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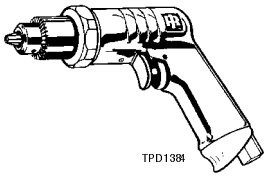
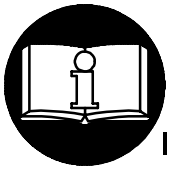


OPERATION AND MAINTENANCE MANUAL FOR SERIES 5 AIR DRILLS

NOTICE

Series 5 Air Drills are designed for drilling applications in automotive and appliance assembly, the electronics and aerospace industries and for woodworking and furniture construction.

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 1/4" (6 mm) inside diameter air supply hose.
- Always turn off the air supply and disconnect the air supply hose before installing, removing or adjusting any accessory on this tool, or before performing any maintenance on this tool.
- Do not use damaged, frayed or deteriorated air hoses and fittings.
- Be sure all hoses and fittings are the correct size and are tightly secured. See Dwg. TPD905–1 for a typical piping arrangement.
- Always use clean, dry air at 90 psig (6.2 bar/620 kPa) maximum air pressure. Dust, corrosive fumes and/or excessive moisture can ruin the motor of an air tool.
- Do not lubricate tools with flammable or volatile liquids such as kerosene, diesel or jet fuel.
- Do not remove any labels. Replace any damaged label.

USING THE TOOL

- Always wear eye protection when operating or performing maintenance on this tool.
- Always wear hearing protection when operating this tool.
- Keep hands, loose clothing and long hair away from rotating end of tool.
- Note the position of the reversing lever before operating the tool so as to be aware of the direction of rotation when operating the throttle.
- 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 accessories 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.
- The Throttle Valve Cap is under pressure from the Throttle Valve Spring. Use care when removing the Throttle Valve Cap. (On tools where applicable.)
- 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.

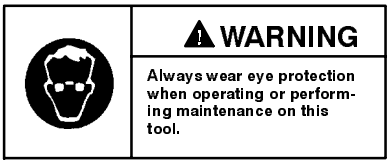
Printed in U.S.A.

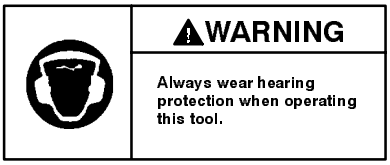
INGERSOLL-RAND®
PROFESSIONAL TOOLS

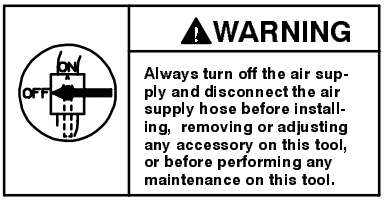
WARNING LABEL IDENTIFICATION

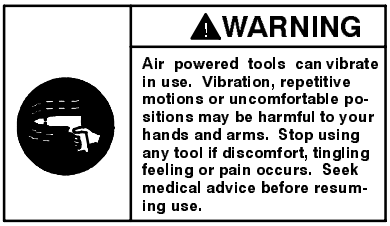
⚠ WARNING

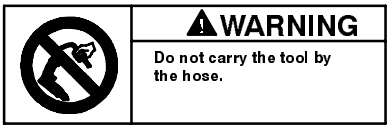
FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

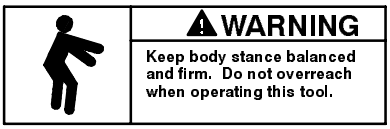


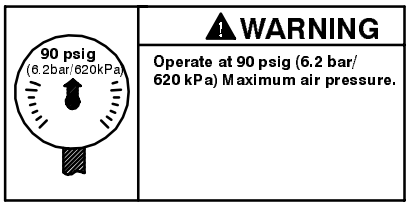












PLACING TOOL IN SERVICE

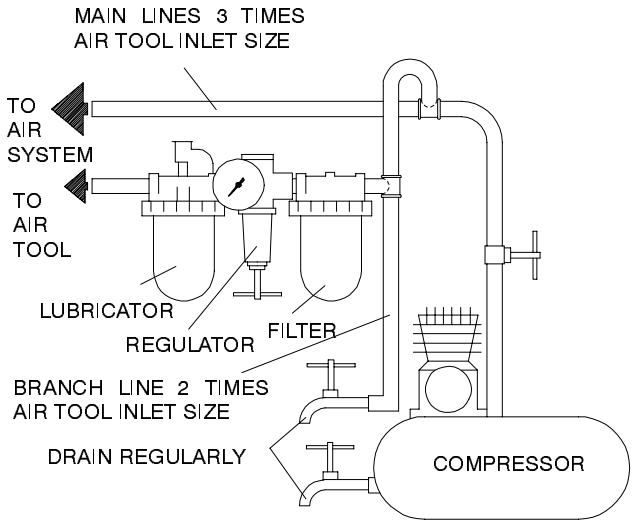
LUBRICATION

Ingersoll-Rand No. 10 **Ingersoll-Rand No. 23**

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

USA - No. C05-02-G00

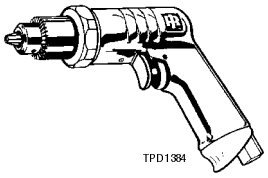
After each eight hours of operation, unless an air line lubricator is used, inject 1.5 cc of Ingersoll–Rand No. 10 Oil into the air inlet.
After each 50 000 cycles or every month, whichever occurs first, inject 5 or 6 strokes of Ingersoll–Rand No. 23 Grease from the No. R000A2–228 Grease Gun into the Grease Fitting. Inject 2.0 cc for models with **J, K or L** ratios and 4.0 cc for models with **N** gearing.



(Dwg. TPD905–1)

HOW TO ORDER A DRILL

Model	Free Speed rpm	Chuck Capacity in	Chuck Capacity mm
NONREVERSIBLE WITH PISTOL GRIP HANDLE			
5AH1	5 000	1/4	6
5AJ1	4 500	1/4	6
5AK1	3 000	1/4	6
5AL1	2 200	1/4	6
5AN3	1 000	3/8	10
REVERSIBLE WITH PISTOL GRIP HANDLE			
5RAL3	2 000	3/8	10
5RAN4	900	1/2	13
NONREVERSIBLE WITH LEVER THROTTLE			
5LJ1	4 800	1/4	6
5LK1	3 100	1/4	6
5LL1	2 300	1/4	6
5LN3	1 000	3/8	10



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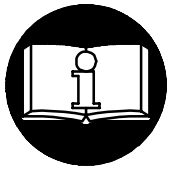
MANUEL D'EXPLOITATION ET D'ENTRETIEN DES PERCEUSES PNEUMATIQUES DE LA SÉRIE 5

NOTE

Les perceuses pneumatiques de la Série 5 sont destinées au serrage des fixations d'assemblage automobile et d'équipements ménagers, des industries électroniques et aérospatiales et pour le travail du bois et la construction des meubles.
Ingersoll-Rand ne peut être tenu responsable de la modification des outils par le client pour les adapter à des applications qui n'ont pas été approuvées par Ingersoll-Rand.

