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Edition 5
June, 2000

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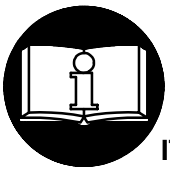
OPERATION AND MAINTENANCE MANUAL FOR MODELS 1100P, 1410P AND 1900P TWIN BLADE IMPULSE WRENCHES

NOTICE

Models 1100P, 1410P and 1900P 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 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.

Printed in Japan

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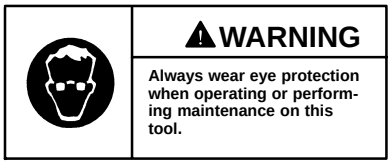
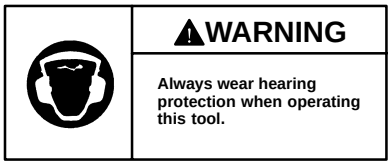
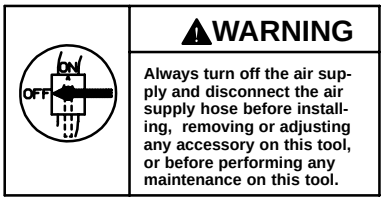
WARNING LABEL IDENTIFICATION

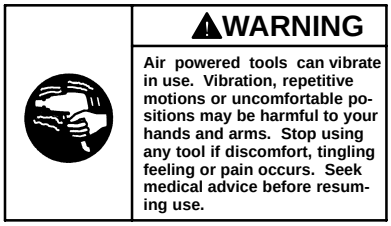
⚠ WARNING

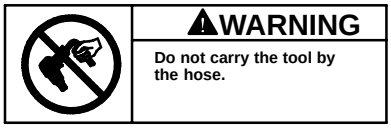
FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

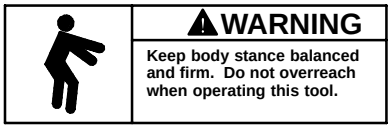


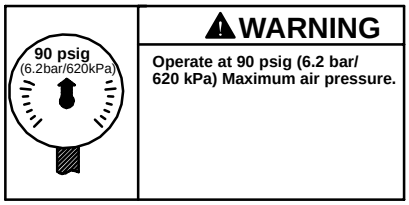












ADJUSTMENTS

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 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

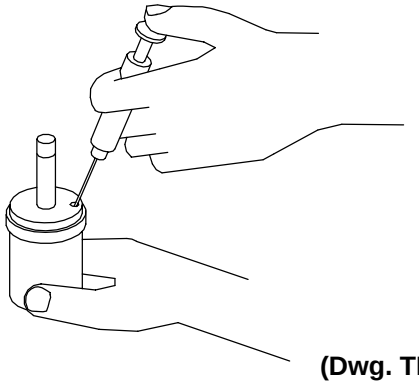
To change the Mechanism Fluid in the Impulse Mechanism, proceed as follows:

1. Remove the Rubber Housing Boot.
2. 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.
3. Lift the assembled mechanism off the Rotor.
4. Using a 2 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.
5. Using a 2.5 mm hex wrench, unscrew and remove the Oil Plug. Remove the Oil Plug Seal and Oil Plug Seal Support.
6. With the oil plug opening downward over a container, rotate the Drive Shaft to purge the fluid from the mechanism.
7. Thread the Tee Wrench included with the Tool Kit (Part No. 700A–99 or 1900P–99) into the Piston Stop Assembly that is 180 degrees from the Torque Adjustment Screw and pull the Stop Assembly toward the output end of the mechanism until it stops.
8. 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 1100P will require 17 cc of fluid; Model 1410P, 23 cc and Model 1900P, 30 cc.
   See 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.

ADJUSTMENTS



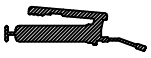
(Dwg. TPD1265)

9. 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.
10. Remove the mechanism from from the fluid and use the Tee Wrench to push the Piston Stop Assembly slowly downward until fluid flows from the fill opening.
11. Thread the Oil Plug with the Oil Plug Seal and Seal Support into the mechanism until it is snug.
12. Using a 2 mm hex wrench, turn the Torque Adjustment Screw clockwise until it stops. This is the maximum torque position.
13. Wipe the outside of the mechanism dry and clean and remove the Oil Chamber Plug. Using the syringe, withdraw 0.85 cc of fluid from 1100P models, 0.85 cc of fluid from 1410P models and 1.20 cc from 1900P models.
14. Install the Oil Chamber Plug and tighten it between 20 and 25 in–lb (2.3 and 2.8 Nm) torque.
15. Position a new Hammer Case Gasket on the Motor Housing and install the assembled mechanism on the rotor shaft.
16. 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.
17. Install the Rubber Housing Boot on the tool.

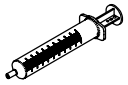
PLACING TOOL IN SERVICE

LUBRICATION

Ingersoll–Rand No. 50



Ingersoll–Rand No. 67

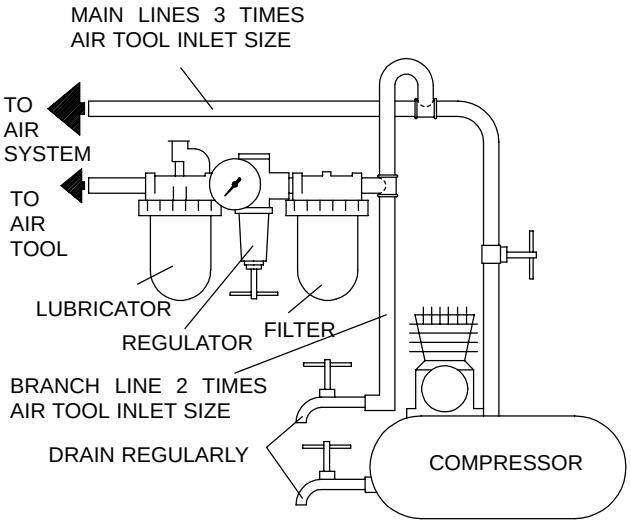


Ingersoll–Rand Fluid Part No. EQ106S–400–1

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

For USA – No. C11–03–G00

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	Free Speed rpm	Recommended Torque Range			
		Soft Draw		Hard Slam	
		ft–lb	Nm	ft–lb	Nm
PISTOL GRIP with 1/2" SQUARE DRIVE					
1100P	5 000	35–60	48–82	60–90	82–122
1410P	6 000	40–70	54–95	71–120	97–163
1900P	5 000	50–85	68–116	86–146	117–199

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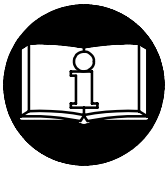
MANUEL D'EXPLOITATION ET D'ENTRETIEN DES CLÉS HYDRO–PNEUMATIQUES À DOUBLE PALETTE MODÈLES 1100P,1410P ET 1900P

NOTE

Les clés hydro–pneumatiques à double palette Modèles 1100P, 1410P et 1900P 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 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 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.

