OPERATOR'S MANUAL

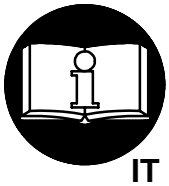
INCLUDING: OPERATION, INSTALLATION & MAINTENANCE

04577011-02
September, 2001

SERIES RG1 AIR DRILLS

NOTICE

Series RG1 Drills are designed for drilling operations in the aerospace, automotive, appliance, electronic, machining and furniture industries.
ARO is not responsible for customer modification of tools for applications on which ARO 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.**
- **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 ARO.**
- **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 ARO 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 ARO Tool Products Authorized Servicenter.

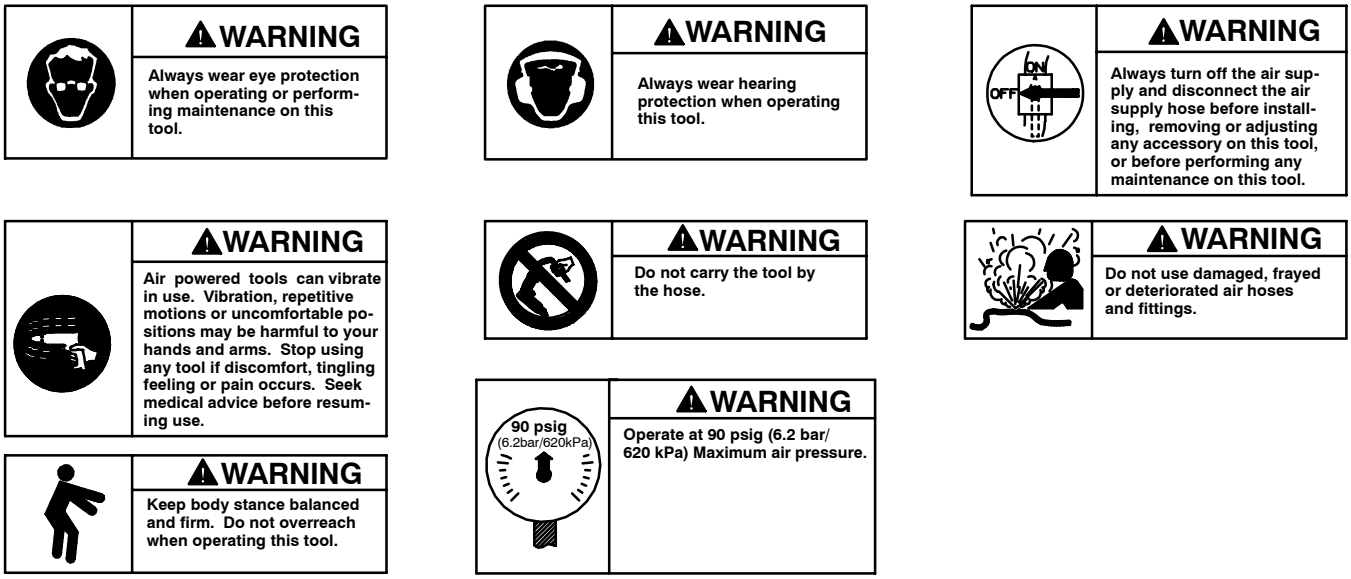
For parts and service information, contact your local ARO distributor, or the Customer Service Dept. of the Ingersoll-Rand Distribution Center, White House, TN at PH: (615) 672-0321, FAX: (615) 672-0801.

ARO Tool Products
Ingersoll-Rand Company
1725 U.S. No. 1 North ● P.O. Box 8000 ● Southern Pines, NC 28388-8000

WARNING LABEL IDENTIFICATION

⚠ WARNING

FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.



