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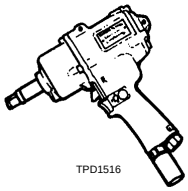
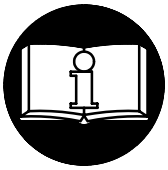


OPERATION AND MAINTENANCE MANUAL FOR MODELS 500P, 500PQ1, 700P AND 900P TWIN BLADE IMPULSE WRENCHES

NOTICE

Models 500P, 500PQ1, 700P and 900P 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.

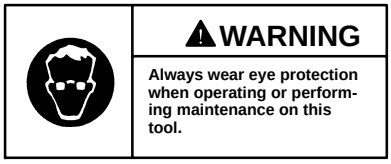
Printed in Japan

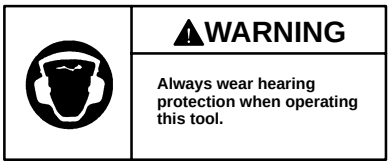
Ingersoll-Rand®

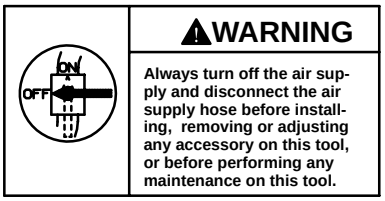
WARNING LABEL IDENTIFICATION

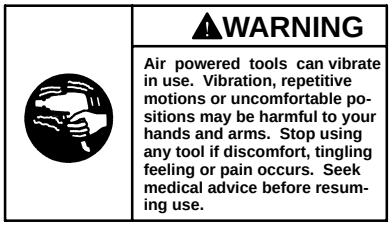
⚠ WARNING

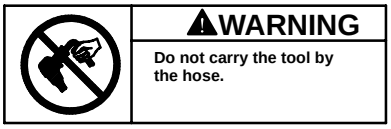
FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

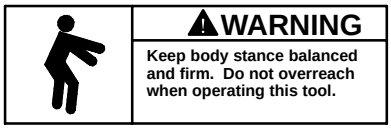


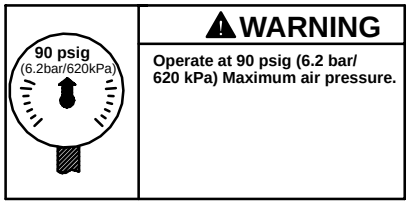












ADJUSTMENTS

TORQUE ADJUSTMENT

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

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

NOTICE

Make all final adjustments at the job.

4. Replace the Adjustment Hole Plug.

CHANGING THE MECHANISM FLUID

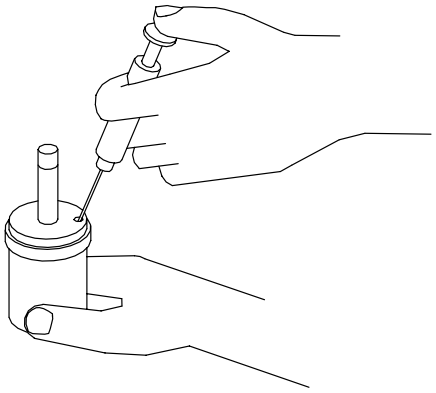
To change the Mechanism Fluid in the Impulse Mechanism, proceed as follows:

1. **For Model 500PQ1,** use a pointed probe to to push the Spring Seat against the Retaining Sleeve Spring. While the Spring is compressed, use another pointed probe or thin blade screwdriver to remove the Retaining Ring. Lift the Spring Seat, Spring and Bit Retaining Sleeve off the Drive Shaft and remove the Bit Retaining Ball.
2. Remove the Rubber Housing Boot.
3. 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.
4. Lift the assembled mechanism off the Rotor.
5. Using a 2 mm hex wrench for 900P models and a 1.5 mm hex wrench for all other models, rotate the Torque Adjustment Screw clockwise until the Screw stops. Rotate the Screw counterclockwise until it stops or makes six complete revolutions.
6. Using a 2.5 mm hex wrench, unscrew and remove the Oil Plug. Remove the Oil Plug Seal and Oil Plug Seal Support.
7. With the oil plug opening downward over a container, rotate the Drive Shaft to purge the fluid from the mechanism.
8. Thread the Tee Wrench included with the Tool Kit (Part No. 700A–99) into the Piston Stop Assembly that it is 180 degrees from the Torque adjustment Screw and pull the Stop Assembly toward the output and of the mechanism until it stops.
9. 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. Models 500P and 500PQ1 will require 9 cc of fluid; Model 700P, 12 cc and Model 900P, 17 cc. See Dwg. TPD1265.

ADJUSTMENTS

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)

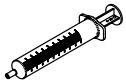
10. Submerge the fill opening in the remainder of the fluid, and using a wrench, rotate the Drive Shaft to purge any remaining air from the system.
11. Remove the mechanism from the fluid and use the Tee Wrench to push the Piston Stop Assembly slowly downward until fluid flows from the fill opening.
12. Thread the Oil Plug with the Oil Plug Seal and Seal Support into the mechanism until it is snug.
13. Using a 2 mm hex wrench on the Model 900P and a 1.5 mm hex wrench on all other models, turn the Torque Adjustment Screw clockwise until it stops. This is the maximum torque position.
14. Wipe the outside of the mechanism dry and clean and remove the Oil Chamber Plug. Using the syringe, withdraw 0.35 cc of fluid from 500P and 500PQ1 models, 0.50 cc of fluid from 700P models and 0.85 cc from 900P models.
15. Install the Oil Chamber Plug and tighten it between 20 and 25 in–lb (2.3 and 2.8 Nm) torque.
16. Position a new Hammer Case Gasket on the Motor Housing and install the assembled mechanism on the rotor shaft.
17. 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.
18. Install the Rubber Housing Boot on the tool.
19. **For Model 500PQ1,** install the Bit Retaining Ball in the hole in the Drive Shaft and capture it by sliding the Bit Retaining Sleeve, small bore first, onto the Drive Shaft.
20. **For Model 500PQ1,** install the Retaining Sleeve Spring and Spring Seat, counterbored end trailing, over the drive shaft hub and into the Sleeve.While compressing the Spring, with a thin blade screwdriver against the Seat, install the Retaining Ring in the annular groove in the hub of the Drive Shaft.

PLACING TOOL IN SERVICE

LUBRICATION

Ingersoll–Rand No. 50

Ingersoll–Rand No. 67

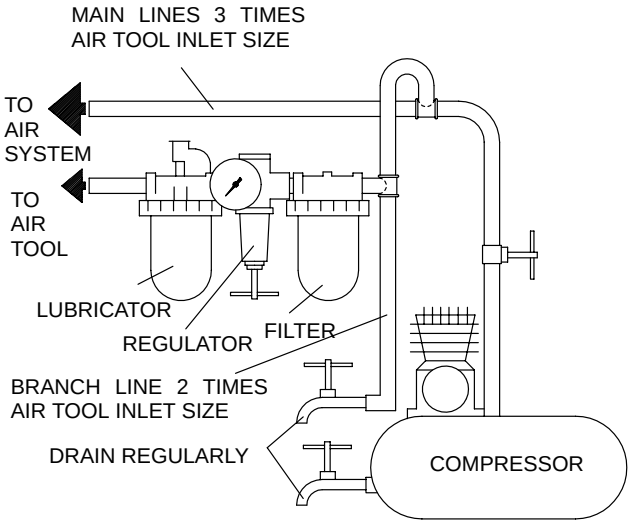


Ingersoll–Rand Fluid Part No. EQ106S–400–1

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

For USA – No. C28–04–FKG0–28

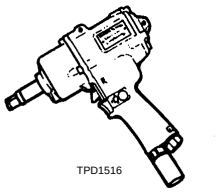
After each 20 000 cycles, or as experience indicates, drain and refill the Impulse Unit Drive Assembly as instructed in this manual using the Fluid Replacement Kit (Part No. EQ106S–K400). Lubricate the hex drive and the output shaft before assembly.



