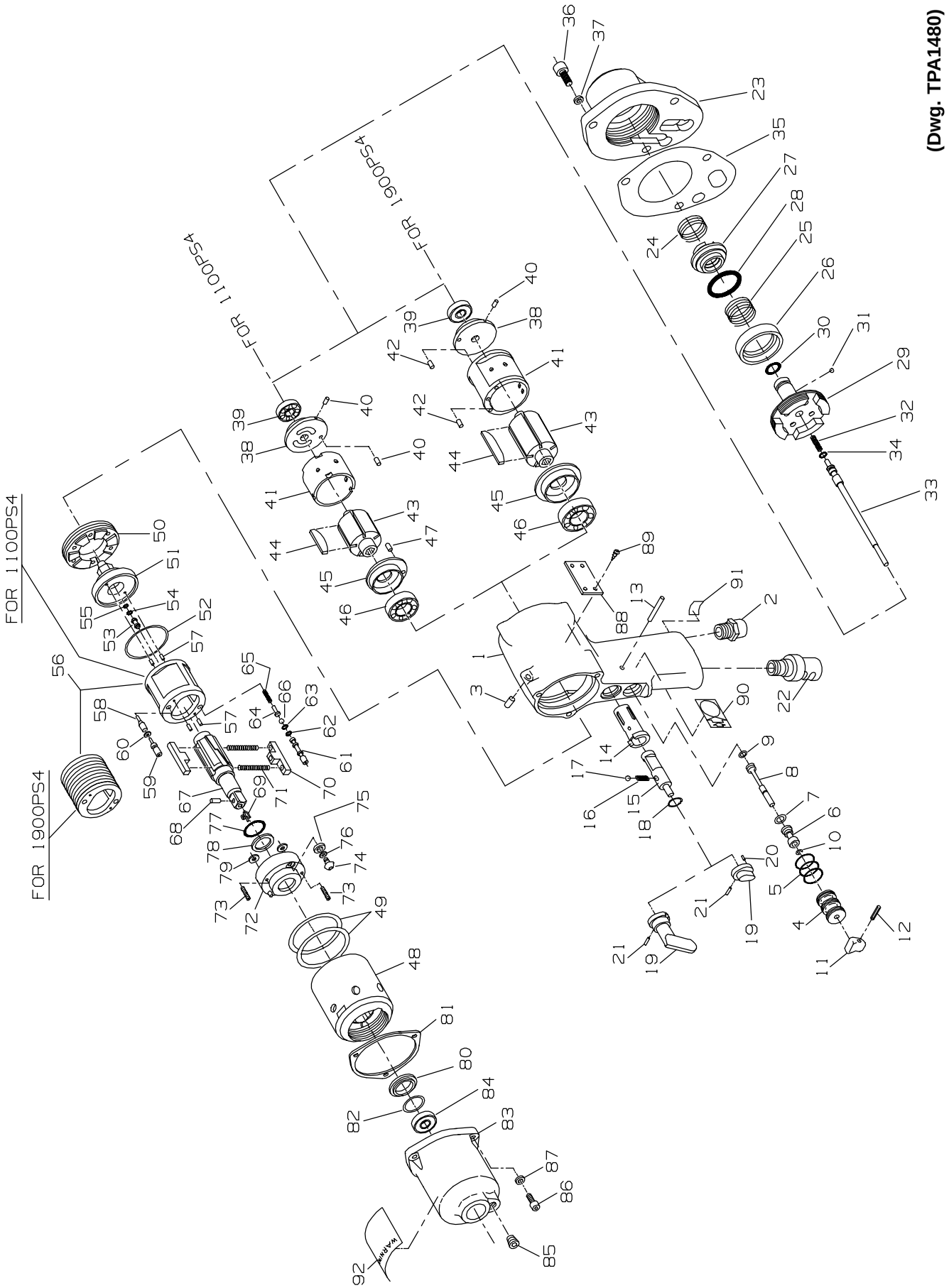
Use sempre um lubrificador de ar de linha com estas ferramentas. Nós recomendamos a seguinte Unidade Filtro–Lubrificador–Regulador:

E.U.A. – No. C18–03–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 Fluido (Número de Pedido EQ106S–K400). Lubrifique o comando hexagonal e o eixo de saída antes de montar.