⚠ ATTENTION



**D'IMPORTANTES INFORMATIONS DE SÉCURITÉ SONT JOINTES.
LIRE CE MANUEL AVANT D'UTILISER L'OUTIL.
L'EMPLOYEUR EST TENU DE COMMUNIQUER LES INFORMATIONS DE CE MANUEL AUX EMPLOYÉS UTILISANT CET OUTIL.
LE NON RESPECT DES AVERTISSEMENTS SUIVANTS PEUT CAUSER DES BLESSURES.**

MISE EN SERVICE DE L'OUTIL

- **Toujours exploiter, inspecter et entretenir cet outil conformément au Code de sécurité des outils pneumatiques portatifs de l'American National Standards Institute (ANSI B186.1).**
- **Pour la sécurité, les performances optimales et la durabilité maximale des pièces, cet outil doit être connecté à une alimentation d'air comprimé de 6,2 bar (620 kPa) maximum à l'entrée, avec un flexible de 6 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 (620 kPa). La poussière, les fumées corrosives et/ou une humidité excessive peuvent endommager le moteur d'un outil pneumatique.**
- **Ne jamais lubrifier les outils avec des liquides inflammables ou volatiles tels que le kérosène, le gasoil ou le carburant d'aviation.**
- **Ne retirer aucune étiquette. Remplacer toute étiquette endommagée.**

UTILISATION DE L'OUTIL

- **Porter toujours des lunettes de protection pendant l'utilisation et l'entretien de cet outil.**
- **Porter toujours une protection acoustique pendant l'utilisation de cet outil.**
- **Tenir les mains, les vêtements flous et les cheveux longs, éloignés de l'extrémité rotative de l'outil.**
- **Noter la position du levier d'inversion avant de mettre l'outil en marche de manière à savoir dans quel sens il va tourner lorsque la commande est actionnée.**
- **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.**
- **Le chapeau de la soupape de commande est soumis à la pression du ressort de soupape. Prendre les soins nécessaires lors de la dépose du chapeau de soupape de commande. (Sur les outils concernés).**
- **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.

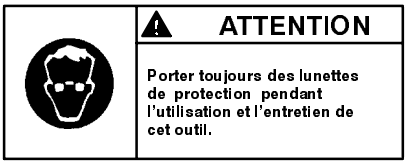
Imprimé aux É.U.

INGERSOLL-RAND®
PROFESSIONAL TOOLS

SIGNIFICATION DES ÉTIQUETTES D'AVERTISSEMENT

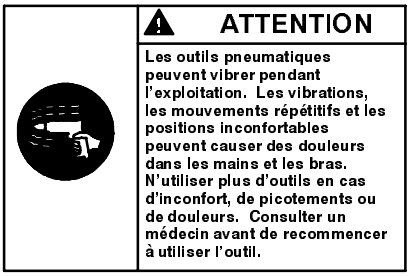
⚠ ATTENTION

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.

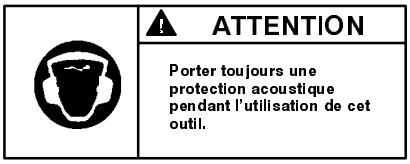


⚠ ATTENTION

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.

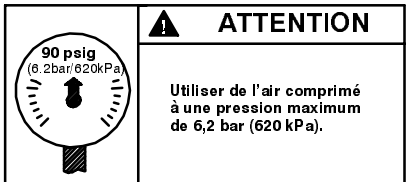


⚠ ATTENTION

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

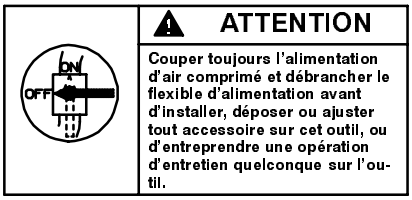
⚠ ATTENTION

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.

MISE EN SERVICE DE L'OUTIL

LUBRIFICATION

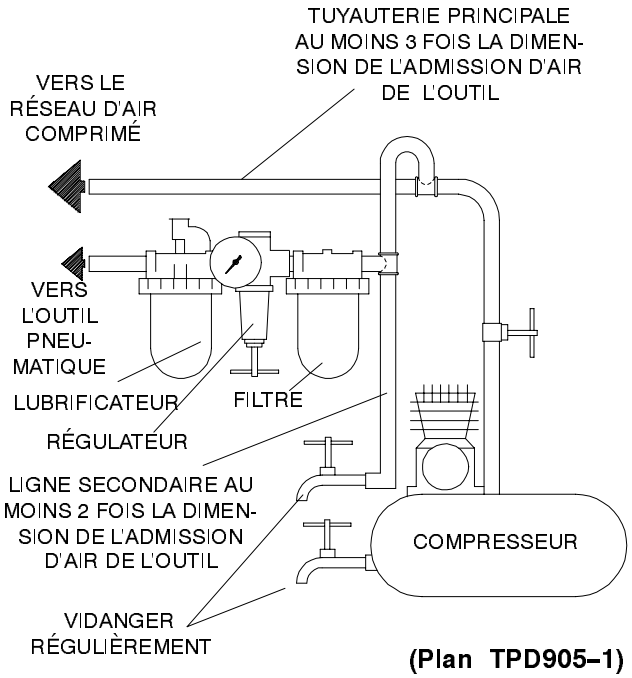
Ingersoll-Rand No. 10 **Ingersoll-Rand No. 23**

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

USA - No. C05-02-G00

Toutes les huit heures de fonctionnement, si un lubrificateur de ligne n'est pas utilisé, injecter 1,5 cm^3 d'huile Ingersoll–Rand No. 10 dans le raccord d'admission de l'outil.

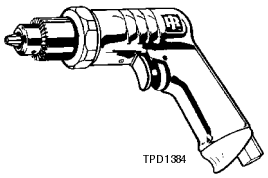
Tous les 50 000 cycles ou au moins tous les mois, selon le cas, injecter 5 à 6 coups de pistolet de graissage No. R000A2–228, rempli de graisse Ingersoll–Rand No. 23, dans le raccord de graissage. Injecter 2 cm^3 dans les modèles dotés des **rapports J, K ou L** et 4 cm^3 dans les modèles dotés du **rapport N**.



(Plan TPD905–1)

SPÉCIFICATIONS

Modèle	Poignée à levier	Capacité du mandrin		Vitesse libre
		pouces	mm	tr/mn
5AH1	pistolet	1/4	6	5.000
5AJ1	pistolet	1/4	6	4.500
5AK1	pistolet	1/4	6	3.000
5AL1	pistolet	1/4	6	2.200
5AN3	pistolet	3/8	10	1.000
5RAL3	pistolet	3/8	10	2.000
5RAN4	pistolet	1/2	13	900
5LJ1	en ligne	1/4	6	4.800
5LK1	en ligne	1/4	6	3.100
5LL1	en ligne	1/4	6	2.300
5LN3	en ligne	3/8	10	1.000



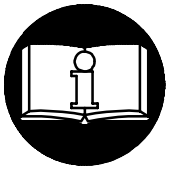
E

MANUAL DE USO Y MANTENIMIENTO PARA TALADROS NEUMÁTICOS DE LA SERIE 5

NOTA

Los taladros neumáticos de la serie 5 están diseñados para aplicaciones de taladrado en el montaje de electrodomésticos y automóviles, las industrias electrónica y aeroespacial, y para carpintería y construcción de muebles.