PLACING TOOL IN SERVICE

LUBRICATION

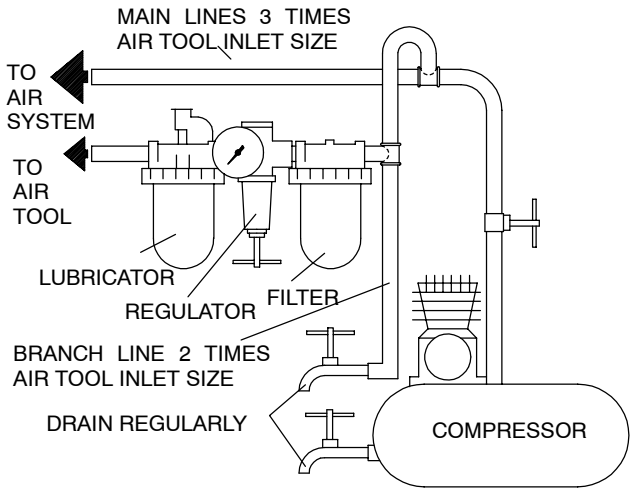
IRAX No. 10

IRAX No. 67

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

For USA - No. C08-02-FKG0-28

After each 40,000 cycles or each month, whichever occurs first, lubricate the gear train with IRAX No. 67 Grease.



(Dwg. TPD905-1)

SPECIFICATIONS

PISTOL GRIP HANDLE			
Model	**Free Speed rpm**	**Chuck Capacity in**	**mm**
RG1AA, RG1AAA, RG1AA2, RG1AA2A	18,000	1/4	6
RG1BA, RG1BAA, RG1BA2, RG1BA2A	5,100	1/4	6
RG1CA, RG1CAA, RG1CA2, RG1CA2A	3,800	1/4	6
RG1EA, RG1EAA, RG1EA2, RG1EA2A	3,000	1/4	6
RG1FA, RG1FAA, RG1FA2, RG1FA2A	2,000	1/4	6
RG1FB, RG1FBA, RG1FB2, RG1FB2A	2,000	3/8	10
RG1GA, RG1GAA, RG1GA2, RG1GA2A	1,500	1/4	6
RG1GB, RG1GBA, RG1GB2, RG1GB2A	1,500	3/8	10
RG1HA, RG1HAA, RG1HA2, RG1HA2A	900	1/4	6
RG1HB, RG1HBA, RG1HB2, RG1HB2A	900	3/8	10
RG1JA, RG1JAA, RG1JA2, RG1JA2A	500	1/4	6
RG1JB, RG1JBA, RG1JB2, RG1JB2A	500	3/8	10

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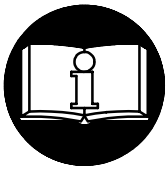
PERCEUSES PNEUMATIQUES DE LA SÉRIE RG1

NOTE

Les perceuses de la Série RG1 sont destinées aux opérations de perçage dans les industries de l'aérospatiale, de l'automobile, des appareils ménagers, de l'électronique, de l'usinage et des meubles.
ARO 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 ARO.



⚠ 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.**
- **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 ARO.**
- **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 ARO 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 ARO le plus proche.

Pour les informations relatives aux pièces et au service, contactez votre distributeur ARO.

ARO Tool Products

Ingersoll-Rand Company
1725 U.S. No. 1 North ● P.O. Box 8000 ● Southern Pines, NC 28388-8000

IR ARO®

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

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

⚠ 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

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

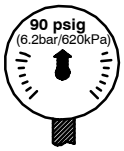
Ne pas transporter l'outil par son flexible.