(Dwg. TPD905–1)

HOW TO ORDER AN IMPULSE WRENCH

Model	Free Speed	Recommended Torque			
		Soft Draw		Hard Slam	
		ft–lb	Nm	ft–lb	Nm
PISTOL GRIP with 1/4” INSERT BIT CHUCK					
500PQ1	8,500	18–27	24–37	22–38	30–52
PISTOL GRIP with 3/8” SQUARE DRIVE					
500P	8,500	20–30	27–41	25–43	34–58
700P	8,500	24–43	33–58	34–58	46–79
PISTOL GRIP with 1/2” SQUARE DRIVE					
900P	7,500	30–50	41–68	55–80	75–109



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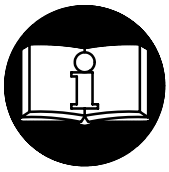
MANUEL D'EXPLOITATION ET D'ENTRETIEN DES CLÉS HYDRO–PNEUMATIQUES À DOUBLE PALETTE MODÈLES 500P, 500PQ1, 700P ET 900P

NOTE

Les clés hydro–pneumatiques à double palette Modèles 500P, 500PQ1, 700P et 900P 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.

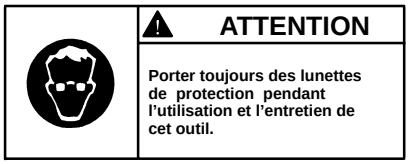
Imprimé au Japon

Ingersoll-Rand®

SIGNIFICATION DES ETIQUETTES D'AVERTISSEMENT

⚠ ATTENTION

LE NON RESPECT DES AVERTISSEMENTS SUIVANTS PEUT CAUSER DES BLESSURES



⚠ ATTENTION

Porter toujours des lunettes de protection pendant l'utilisation et l'entretien de cet outil.

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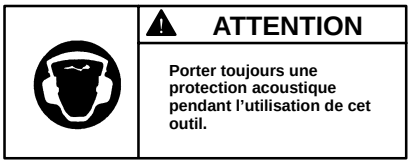
Les outils pneumatiques peuvent vibrer pendant l'exploitation. Les vibrations, les mouvements répétitifs et les positions inconfortables peuvent causer des douleurs dans les mains et les bras. N'utiliser plus d'outils en cas d'inconfort, de picotements ou de douleurs. Consulter un médecin avant de recommencer à utiliser l'outil.

⚠ ATTENTION

Garder une position équilibrée et ferme. Ne pas se pencher trop en avant pendant l'utilisation de cet outil.

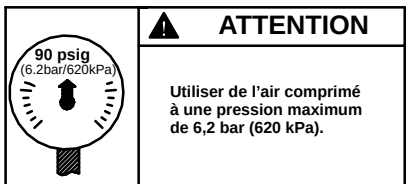


⚠ ATTENTION

Porter toujours une protection acoustique pendant l'utilisation de cet outil.

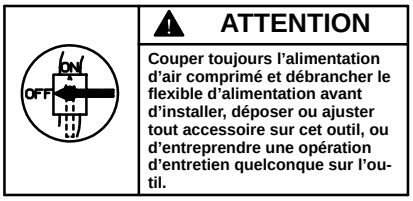
⚠ ATTENTION

Ne pas transporter l'outil par son flexible.



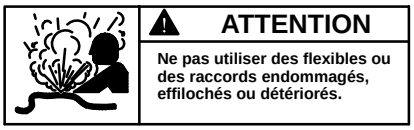
⚠ ATTENTION

Utiliser de l'air comprimé à une pression maximum de 6,2 bar (620 kPa).



⚠ ATTENTION

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.



⚠ ATTENTION

Ne pas utiliser des flexibles ou des raccords endommagés, effilochés ou détériorés.

RÉGLAGES

RÉGLAGE DU COUPLE

Pour ajuster le couple sur ces clés à impulsion bi–lame, procéder comme suit:

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

NOTE

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

4. Remonter le bouchon dans le trou de réglage.

CHANGEMENT DU FLUIDE DU MECANISME

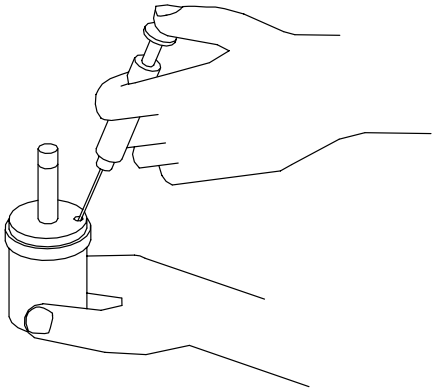
Le fluide du mécanisme d'impulsion est changé de la façon suivante :

1. **Pour le Modèle 500PQ1**, utiliser un outil pointu pour pousser le siège de ressort contre le ressort du manchon de retenue. Lorsque le ressort est comprimé, utiliser un autre outil pointu ou un tournevis à lame fine pour déposer la bague de retenue. Retirer le siège de ressort, le ressort et le manchon de retenue d'embout de l'arbre d'entraînement et retirer la bille de retenue d'embout.
2. Oter la gaine en caoutchouc du corps.
3. A l'aide d'une clé pour six pans creux, déposer 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. Déposer la garniture du carter de marteau.
4. Retirer le mécanisme assemblé du rotor.
5. A l'aide d'une clé pour six pans creux de 2 mm pour le Modèle 900P et de 1,5 mm pour tous les autres modèles, tourner la vis de réglage de couple dans le sens des aiguilles d'une montre jusqu'à ce que la vis s'arrête. Tourner la vis dans le sens inverse des aiguilles d'une montre jusqu'à ce qu'elle vienne en butée, ou effectue six tours complets.
6. A l'aide d'une clé pour six pans creux de 2,5 mm, dévisser et retirer le bouchon d'huile. Retirer le joint du bouchon d'huile et la bague d'appui du joint.
7. 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.
8. Visser la clé en T fournie dans le nécessaire d'outillage (Réf. No. 700A–99) dans la butée de piston qui se trouve à 180º 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.
9. 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. Les Modèles 500P et 500PQ1 nécessitent 9cm^3 de fluide; le Modèle 700P 12cm^3 et le Modèle 900P 17cm^3. Voir Plan TPD1265.

RÉGLAGES

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)

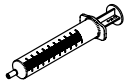
10. Submerger l'ouverture de remplissage dans le reste du fluide et, à l'aide d'une clé, tourner l'arbre d'entraînement pour purger tout l'air du système.
11. Retirer le mécanisme du fluide et, à l'aide de la clé en T, pousser l'ensemble de butée de piston lentement vers le bas jusqu'à ce que le fluide déborde de l'ouverture de remplissage.
12. Visser le bouchon, équipé du joint et de son support, dans le mécanisme et le serrer fermement.
13. A l'aide d'une clé pour six pans creux de 2 mm sur le Modèle 900P et de 1,5 mm sur tous les autres modèles, tourner la vis de réglage de couple à fond dans le sens des aiguilles d'une montre. C'est la position de couple maximum.
14. Essuyer l'extérieur du mécanisme pour le sécher et retirer le bouchon de la chambre d'huile. A l'aide de la seringue, retirer 0,35 cm^3 de fluide sur les modèles 500P et 500PQ1, 0,50 cm^3 sur le modèle 700P et 0,85 cm^3 sur le modèle 900P.
15. Remonter le bouchon de la chambre d'huile et le serrer à un couple de 2,3 à 2,8 Nm.
16. Placer une nouvelle garniture de carter de marteau sur le corps de moteur et installer le mécanisme assemblé sur l'arbre du rotor.
17. 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.
18. Monter la gaine en caoutchouc sur l'outil.
19. **Pour le modèle 500PQ1**, placer la bille de retenue d'embout dans le trou de l'arbre d'entraînement et la retenir en glissant le manchon de retenue, petit alésage en premier, sur l'arbre d'entraînement.
20. **Pour le modèle 500PQ1**, monter le ressort du manchon de retenue et le siège du ressort, côté chambré en arrière, sur le moyeu de l'arbre d'entraînement et dans le manchon. Comprimer le ressort avec un tournevis à lame fine placé sur le siège, et monter la bague de retenue dans la gorge annulaire du moyeu de l'arbre d'entraînement.