Ingersoll–Rand no aceptará responsabilidad alguna por la modificación de las herramientas efectuada por el cliente para las aplicaciones que no hayan sido consultadas con Ingersoll–Rand.



⚠ AVISO

SE ADJUNTA INFORMACIÓN IMPORTANTE DE SEGURIDAD.
LEA ESTE MANUAL ANTES DE UTILIZAR LA HERRAMIENTA.
ES RESPONSABILIDAD DE LA EMPRESA ASEGURARSE DE QUE EL OPERARIO ESTÉ AL TANTO DE LA INFORMACIÓN QUE CONTIENE ESTE MANUAL.
EL HACER CASO OMISO DE LOS AVISOS SIGUIENTES PODRÍA OCASIONAR LESIONES.

PARA PONER LA HERRAMIENTA EN SERVICIO

- **Utilice, examine y mantenga siempre esta herramienta conforme al código de seguridad para herramientas neumáticas portátiles de la American National Standards Institute (ANSI B186.1).**
- **Para mayor seguridad, rendimiento óptimo y larga vida útil de las piezas, utilice esta herramienta a una presión de aire máxima de 90 psig (6,2 bar/620 kPa) con una manguera de suministro de aire con diámetro interno de 6 mm.**
- **Corte siempre el suministro de aire y desconecte la manguera de suministro de aire antes de instalar, desmontar o ajustar cualquier accesorio de esta herramienta, o antes de realizar cualquier operación de mantenimiento de la misma.**
- **No utilice mangueras de aire y racores dañados, desgastados o deteriorados.**
- **Asegúrese de que todos los racores y mangueras sean del tamaño correcto y estén bien apretados. El Esq. TPD905–1 muestra una disposición característica de las tuberías.**
- **Use siempre aire limpio y seco a una presión máxima de 90 psig (6,2 bar/620 kPa). El polvo, los gases corrosivos y el exceso de humedad pueden estropear el motor de una herramienta neumática.**
- **No lubrique las herramientas con líquidos inflamables o volátiles tales como queroseno, gasoil o combustible para motores a reacción.**
- **No saque ninguna etiqueta. Sustituya toda etiqueta dañada.**

UTILIZACIÓN DE LA HERRAMIENTA

- **Lleve siempre protección ocular cuando utilice esta herramienta o realice operaciones de mantenimiento en la misma.**
- **Lleve siempre protección para los oídos cuando utilice esta herramienta.**
- **Mantenga las manos, la ropa suelta y el cabello largo alejados del extremo giratorio de la herramienta.**
- **Tome nota de la posición de la palanca de inversión antes de hacer funcionar la herramienta para tener en cuenta el sentido de rotación al accionar el estrangulador.**
- **Anticipe y esté atento a los cambios repentinos en el movimiento durante la puesta en marcha y utilización de toda herramienta motorizada.**
- **Mantenga una postura del cuerpo equilibrada y firme. No estire demasiado los brazos al manejar la herramienta. Pueden darse elevados pares de reacción a la presión de aire recomendada, e incluso a presiones inferiores.**
- **Los accesorios de la herramienta podrían seguir girando brevemente después de haberse soltado la palanca de mando.**
- **Las herramientas neumáticas pueden vibrar durante el uso. La vibración, los movimientos repetitivos o las posiciones incómodas pueden dañarle los brazos y manos. En caso de incomodidad, sensación de hormigueo o dolor, deje de usar la herramienta. Consulte con el médico antes de volver a utilizarla.**
- **Utilice únicamente los accesorios Ingersoll–Rand recomendados.**
- **El muelle de la válvula reguladora ejerce presión contra la tapa de dicha válvula. Tenga cuidado al sacar la tapa. (Si procede, según la herramienta).**
- **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 EE. UU.

INGERSOLL-RAND®
PROFESSIONAL TOOLS

ETIQUETAS DE AVISO

⚠ AVISO

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

⚠ ADVERTENCIA

Usar siempre protección ocular al manejar o realizar operaciones de mantenimiento en esta herramienta.

⚠ ADVERTENCIA

Usar siempre protección para los oídos al manejar esta herramienta.

⚠ 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

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

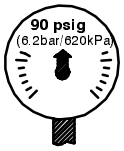
No coger la herramienta por la manguera para levantarla.

⚠ ADVERTENCIA

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

⚠ ADVERTENCIA

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



⚠ ADVERTENCIA

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

PARA PONER LA HERRAMIENTA EN SERVICIO

LUBRICACIÓN

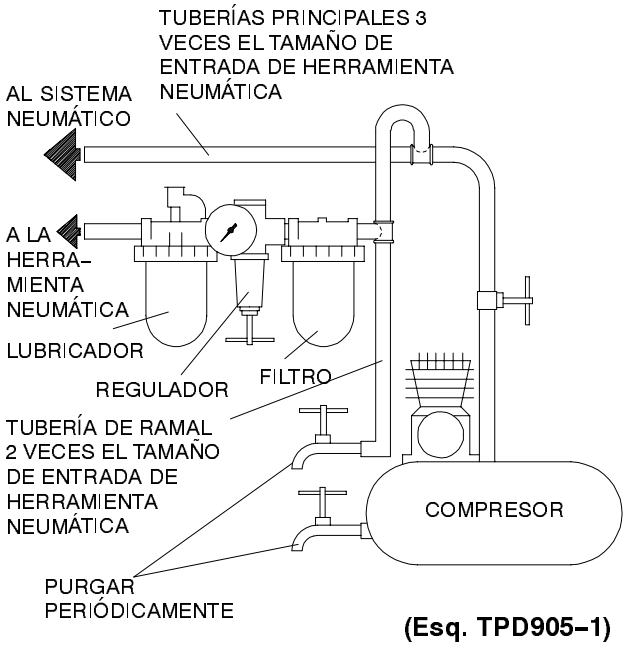
Ingersoll-Rand Nº 10

Ingersoll-Rand Nº 23

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

USA - Nº C05-02-G00

Después de cada ocho horas de funcionamiento, a menos que se use un lubricador de línea de aire, inyecte 1,5 cc de aceite Ingersoll–Rand Nº 10 en la admisión de aire.
Después de cada 50000 ciclos o cada mes (lo que ocurra primero), inyecte 5 ó 6 disparos de grasa Ingersoll–Rand Nº 23 con la pistola engrasadora Nº R000A2–228 en el engrasador. Inyecte 2,0 cc para modelos con engranajes **J, K, o L,** y 4,0 cc para modelos con engranajes **N.**



(Esq. TPD905–1)

ESPECIFICACIONES

Modelo	Tipo de empuñadura	Capacidad del portabrocas		Velocidad en vacío
		pulg.	mm	rpm
5AH1	pistola	1/4	6	5 000
5AJ1	pistola	1/4	6	4 500
5AK1	pistola	1/4	6	3 000
5AL1	pistola	1/4	6	2 200
5AN3	pistola	3/8	10	1 000
5RAL3	pistola	3/8	10	2 000
5RAN4	pistola	1/2	13	900
5LJ1	recta	1/4	6	4 800
5LK1	recta	1/4	6	3 100
5LL1	recta	1/4	6	2 300
5LN3	recta	3/8	10	1 000

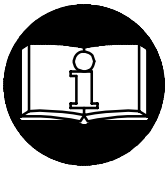
P

MANUAL DE FUNCIONAMENTO E MANUTENÇÃO PARA BERBEQUINS PNEUMÁTICOS SÉRIE 5

AVISO

Os Berbequins Pneumaticos Series 5 são concebidos para perfuracao em montagem de equipamentos e de automoveis, indústrias electrónica e aerospacial e para contrução de móveis.