(Desenho TPD905–1)



(Dwg. TPA1480)

PART NUMBER FOR ORDERING

		1100PS4	1900PS4
	Motor Housing Assembly	04355079	04355145
1	Motor Housing	04355087	04355152
2	Inlet Bushing	EQ106S–565	EQ106S–565
3	Suspension Hole Liner	EQ106P–366	EQ106P–366
4	Throttle Bushing Assembly	04351763	04355160
5	Throttle Bushing Seal (3)	EQ106P–283	EQ106P–283
6	Throttle Valve Assembly	04532503	04532511
7	Throttle Valve Seal	100PQ–288	EQ112P–159
8	Throttle Rod Assembly	EQ106P–A302	EQ112P–A302
9	Throttle Rod Seal	EQ106S–288	EQ106S–288
10	Valve Retaining Ring	EQ106P–303	EQ106P–303
11	Trigger	EQ106P–93	EQ106P–93
12	Trigger Pin	EQ106P–265	EQ106P–265
13	Throttle Retaining Pin	180PQ–120	180PQ–120
14	Reverse Valve Bushing	04351771	2400P–330
15	Reverse Valve	04351789	2400P–329
16	Reverse Valve Detent Spring	04351797	1900P–51
17	Reverse Valve Detent Ball	EQ104S–929	500P–333
18	Reverse Valve Retainer	500PQ–303	1410P–303
19	Reverse Lever Assembly	04351805	3000P–328
20	Reverse Lever Alignment Pin	04351813	—
21	Reverse Lever Retaining Pin	3000P–152	3000P–152
22	Exhaust Deflector	EQ110P–23	EQ110P–23
23	Backcap	04354734	04355186
24	Backcap Rear Spring (12 mm long)	04351839	04351839
25	Backcap Front Spring (15 mm long)	04351847	04351847
26	Control Plate	04354742	04354742
27	Control Valve Assembly	04351862	04351862
28	Control Valve Seal	04351870	04351870
29	Control Bushing Assembly	04354759	04355194
30	Control Bushing Seal	180PQ–288	180PQ–288
31	Control Bushing Ball (3.5 mm dia.) (3)	04351904	04351904
32	Control Shaft Spring	04351912	04351912
33	Control Shaft Assembly	04355095	04355202
34	Control Shaft Seal	EQ110P–288	EQ110P–288
35	Backcap Gasket	04354775	04355210
36	Backcap Mounting Screw (3)	1410P–638	2400P–277
37	Backcap Mounting Screw Washer (3)	900P–58	900P–58
	Rear End Plate Assembly	04354783	04355244
38	Rear End Plate	04354791	04355228
39	Rear Rotor Bearing	WFS182–22	R1AP–97
40	End Plate Alignment Dowel (2 for 1100PS4; 1 for 1900PS4)	EQ106P–99	EQ104S–299
41	Cylinder	1100P–3	—
41	Cylinder Assembly	—	1900P–A3
42	Alignment Pin (2)	—	1900P–152
43	Rotor	04355103	04355236