⚠ ATTENTION

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

⚠ ATTENTION

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



⚠ ATTENTION

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

MISE EN SERVICE DE L'OUTIL

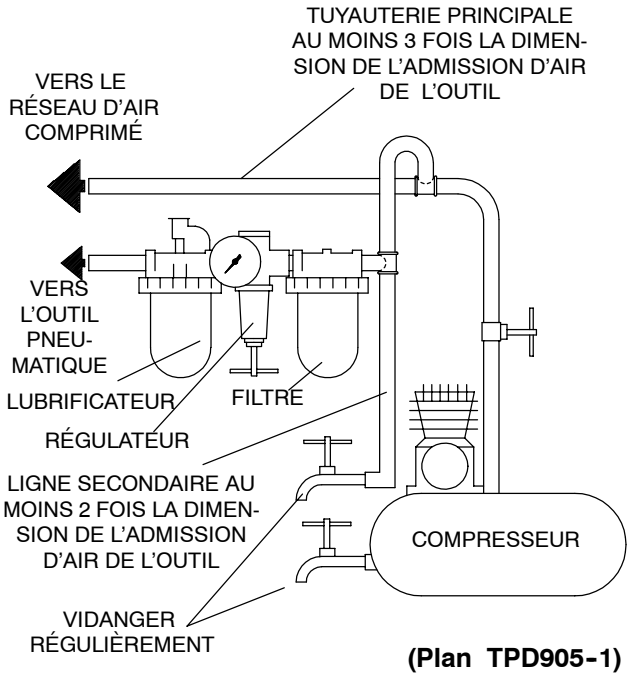
LUBRIFICATION

IRAX No. 10 **IRAX No. 67**

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

É.U. - No. C08-02-FKG0-28

Tous les 40.000 cycles ou au moins tous les mois, lubrifier le train d'engrenages avec de la graisse IRAX No. 67.



(Plan TPD905-1)

MISE EN SERVICE DE L'OUTIL

SPÉCIFICATIONS

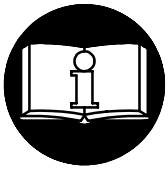
Modèle	Type de poignée	Vitesse à vide	Capacité du mandrin	
		tr/mn	pouces	mm
RG1AA, RG1AAA, RG1AA2, RG1AA2A	pistolet	18,000	1/4	6
RG1BA, RG1BAA, RG1BA2, RG1BA2A	pistolet	5,100	1/4	6
RG1CA, RG1CAA, RG1CA2, RG1CA2A	pistolet	3,800	1/4	6
RG1EA, RG1EAA, RG1EA2, RG1EA2A	pistolet	3,000	1/4	6
RG1FA, RG1FAA, RG1FA2, RG1FA2A	pistolet	2,000	1/4	6
RG1FB, RG1FBA, RG1FB2, RG1FB2A	pistolet	2,000	3/8	10
RG1GA, RG1GAA, RG1GA2, RG1GA2A	pistolet	1,500	1/4	6
RG1GB, RG1GBA, RG1GB2, RG1GB2A	pistolet	1,500	3/8	10
RG1HA, RG1HAA, RG1HA2, RG1HA2A	pistolet	900	1/4	6
RG1HB, RG1HBA, RG1HB2, RG1HB2A	pistolet	900	3/8	10
RG1JA, RG1JAA, RG1JA2, RG1JA2A	pistolet	500	1/4	6
RG1JB, RG1JBA, RG1JB2, RG1JB2A	pistolet	500	3/8	10

E

TALADROS NEUMÁTICOS DE LA SERIE RG1

NOTA

Los taladros de la serie RG1 están diseñados para las operaciones de taladrado en las industrias aeroespacial, del automóvil, de electrodomésticos, electrónica, mecánica y del mueble.
ARO no aceptará responsabilidad alguna por la modificación de las herramientas efectuada por el cliente para las aplicaciones que no hayan sido consultadas con ARO.



⚠ 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

- **Use siempre protección ocular cuando utilice esta herramienta o realice operaciones de mantenimiento en la misma.**
- **Use siempre protección para los oídos cuando utilice esta herramienta.**
- **Mantenga las manos, la ropa suelta y el cabello largo alejados del extremo giratorio de la herramienta.**
- **Anticipe y esté atento a los cambios repentinos en el movimiento durante la puesta en marcha y utilización de toda herramienta motorizada.**
- **Mantenga una postura del cuerpo equilibrada y firme. No estire demasiado los brazos al manejar la herramienta. Pueden 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 ARO recomendados.**
- **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 ARO 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 ARO más próximo.

Por información sobre piezas y servicio, sírvase ponerse en contacto con el distribuidor ARO de su zona.