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 6 mm (1/4").
- 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 6,2 bar/620 kPa 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.
- Observe a posição da alavanca de reversão antes de operar a ferramenta de modo a estar atento ao sentido de rotação ao operar a válvula reguladora de pressão.
- 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 acessório 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.
- O Tampo da Válvula Reguladora de Pressão está sob pressão da Mola da Válvula Reguladora de Pressão. Tenha cuidado ao remover o Tampo da Válvula Reguladora de Pressão. (Sob ferramentas onde aplicável).
- 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.

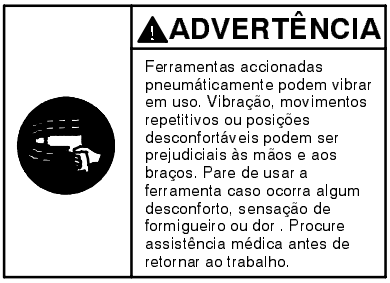
Impresso nos E.U.A.

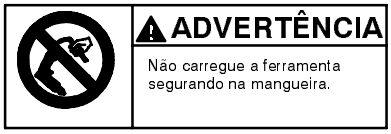
INGERSOLL-RAND®
PROFESSIONAL TOOLS

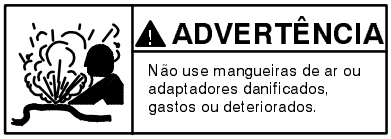
IDENTIFICAÇÃO DO RÓTULO DE ADVERTÊNCIA

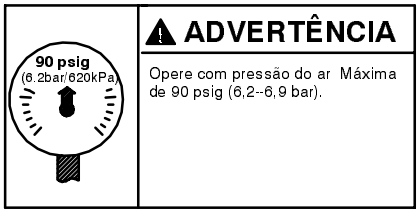
⚠ ADVERTÊNCIA

O NÃO CUMPRIMENTO DAS SEGUINTES ADVERTÊNCIAS PODE RESULTAR EM FERIMENTOS.









COLOCANDO A FERRAMENTA EM FUNCIONAMENTO

LUBRIFICAÇÃO

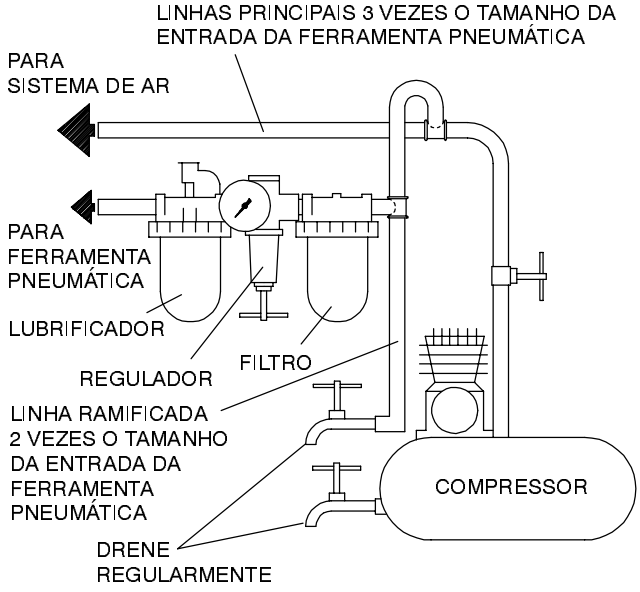
Ingersoll–Rand No. 10 **Ingersoll–Rand No. 23**

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

Para USA – No. C05–C02–G00

Depois de cada oito horas de operação, a menos que um lubrificador de ar de linha estiver sendo usado, injecte 1,5 cc de Óleo Ingersoll–Rand No.10 no entrada de ar.

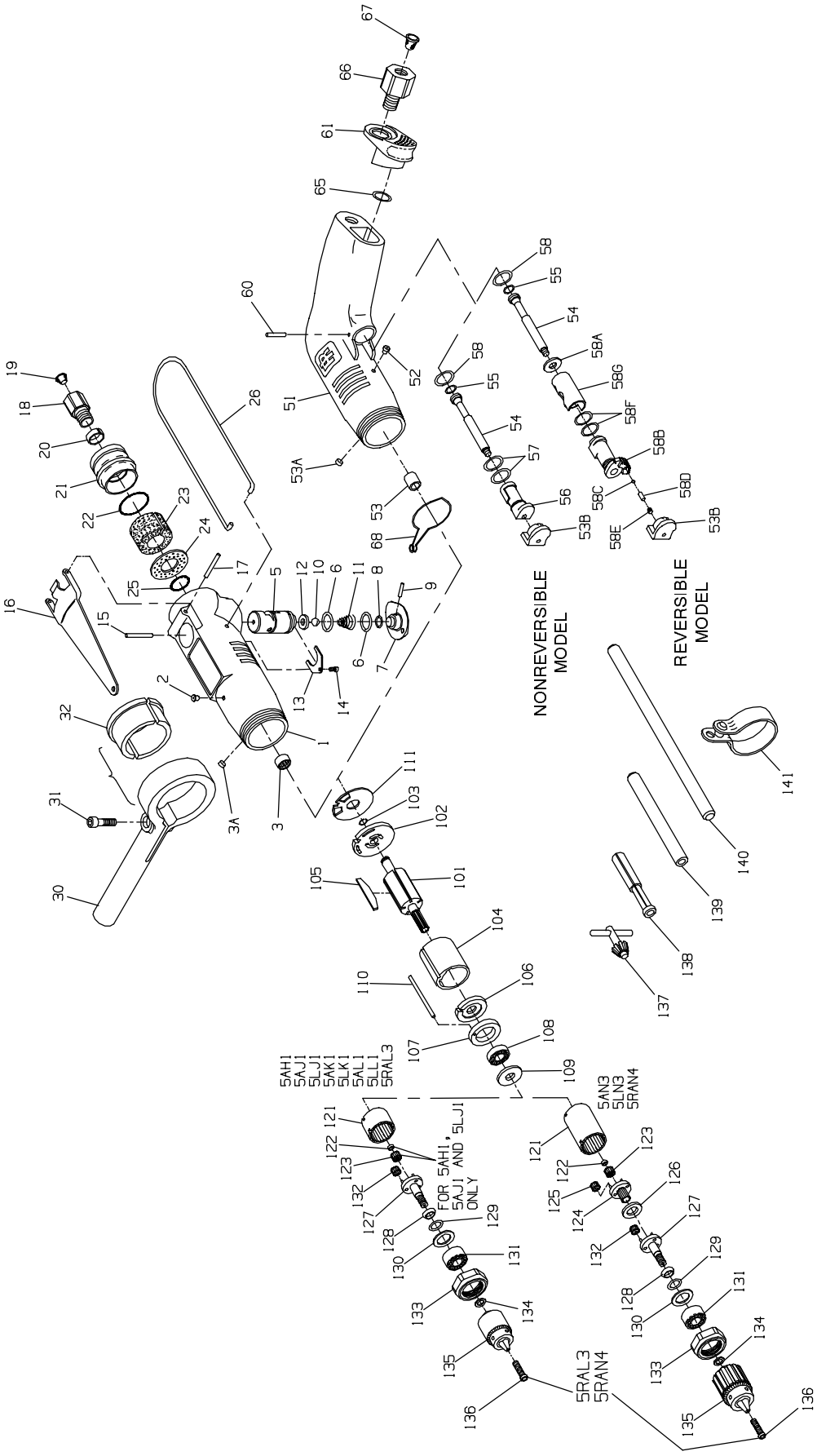
Depois de cada 50 000 ciclos ou cada mês, o que ocorrer primeiro, injecte 5 ou 6 medidas de Massa Lubrificadora Ingersoll–Rand No. 23 do Canhão de Massa Lubrificadora No. R000A2–228 no Adaptador de Massa Lubrificadora. Injecte 2,0 para modelos com razões de engrenagem **J, L ou K,** e 4,0 cc para modelos com razão de engrenagem **N**.