PART NUMBER FOR ORDERING

		1100PS4	1900PS4
44	Vane Packet (set of 6 Vanes)	1100P–42–6	1900P–42–6
	Front End Plate Assembly	04354817	1900P–A11
45	Front End Plate	04354825	04355251
46	Front Rotor Bearing	R38P–606	1900P–22
47	End Plate Alignment Dowel	EQ106P–99	—
48	Liner Housing	EQ112P–240	1900P–240
49	Liner Housing Seal (2)	EQ212P–236	1900P–238
50	Housing Cap	EQ110P–207	04355269
51	Rear Liner Cover	04354833	04355277
52	Rear Liner Cover Seal	EQ212P–237	2400P–238
53	Sensor Assembly	04352019	04352019
54	Sensor Seal	EQ104S–50	EQ104S–50
55	Sensor Seal Back–up O–Ring	04352035	04352035
56	Liner Assembly	04354841	04355285
57	Liner Alignment Pin (4)	EQ212P–298	1900P–298
58	Torque Valve Piston	1100P–222	1900P–222
59	Piston Stop Assembly	04354858	04350820
60	Piston Stop Seal	EQ110P–288	EQ104S–50
61	Check Valve Assembly	04354866	04355293
62	Check Valve Front Seal	EQ106P–288	EQ104S–50
63	Check Valve Rear Seal	EQ110P–288	EQ110P–288
64	Check Valve Piston	04354874	04355301
65	Piston Spring	04354882	04355319
66	Check Valve Ball	500P–333	04355327
67	Drive Shaft Assembly	04354890	04355335
68	Socket Retaining Pin	5020–716	5020–716
69	Retaining Pin Spring	401–718	401–718
70	Drive Shaft Blade (2)	EQ212P–220	1900P–220
71	Blade Spring (2)	EQ212P–219	1900P–219
72	Front Liner Cover Assembly	04354908	04355343
73	Adjustment Screw (2)	1900P–230	1900P–230
74	Oil Plug	EQ106S–277	EQ230P–277
75	Oil Plug Seal Support	EQ106S–229	EQ230P–229
76	Oil Plug Seal	EQ106S–228	EQ230P–238
77	Drive Shaft O–ring	EQ110P–271	04355376
78	Seal Back–Up Ring	EQ110P–272	EQ110P–272
79	Front Liner Cover Piston Seal (2)	EQ212P–232	2400P–237
80	Front Mechanism Spacer	04354916	04354916
81	Hammer Case Gasket	04354924	04355384
82	Drive Shaft Packing		
	0.2 mm thick	04354932	04354932
	0.3 mm thick	04354940	04354940
	0.5 mm thick	04354957	04354957
	Hammer Case Assembly	04354965	04355392
83	Hammer Case	04354973	04355400
84	Hammer Case Bearing	04354981	04355418
85	Adjustment Hole Plug	180PQ–95	180PQ–95

PART NUMBER FOR ORDERING

		1100PS4	1900PS4
86	Hammer Case Cap Screw (3)	1410P–638	1900P–638
87	Cap Screw Lock Washer (3)	900P–58	EQ112P–58
88	Nameplate	04355111	04355426
89	Nameplate Screw (4)	EQ106S–322	EQ106S–322
90	Two Speed Trigger Label	180PQ–68	180PQ–68
91	Oil Daily Label	500P–69	500P–69
92	Warning Label		
	for models ending in –EU	EU–99	EU–99
	for all others models	WARNING–2–99	WARNING–2–99
*	Hex Wrench		
	2.0 mm	04355012	04355012
	5.0 mm	04352258	04352258
*	Repair Fixture	04355178	04355178
*	Fluid Replacement Kit	EQ106S–K400	EQ106S–K400
	Replacement Fluid (4 oz.)	EQ106S–400–1	EQ106S–400–1
*	Replacement Fluid (1 gal.)	EQ106S–BF400–1	EQ106S–BF400–1
*	Tool Kit (includes all the specialized tooling required to repair these tools and consists of a Spanner Plug, Threaded Tee Wrench, O–ring Installer and a pressing fixture that has a Disassembly Arbor and Pressing Sleeve)	700A–99	1900P–99
*	Motor Tune–up Kit (includes illustrated items 32, 34, 35, 39, 44 and 46)	1100PS4–K500	—

* Not illustrated.

⚠ WARNING

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

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.

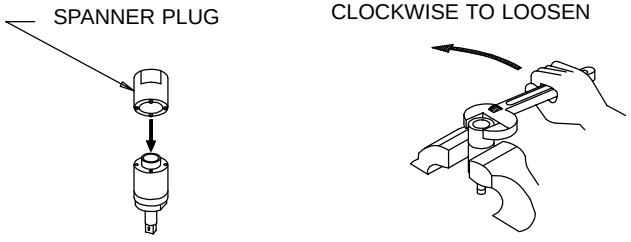
DISASSEMBLY

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.