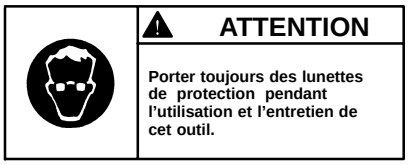
Imprimé au Japon

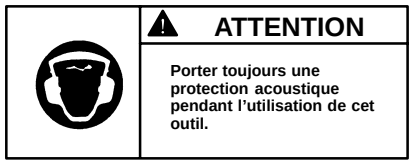
Ingersoll-Rand®

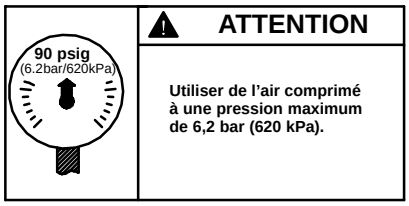
SIGNIFICATION DES ETIQUETTES D'AVERTISSEMENT

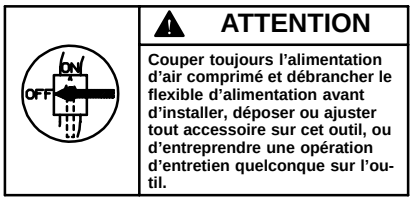
⚠ ATTENTION

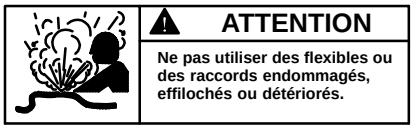
LE NON RESPECT DES AVERTISSEMENTS SUIVANTS PEUT CAUSER DES BLESSURES











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.
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

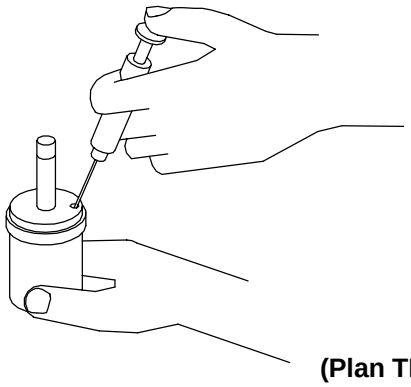
Le fluide du mécanisme d'impulsion est changé de la façon suivante:

1. Déposer la gaine en caoutchouc du corps.
2. A l'aide d'une clé pour six pans creux, retirer les trois vis du carter de marteau et les rondelles frein. Retirer le carter de marteau du corps du moteur sur l'arbre d'entraînement. Enlever la garniture du carter de marteau.
3. Retirer le mécanisme assemblé du rotor.
4. A l'aide d'une clé pour six pans creux de 2 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.
5. A l'aide d'une clé pour six pans creux de 2,5 mm, dévisser et retirer le bouchon d'huile. Enlever le joint du bouchon d'huile et la bague d'appui du joint.
6. 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.
7. Visser la clé en T fournie dans le nécessaire d'outillage (Réf. No. 700A–99 ou 1900P–99) dans la butée de piston qui se trouve à 180° par rapport à la vis de réglage de couple et tirer l'ensemble de butée vers la sortie et le mécanisme jusqu'à ce qu'il s'arrête.
8. 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 1100P nécessite 17 cm^3 de fluide; le Modèle 1410P 23 cm^3 et le Modèle 1900P 30 cm^3. Voir Plan 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.

RÉGLAGES



(Plan TPD1265)

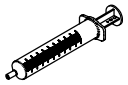
9. Submerger l'ouverture de remplissage dans le reste du fluide et, à l'aide d'une clé, tourner l'arbre d'entraînement pour purger tout l'air du système.
10. Retirer le mécanisme du fluide et, à l'aide de la clé en T, pousser l'ensemble de butée de piston lentement vers le bas jusqu'à ce que le fluide déborde de l'ouverture de remplissage.
11. Visser le bouchon, équipé du joint et de son support, dans le mécanisme et le serrer fermement.
12. A l'aide d'une clé pour six pans creux de 2 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.
13. Essuyer l'extérieur du mécanisme pour le sécher et déposer le bouchon de la chambre d'huile. A l'aide de la seringue, retirer 0,85 cm3 de fluide sur le modèle 1100P, 0,85 cm^3 sur le modèle 14100P et 1,2 cm^3 sur le modèle 1900P.
14. Remonter le bouchon de la chambre d'huile et le serrer à un couple de 2,3 à 2,8 Nm.
15. Placer une nouvelle garniture de carter de marteau sur le corps de moteur et installer le mécanisme assemblé sur l'arbre du rotor.
16. Placer le couvercle de carter de marteau sur l'arbre d'entraînement et contre le corps et la garniture. Monter les trois vis à six pans creux du carter de marteau et les rondelles de frein. Serrer chaque vis à un couple de 5,1 à 5,6 Nm.
17. Monter la gaine en caoutchouc sur l'outil.

MISE EN SERVICE DE L'OUTIL

LUBRIFICATION

Ingersoll–Rand Nº. 50

Ingersoll–Rand Nº. 67

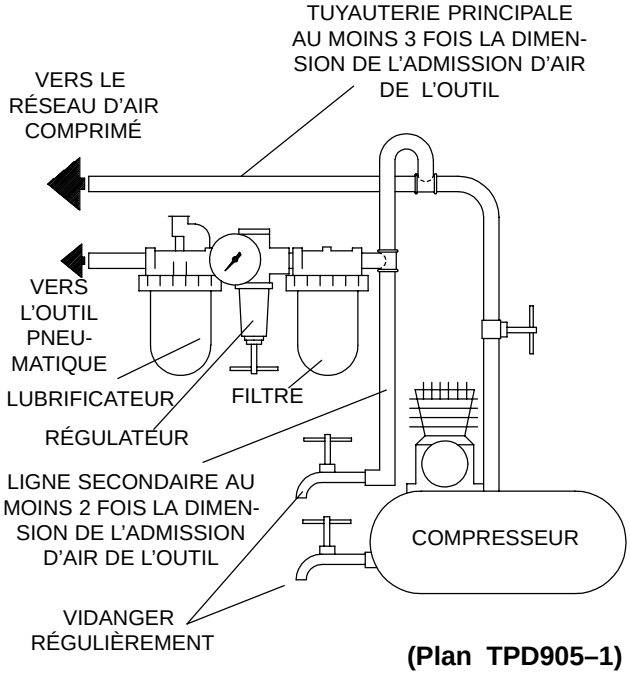


Fluide Ingersoll–Rand Réf. EQ106S–400–1

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

For USA – No. C11–03–G00

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)

SPÉCIFICATIONS

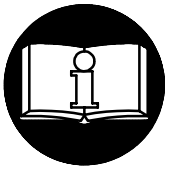
Modèle	Type de poignée	Limiteur/ Entraînement	Vitesse libre	Gamme de couples recommandée	
		pouces		Serrage élastique Nm	Serrage fort Nm
1100P	pistolet	1/2	5 000	48–82	82–122
1410P	pistolet	1/2	6 000	54–95	97–163
1900P	pistolet	1/2	5 000	68–116	117–199

E

MANUAL DE USO Y MANTENIMIENTO PARA LLAVES DE IMPULSO DE DOBLE PALETA MODELOS 1100P, 1410P Y 1900P

NOTA

Las llaves de impulso modelos 1100P, 1410P y 1900P 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.