MISE EN SERVICE DE L'OUTIL

LUBRIFICATION

Ingersoll–Rand No. 50

Ingersoll–Rand No. 67

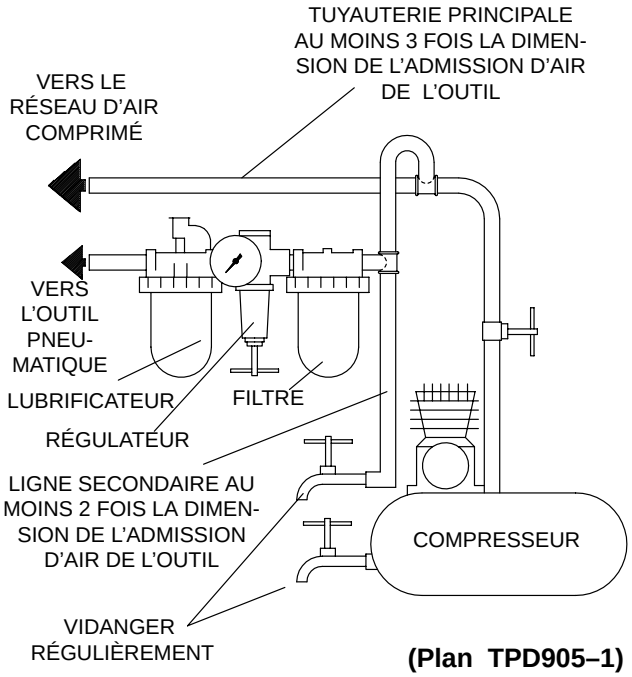


Fluide Ingersoll–Rand Référence EQ106S–400–1

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

Pour É.U. – N^{O}. C28–04–FKG0–28

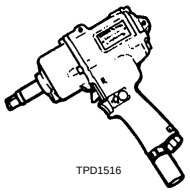
Tous les 20.000 cycles, ou en fonction de l'expérience, vider et remplir l'ensemble de mécanisme d'impulsion conformément aux instructions du manuel en utilisant le nécessaire de fluide de remplacement (Réf. No. EQ106S–K400). Lubrifier l'entraîneur hexagonal et l'arbre de sortie avant l'assemblage.



(Plan TPD905–1)

SPÉCIFICATIONS

Modèle	Poignée à levier	Limiteur/ Entraînement	Vitesse libre	Gamme de couples recommandée	
		pouces		Serrage élastique ft.lbs (Nm)	Serrage fort ft.lbs (Nm
500P	pistolet	3/8” carré	8.500	20–30 (27–41)	25–43 (34–58)
500PQ1	pistolet	1/4” rapide	8.500	18–27 (24–37)	22–38 (30–52)
700P	pistolet	3/8” carré	8.500	24–43 (33–58)	34–58 (46–79)
900P	pistolet	1/2” carré	7.500	30–50 (41–68)	55–80 (75–109)

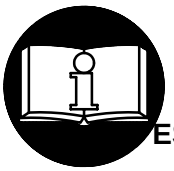


E

MANUAL DE FUNCIONAMENTO E MANUTENÇÃO PARA LLAVES DE IMPULSO DE DOBLE PALETA MODELOS 500P, 500PQ1, 700P Y 900P

NOTA

Las Llaves de Impulso Modelos 500P, 500PQ1, 700P y 900P están diseñadas para operaciones de ensamblaje que requieren alta velocidad de fijación con par consistente y reducida reacción de par.
Ingersoll–Rand no aceptará responsabilidad alguna por la modificación de las herramientas efectuada por el cliente para las aplicaciones que no hayan sido consultadas con Ingersoll–Rand.



⚠ AVISO

**SE ADJUNTA INFORMACIÓN IMPORTANTE DE SEGURIDAD.
LEA ESTE MANUAL ANTES DE 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 seguridad, máximo rendimiento y vida de servicio de las piezas, use esta herramienta a una presión de aire máxima de 90 psig (6,2 bar/620 kPa) en la 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 accesorios dañados, desgastados ni deteriorados.**
- **Asegúrese que todas las mangueras y accesorios sean del tamaño correcto y estén bien apretados. Vea Esq. TPD905–1 para un típico arreglo de tuberías.**
- **Use siempre aire limpio y seco a una máxima presión de 90 psig. El polvo, los gases corrosivos y/o el exceso de humedad podrían 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.**

USO DE LA HERRAMIENTA

- **Use siempre protección ocular cuando maneje, o realice operaciones de mantenimiento en esta herramienta.**
- **Use siempre protección para los oídos cuando maneje esta herramienta.**
- **Mantenga las manos, la ropa suelta y el cabello largo alejados del extremo giratorio de la herramienta.**
- **Anticipe y esté alerta sobre los cambios repentinos en el movimiento durante la puesta en marcha y el manejo de toda herramienta motorizada.**
- **Mantenga una postura de cuerpo equilibrada y firme. No estire demasiado los brazos al manejar la herramienta. Pueden ocurrir reacciones de alto par a, o a menos de, la recomendada presión de aire.**
- **El eje de la herramienta podría seguir girando brevemente después de haber soltado la palanca de estrangulación.**
- **Las herramientas neumáticas pueden vibrar durante el uso. La vibración, repetición o posiciones incómodas pueden dañarle los brazos y manos. En caso de incomodidad, sensación de hormigueo o dolor, deje de usar la herramienta. Consulte a un médico antes de volver a usarla otra vez.**
- **Utilice únicamente los accesorios Ingersoll–Rand recomendados.**
- **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 podría 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 serán realizadas por personal cualificado y autorizado. Consulte con el centro de servicio Ingersoll–Rand autorizado más próximo.

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

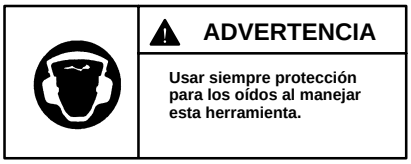
Impreso en Japón

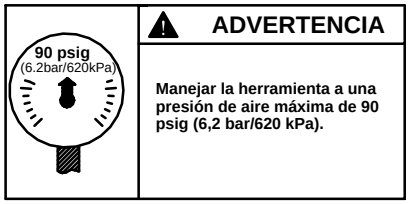
Ingersoll-Rand®

ETIQUETAS DE AVISO

⚠ AVISO

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





AJUSTES

AJUSTE DE PAR

Para ajustar el par de estas Llaves de Impulso de Doble Paleta, proceda como sigue:

1. Saque el Tapón de Orificio de Ajuste.
2. Gire el Eje de Accionamiento hasta que el Tornillo de Ajuste de Par sea visible a través de dicho orificio.
3. Con una llave hexagonal de 1,5 mm, gire el Tornillo de Ajuste en el sentido de las agujas del reloj para incrementar el par, y en sentido contrario a las agujas del reloj para disminuirlo. No gire el Tapón de Aceite.

NOTA

Haga todos los ajustes finales trabajando.