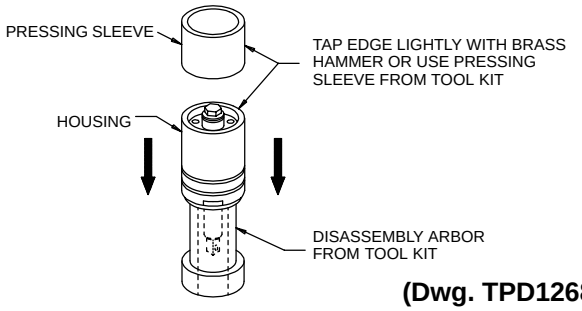
Disassembly of the Impulse Mechanism

1. Use a hooked wire to pull the Retaining Pin Spring (69) out of the end of the Drive Shaft (67) and remove the Socket Retaining Pin (68).
2. Using a hex wrench, remove the three Hammer Case Cap Screws (86) and Lock Washers (87). Lift the Hammer Case (83) off the Motor Housing (1) over the Drive Shaft. Remove the Hammer Case Gasket (81).
3. Lift the assembled mechanism off the Rotor (43).
4. Grasp the flats of the Housing (48) in vise jaws with the output end of the Drive Shaft downward.
5. Insert the pins of the Spanner Plug (Part No. 04355178) into two holes in the Housing Cap (50). Using a wrench on the plug, unscrew and remove the Housing Cap from the Housing. (Refer to Dwg. TPD1267).



(Dwg. TPD1267)

6. 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)

NOTICE

In the following step, do not remove or turn the Shut–off Adjustment Screw (73) located in the Front Liner Cover (72). It is the Screw with the paint in the wrench opening.

7. Disassemble the components of the mechanism in the sequence shown in Drawing TPA1480 on Page 13.

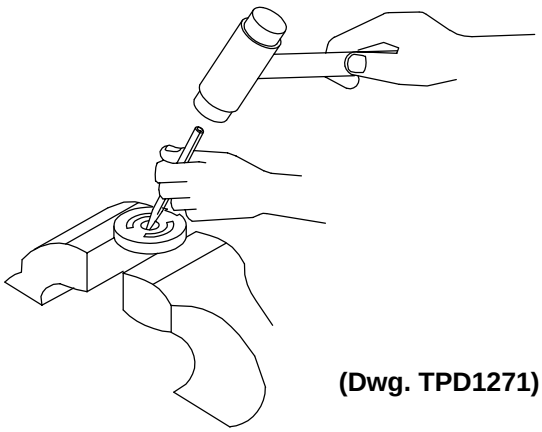
Disassembly of the Motor

1. Grasp the Motor Housing (1) in vise jaws with the Backcap (23) upward.
2. Using a hex wrench, remove the three Backcap Screws (36) and Lock Washers (37).
3. Lifting straight upward, remove the Backcap and assembled shut–off mechanism from the Motor Housing and also the Backcap Gasket (35). Set the assembled Backcap aside.
4. Remove the Housing from the vise jaws and insert a rod into the central opening in the output end of the rotor shaft.
5. While holding the motor end of the Housing above a piece of cardboard on the workbench, lightly tap the rod to remove the Rear End Plate Assembly (38), Rotor (43) and Vanes (44).
6. On the table of an arbor press, support the Rear End Plate with blocks as close to the Rotor as possible and press the Rotor out of the Rear End Plate and Rear Rotor Bearing (39).

NOTICE

In the following two steps, do not enlarge or damage the shaft hole in the End Plate.

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 longer drift punch through the Cylinder (41), tap the Front Rotor Bearing (46) out of the Front End Plate Assembly (45) in the same manner.
9. The Cylinder and Front End Plate are a shrink fit in the Motor Housing and parts that can be damaged during the heating process must be removed before heating the Housing.
10. Press the Reverse Lever Retaining Pin (21) out of the Reverse Lever (19) and pull the lever off the shaft of the Reverse Valve (15).
11. Using snap ring pliers, remove the Reverse Valve Retainer (18).
12. Grasp the shaft of the Reverse Valve with pliers, and pull the Reverse Valve, Reverse Valve Detent Ball (17) and Detent Spring (16) out of the Reverse Valve Bushing (14). Be careful not to lose the Ball and Spring.
13. Using a pin punch, tap the Throttle Retaining Pin (13) out of the Handle.
14. Grasp the Trigger (11) and pull the assembled throttle out of the Motor Housing.
15. Using a pin punch and without damaging the Trigger, remove the Trigger Pin (12).
16. Slide the Throttle Bushing Assembly (4) off the shaft of the Throttle Rod Assembly (8).
17. Using a thin blade screwdriver, remove the Valve Retaining Ring (10) and slide the Throttle Valve Assembly (6) off the shaft of the Throttle Valve Rod.
18. Using an adjustable wrench, unscrew and remove the Inlet Bushing (2) and Exhaust Deflector Assembly (22).
19. Insert a threaded rod through the Cylinder and Front End Plate and install a nut and washer on the end plate end of the rod. Position the Rear End Plate on the threaded rod against the Cylinder and clamp the End Plates and Cylinder snug with another nut and washer. Do not tighten the assembly excessively.