Impreso en Japón

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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

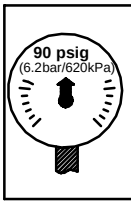
Mantener una postura del cuerpo equilibrada y firme. No estirar demasiado los brazos al manejar la herramienta.

⚠ 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.
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

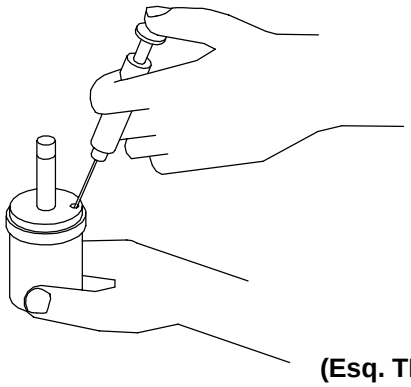
Para cambiar el líquido del mecanismo de impulso, proceda como sigue:

1. Saque la funda de goma de la carcasa.
2. Utilice una llave hexagonal para quitar los tres tornillos y arandelas de la carcasa de la maza. Saque la carcasa de la maza retirándola de la carcasa del motor por encima del eje de accionamiento. Saque la junta de la carcasa de la maza.
3. Retire el mecanismo armado del rotor.
4. Con una llave hexagonal de 2 mm, gire el tornillo de ajuste de par a la derecha hasta el tope. Gire el tornillo hacia la izquierda hasta el tope o seis vueltas completas.
5. Con una llave hexagonal de 2,5 mm, desenrosque y saque el tapón de aceite. Saque el retén del tapón de aceite y su soporte.
6. Con el orificio del tapón de aceite hacia abajo sobre un recipiente, gire el eje de accionamiento para purgar el líquido del mecanismo.
7. Enrosque la llave en “T” provista con el juego de herramientas (pieza nº 700A–99 o 1900P–99) en el tope del pistón, que se encuentra a 180 grados del tornillo de ajuste de par, y tire del tope hacia el extremo de salida del mecanismo hasta que se pare.
8. 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. En el modelo 1100P hay que inyectar 17 cc de líquido; modelo 1410P, 23 cc; modelo 1900P, 30 cc. Véase el Esq. 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.

AJUSTES



(Esq. TPD1265)

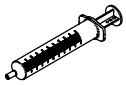
9. Sumerja el orificio de llenado en el resto del líquido y utilice una llave para girar el eje de accionamiento y purgar el aire que pudiera quedar en el sistema.
10. Saque el mecanismo del líquido y utilice la llave en "T" para empujar el tope del pistón lentamente hacia abajo hasta que salga líquido por el orificio de llenado.
11. Enrosque el tapón de aceite, su retén y el soporte de éste en el mecanismo hasta que quede bien ajustado.
12. Con una llave hexagonal de 2 mm, gire el tornillo de ajuste de par hacia la derecha hasta el tope. Ésta es la posición de par máximo.
13. Seque la parte exterior del mecanismo; limpie el tapón de la cámara de aceite y retírelo. Extraiga con la jeringuilla 0,85 cc de líquido de los modelos 1100P, 0,85 cc de los modelos 1410P y 1,2 cc de los modelos 1900P.
14. Coloque el tapón de la cámara de aceite y apriételo a 2,3–2,8 Nm.
15. 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.
16. 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.
17. Instale la funda de goma de la carcasa en la herramienta.

PARA PONER LA HERRAMIENTA EN SERVICIO

LUBRICACIÓN

Ingersoll–Rand Nº. 50

Ingersoll–Rand Nº. 67

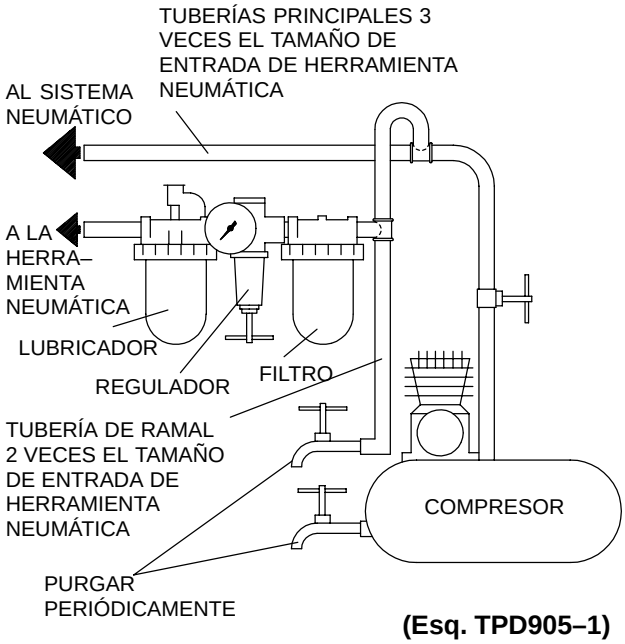


Líquido Ingersoll–Rand Nº. referencia EQ106S–400–1

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

USA – C11–03–G00

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)

ESPECIFICACIONES

Modelo	Tipo de empuñadura	Portapuntas/ cuadradillo	Velocidad en vacío	Gama de par recomendada	
		pulg.		Extracción suave ft–lbs (Nm)	Golpe fuerte ft–lbs (Nm)
1100P	pistola	1/2	5 000	35–60 (48–82)	60–90 (82–122)
1410P	pistola	1/2	6 000	40–70 (54–95)	71–120 (97–163)
1900P	pistola	1/2	5 000	50–85 (68–116)	86–146 (117–199)

P

MANUAL DE FUNCIONAMENTO E MANUTENÇÃO DE LÂMINAS DUPLAS MODELOS 1100P, 1410P E 1900P

AVISO

As Ferramentas Pneumáticas de Impulso Modelos 1100P, 1410P e 1900P 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 ter 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.

Fabricado no Japão

Ingersoll-Rand®

IDENTIFICAÇÃO DO RÓTULO DE ADVERTÊNCIA

⚠ ADVERTÊNCIA

O NÃO CUMPRIMENTO DAS SEGUINTES ADVERTÊNCIAS PODE RESULTAR EM FERIMENTOS.