(Desenho TPD905–1)

ESPECIFICAÇÕES

Modelo	Tipo de Punho	Capacidade da Bucha		Velocidade Livre
		mm	pol.	rpm
5AH1	pistola	6	1/4	5 000
5AJ1	pistola	6	1/4	4 500
5AK1	pistola	6	1/4	3 000
5AL1	pistola	6	1/4	2 200
5AN3	pistola	10	3/8	1 000
5RAL3	pistola	10	3/8	2 000
5RAN4	pistola	13	1/2	900
5LJ1	em linha	6	1/4	4 800
5LK1	em linha	6	1/4	3 100
5LL1	em linha	6	1/4	2 300
5LN3	em linha	10	3/8	1 000


NONREVERSIBLE MODEL
REVERSIBLE MODEL
FOR 5AH1, 5AJ1 AND 5LJ1 ONLY
5AH1 5AJ1 5LJ1 5AK1 5LK1 5AL1 5LL1 5RAL3
5AN3 5LN3 5RAN4
5RAL3 5RAN4

(Dwg. TPA782-7)

			PART NUMBER FOR ORDERING
		Motor Housing Assembly (for 5L models)	
		for 5LJ1, 5LK1 and 5LL1	5LK-A40
		for 5LJ1-EU, 5LK1-EU and 5LL1-EU	5LK-EU-A40
		for 5LN3	5LN-A40
		for 5LN3-EU	5LN-EU-A40
	1	Motor Housing	
		for 5LJ1, 5LK1 and 5LL1	5RLK-B40
		for 5LJ1-EU, 5LK1-EU and 5LL1-EU	5RLK-EU-B40
		for 5LN3	5RLN-B40
		for 5LN3-EU	5RLN-EU-B40
	*	Warning Label	
		for models ending in -EU	EU-99
		for all other models	WARNING-7-99
	2	Grease Fitting	DOF9-879
	3	Rear Rotor Bearing	5R-24
	3A	Housing Pellet	5R-41
		Throttle Assembly	5L-A329
	5	Throttle Valve Body Assembly	5RL-B329
♦ •	6	Throttle Valve Seal (2)	85H-167
	7	Valve Knob	5L-658
♦ •	8	Valve Knob Seal	R1A-159
	9	Valve Knob Retainer	R2N-152
	10	Throttle Valve	G601-65
♦	11	Throttle Valve Spring	5RL-51
♦	12	Throttle Valve Seat	5L-323
	13	Throttle Assembly Retainer	5RL-667
•	14	Retainer Screw	WWA100-77
	15	Throttle Valve Plunger	5RL-302
	16	Throttle Lever	5RL-273
	17	Throttle Lever Pin	5RL-120
	18	Inlet Bushing Assembly	5RA-A565
♦ •	19	Air Strainer Screen	5RA-61
	20	Inlet Bushing Spacer	5RA-65
	21	Exhaust Deflector	5RL-23
♦	22	Exhaust Deflector Seal	R00A2-103
♦	23	Muffler Element	5RL-311
	24	Exhaust Silencer	5RL-310
♦	25	Silencer Seal Ring	R18LF-21
	26	Suspension Bail	5RL-365
	30	Dead Handle Assembly	728N-A48
	31	Dead Handle Pinch Bolt	510-638
	32	Dead Handle Adapter (2)	5A-49
		Motor Housing Assembly (for 5A and and 5RA Models)	
		for 5AH1	5AH-AT40
		for 5AH1-EU	5AH-EU-AT40
		for 5AJ1, 5AK1 and 5AL1	5AK-AT40
		for 5AJ1-EU, 5AK1-EU and 5AL1-EU	5AK-EU-AT40
		for 5AN3	5AN-AT40
		for 5AN3-EU	5AN-EU-AT40
		for 5RAL3	5RAK-A40
		for 5RAL3-EU	5RAK-EU-A40
		for 5RAN4	5RAN-A40
		for 5RAN4-EU	5RAN-EU-A40
	51	Motor Housing	
		for 5AH1, 5AJ1, 5AK1, 5AL1 and 5RAL3	5RAK-B40
		for 5AH1-EU, 5AJ1-EU, 5AK1-EU, 5AL1-EU and 5RAL3-EU	5RAK-EU-B40
		for 5AN3 and 5RAN4	5RAN-B40
		for 5AN3-EU and 5RAN4-EU	5RAN-EU-B40

* Not illustrated.

♦ Indicates Tune-up Kit part.