CAUTION

In the following step, take all precautions necessary to prevent being burned by handling warm or hot parts.

20. Using a heat induction coil or an oven, heat the assembly and Housing until it is warm enough to pull the assembly out the rear of the Motor Housing. Do not apply enough heat to distort the Housing.
21. To disassemble the shut–off mechanism, grasp the Backcap in copper–covered vise jaws with the Control Shaft Assembly (33) upward.
22. Using a spanner wrench, unscrew the Control Bushing Assembly (29) and carefully separate the components. Be doubly careful not to lose the three Control Bushing Balls (31) from the shaft of the Control Bushing.

ASSEMBLY

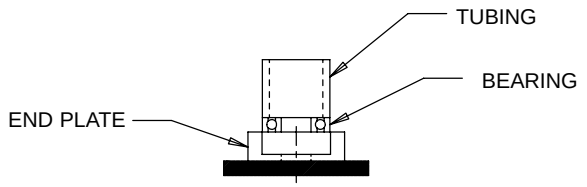
General Instructions

1. 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.
2. Always press on the inner ring of a ball–type bearing when installing the bearing on a shaft.
3. Always press on the outer ring of a ball–type bearing when pressing the bearing into a bearing recess.
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

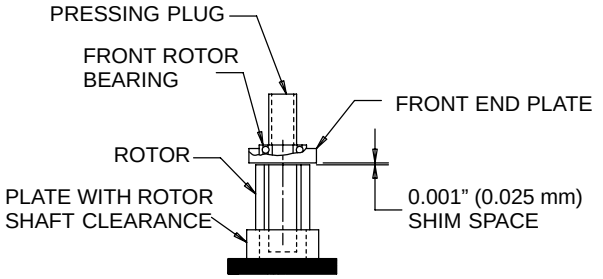
1. If the shut–off mechanism was disassembled, install the Control Shaft Seal (34) into the groove on the Control Shaft (33).
2. Insert the Control Shaft Spring (32) into the central opening at the large end of the Control Bushing (29) and insert the assembled Shaft, Seal end leading, into the opening. The end of the Shaft must be encircled by the Spring and the long groove must align with the three crossholes for the Control Bushing Balls (31).
3. Coat the Control Bushing Balls with Ingersoll–Rand No. 67 Grease and insert them into the crosshole openings.
4. Install the Control Valve Seal (28) on the Control Valve (27) and place the Control Plate (26), large open end leading, over the shaft of the Control Bushing.

5. Install the Backcap Front Spring (25) and the Control Valve Assembly, seal end leading, over the shaft of the Control Bushing. Install the Control Bushing Seal in annular groove around the bushing shaft.
6. Fit the Backcap Rear Spring (24) against the Control Valve and thread the entire assembly, spring end leading, into the Backcap (23). Using a spanner wrench, tighten the Control Bushing in the Backcap.
7. Using an arbor press and a piece of tubing that contacts the outer ring of the bearings, press the Front Rotor Bearing (46) into the Front End Plate (45) and the Rear Rotor Bearing (39) into the Rear End Plate (38). (Refer to Dwg. TPD1274.)



(Dwg. TPD1274)

8. Stand the Rotor (43) 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 upward.
9. 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 Front Rotor Bearing and Front End Plate, End Plate leading, onto the shaft of the Rotor until the End Plate contacts the shim. Remove the shim. (Refer to Dwg. TPD1275.)



(Dwg. TPD1275)

10. Coat each Vane (44) 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.
11. **For Model 1100PS4,** install the Cylinder (41) over the Vanes and Rotor making certain the End Plate Alignment Dowel (46) enters the notch in the end face of the Cylinder.
    For Model 1900PS4, install the Cylinder Assembly (41) over the Vanes and Rotor making certain the Cylinder Alignment Pin (42) enters the hole in the face of the Front End Plate.
12. Stand the assembly on an arbor press table so that the rotor shaft on the front end plate end contacts the table. Press the Rear End Plate Assembly, bearing end trailing, onto the rotor shaft against the Cylinder.
    For Model 1100PS4, make certain the End Plate Alignment Dowel (40) enters the notch in the end face of the Cylinder.
    For Model 1900PS4, make certain the Cylinder Alignment Pin (42) enters the notch in the end face of the Cylinder.
13. Stand the assembly on a table with the Front End Plate Assembly upward.