4. Vuelva a poner en su sitio el Tapón de Orificio de Ajuste.

CAMBIO DE FLUIDO DE MECANISMO

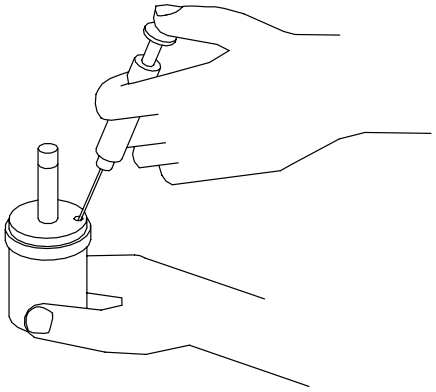
Para cambiar el fluido de mecanismo del mecanismo de impulso, proceda como sigue:

1. **Para el Modelo 500PQ1,** utilizar una varilla puntiaguda para empujar el Asiento de Muelle contra el Muelle de Manga Retenedora. Mientras el muelle está comprimido, use otra varilla puntiaguda o destornillador de hoja fina para sacar el Aro Retenedor. Saque el asiento de muelle, muelle y manga retenedora de broca fuera del eje de accionamiento y saque la bola retenedora de broca.
2. Saque la funda de carcasa de caucho.
3. Utilizando una llave hexagonal, saque los tornillos de casquete de funda de martillo y las arandelas de seguro. Levante la funda de martillo y sáquela de la carcasa de motor por encima del eje de accionamiento. Saque la junta obturadora de funda de carcasa.
4. Levante el mecanismo ensamblado y sáquelo del rotor.
5. Con una llave hexagonal de 2 mm para los modelos 900P y de 1,5 mm para todos los demás modelos, gire el Tornillo de Ajuste de Par en el sentido de las agujas del reloj hasta que se pare. Gire el tornillo en sentido contrario al de las agujas del reloj hasta que se pare o dé seis vueltas completas.
6. Con una llave hexagonal de 2,5 mm, desenrosque y saque el Tapón de Aceite. Saque la Junta de Tapón de Aceite y Soporte de dicha Junta de Tapón de Aceite.
7. Con el orificio de tapón de aceite hacia abajo sobre un contenedor, gire el eje de accionamiento para purgar el líquido del mecanismo.
8. Enrosque la llave en T que se incluye en la caja de herramientas (Pieza Nº 700A–99) en el conjunto de tope de pistón que se encuentra a 180 grados del tornillo de ajuste de par, y tire de dicho conjunto hacia la salida del mecanismo hasta que se pare.
9. Con la jeringuilla y el fluido incluidos en el Equipo de Cambio de Fluido (Pieza Nº. EQ106S–K400, llene el mecanismo con el fluido suministrado en dicho equipo hasta que dicho fluido se salga del orificio de llenado. Los modelos 500P y 500PQ1 requerirán 9 cc de fluido; el modelo 700P requerirá 12 cc, y el modelo 900P 17 cc. Vea Esq. TPD1265.

AJUSTES

NOTA

NO SUSTITUYA CON NINGÚN OTRO FLUIDO. Si no se usa el fluido de mecanismo de impulso suministrado, se podría dañar la herramienta, incrementar su mantenimiento y disminuir su rendimiento. Use solamente fluido limpio en estas herramientas.



(Esq. TPD1265)

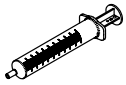
10. Sumerja el orificio de llenado en el resto del fluido y, utilizando una llave, gire el eje de accionamiento para purgar el aire que pudiera quedar en el sistema.
11. Saque el mecanismo del fluido y utilice la llave en T para empujar lentamente el conjunto de tope de pistón hacia abajo hasta que dicho fluido salga del orificio de relleno.
12. Enrosque el Tapón de Aceite con el retén de tapón de aceite y el apoyo de retén en el mecanismo hasta que quede bien ajustado.
13. Con una llave hexagonal de 2 mm para el modelo 900P y de 1,5 mm para todos los demás modelos, gire el Tornillo de Ajuste de Par en el sentido de las agujas del reloj hasta que se pare. Ésta es la posición de máximo par.
14. Limpie la parte de fuera del mecanismo y séquelo, y saque el tapón de la cámara de aceite. Utilizando la jeringuilla, saque 0,35 cc de fluido de los modelos 500P y 500PQ1, 0,50 cc de los modelos 700P y 0,85 cc de los modelos 900P.
15. Instale el Tapón de la cámara de Aceite y apriételo entre 20 y 25 pulg–lb (2,3 a 2,8 Nm) de par.
16. Coloque una junta obturadora de funda de martillo nueva en la carcasa de motor e instale el mecanismo ensamblado en el eje rotor.
17. Coloque la cubierta de funda de martillo sobre el eje de accionamiento y contra la carcasa y la junta obturadora. Instale los tornillos de cabeza de funda de martillo y las arandelas de seguro. Apriete cada tornillo entre 45 y 50 pulg–lb (5,1 a 5,6 Nm) de par.
18. Instale la funda de carcasa de caucho en la herramienta.
19. **Para el modelo 500PQ1,** instale la Bola Retenedora de Broca en el orificio del eje de accionamiento y sujétela deslizando la Manga Retenedora de Broca, con el diámetro pequeño por delante, en el eje de accionamiento.
20. **Para el modelo 500PQ1,** instale el muelle de manga retenedora y asiento de muelle, con el extremo escariado atrás, sobre el buje de eje de accionamiento y dentro de la manga. Mientras se comprime el muelle con un destornillador de hoja fina contra el asiento, instale el anillo retenedor en la ranura anular situada en el buje del eje de accionamiento.

PARA PONER LA HERRAMIENTA EN SERVICIO

LUBRICACIÓN

Ingersoll–Rand Nº 50

Ingersoll Rand No. 67

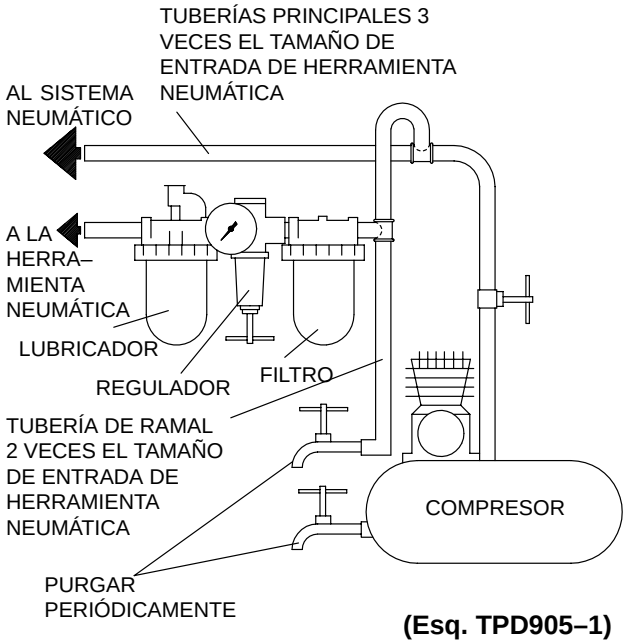


Fluido Ingersoll–Rand Pieza Nº. EQ106S–400–1

Utilice siempre un lubricador de aire comprimido con estas herramientas. Recomendamos la siguiente unidad de Filtro–Lubricador–Regulador:

Para EE.UU. – Nº. C28–04–FKG0–28

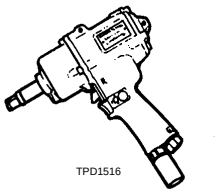
Después de cada 20.000 ciclos,o como indique la experiencia, drene y vuelva a llenar el Conjunto de Accionamiento de Unidad de Impulso tal y como se indica en este manual, usando el equipo de cambio de fluido (Pieza Nº. EQ106S–K400). Lubrique el eje de salida y accionamiento hexagonal antes del montaje.



(Esq. TPD905–1)

ESPECIFICACIONES

Modelo	Tipo de Mango	Portapuntas/ Accionamiento	Velocidad Libre	Gama de par recomendada	
		pulg.		Retroceso Suave ft–lbs (Nm)	Golpe Fuerte ft–lbs (Nm)
500P	pistola	3/8 pulg. cuadradillo	8.500	20–30 (27–41)	25–43 (34–58)
500PQ1	pistola	1/4 Cambio Rápido	8.500	18–27 (24–37)	22–38 (30–52)
700P	pistola	3/8 pulg. cuadradillo	8.500	24–43 (33–58)	34–58 (46–79)
900P	pistola	1/2 pulg. cuadradillo	7.500	30–50 (41–68)	55–80 (75–109)



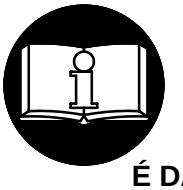
P

MANUAL DE FUNCIONAMENTO E MANUTENÇÃO PARA FERRAMENTAS PNEUMÁTICAS DE IMPULSO DE LÂMINAS DUPLAS MODELOS 500P, 500PQ1, 700P E 900P

AVISO

Ferramentas Pneumáticas De Impulso Modelos 500P, 500PQ1, 700P e 900P 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.