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

			PART NUMBER FOR ORDERING				PART NUMBER FOR ORDERING
	*	Warning Label			66	Inlet Bushing Assembly	5RA–A565
		for models ending in –EU	EU–99	•	67	Air Strainer Screen	5RA–61
		for all other models	WARNING–7–99		68	Hanger	5RA–365
	52	Grease Fitting	D0F9–879		*	Nameplate	
♦	53	Rear Rotor Bearing	5R–24			for pistol grip models ending in –EU	4RA–EU–301
	53A	Housing Pellet	5R–41			for all other pistol grip models	4RA–301
		Throttle Assembly				for lever throttle models ending in –EU	5RA–EU–301
		for 5AH1	5AH–AT302			for all other lever throttle models	5RA–301
		for 5AJ1, 5AK1, 5AL1, 5AN3, 5RAL3 and 5RAN4	5A–AT302		*	Nameplate Screw (2)	BN403–302
	53B	Trigger	5RA–93		101	Rotor	
+	54	Throttle Valve Assembly	5A–BT302			for K ratio (8 teeth)	5RLK–53
•	55	Throttle Valve Face	401–159			for H, J, L or N Ratio (6 teeth)	5RLL–53
+	56	Throttle Bushing Assembly			102	Rear End Plate	5RLK–12
		for 5AH1	5AH–A503	♦	• 103	End Plate Retainer	5RLK–118
		for 5AJ1, 5AK1, 5AL1 & 5AN3	5A–A503		104	Cylinder	
♦	• 57	Throttle Bushing Seal (2)	410–283			for 5RAL3 and 5RAN4	5RLK–3
	58	Throttle Bushing Seat	R18L–14			for all other models	5LK–3
	58A	Throttle Valve Seat (for 5RAL3 and 5RAN4)	5RA–303	♦	• 105	Vane Packet (set of 5)	R1401–42–5
+	58B	Reverse Valve Assembly			106	Front End Plate	5RLK–11
		(for 5RAL3 and 5RAN4)	5RA–A329		107	Front Rotor Bearing Housing	5R–13
	58C	Reverse Valve Detent Ball	AV1–255	♦	• 108	Front Rotor Bearing	WWA100–97
	58D	Reverse Valve Detent Spring	5RA–664		109	Bearing Retainer Washer	
•	58E	Reverse Valve Detent Adjusting Screw	5RA–665			(for all except 5AD1)	5R–80
	58F	Reverse Valve Seal Ring (2)	PS3–67		• 110	Cylinder Dowel	
+	58G	Reverse Valve Bushing (for				for 5AD1	106–98
		5RAL3 and 5RAN4)	5RA–330			for all others	R0A1–98
	60	Throttle Retaining Pin	R100B–120				
	61	Muffler Assembly					
		for 5AH1	5A–A123				
		for 5AJ1, 5AK1, 5AL1, 5AN3, 5RAL3 and 5RAN4	5RA–A123A				
	65	Silencer Seal Ring	R18LF–21				

* Not illustrated.

♦ Indicates Tune–up Kit part.

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

\+ When ordering any of these parts for replacement, also order a new Trigger (53B).

		PART NUMBER FOR ORDERING
♦ •	111	Rear End Plate Gasket 5RLK–739
•	121	Ring Gear
		for 5AK1 and 5LK1 (40 teeth) 5RAK–406A
		for 5AH1, 5AJ1, 5LJ1, 5AL1, 5LL1 and 5RAL3 (42 teeth) 5RAL–406A
		for 5AN3, 5LN3 and 5RAN4 (42 teeth) . 5RAN–406B
	121A	Housing Spacer (for 5AD1) 5AD–406
•	122	Rotor Pinion Spacer (for 5AH1, 5AJ1, 5LJ1, 5LN3 and 5RAN4) 5RAN–18
•	123	Rotor Pinion (for 5AH1, 5AJ1, 5LJ1, 5AN3, 5LN3 and 5RAN4) 5RAN–17
•	124	Gear Head Assembly (for 5AN3, 5LN3 and 5RAN4) 5RAN–A216
•	125	Gear Head Planet Gear (3) (13 teeth) (for 5AN3, 5LN3 and 5RAN4) 5RAN–9
	126	Gear Head Spacer (for 5AN3, 5LN3 and 5RAN4) . 5R–80
		for 5AD1 106–13
		for all others 5R–13
		Spindle Assembly
		for 5AH1 ..... 5AH–A8
		for 5AJ1 and 5LJ1 ..... 5A–A8
		for 5AK1, 5LKI, 5AL1, 5LL1 and 5RAL3 ..... 5AK–A8
		for 5AN3, 5LN3 and 5RAN4 ..... 5AN–A8
•	127	Spindle
		for 5AH1, 5AJ1 and 5LJ1 ..... 5AJ–8
		for 5AK1, 5LK1, 5AL1, 5LL1 and 5RAL3 ..... 5AK–8
		for 5AN3, 5LN3 and 5RAN4 ..... 5AN–8
•	128	Slinger Ring 5A–28
♦ •	129	Seal (for 5AJ1, 5LJ1, 5AK1, 5LK1, 5AL1, 5LL1, 5AN3, 5LN3, 5RAL3 and 5RAN4) 182A53–610
	130	Grease Shield 5R–701
	131	Spindle Bearing 5A–510

		PART NUMBER FOR ORDERING
•	132	Spindle Planet Gear (3)
		for 5AH1, 5AJ1 and 5LJ1 (13 teeth) 5RAN–9
		for 5AK1 and 5LK1 (15 teeth) 5RAK–10A
		for 5AL1, 5LL1 and 5RAL3 (17 teeth) .. 5RAL–10B
		for 5AN3, 5LN3 and 5RAN4 (14 teeth) . 5RAN–10A
	133	Spindle Bearing Locknut 5A–27
	134	Drill Chuck Spacer 5A–90
	135	Drill Chuck
		0 to 1/4" (0 to 6.4 mm) capacity (for H, J, K or L ratio nonreversible models ending in 1) R0H–99
		0 to 3/8" (0 to 9.5 mm) capacity (for L or N ratio models ending in 3) ... R1M–99
		0 to 1/2" (0 to 13 mm) capacity (for N ratio models ending in 4) R0K–99
	136	Chuck Screw (for 5RAL3 and 5RAN4) 105485
	137	Drill Chuck Key
		for No. R0H–99 Chuck R1H–J253
		for No. R1M–99 Chuck R1M–J253
		for No. R0K–99 Chuck R1T–J253
+		Vibra–Tite®**
		0.6 cc 5R–VT06
		30.0 cc 5R–VT30
		Rear Rotor Bearing Puller 5R–A799
	138	Bearing Puller 5R–799
	139	Puller Extension 5R–800
	140	Puller Expanding Rod 5R–798
	141	Horizontal Hanger 7RA–A366
*		Grease Gun R000A2–228
*		Piped–Away Exhaust Kit (for Series 5L Drills) 5L–K184
*		Chuck Shield 5A–309
*		Tune–up Kit (includes illustrated parts 6, 8, 11, 12, 19, 22, 23, 25, 53, 57, 103, 105, 108, 111 and 129) 5A/5L–TK1

* Not illustrated.

♦ Indicates Tune–up Kit part.

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

+ bullet (•) for every four tools in service.

** Registered trademark of N.D. Industries

⚠ 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.

LUBRICATION

Each time a Series 5 Drill is disassembled for maintenance and repair or replacement of parts, lubricate the tool as follows:

1. Inject a few drops of Ingersoll–Rand No. 10 Oil into each vane slot in the Rotor bore before inserting the Vanes.
2. Work enough Ingersoll–Rand No. 23 Grease into the Front Rotor Bearing (108) and Spindle Bearing (131) to coat the balls and races; apply a heavy coat of the recommended grease into the Rear Rotor Bearing (3 and 53) before installing the motor in the Motor Housing.
3. Apply a coat of Ingersoll–Rand No. 23 Grease to the Planet Gears (125 and 132), the planet gear shafts, the bearing surfaces on the Spindle (127) and Gear Head (124) and the teeth on the Ring Gear (121).