CAUTION

In the following step, take all precautions necessary to prevent being burned by handling warm or hot parts.

14. Using an induction coil or oven, heat the Motor Housing (1) until the motor opening is large enough to be placed over the Cylinder. At that time, install the Housing over the Cylinder and Front End Plate making sure the radial End Plate Alignment Pin in the Rear End Plate enters the notch in the Motor Housing.
15. Allow the assembly to cool and install the Backcap Gasket (35) and the assembled Backcap (23).
16. Secure the Backcap to the Housing by installing the three Backcap Mounting Screws (36) and Lock Washers (37). Tighten each Screw between 45 and 50 in–lb (5.1 and 5.6 Nm) torque.
17. Install the Exhaust Deflector (22) in the bottom of the handle of the Motor Housing and tighten it between 20 and 25 ft–lb (27 and 34 Nm) torque.
18. Thread the Inlet Bushing (2) into the bottom of the handle of the Motor Housing (1) and tighten it between 30 and 35 ft–lb (40 and 47 Nm) torque.
19. Install the Throttle Rod Seal (9) in the groove on the large hub of the Throttle Rod (8).
20. Install the Throttle Valve Seal (7) in the groove on the large hub of the Throttle Valve (6).
21. Slide the Throttle Valve, Valve Seal end first, onto the Throttle Valve Rod.
22. Secure the Throttle Valve Assembly by installing the Valve Retaining Ring (10) in the small groove on the Throttle Valve Rod.
23. Install the three Throttle Bushing Seals (5) in the grooves on the Throttle Bushing (4).
24. Slide the Throttle Bushing Assembly onto the shaft of the Throttle Valve Rod and position the Trigger (11) on the same shaft. Install the Trigger Pin (12).

25. Insert the assembled Trigger into the Housing. Make certain the widest end of the Trigger is nearest the motor bore and the narrowest portion of the Throttle Valve aligns with hole for the Throttle Retaining Pin (13). Install the Pin making certain it captures the Throttle Valve and secures the assembled Trigger.
26. Align the detent hole in the Reverse Valve (15) with the hole inside the Reverse Valve Bushing (14) and slide the Valve into the Bushing until almost reaching the detent hole. Insert the Reverse Valve Detent Spring (16) and Reverse Valve Detent Ball (17) into the hole and while compressing the Spring with the Ball, slide the Valve completely into the Bushing.
27. Using snap ring pliers, install the Reverse Valve Retainer (18).
28. Slide the Reverse Lever (19) onto the Reverse Valve, making certain the Reverse Lever Alignment Pin (21) enters the notch on the face of the Reverse Valve Bushing. Secure the Lever to the Valve by inserting the Reverse Lever Retaining Pin (20).

Assembly of the Impulse Mechanism

1. Insert the long shaft of the Piston Stop (59) into the central opening of the O–ring Installer furnished with the Tool Kit (Part No. 700A–99 or 1900P–99). Place the Piston Stop Seal (60) on the tapered end of the Installer and roll the Seal up the taper and into the groove on the large body of the Piston Stop. Install the Check Valve Front Seal (62) and Check Valve Rear Seal (63) on the Check Valve (61).
2. When looking inside the central opening of the Liner Assembly (56), the internal wall has three holes on one side which do not extend through the wall. The opening on the end face of that wall is for the Torque Valve Piston (58). Install the Torque Valve Piston, large end trailing, into that opening.
3. Insert the Piston Spring (65) into hole in the end face of the opposite wall. Insert the Check Valve Piston (64), large end trailing, and the Check Valve Ball (66) into the same opening.
4. Thread the Threaded Tee Wrench furnished with the Tool Kit into the end of the Check Valve Assembly and using the Wrench to hold the Assembly, insert the Assembly into the opening against the Ball.
5. Unscrew the Wrench and screw it into the Piston Stop Assembly and using the Wrench to hold the Assembly, insert the Assembly into the opening against the Piston. Mark this opening with a felt marker to indicate that it contains the Torque Valve Piston.
6. Install the Sensor Seal Back–up O–ring (55) followed by the Sensor Seal (54) on one end of the Sensor (53) and insert the assembly, Seal end leading, into the central opening of the Rear Liner Cover (51). Make certain the assembly slides freely in the opening.
7. Install the Rear Liner Cover Seal (52) in the annular groove on the face of the Rear Liner Cover.
8. Install the two Front Liner Cover Piston Seals (79) in the openings on the face of the Front Liner Cover (72).
9. Install the Seal Back–Up Ring (78) followed by the Drive Shaft O–ring (77) in the central opening in the face of the Front Liner Cover.
10. Insert the short round hub of the Drive Shaft (67) into the central opening of the Rear Liner Cover.
11. Insert a Blade (70) into one slot in the Drive Shaft. Install the Blade Springs (71) through the Drive Shaft and into the holes in the Blade. Place the remaining Blade on the Springs making certain the Springs enter the holes in that Blade.
12. Using finger pressure, compress the Springs with the Blades until the outer edges of the Blades are flush with the drive shaft surface. Capture the Blades in this position by installing the Liner Assembly, piston stop end trailing, over the Drive Shaft and against the Rear Liner Cover.