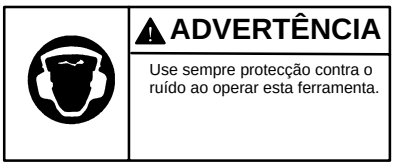
Fabricado no Japão

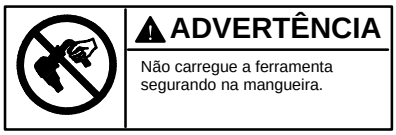
Ingersoll-Rand®

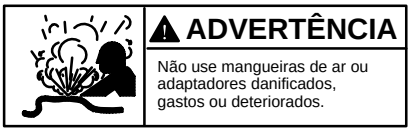
IDENTIFICAÇÃO DO RÓTULO DE ADVERTÊNCIA

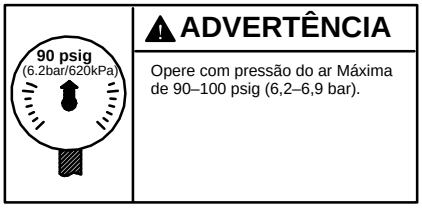
⚠ ADVERTÊNCIA

O NÃO CUMPRIMENTO DAS SEGUINTES ADVERTÊNCIAS PODE RESULTAR EM FERIMENTOS.









AJUSTES

AJUSTE DE TORQUE

Para ajustar o torque nestas Chaves Dinamométricas 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 1,5 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

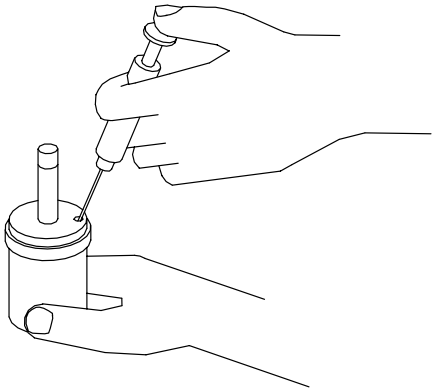
Para mudar o Fluído do Mecanismo no Mecanismo de Impulso, proceda da seguinte maneira:

1. **Para o modelo 500PQ1,** use uma ponta de prova para empurrar o Assento da Mola contra a Mola da Camisa Retentora. Enquanto a Mola for comprimida utilize uma outra ponta de prova ou chave de fenda de lâmina fina para remover o Anel de Retenção. Erga o Assento da Mola, a Mola e a Camisa de Retenção do bite para fora do Eixo de Comando e remova a Esfera de Retenção do Bite.
2. Remova o Calço do Corpo de Borracha.
3. Usando uma chave Allen, remova os três Parafusos dos Tampos da Caixa do Martelo e Anilhas de Trava. Erga a Caixa do Martelo para fora do Corpo do Motor sobre o Eixo de Comando. Remova a Junta da Culatra da Caixa do Martelo.
4. Erga o mecanismo montado do motor.
5. Usando uma chave Allen de 2 mm para os modelos 900P e 1,5 mm para os outros modelos , 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.
6. 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.
7. Com a abertura do bujão de óleo para baixo sobre um recipiente, gire o Eixo de Comando para expelir o fluido do mecanismo.
8. Rosqueie a Chave em “T” incluída no Kit de Ferramenta (Número 700A–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.
9. Usando a seringa e fluido do Kit de Reposição de Fluido (Número de Pedido EQ106S–K400), encha o mecanismo com o fluido fornecido no Kit até que o fluido transborde do orifício de enchimento. Os Modelos 500P e 500PQ1 necessitarão 9 cc de fluído, o Modelo 700P 12 cc e o Modelo 900P, 17 cc. Veja o Desenho TPD1265.

AJUSTES

AVISO

NÃO SUBSTITUA POR QUALQUER OUTRO FLUÍDO.
Caso o fluido fornecido não for usado danos podem ocorrer à ferramenta, aumento da manutenção e diminuição do desempenho. Use somente fluido limpo nestas ferramentas.



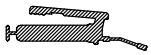
(Desenho TPD1265)

10. 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.
11. 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.
12. Rosqueie o Bujão de Óleo com o Lacre do Bujão de Óleo no mecanismo até que ele esteja apertado.
13. Usando uma chave Allen de 2 mm no Modelo 900EP–EU e de 1,5 mm nos outros modelos, gire o Parafuso de Ajuste de Torque no sentido horário até o Parafuso parar. Esta é a posição de máximo torque.
14. Limpe a parte externa do mecanismo a seco e limpe e remova o Bujão da Câmara de Óleo. Usando uma seringa, retire 0,35 cc de fluído dos modelos 500P e 500PQ1 e 0,50 cc dos modelos 700P e 0,85 cc dos modelos 900P.
15. Instale o Bujão da Câmara de Óleo e aperte–o com um torque de 2,3 a 2,8 Nm (20 a 25 pol–lb).
16. Posicione a Junta da Culatra da Caixa do Martelo nova no Corpo do Motor e instale o mecanismo montado no eixo do rotor.
17. Coloque a Capa da Caixa do Martelo sobre o Eixo de Comando contra o Corpo e o Junta da Culatra. 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).
18. Instale o Calço do Corpo de Borracha na ferramenta
19. **Para o Modelo 500PQ1,** instale a Esfera de Retenção do Bite no orifício no Eixo do Comando e capture–o ao deslizar a Camisa de Retenção do Bite, o diâmetro pequeno primeiro, sobre o Eixo de Comando.
20. **Para o Modelo 500PQ1,** instale a Mola da Camisa de Retenção e o Assento da Mola, extremidade do trilho contrabalnçada, sobre o cubo de roda do eixo de comando e na Camisa. Enquanto comprime a Mola, com uma chave de fenda de lâmina fina contra o Assento, instale o Anel de Retenção no encaixe anular no cubo de roda do Eixo de Comando.