NOTICE

Do not pack the gear chamber with grease; excessive grease will cause a loss of power and overheating.

DISASSEMBLY

General Instructions

1. Do not disassemble the tool any further than necessary to replace or repair damaged parts.
2. Whenever 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 a subassembly unless the removal of that part is necessary for repairs or replacement.
4. Do not disassemble the tool unless you have a complete set of new gaskets and O–rings for replacement.

Disassembly of the Gearing

1. Lightly clamp the Motor Housing (1 or 51) in a vise with the spindle end up.

NOTICE

Take care not to distort the motor bore.

2. Remove the Spindle Bearing Locknut (133) from the Housing and withdraw the gearing. Except for the moderate press fit of the Spindle Bearing (131) on the Spindle (127), all gearing parts are free fitting and will easily slide apart.

Disassembly of the Motor

NOTICE

All motor parts are free fitting except for the Rear End Plate (102) which is retained by the End Plate Retainer (103).

1. Withdraw the motor assembly from the Housing.
2. Remove Rear End Plate Gasket (111) from the Housing.
3. Remove End Plate Retainer and Rear End Plate (102).
4. Remove Bearing Retaining Washer (109), Front Rotor Bearing (108), Front Rotor Bearing Housing (106), Cylinder Dowel (110), Cylinder (104), Rotor (101) and Vanes (105).

Disassembly of the Throttle Mechanism for Pistol Grip Drills

1. Using a small punch, remove the Throttle Retaining Pin (60) from the Motor Housing (51) and withdraw the throttle mechanism.
2. Remove the Throttle Valve Face (55) from the Throttle Valve (54).
3. Remove the Throttle Valve from the Throttle Bushing (56) and remove the Throttle Bushing Seals (57). **For Reversible Models,** remove the Throttle Valve Seat (58F), Reverse Valve Bushing (58G) and Reverse Valve Seal Rings (58F).

NOTICE

If it is necessary to remove the Trigger (53B), a new Trigger must be installed.

Disassembly of the Throttle Mechanism for Lever Throttle Drills

1. Remove the Retainer Screw (14) and Throttle Assembly Retainer (13) and withdraw the throttle mechanism.

NOTICE

Before proceeding, place an index mark on the Throttle Valve Body (5) and Valve Knob (7) to assure their same relative position when reassembling. It is possible to change the orientation 180°. If this occurs, the Tool will not run.

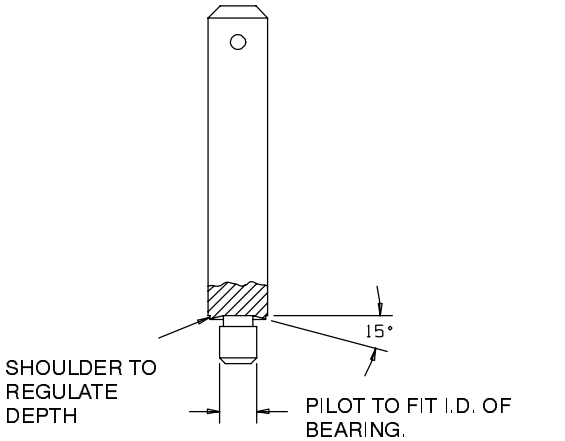
2. Push the Valve Knob Retainer (9) from the Valve Knob (7) and separate the Knob from the Throttle Valve Body being careful not to lose the other throttle components.
3. Withdraw the Throttle Valve Seat (12) from the Valve Body.

ASSEMBLY

General Instructions

1. Always press on the **inner** ring of a ball–type bearing when installing the bearing on a shaft.
2. Always press on the **outer** ring of a ball–type bearing when pressing the bearing into a bearing recess.
3. Whenever grasping a tool or part in a vise, always use leather–covered or copper–covered vise jaws. Take extra care with threaded parts and housings.
4. Always clean every part and wipe every part with a thin film of oil before installation.
5. Apply a film of O–ring lubricant to all O–rings before final assembly.
6. Check every bearing for roughness. If an open bearing must be cleaned, wash it thoroughly in a clean, suitable, cleaning solution and dry with a clean cloth. **Sealed or shielded bearings should never be cleaned.** Work grease thoroughly into every open bearing before installation.
7. Unless otherwise noted, always press on the stamped end of a needle bearing when installing the needle bearing in a recess. Use a bearing inserting tool similar to the one shown in Dwg. TPD786.

Needle Bearing Inserting Tool



(Dwg. TPD786)

Assembly of the Throttle Mechanism for Lever Throttle Drills

1. Insert the Throttle Valve (10) followed by the small diameter end of the Throttle Valve Spring (11) into the Throttle Valve Body (5).

NOTICE

Make certain the Valve Knob Seal (8) is undamaged and in place between the Knob and Valve Body.

2. Insert the Valve Knob (7) into the Throttle Valve Body and retain it using the Valve Knob Retainer (9).
3. Examine the Throttle Valve Seals (6) and replace them if they are worn or damaged. Apply a film of O–ring lubricant to the O–rings before assembly.
4. Insert the assembled throttle mechanism into the Motor Housing and retain the mechanism using the Throttle Assembly Retainer (13) and Retainer Screw (14).

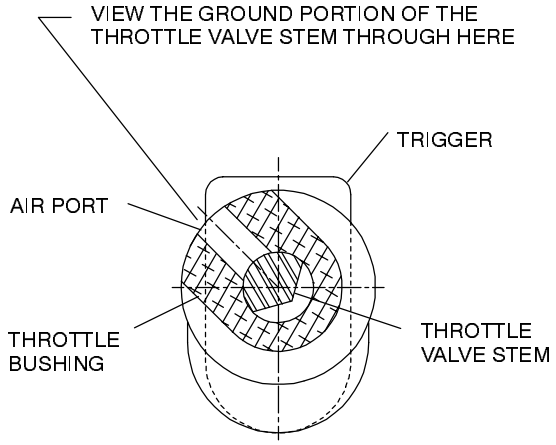
Assembly of the Throttle Mechanism for Pistol Grip Drills

NOTICE

If it becomes necessary to remove the Trigger (53B), a new Trigger must be installed. The orientation of the Valve and Trigger is important for maintaining optimum performance.

1. Install the Throttle Bushing Seat (58) in the Housing (51).
2. Install the Throttle Valve Face (55) in the groove in the Throttle Valve (54) and apply a thin coat of O–ring lubricant.
3. Examine the Throttle Valve to identify a ground arc on the Valve shaft near the Throttle Valve Face. Two unground flat faces connect with the arc.
4. Slide the Throttle Valve, barbed end first, into the round end of the Throttle Bushing Assembly (56) or Reverse Valve Assembly (58B) and locate the drilled hole in the outside diameter of the Bushing.
5. View the Throttle Valve stem through the drilled hole. Rotate the Throttle Valve until the ground arc fills the view through the drilled hole. Maintain this relative positioning and stand the partially assembled throttle on the workbench with the Throttle Valve Face down.