ARO Tool Products
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ETIQUETAS DE AVISO

⚠ AVISO

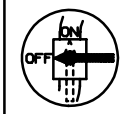
EL HACER CASO OMISO DE LOS AVISOS SIGUIENTES PODRÍA OCASIONAR LESIONES.

⚠ ADVERTENCIA

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

⚠ ADVERTENCIA

Use siempre protección para los oídos cuando utilice 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

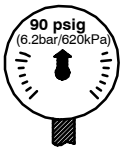
No coger la herramienta por la manguera para levantarla.

⚠ 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

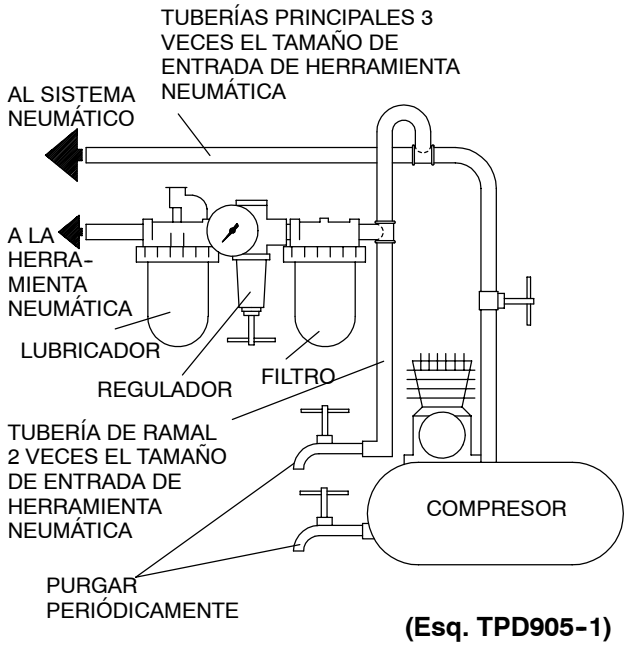
IRAX Nº 10

IRAX Nº 67

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

Para EE.UU. - No. C08-02-FKG0-28

Después de cada 40.000 ciclos o mensualmente (lo que ocurra primero), lubrique el tren de engranajes con grasa IRAX Nº 67.



(Esq. TPD905-1)

PARA PONER LA HERRAMIENTA EN SERVICIO

ESPECIFICACIONES

Modelo	Tipo de empuñadura	Velocidad en vacío	Capacidad del portabrocas	
		rpm	mm	pulg.
RG1AA, RG1AAA, RG1AA2, RG1AA2A	pistola	18,000	6	1/4
RG1BA, RG1BAA, RG1BA2, RG1BA2A	pistola	5,100	6	1/4
RG1CA, RG1CAA, RG1CA2, RG1CA2A	pistola	3,800	6	1/4
RG1EA, RG1EAA, RG1EA2, RG1EA2A	pistola	3,000	6	1/4
RG1FA, RG1FAA, RG1FA2, RG1FA2A	pistola	2,000	6	1/4
RG1FB, RG1FBA, RG1FB2, RG1FB2A	pistola	2,000	10	3/8
RG1GA, RG1GAA, RG1GA2, RG1GA2A	pistola	1,500	6	1/4
RG1GB, RG1GBA, RG1GB2, RG1GB2A	pistola	1,500	10	3/8
RG1HA, RG1HAA, RG1HA2, RG1HA2A	pistola	900	6	1/4
RG1HB, RG1HBA, RG1HB2, RG1HB2A	pistola	900	10	3/8
RG1JA, RG1JAA, RG1JA2, RG1JA2A	pistola	500	6	1/4
RG1JB, RG1JBA, RG1JB2, RG1JB2A	pistola	500	10	3/8

MANUAL DO OPERADOR

9-2001

INCLUINDO: FUNCIONAMENTO, INSTALAÇÃO E MANUTENÇÃO

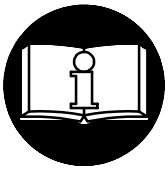
BERBEQUINS PNEUMÁTICOS SÉRIES RG1

P

AVISO

Os Berbequins Séries RG1 são concebidos para aplicações de perfuração em indústrias aeroespacial, de automóveis, de equipamentos, electrónica, de maquinaria aeroespaciais e de mobiliário.
A ARO não é responsável por modificações, feitas pelo cliente em ferramentas, nas quais a ARO 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 com 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**
  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.**
- **Os acessórios da ferramenta podem continuar a emitir impactos 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 ARO.**
- **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 ARO 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 ARO mais próximo.