⚠ ADVERTÊNCIA

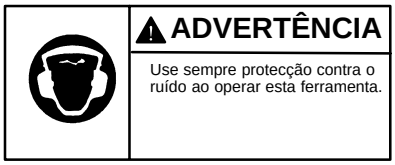
Use sempre óculos de protecção quando estiver operando ou executando algum serviço de manutenção nesta ferramenta.

⚠ ADVERTÊNCIA

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.

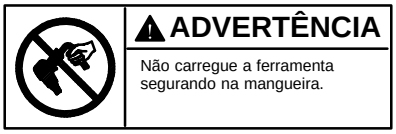
⚠ ADVERTÊNCIA

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.



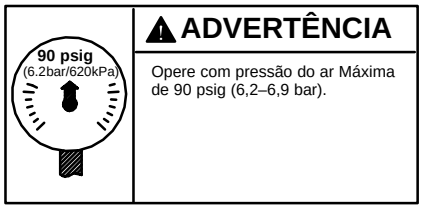
⚠ ADVERTÊNCIA

Use sempre protecção contra o ruído ao operar esta ferramenta.



⚠ ADVERTÊNCIA

Não carregue a ferramenta segurando na mangueira.

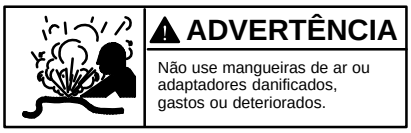


⚠ ADVERTÊNCIA

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

⚠ 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

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

AJUSTES

AJUSTE DE TORQUE

Para ajustar o torque nestas Ferramentas Pneumáticas de Impulso 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 2 mm, gire o Parafuso de Ajuste no sentido horário para aumentar o torque de saída e no sentido contrário ao dos ponteiros do relógio 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 Fluído do Mecanismo no Mecanismo de Impulso, proceda da seguinte maneira:

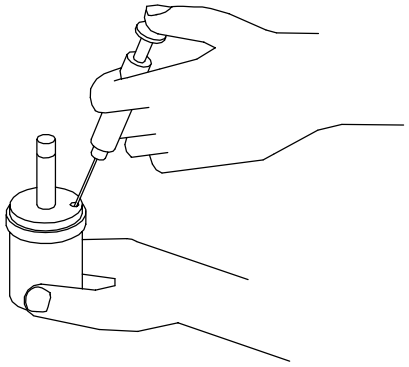
1. Remova o Calço do Corpo de Borracha.
2. Usando uma chave Allen, remova os três Parafusos dos Tampos da Caixa do Martelo e Anilhas de Travamento. Erga a Caixa do Martelo para fora do Corpo do Motor sobre o Eixo de Comando. Remova a Junta da Caixa do Martelo.
3. Erga o mecanismo montado do motor.
4. Usando uma chave Allen de 2 mm gire o Parafuso de Ajuste de Torque no sentido horário até que o Parafuso pare. Gire o Parafuso no sentido contrário ao dos ponteiros do relógio até que ele pare ou complete 6 revoluções.
5. Usando uma chave Allen de 2,5 mm, desparafuse e remova o Bujão de Óleo. Remova o Lacre do Bujão do Óleo e o Suporte do Lacre do Bujão de Óleo.
6. Com a abertura do bujão de óleo para baixo sobre um recipiente, gire o Eixo de Comando para expelir o fluido do mecanismo.
7. Rosqueie a Chave em “T” incluída no Kit de Ferramental (Número 700A–99 ou 1900P–99) no Conjunto de Paragem do Pistão que está a 180 graus do Parafuso de Ajuste de Torque e puxe o Conjunto de Paragem em direção à saída do mecanismo até que ele pare.
8. Usando a seringa e fluído do Kit de Reposição de Fluído (Número de Pedido EQ106S–K400), encha o mecanismo com o fluído fornecido no Kit até que o fluído transborde do orifício de enchimento. O Modelo 1100P necessitará 17 cc de fluído, o Modelo 1410P 23 cc e o Modelo 1900P, 30 cc. Veja o Desenho TPD1265.

AVISO

NÃO SUBSTITUA POR QUALQUER OUTRO FLUÍDO.

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

AJUSTES



(Desenho TPD1265)

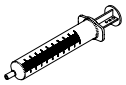
9. A abertura de enchimento deve ser submersa no restante do fluido, e usando uma chave, gire o Eixo do Comando para expelir qualquer ar remanescente do sistema.
10. Remova o mecanismo do fluido e use uma Chave em "T" para empurrar o Conjunto de Paragem do Pistão lentamente para baixo até que o fluido flua da abertura de enchimento.
11. Rosqueie o Bujão de Óleo com o Lacre do Bujão de Óleo no mecanismo até que ele esteja apertado.
12. Usando uma chave Allen de 2 mm gire o Parafuso de Ajuste de Torque no sentido horário até o Parafuso parar. Esta é a posição de máximo torque.
13. Limpe a parte externa do mecanismo a sêco e limpe e remova o Bujão da Câmara de Óleo. Usando uma seringa, retire 0,85 cc de fluído dos modelos 1100P e 0,85 cc dos modelos 1410P e 1,2 cc dos modelos 1900P.
14. 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).
15. Posicione o Gasket da Caixa do Martelo novo no Corpo do Motor e instale o mecanismo montado no eixo do rotor.
16. Coloque a Capa da Caixa do Martelo sobre o Eixo do Comando contra o Corpo e a Junta. Instale os três Parafusos do Tampo da Caixa do Martelo e Anilhas de Trava. Aperte cada Parafuso com um torque de 5,1 e 5,6 Nm (45 e 50 pol–lb).
17. Instale o Calço do Corpo de Borracha na ferramenta.