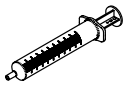
COLOCANDO A FERRAMENTA EM FUNCIONAMENTO

LUBRIFICAÇÃO

Ingersoll–Rand No. 50



Ingersoll–Rand No. 67

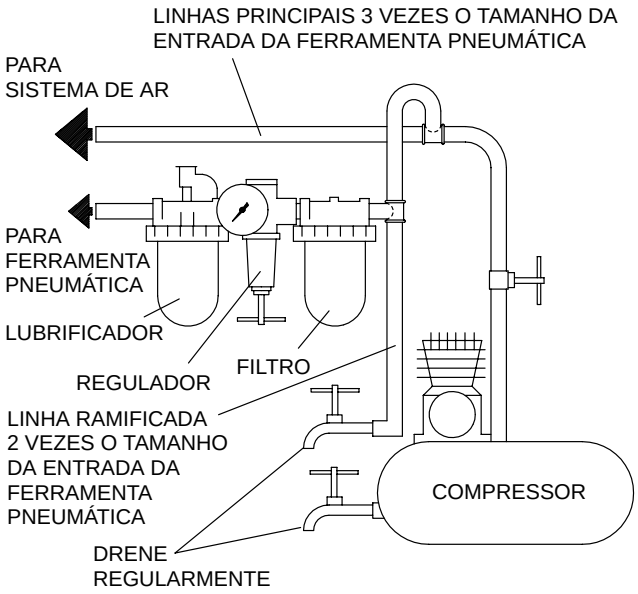


Ingersoll–Rand No. EQ106S–400–1

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

E.U.A.– No. C28–04–FKG0–28

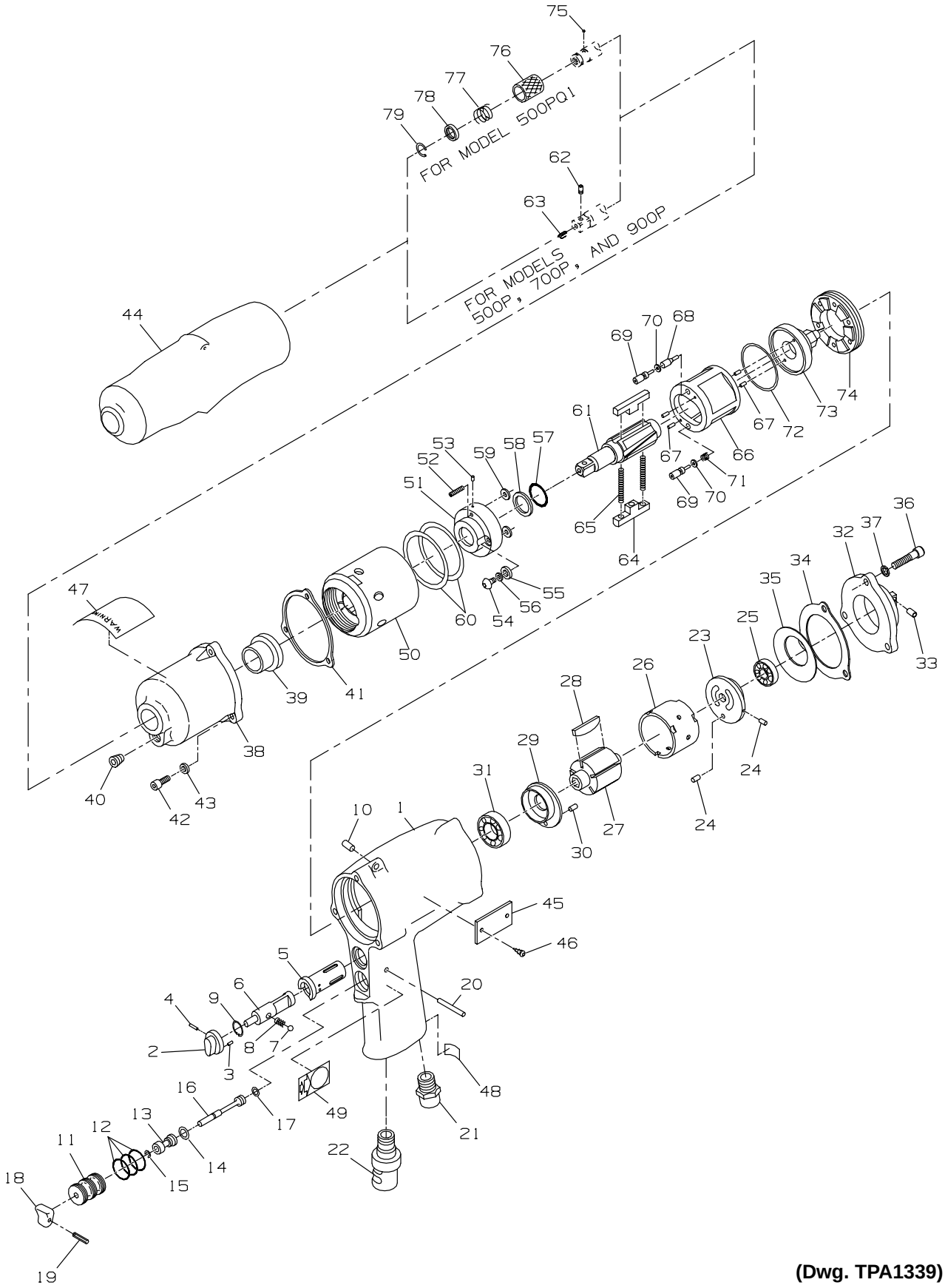
Depois de cada 20.000 ciclos, ou como a experiência indicar, drene e encha o Conjunto do Comando da Unidade de Impulso como instruído neste manual usando o Kit de Reposição de Fluido (Número de Pedido EQ106S–K400). Lubrifique o comando hexagonal e o eixo de saída antes de montar.



(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
500P	pistola	3/8 quadrada	8.500	27–41 (20–30)	34–58 (25–43)
500PQ1	pistola	1/4 Q.C.	8.500	24–37 (18–27)	30–52 (22–38)
700P	pistola	3/8 quadrada	8.500	33–58 (24–43)	46–79 (34–58)
900P	pistola	1/2 quadrada	7.500	41–68 (30–50)	75–109 (55–80)



(Dwg. TPA1339)

PART NUMBER FOR ORDERING

		500P 500PQ1	700P	900P
	Motor Housing Assembly	500PQ–A40	700P–A40	900P–A40
1	Motor Housing	500PQ–40	700P–40	900P–40
	Reverse Lever Assembly	500PQ–A328	500PQ–A328	500PQ–A328
2	Reverse Lever	500PQ–328	500PQ–328	500PQ–328
3	Reverse Lever Alignment Pin	EQ112P–99	EQ112P–99	EQ112P–99
4	Reverse Lever Retaining Pin	180SQ–152	180SQ–152	180SQ–152
5	Reverse Valve Bushing	500PQ–330	700P–330	700P–330
6	Reverse Valve	500PQ–329	700P–329	700P–329
7	Reverse Valve Detent Ball	500P–333	500P–333	500P–333
8	Reverse Valve Detent Spring	500PQ–51	500PQ–51	500PQ–51
9	Reverse Valve Retainer	500PQ–303	500PQ–303	500PQ–303
10	Suspension Hole Liner	EQ106P–366	EQ106P–366	EQ106P–366
11	Throttle Bushing Assembly	EQ106P–A503	EQ106P–A503	EQ106P–A503
12	Throttle Bushing Seal (3)	EQ106P–283	EQ106P–283	EQ106P–283
13	Throttle Valve Assembly	EQ106P–A304	EQ106P–A304	EQ106P–A304
14	Throttle Valve Seal	EQ106S–159	EQ106S–159	EQ106S–159
15	Valve Retaining Ring	EQ106P–303	EQ106P–303	EQ106P–303
16	Throttle Rod Assembly	EQ106P–A302	EQ106P–A302	EQ106P–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	EQ110P–23	EQ110P–23	EQ110P–23
	Motor Assembly	500PQ–A53	700P–A53	900P–A53
	Rear End Plate Assembly	500PQ–A12	700P–A12	900P–A12
23	Rear End Plate Assembly	EQ106P–A12	700P–B12	EQ110P–A12
24	End Plate Alignment Dowel (2)	EQ106P–99	EQ106P–99	EQ106P–99
25	Rear Rotor Bearing	R0A2–22	R0A2–22	R38P–606
26	Cylinder	EQ106P–3	EQ108P–3	EQ110P–3
27	Rotor	EQ106P–53	EQ108P–53	EQ110P–53
28	Vane Packet (set of 6 Vanes)	EQ106P–42–6	EQ108P–42–6	EQ110P–42–6
	Front End Plate Assembly	500PQ–A11	700P–A11	900P–A11
29	Front End Plate Assembly	EQ106P–A11	700P–B11	EQ110P–A11
30	End Plate Alignment Dowel	EQ106P–99	EQ106P–99	EQ106P–99
31	Front Rotor Bearing	EQ106S–22	EQ106S–22	WFS182–22