6. Align the flat on the top of the Trigger with the flat on the top of the Bushing, keeping the alignment as in Step 5 above, and press the Trigger onto the exposed barbed end of the Valve. Recheck the alignment of the Valve, Trigger and Bushing. When the parts are properly positioned, the flat on the Bushing and the flat on the top of the Trigger should align when the ground arc is seen through the port in the side of the Bushing. Refer to Dwg. TPD602.



CROSS SECTION THROUGH THROTTLE VALVE BUSHING AND THROTTLE VALVE SHOWING RELATIVE POSITION OF AIR PORT AND VALVE STEM

(Dwg. TPD602)

7. When inserting the assembled Throttle into the Motor Housing, align the flat on the Trigger with the flat on the Bushing and insert the assembly into the throttle hole with the flats closest to the body of the Housing.
8. Retain the throttle mechanism in the Housing using the Throttle Retaining Pin (60).

Assembly of the Motor

1. Slip the Rear End Plate (102) on the rear hub of the Rotor (101) and install the Retainer (103) in the groove.
2. Hold the Rotor vertically and clamp the short hub in leather–covered or copper–covered vise jaws.
3. Insert a Vane (105) in each slot.
4. Place the Cylinder (104), front end up, over the Rotor and onto the Rear End Plate. To determine which end of the Cylinder is the front end, hold the Cylinder horizontally, facing one end. Position the external groove for the Dowel (110) at the top as shown in the illustration. If the airports through the cylinder wall are in the bottom right quadrant, you are facing the front of the Cylinder. When assembling the motor, be sure to properly install the Cylinder. The motor will not operate properly if the Cylinder is inverted.
5. Slip the Front End Plate (106) over the rotor shaft. Press the Front Rotor Bearing (105) into the Bearing Housing (107) with the sealed face of the Bearing flush with one face of the Housing. Slide the Bearing and Housing, sealed side first, followed by the Retaining Washer (109), onto the shaft.
6. Enter the Rear End Plate Gasket (111) into the Motor Housing (1 or 51), positioning the Gasket smoothly on the backbore so that the dowel notch in the Gasket aligns with the dowel hole in the Housing.
7. Obtain a stiff steel rod 3/32" (2.3 mm) diameter and approximately 10" (254 mm) long to use as an assembly dowel.
8. Align the dowel groove in the Rear End Plate, Cylinder and Front End Plate with the dowel hole through the Rotor Bearing Housing and insert the rod.
9. Enter the end of the assembly dowel in the dowel hole and slide the motor assembly into the Housing. This is a sliding fit and if proper alignment is maintained, the assembly will enter under only slight finger pressure. Do not drive or otherwise force the motor into position.
10. Replace the assembly dowel with the Cylinder Dowel.

NOTICE

Make sure the Cylinder Dowel is entered into and remains in the dowel hole in the Housing. When in proper position, approximately 3/32" (2.3 mm) of the Dowel protrudes from the face of the Bearing Housing. If it is not in the hole, it will protrude approximately 7/32" (5.5 mm).

Assembly of the Gearing

1. Work the Slinger Ring (128), large end first, over the Spindle shaft and against the Gear Frame race. Follow with the Seal (129) and the Grease Shield (130).
2. Install the Spindle Bearing (131) over the Spindle shaft. Firmly support the Spindle (127) and press, do not drive, the Bearing into position using an arbor that will contact only the inner ring of the Bearing.
3. Slide the Ring Gear (121) into the Motor Housing (1 or 51), making sure the Cylinder Dowel (110) enters one of the notches in the end of the Gear. Check this engagement by trying to rotate the Gear by hand.
4. **For H, J or N ratio,** slide the Rotor Pinion Spacer (122) followed by the Rotor Pinion (123) onto the spline shaft on the Rotor (101).

5. **For N ratio**, slide a Gear Head Planet Gear (125) (13 teeth) onto each of the three gear shafts on the Gear Head (124). Enter the assembly into the Ring Gear (121) and slide it into engagement with the Rotor Pinion. Slip the Gear Head Spacer (126) over the spline on the Gear Head.

NOTICE

For N ratio, a Gear Head Planet Gear (125) has 13 teeth and a Spindle Planet Gear (132) has 14 teeth. Do not mix, mismatch or switch locations with these small gears when reassembling a tool.

6. **For H, J, K, L or N ratio,** slide a Spindle Planet Gear onto each of the three gear shafts on the Spindle (127) and slide the assembly into the Ring Gear and into engagement with the Rotor Pinion or Gear Head.
7. Install new Housing Pellet (3A or 53A) in the Motor Housing. (See Dwg. TPA782–7 on Page 13).
8. Clean the threads on the Spindle Bearing Locknut (133) and Motor Housing (1 or 5l) to remove all grease and oil.
9. With the Locknut hand tight, connect the air hose to the Inlet (18 or 66) and operate the Drill to check for smooth operation.
10. Clamp the Tool in a vise, taking care not to damage the Housing and tighten the Locknut a minimum torque of 25 ft–lb (33 Nm).
11. Install Drill Chuck Spacer (134) on Spindle.
12. Thread Drill Chuck onto Spindle and tighten.

TROUBLESHOOTING GUIDE

Trouble	Probable Cause	Solution
Loss of Power	Low air pressure	Check air supply. For top performance, the air pressure must be 90 psig (6.2 bar/620 kPa) at the inlet.
	Plugged Air Strainer Screen or Inlet Screen	Clean the Air Strainer or Inlet Screen in a clean, suitable, cleaning solution. If the Screen cannot be cleaned, replace it.
	Clogged Muffler or Exhaust Silencer	Clean the Muffler Element in a clean, suitable, cleaning solution. If it cannot be cleaned, replace it.
	Worn or broken Vanes	Replace the **complete** set of Vanes.
	Damaged Rear End Plate Gasket	Install a new Rear End Plate Gasket.
	Worn or broken Cylinder	Replace the Cylinder if it is cracked or if the bore appears wavy or scored.
	Improper lubrication or dirt build--up	Clean the Motor Unit parts and lubricate as instructed.
Leaky Throttle Valve	Worn Throttle Valve and/or Throttle Valve Seat	Install a new Throttle Valve and/or a Throttle Valve Seat.
	Dirt accumulation on Throttle Valve and/or Throttle Valve Seat	Pour about 3 cc of a clean, suitable, cleaning solution in the air inlet and operate the tool Valve for about 30 seconds. **Immediately** pour 3 cc of the recommended oil in the air inlet and operate the tool for 30 seconds to lubricate all the cleaned parts.
Gear Case gets hot	Excessive grease	Clean and inspect the Gear Case and gearing parts and lubricate as instructed.
	Worn or damaged parts	Clean and inspect the Gear Case and gearing. Replace worn or broken components.

NOTICE

SAVE THESE INSTRUCTIONS. DO NOT DESTROY.

NOTES

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