COLOCANDO A FERRAMENTA EM FUNCIONAMENTO

LUBRIFICAÇÃO

Ingersoll–Rand No. 50

Ingersoll–Rand No. 67

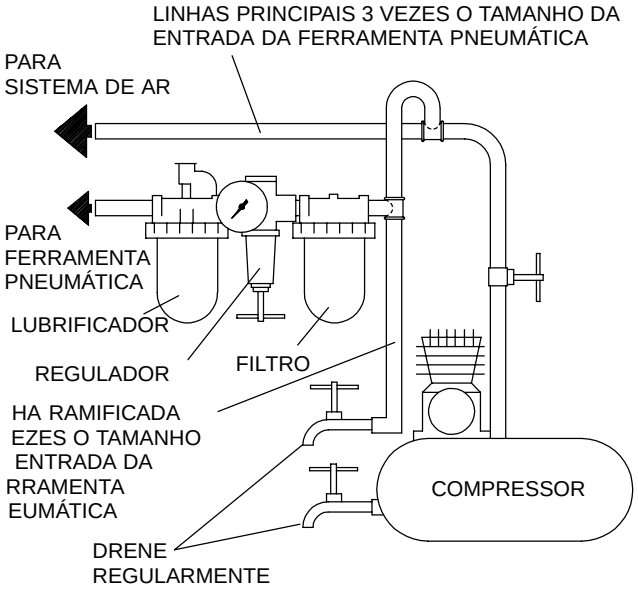


Fluído Ingersoll–Rand Número de Pedido No. EQ106S–400–1

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

USA – C11–03–G00

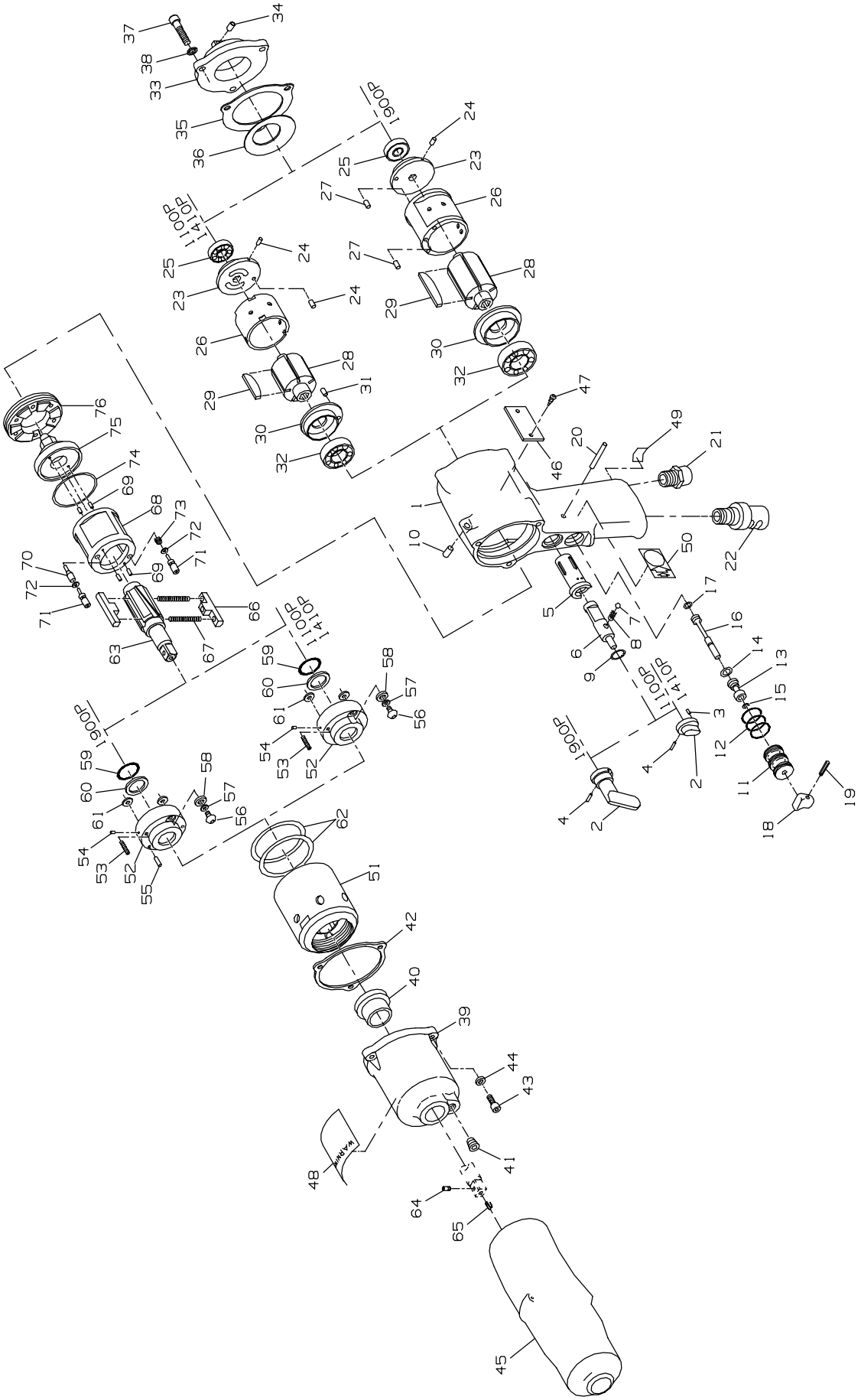
Depois de cada 20 000 ciclos, ou como a experiência indicar, drene e encha o Conjunto do Comando da Unidade de Impulso como instruído neste manual usando o Kit de Reposição de Fluído (Número de Pedido EQ106S–K400). Lubrifique o comando hexagonal e o eixo de saída antes de montar.



(Desenho TPD905–1)

ESPECIFICAÇÕES

Modelo	Tipo de Punho	Encabadouro/ Comando	Velocidade Livre	Intervalo de Torque Recomendado	
		pol.		Apertos Ligeiros Nm (pés–lb)	Batimento Duro Nm (pés–lb)
1100P	pistola	1/2	5 000	48–82 (35–60)	82–122 (60–90)
1410P	pistola	1/2	6 000	54–95 (40–70)	97–163 (71–120)
1900P	pistola	1/2	5 000	68–116 (50–85)	117–199 (86–146)



(Dwg. TPA1346)

PART NUMBER FOR ORDERING

		1100P	1410P	1900P
	Motor Housing Assembly	1100P–A40	1410P–A40	1900P–A40
1	Motor Housing	1100P–40	1410P–40	1900P–40
2	Reverse Lever Assembly	500PQ–A328	1410P–A328	3000P–328
	Reverse Lever	500PQ–328	—	—
3	Reverse Lever Alignment Pin	EQ112P–99	EQ112P–99	—
4	Reverse Lever Retaining Pin	180SQ–152	3000P–152	3000P–152
5	Reverse Valve Bushing	700P–330	1410P–330	1410P–330
6	Reverse Valve	700P–329	1410P–329	1410P–329
7	Reverse Valve Detent Ball	500P–333	500P–333	500P–333
8	Reverse Valve Detent Spring	500PQ–51	1900P–51	1900P–51
9	Reverse Valve Retainer	500PQ–303	1410P–303	1410P–303
10	Suspension Hole Liner	1100P–232	1100P–232	1900P–232
11	Throttle Bushing Assembly	EQ106P–A503	EQ112P–A503	EQ112P–A503
12	Throttle Bushing Seal (3)	EQ106P–283	EQ106P–283	EQ106P–283
13	Throttle Valve Assembly	EQ106P–A304	EQ112P–A304	EQ112P–A304
14	Throttle Valve Seal	EQ106S–159	EQ112P–159	EQ112P–159
15	Valve Retaining Ring	EQ106P–303	EQ106P–303	EQ106P–303
16	Throttle Rod Assembly	EQ106P–A302	EQ112P–A302	EQ112P–A302
17	Throttle Rod Seal	EQ106P–288	EQ106P–288	EQ106P–288
18	Trigger	EQ106P–93	EQ106P–93	EQ106P–93
19	Trigger Pin	EQ106P–265	EQ106P–265	EQ106P–265
20	Throttle Retaining Pin	180PQ–120	180PQ–120	180PQ–120
21	Inlet Bushing	EQ106S–565	EQ106S–565	EQ106S–565
22	Exhaust Deflector	1100P–A23	EQ110P–23	EQ110P–23
	Motor Assembly	1100P–A53	1410P–A53	1900P–A53
	Rear End Plate Assembly	900P–A12	1410P–A12	1900P–A12
23	Rear End Plate Assembly	EQ110P–A12	1410P–B12	1900P–B12
24	End Plate Alignment Dowel (1 for 1900P; 2 for all others)	EQ106P–99	EQ112P–99	EQ104S–299
25	Rear Rotor Bearing	R38P–606	R1AP–97	R1AP–97