PART NUMBER FOR ORDERING

		500P 500PQ1	700P	900P
32	Motor Case Cover Assembly	500PQ–A202	700P–A202	900P–A202
33	Suspension Hole Liner	EQ106P–366	EQ106P–366	EQ106P–366
34	Motor Case Cover Gasket	500PQ–739	700P–747	900P–739
35	Rear End Plate Gasket	—	—	900P–740
36	Motor Case Cover Screw (3)	700P–638	700P–638	1100P–638
37	Cover Screw Lock Washer (3)	500P–58	500P–58	900P–58
	Hammer Case Assembly	500PQ–A727	700P–A727	900P–A727
38	Hammer Case	500PQ–727	700P–727	900P–727
39	Hammer Case Bushing	EQ106S–641	EQ106S–641	EQ110P–641
40	Adjustment Hole Plug	180PQ–95	180PQ–95	180PQ–95
41	Hammer Case Gasket	700P–739	700P–739	900P–741
42	Hammer Case Cap Screw (3)	500PQ–638	500PQ–638	1410P–638
43	Cap Screw Lock Washer (3)	500P–58	500P–58	900P–58
44	Rubber Housing Boot	500PQ–2	700P–2	900P–2
45	Nameplate	—	700P–301	900P–301
	for model 500P	500P–301	—	—
	for model 500PQ1	500PQ–301	—	—
	for models ending in –EU	500P–EU–301	500P–EU–301	500P–EU–301
46	Nameplate Screw (2)	EQ106S–322	EQ106S–322	EQ106S–322
47	Warning Label			
	for all models ending in –EU	EU–99	EU–99	EU–99
	for all other models	WARNING–2–99	WARNING–2–99	WARNING–2–99
48	Oil Daily Label	500P–69	500P–69	500P–69
49	Two Speed Trigger Label	180PQ–68	180PQ–68	180PQ–68
*	Motor Tune–up Kit (includes illustrated items 25, 28, 31 and 34)	500P–K500	700P–K500	—
*	Motor Tune–up Kit (includes illustrated items 25, 28, 31, 34 and 35)	—	—	900P–K500

* Not illustrated.

PART NUMBER FOR ORDERING

		500P 500PQ1	700P	900P
	Impulse Unit Drive Assembly	—	700P–A200	900P–A200
	for model 500P	500P–A200	—	—
	for model 500PQ1	500PQ–A200	—	—
50	Liner Housing	EQ208S–240	EQ210S–240	EQ212P–240
	Front Cover Assembly	500PQ–A211	500PQ–A211	900P–A211
51	Front Liner Cover Assembly	500P–A211	500P–A211	900P–B211
52	Torque Adjustment Screw	EQ208S–230	EQ208S–230	EQ212P–230
53	Adjustment Screw Lock	500PQ–288	500PQ–288	900P–288
54	Oil Plug	EQ106S–277	EQ106S–277	EQ106S–277
55	Oil Plug Seal	EQ106S–228	EQ106S–228	EQ106S–228
56	Oil Plug Seal Support	EQ106S–229	EQ106S–229	EQ106S–229
57	Drive Shaft O–ring	EQ208S–271	EQ208S–271	EQ110P–271
58	Seal Back–Up Ring	EQ106S–272	EQ106S–272	EQ110P–272
59	Front Liner Cover Piston Seal	EQ208S–238	EQ208S–238	EQ112P–228
60	Liner Housing Seal	EQ104S–36	EQ104S–36	EQ104S–36
61	Drive Shaft (for models ending in PQ1)	500PQ–626	—	—
	Drive Shaft Assembly (for models ending in P)	500P–A626	700P–A626	900P–A626
61	Drive Shaft	500P–626	700P–626	900P–626
62	Socket Retaining Pin	5020–716	5020–716	5020–716
63	Retaining Pin Spring	401–718	401–718	401–718
64	Drive Shaft Blade (2)	EQ208S–220	8020–1309–0000	EQ212P–220
65	Blade Spring (2)	EQ208S–219	EQ208S–219	EQ212P–219
66	Liner Assembly	500PQ–A203	700P–A203	900P–A203
67	Liner Alignment Pin (4)	EQ208S–298	EQ208S–298	EQ212P–298
68	Torque Valve Piston	EQ208S–222	EQ210S–222	EQ212P–222
69	Piston Stop Assembly (2)	EQ208S–A255	700A–A255	EQ212P–A255
70	Piston Stop Seal (2)	EQ106S–288	EQ106S–288	EQ110P–288
71	Piston Stop Assist Spring	EQ208S–219	EQ212P–219	1410P–219
72	Rear Liner Cover Seal	EQ208S–237	EQ208S–237	EQ212P–237
73	Rear Liner Cover	EQ208S–212	EQ208S–212	EQ212P–212
74	Housing Cap	EQ106S–207	EQ106S–207	EQ110P–207

PART NUMBER FOR ORDERING

		500P 500PQ1	700P	900P
	Bit Chuck Assembly (for model 500PQ1)	180PQ–A667	—	—
75	Bit Retaining Ball	EQ104S–929	—	—
76	Bit Retaining Sleeve	EQ104S–930	—	—
77	Bit Sleeve Spring	EQ104S–931	—	—
78	Spring Seat	EQ104S–932	—	—
79	Retaining Ring	EQ104S–933	—	—
*	Fluid Replacement Kit	EQ106S–K400	EQ106S–K400	EQ106S–K400
*	Replacement Fluid (4 oz.)	EQ106S–400–1	EQ106S–400–1	EQ106S–400–1
*	Mechanism Tune–up Kit (includes illustrated items 55, 56, 57, 58, 59, 60, 70 and 72)	500P–K600	500P–K600	—
*	Mechanism Tune–up Kit (includes illustrated items 41, 55, 56, 57, 58, 59 [2], 60 [2], 62, 63, 65 [2], 70 [2], 71 and 72)	—	—	900P–K600
*	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	700A–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.

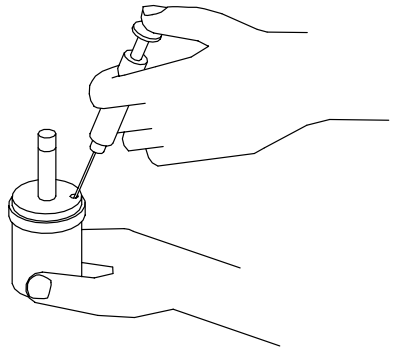
—CHANGING THE MECHANISM FLUID —

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

1. **For Model 500PQ1,** use a pointed probe to to push the Spring Seat (78) against the Retaining Sleeve Spring (77). While the Spring is compressed, use another pointed probe or thin blade screwdriver to remove the Retaining Ring (79). Lift the Spring Seat, Spring and Bit Retaining Sleeve (76) off the Drive Shaft (61) and remove the Bit Retaining Ball (75).
2. Remove the Rubber Housing Boot (44).
3. Using a hex wrench, remove the three Hammer Case Cap Screws (42) and Lock Washers (43). Lift the Hammer Case (38) off the Motor Housing (1) over the Drive Shaft. Remove the Hammer Case Gasket (41).
4. Lift the assembled mechanism off the Rotor (27).
5. Using a 2 mm hex wrench for 900P models and a 1.5 mm hex wrench for all other models, rotate the Torque Adjustment Screw (52) clockwise until the Screw stops. Rotate the Screw counterclockwise until it stops or makes six complete revolutions.
6. Using a 2.5 mm hex wrench, unscrew and remove the Oil Plug (54). Remove the Oil Plug Seal (55) and Oil Plug Seal Support (56).
7. With the oil plug opening downward over a container, rotate the Drive Shaft to purge the fluid from the mechanism.
8. Thread the Tee Wrench included with the Tool Kit (Part No. 700A–99) into the into the Piston Stop Assembly (69) that it is 180 degrees from the Torque Adjustment Screw and pull the Stop Assembly toward the output end of the mechanism until it stops.
9. 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. Models 500P and 500PQ1 will require 9 cc of fluid; Model 700P, 12 cc and Model 900P, 17 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)

10. 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.
11. Remove the mechanism from the fluid and use the Tee Wrench to push the Piston Stop Assembly slowly downward until fluid flows from the fill opening.
12. Thread the Oil Plug with the Oil Plug Seal and Seal Support into the mechanism until it is snug.
13. Using a 2 mm hex wrench on the Model 900P and a 1.5 mm hex wrench on all other models, turn the Torque Adjustment Screw clockwise until it stops. This is the maximum torque position.
14. Wipe the outside of the mechanism dry and clean and remove the Oil Chamber Plug. Using the syringe, withdraw 0.35 cc of fluid from 500P and 500PQ1 models, 0.50 cc of fluid from 700P models and 0.85 cc from 900P models.
15. Install the Oil Chamber Plug and tighten it between 20 and 25 in–lb (2.3 and 2.8 Nm) torque.
16. Position a new Hammer Case Gasket on the Motor Housing and install the assembled mechanism on the rotor shaft.
17. 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.
18. Install the Rubber Housing Boot on the tool.
19. **For Model 500PQ1,** install the Bit Retaining Ball in the hole in the Drive Shaft and capture it by sliding the Bit Retaining Sleeve, small bore first, onto the Drive Shaft.
20. **For Model 500PQ1,** install the Retaining Sleeve Spring and Spring Seat, counterbored end trailing, over the drive shaft hub and into the Sleeve.While compressing the Spring, with a thin blade screwdriver against the Seat, install the Retaining Ring in the annular groove in the hub of the Drive Shaft.