NOTICE

This installation can be accomplished more easily by aligning the compressed Blades with the webs at the narrowest portion of the opening. Keeping the Blades on the web allows them to slide the length of the Liner without interference.

13. Insert the hex end of the Rear Liner Cover into the Disassembly Arbor from the Tool Kit and stand it on a workbench with the Drive Shaft upward.
14. Install the Front Liner Cover Assembly over the Drive Shaft and against the Liner. Make certain the Torque Adjustment Screw (73) aligns with the proper piston stop opening that was marked during assembly.
15. Install the two Liner Cover Seals (49) in the grooves inside the Liner Housing (47) near the end with the external wrench flats.
16. Place the Liner Housing, Seal end trailing, over the assembled Liner. Make certain the notch in the trailing end face of the Housing aligns with the Oil Plug (73) in the Front Liner Cover. Use the Pressing Sleeve from the Tool Kit to press the Housing over the Seals and into position. Do not Damage the Seals during installation.
17. Grasp the flats of the Liner Housing in vise jaws and using the Spanner Plug (part No. 04355178) and a torque wrench, install the Housing Cap, castellated end leading. This is a **left–hand thread**; rotate the wrench **counterclockwise** to tighten the Cap. Tighten the Cap on model 1100PS4 between 137 and 152 ft–lb (186 and 206 Nm) torque and on model 1900PS4 between 173 and 188 ft–lb (235 and 255 Nm) torque.

18. Make certain the Drive Shaft rotates freely and then fill the mechanism with fluid and reassemble the tool as instructed in the section, **CHANGING THE MECHANISM FLUID**.
19. After assembling the tool, check the torque output with a torque tester or pulse counter.
    If the output is not acceptable, adjust the torque output as instructed in the section **TORQUE ADJUSTMENT** on Page 2.
    If the output is acceptable, proceed as follows:
    a. Using a hex wrench, remove the three Hammer Case Cap Screws (86) and Lock Washers (87). Lift the Hammer Case (83) off the Motor Housing (1) over the Drive Shaft. Remove the Hammer Case Gasket (81).
    b. Lift the assembled mechanism off the Rotor (43).
    c. Grasp the flats of the Housing (48) in vise jaws with the output end of the Drive Shaft downward.
    d. Insert the pins of the Spanner Plug from the No. 700A–99 or No. 1900P–99 Tool Kit into two holes in the Housing Cap (50). Using a wrench on the plug, unscrew and remove the Housing Cap from the Housing. This is a **left–hand thread**, rotate the plug **counterclockwise** to loosen the Cap.
    e. Apply thread sealant to the threads of the Cap and using the Spanner Plug furnished with the Tool Kit and a torque wrench, install the Housing Cap, castellated end leading. This is a **left–hand thread**; rotate the wrench **counterclockwise** to tighten the Cap. Tighten the Cap on model 1100PS4 between 137 and 152 ft–lb (186 and 206 Nm) torque and on model 1900PS4 between 173 and 188 ft–lb (235 and 255 Nm) torque.
    f. Position a new Hammer Case Gasket (81) on the Motor Housing and install the assembled mechanism on the rotor shaft.
    g. Place the Hammer Case Cover over the Drive Shaft against the Housing and Gasket. Install the three Hammer Case Cap Screws and Lock Washers. Tighten each Screw between 45 an 50 in–lb (5.1 and 5.6 Nm) torque.

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