PART NUMBER FOR ORDERING

		1100P	1410P	1900P
26	Cylinder Assembly	1100P–3	1410P–3	1900P–A3
27	Cylinder Alignment Pin (2)	—	—	1900P–152
28	Rotor	1100P–53	1410P–53	1900P–53
29	Vane Packet (set of 6 Vanes)	1100P–42–6	1410P–42–6	1900P–42–6
	Front End Plate Assembly	900P–A11	1410P–A11	—
30	Front End Plate Assembly	EQ110P–A11	1410P–B11	1900P–A11
31	End Plate Alignment Dowel	EQ106P–99	EQ112P–99	—
32	Front Rotor Bearing	WFS182–22	R1–24A	1900P–22
33	Motor Case Cover Assembly	900P–A202	1410P–A202	1900P–A202
34	Suspension Hole Liner	EQ106P–366	1100P–232	1900P–232
35	Motor Case Cover Gasket	900P–739	1410P–739	1900P–739
36	Rear End Plate Gasket	900P–740	—	—
37	Motor Case Cover Screw (3)	1100P–638	1410P–638	1900P–638
38	Cover Screw Lock Washer (3)	900P–58	900P–58	EQ112P–58
	Hammer Case Assembly	900P–A727	1410P–A727	1900P–A727
39	Hammer Case	900P–727	1410P–727	1900P–727
40	Hammer Case Bushing	EQ110P–641	EQ110P–641	EQ110P–641
41	Adjustment Hole Plug	500P–95	500P–95	500P–95
42	Hammer Case Gasket	900P–741	1410P–740	1900P–740
43	Hammer Case Cap Screw (3)	1100P–638	1410P–638	1900P–638
44	Cap Screw Lock Washer (3)	900P–58	900P–58	EQ112P–58
45	Rubber Housing Boot	1100P–2	1410P–2	1900P–2
46	Nameplate			
	for models ending in –EU	500P–EU–301	500P–EU–301	500P–EU–301
	for all other models	1100P–301	1410P–301	1900P–301
47	Nameplate Screw (2)	EQ106S–322	EQ106S–322	EQ106S–322
48	Warning Label			
	for models ending in –EU	EU–301	EU–301	EU–301
	for all other models	WARNING–2–99	WARNING–2–99	WARNING–2–99
49	Oil Daily Label	500P–69	500P–69	500P–69
50	Two Speed Trigger Label	180PQ–68	180PQ–68	180PQ–68
*	Motor Tune–up Kit (includes illustrated items 25, 29, 32, 35, 36 and 42)	1100P–K500	—	—
*	Motor Tune–up Kit (includes illustrated items 25, 29, 32, and 35)	—	1410P–K500A	1900P–K500

* Not illustrated.

PART NUMBER FOR ORDERING

		1100P	1410P	1900P
	Impulse Unit Drive Assembly	1100P–A200	1410P–A200	1900P–A200
51	Liner Housing	EQ212P–240	1410P–240	1900P–240
	Front Cover Assembly	900P–A211	1410P–A211	1900P–A211
52	Front Liner Cover Assembly	900P–B211	1410P–B211	1900P–B211
53	Torque Adjustment Screw	EQ212P–230	EQ212P–230	1900P–230
54	Adjustment Screw Lock	900P–288	900P–288	2400P–288
55	Alignment Pin	—	—	1900P–120
56	Oil Plug	EQ106S–277	EQ106S–277	EQ230P–277
57	Oil Plug Seal	EQ106S–228	EQ106S–228	EQ208S–238
58	Oil Plug Seal Support	EQ106S–229	EQ106S–229	EQ230P–229
59	Drive Shaft O–ring	EQ110P–271	EQ110P–271	EQ110P–271
60	Seal Back–Up Ring	EQ110P–272	EQ110P–272	EQ110P–272
61	Front Liner Cover Piston Seal (2)	EQ212P–238	EQ208S–238	2400P–237
62	Liner Housing Seal (2)	EQ212P–236	1410P–236	1900P–238
	Drive Shaft Assembly	900P–A626	1410P–A626	1900P–A626
63	Drive Shaft	900P–626	1410P–626	1900P–626
64	Socket Retaining Pin	804–716	804–716	804–716
65	Retaining Pin Spring	5UHD–718	5UHD–718	5UHD–718
66	Drive Shaft Blade (2)	EQ212P–220	1410P–220	1900P–220
67	Blade Spring (2)	EQ212P–219	1410P–219	1900P–219
68	Liner Assembly	900P–A203	1410P–A203	1900P–A203
69	Liner Alignment Pin (4)	EQ212P–298	EQ212P–298	1900P–298
70	Torque Valve Piston	1100P–222	1410P–222	1900P–222
71	Piston Stop Assembly (2)	EQ212P–A255	1410P–A255	1900P–A255
	Piston Stop	—	—	1900P–255
72	Piston Stop Seal (2)	EQ110P–288	EQ110P–288	EQ104S–288
73	Piston Stop Assist Spring	1410P–219	1410P–219	1900P–219
74	Rear Liner Cover Seal	EQ212P–237	1410P–228	2400P–238
75	Rear Liner Cover	EQ212P–212	1410P–212	1900P–212
76	Housing Cap	EQ110P–207	1410P–207	EQ112P–207
*	Fluid Replacement Kit	EQ106S–K400	EQ106S–K400	EQ106S–K400
*	Repalcement Fluid (4 oz.)	EQ106S–400–1	EQ106S–400–1	EQ106S–400–1
*	Mechanism Tune–up Kit (includes illustrated items 42, 57, 58, 59, 60, 61 [2], 62 [2], 64, 65, 67 [2], 72 [2] and 74)	900P–K600A	1410P–K600A	1900P–K600A
*	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	700A–99	1900P–99

* 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.