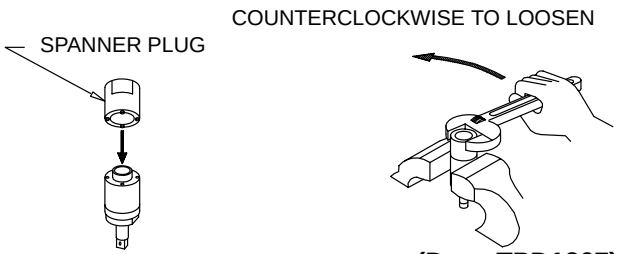
DISASSEMBLY

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.

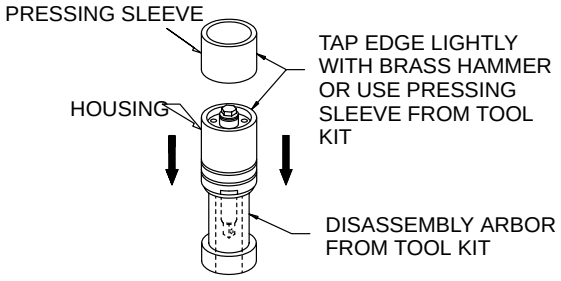
Disassembly of the Impulse Mechanism

1. **For Model 500PQ1,** use a pointed probe to to push the Spring Seat (78) against the Retaining Sleeve Spring (77). While the Spring is compressed, use another pointed probe or thin blade screwdriver to remove the Retaining Ring (79). Lift the Spring Seat, Spring and Bit Retaining Sleeve (76) off the Drive Shaft (61) and remove the Bit Retaining Ball (75).
   For Model 500P, 700P or 900P, use a hooked wire to pull the Retaining Pin Spring (63) out of the end of the Drive Shaft (61) and remove the Socket Retaining Pin (62).
2. Remove the Rubber Housing Boot (44).
3. Using a hex wrench, remove the three Hammer Case Cap Screws (42) and Lock Washers (43). Lift the Hammer Case (38) off the Motor Housing (1) over the Drive Shaft. Remove the Hammer Case Gasket (41).
4. Lift the assembled mechanism off the Rotor (27).
5. Grasp the flats of the Housing (50) 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 Tool Kit into two holes in the Housing Cap (74). 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)

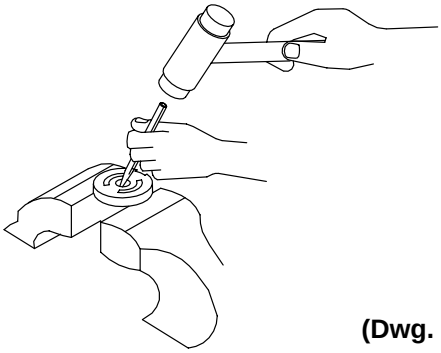
8. Disassemble the components of the mechanism in the sequence shown in Drawing TPA1339 on Page 17.

Disassembly of the Motor

1. Grasp the Motor Housing (1) in vise jaws with the Motor Case Cover Assembly (32) upward.
2. Using a hex wrench, remove the three Motor Case Cover Screws (36) and Lock Washers (38).
3. Remove the Cover and Motor Case Cover Gasket (34) from the Motor Housing and also the Rear End Plate Gasket (35) on 900P 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 (27) and Vanes (28).
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 (31) out of the Front End Plate Assembly (29) 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 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 overheat as this will distort the Housing.

CAUTION

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

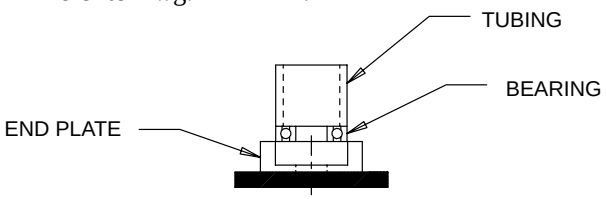
ASSEMBLY

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.

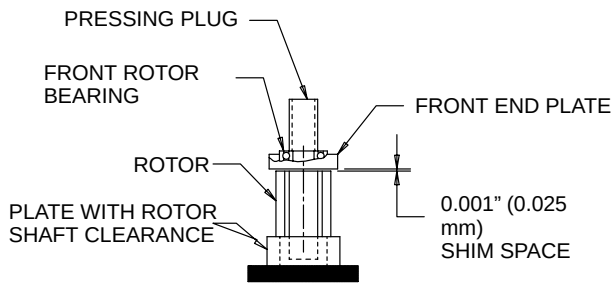
Assembly of the Motor

1. Using an arbor press and a piece of tubing that contacts the outer ring of the bearings, press the Front Rotor Bearing (31) into the Front End Plate (29) and the Rear Rotor Bearing (26) into the Rear End Plate (25). Refer to Dwg. TPD1274.



(Dwg. TPD1274)

2. Stand the Rotor (27) 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. TPD1275.



(Dwg. TPD1275)

4. Coat each Vane (28) 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. Install the Cylinder (26) over the Vanes and Rotor making certain the End Plate Alignment Dowel (30) enters the notch in the end face of the Cylinder.
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. Make certain the End Plate Alignment Dowel (24) enters the notch 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 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 (35)(for 900P models), the Motor Case Cover Gasket (34) and Motor Case Cover (32).
10. Secure the Cover to the Housing by installing the three Motor Case Cover Screws (36) and Lock Washers (37). 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 wider end of the Trigger is nearest the motor bore and the narrower portion of the Throttle Valve aligns with 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) 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 (69) into the central opening of the O–ring Installer furnished with the Tool Kit (Part No. 700A–99). Place the Piston Stop Seal (70) 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 (66), 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 (68). Install the Torque Valve Piston, large end trailing, into that opening.
3. Insert the Piston Stop Assist Spring (71) 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 the 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 (72) in the annular groove on the face of the Rear Liner Cover (73).
7. Install the two Front Liner Cover Piston Seals (59) in the openings on the face of the Front Liner Cover.
8. Install the Seal Back–Up Ring (58) followed by the Drive Shaft O–ring (57) in the central opening in the face of the Front Liner Cover.
9. Insert the short round hub of the Drive Shaft (61) into the central opening of the Rear Liner Cover.
10. Insert a Blade (64) into one slot in the Drive Shaft. Install the Blade Springs (65) 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 (52) aligns with the proper piston stop opening that was marked during assembly.
14. Install the two Liner Cover Seals (60) in the grooves inside the Liner Housing (50) 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 (54) 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.

NOTICE

This is a left–hand thread; rotate the wrench counterclockwise to tighten the Cap.

Tighten the Cap on models 500P, 500PQ1 and 700P between 101 and 116 ft–lb (137 and 157 Nm) torque and on model 900P between 116 and 130 ft–lb (157 and 176 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**.