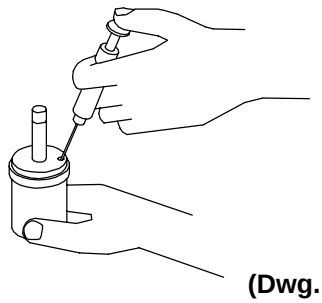
— CHANGING THE MECHANISM FLUID—

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

1. Remove the Rubber Housing Boot (45).
2. Using a hex wrench, remove the three Hammer Case Cap Screws (43) and Lock Washers (44). Lift the Hammer Case (39) off the Motor Housing (1) over the Drive Shaft. Remove the Hammer Case Gasket (42).
3. Lift the assembled mechanism off the Rotor (28).
4. Using a 2 mm hex wrench, rotate the Torque Adjustment Screw (53) clockwise until the Screw stops. Rotate the Screw counterclockwise until it stops or makes six complete revolutions.
5. Using a 2.5 mm hex wrench, unscrew and remove the Oil Plug (56). Remove the Oil Plug Seal (57) and Oil Plug Seal Support (58).
6. With the oil plug opening downward over a container, rotate the Drive Shaft to purge the fluid from the mechanism.
7. Thread the Tee Wrench included with the Tool Kit (Part No. 700A–99 or 1900P–99) into the Piston Stop Assembly (71) that is 180 degrees from the Torque Adjustment Screw and pull the Stop Assembly toward the output end of the mechanism until it stops.
8. 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 1100P will require 17 cc of fluid; Model 1410P, 23 cc and Model 1900P, 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)

9. 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.
10. Remove the mechanism from from the fluid and use the Tee Wrench to push the Piston Stop Assembly slowly downward until fluid flows from the fill opening.
11. Thread the Oil Plug with the Oil Plug Seal and Seal Support into the mechanism until it is snug.
12. Using a 2 mm hex wrench, turn the Torque Adjustment Screw clockwise until it stops. This is the maximum torque position.
13. Wipe the outside of the mechanism dry and clean and remove the Oil Chamber Plug. Using the syringe, withdraw 0.85 cc of fluid from 1100P models, 0.85 cc of fluid from 1410P models and 1.2 cc from 1900P models.
14. Install the Oil Chamber Plug and tighten it between 20 and 25 in–lb (2.3 and 2.8 Nm) torque.
15. Position a new Hammer Case Gasket on the Motor Housing and install the assembled mechanism on the rotor shaft.
16. 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.
17. Install the Rubber Housing Boot on the tool.

DISASSEMBLY

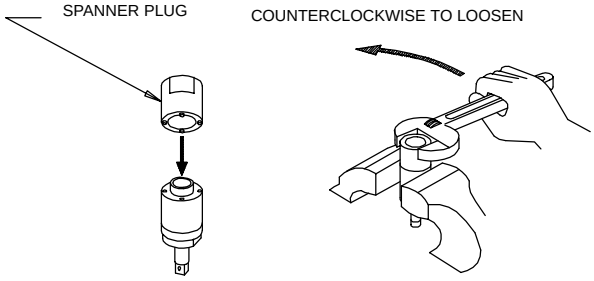
General Instructions

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

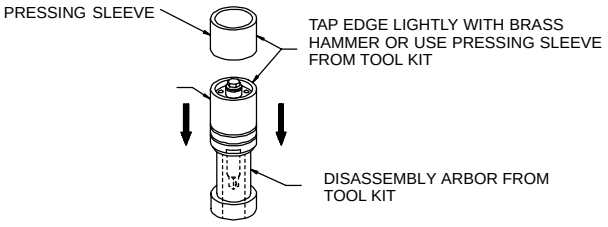
1. Use a hooked wire to pull the Retaining Pin Spring (65) out of the end of the Drive Shaft (63) and remove the Socket Retaining Pin (64).
2. Remove the Rubber Housing Boot (45).
3. Using a hex wrench, remove the three Hammer Case Cap Screws (43) and Lock Washers (44). Lift the Hammer Case (39) off the Motor Housing (1) over the Drive Shaft. Remove the Hammer Case Gasket (42).
4. Lift the assembled mechanism off the Rotor (28).
5. Grasp the flats of the Housing (51) in vise jaws with the output end of the Drive Shaft downward.

6. 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 (76). Using a wrench on the plug, unscrew and remove the Housing Cap from the Housing. (Refer to Dwg. TPD1267).



(Dwg. TPD1267)

7. 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)

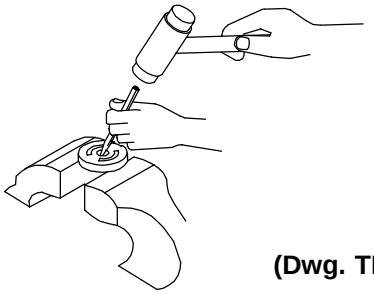
8. Disassemble the components of the mechanism in the sequence shown in Drawing TPA1346 on Page 13.

Disassembly of the Motor

1. Grasp the Motor Housing (1) in vise jaws with the Motor Case Cover Assembly (33) upward.
2. Using a hex wrench, remove the three Motor Case Cover Screws (37) and Lock Washers (38).
3. Remove the Cover and Motor Case Cover Gasket (35) from the Motor Housing and also the Rear End Plate Gasket (36) on 1100P models.
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 (23), Rotor (28) and Vanes (29).
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 (25).
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).

NOTICE

Do not enlarge or damage the shaft hole in the End Plate.



(Dwg. TPD1271)

8. Using a longer drift punch through the Cylinder (26), tap the Front Rotor Bearing (32) out of the Front End Plate Assembly (30) in the same manner.

NOTICE

Do not enlarge or damage the shaft hole in the End Plate.

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 Pin (4) out of the Reverse Lever (2) and pull the lever off the shaft of the Reverse Valve (6).
11. Using snap ring pliers, remove the Reverse Valve Retainer (9).
12. Grasp the shaft of the Reverse Valve with pliers, and pull the Reverse Valve, Reverse Valve Detent Ball (7) and Detent Spring (8) out of the Reverse Valve Bushing (5). Be careful not to lose the Ball and Spring.
13. Using a pin punch, tap the Throttle Retaining Pin (20) out of the Handle.
14. Grasp the Trigger (18) and pull the assembled throttle out of the Motor Housing.
15. Using a pin punch and without damaging the Trigger, remove the Trigger Pin (19).

16. Slide the Throttle Bushing Assembly (11) off the shaft of the Throttle Rod Assembly (16).
17. Using a thin blade screwdriver, remove the Valve Retaining Ring (15) and slide the Throttle Valve Assembly (13) off the shaft of the Throttle Valve Rod.
18. Using an adjustable wrench, unscrew and remove the Inlet Bushing (21) 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.
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.

CAUTION

Take all precautions necessary to prevent being burned by handling warm or hot parts.

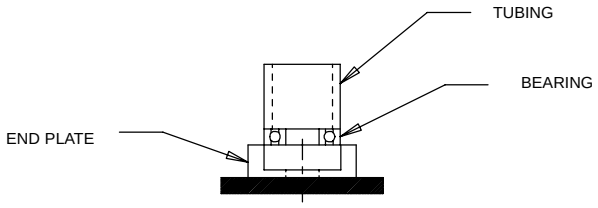
ASSEMBLY

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.

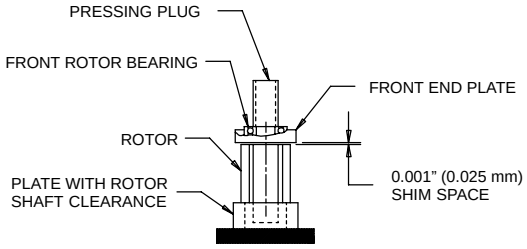
Assembly of the Motor

1. Using an arbor press and a piece of tubing that contacts the outer ring of the bearings, press the Front Rotor Bearing (32) into the Front End Plate (30) and the Rear Rotor Bearing (25) into the Rear End Plate (23). (Refer to Dwg. TPD1274).



(Dwg. TPD1274)

2. Stand the Rotor (28) 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.
3. 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. TPD1276).



(Dwg. TPD1275)

4. Coat each Vane (29) 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.
5. **For Model 1100P or 1410P,** install the Cylinder (26) over the Vanes and Rotor making certain the End Plate Alignment Dowel (31) enters the notch in the end face of the Cylinder.
   For Model 1900P, install the Cylinder Assembly (26) over the Vanes and Rotor making certain the Cylinder Alignment Pin (27) enters the hole in the face of the Front End Plate.
6. 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 1100P or 1410P, make certain the End Plate Alignment Dowel (24) enters the notch in the end face of the Cylinder.
   For Model 1900P, make certain the Cylinder Alignment Pin (27) enters the hole in the end face of the Cylinder.

7. Stand the assembly on a table with the Front End Plate Assembly upward.
8. Using an induction coil or oven, heat the Motor Housing 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 (24) in the Rear End Plate enters the notch in the Motor Housing.

CAUTION

Take all precautions necessary to prevent being burned by handling warm or hot parts.

9. Allow the assembly to cool and install the Rear End Plate Gasket (36) (for 1100P or 1100P–EU models), the Motor Case Cover Gasket (35) and Motor Case Cover (33).
10. Secure the Cover to the Housing by installing the three Motor Case Cover Screws (37) and Lock Washers (38). Tighten each Screw between 45 and 50 in–lb (5.1 and 5.6 Nm) torque.
11. 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.
12. Thread the Inlet Bushing (21) 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.
13. Install the Throttle Rod Seal (17) in the groove on the large hub of the Throttle Rod (16).
14. Install the Throttle Valve Seal (14) in the groove on the large hub of the Throttle Valve (13).
15. Slide the Throttle Valve, Valve Seal end first, onto the Throttle Valve Rod.
16. Secure the Throttle Valve Assembly by installing the Valve Retaining Ring (15) in the small groove on the Throttle Valve Rod.
17. Install the three Throttle Bushing Seals (12) in the grooves on the Throttle Bushing (11).
18. Slide the Throttle Bushing Assembly onto the shaft of the Throttle Valve Rod and position the Trigger (18) on the same shaft. Install the Trigger Pin (19).
19. 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 the hole for the Throttle Retaining Pin (20). Install the Pin making certain it captures the Throttle Valve and secures the assembled Trigger.
20. Align the detent hole in the Reverse Valve (6) with the hole inside the Reverse Valve Bushing (5) and slide the Valve into the Bushing until almost reaching the detent hole. Insert the Reverse Valve Detent Spring (8) and Reverse Valve Detent Ball (7) into the hole and while compressing the Spring with the Ball, slide the Valve completely into the Bushing.
21. Using snap ring pliers, install the Reverse Valve Retainer (9).
22. Slide the Reverse Lever (2) onto the Reverse Valve, making certain the Reverse Lever Alignment Pin (3) or cast lug on 1900P models enters the notch on the face of the Reverse Valve Bushing. Secure the Lever to the Valve by inserting the Reverse Lever Retaining Pin (4).

Assembly of the Impulse Mechanism

1. Insert the long shaft of the Piston Stop (71) into the central opening of the O–ring Installer furnished with the Tool Kit (Part No. 700A–99 or Part No. 1900P–99). Place the Piston Stop Seal (72) 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. Repeat the procedure with the other Piston Stop and Seal.
2. When looking inside the central opening of the Liner Assembly (68), 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 (70). Install the Torque Valve Piston, large end trailing, into that opening.
3. Insert the Piston Stop Assist Spring (73) into hole in the end face of the opposite wall.
4. Thread the Threaded Tee Wrench furnished with the Tool Kit into one of the Piston Stop Assemblies and using the Wrench to hold the Assembly, insert the Assembly into the opening against Piston. Mark this opening with a felt marker to indicate that it contains the Torque Valve Piston.
5. Unscrew the Wrench and in the same manner, install the other Piston Stop Assembly in the hole with the Spring.
6. Install the Rear Liner Cover Seal (74) in the annular groove on the face of the Rear Liner Cover (75).
7. Install the two Front Liner Cover Piston Seals (61) in the openings on the face of the Front Liner Cover.
8. Install the Seal Back–Up Ring (60) followed by the Drive Shaft O–ring (59) in the central opening in the face of the Front Liner Cover.
9. Insert the short round hub of the Drive Shaft (63) into the central opening of the Rear Liner Cover.
10. Insert a Blade (66) into one slot in the Drive Shaft. Install the Blade Springs (67) 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.

11. 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.

12. 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.
13. Install the Front Liner Cover Assembly over the Drive Shaft and against the Liner. Make certain the Torque Adjustment Screw (53) aligns with the proper piston stop opening that was marked during assembly.
14. Install the two Liner Cover Seals (62) in the grooves inside the Liner Housing (51) near the end with the external wrench flats.
15. 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 (56) 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.
16. Grasp the flats of the Liner Housing in vise jaws 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 1100P or 1410P between 137 and 152 ft–lb (186 and 206 Nm) torque and on model 1900P between 173 and 188 ft–lb (235 and 255 Nm) torque.
17. 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.**
18. 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 (43) and Lock Washers (44). Lift the Hammer Case (39) off the Motor Housing (1) over the Drive Shaft. Remove the Hammer Case Gasket (42).
    b. Lift the assembled mechanism off the Rotor (28).
    c. Grasp the flats of the Housing (51) 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 (76). 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 1100P or 1410P between 137 and 152 ft–lb (186 and 206 Nm) torque and on model 1900P between 173 and 188 ft–lb (235 and 255 Nm) torque.
    f. Position a new Hammer Case Gasket (42) 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 and 50 in–lb (5.1 and 5.6 Nm) torque.
    h. Install the Rubber Housing Boot on the tool.

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