Para obter informações sobre peças e assistência, contacte o seu distribuidor local ARO.

ARO Tool Products
Ingersoll-Rand Company
1725 U.S. No. 1 North ● P.O. Box 8000 ● Southern Pines, NC 28388-8000

IDENTIFICAÇÃO DO RÓTULO DE ADVERTÊNCIA

⚠ ADVERTÊNCIA

O NÃO CUMPRIMENTO DAS SEGUINTES ADVERTÊNCIAS PODE RESULTAR EM FERIMENTOS.

⚠ ADVERTÊNCIA

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

⚠ ADVERTÊNCIA

Ferramentas accionadas pneumáticamente podem vibrar em uso. Vibração, movimentos repetitivos ou posições desconfortáveis podem ser prejudiciais às mãos e aos braços. Pare de usar a ferramenta caso ocorra algum desconforto, sensação de formigueiro ou dor . Procure assistência médica antes de retornar ao trabalho.

⚠ ADVERTÊNCIA

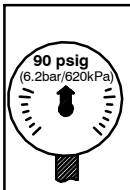
Mantenha a posição do corpo equilibrada e firme. Não exagere quando operar esta ferramenta. Torques de reacção elevados podem ocorrer sob a pressão de ar recomendada.

⚠ ADVERTÊNCIA

Use sempre protecção contra o ruído ao operar esta ferramenta.

⚠ ADVERTÊNCIA

Não carregue a ferramenta segurando na mangueira.



⚠ ADVERTÊNCIA

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

⚠ ADVERTÊNCIA

Desligue sempre a alimentação de ar e desconecte a mangueira de alimentação de ar antes de instalar, remover ou ajustar qualquer acessório nesta ferramenta, ou antes de executar algum serviço de manutenção nesta ferramenta.

⚠ ADVERTÊNCIA

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

COLOCANDO A FERRAMENTA EM FUNCIONAMENTO

LUBRIFICAÇÃO

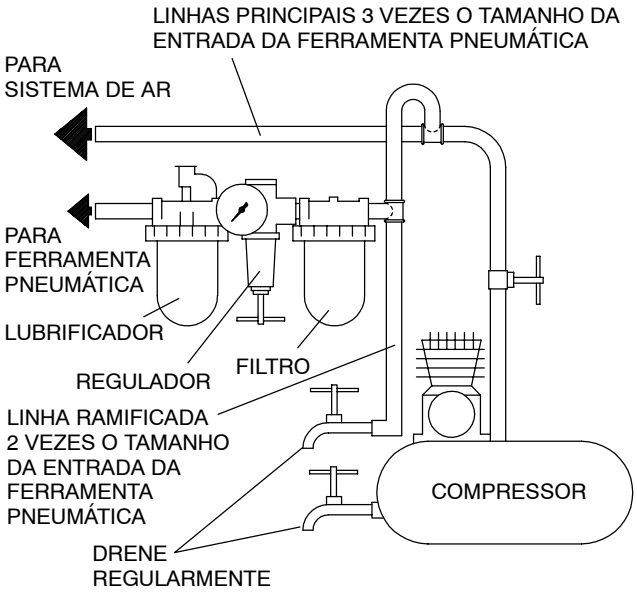
IRAX No. 10

IRAX No. 67

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

Para EUA - No. C08-02-FKG0-28

Depois de 40.000 ciclos ou cada mês, o que ocorrer primeiro, lubrifique o trem de engrenagem com Massa IRAX No. 67.

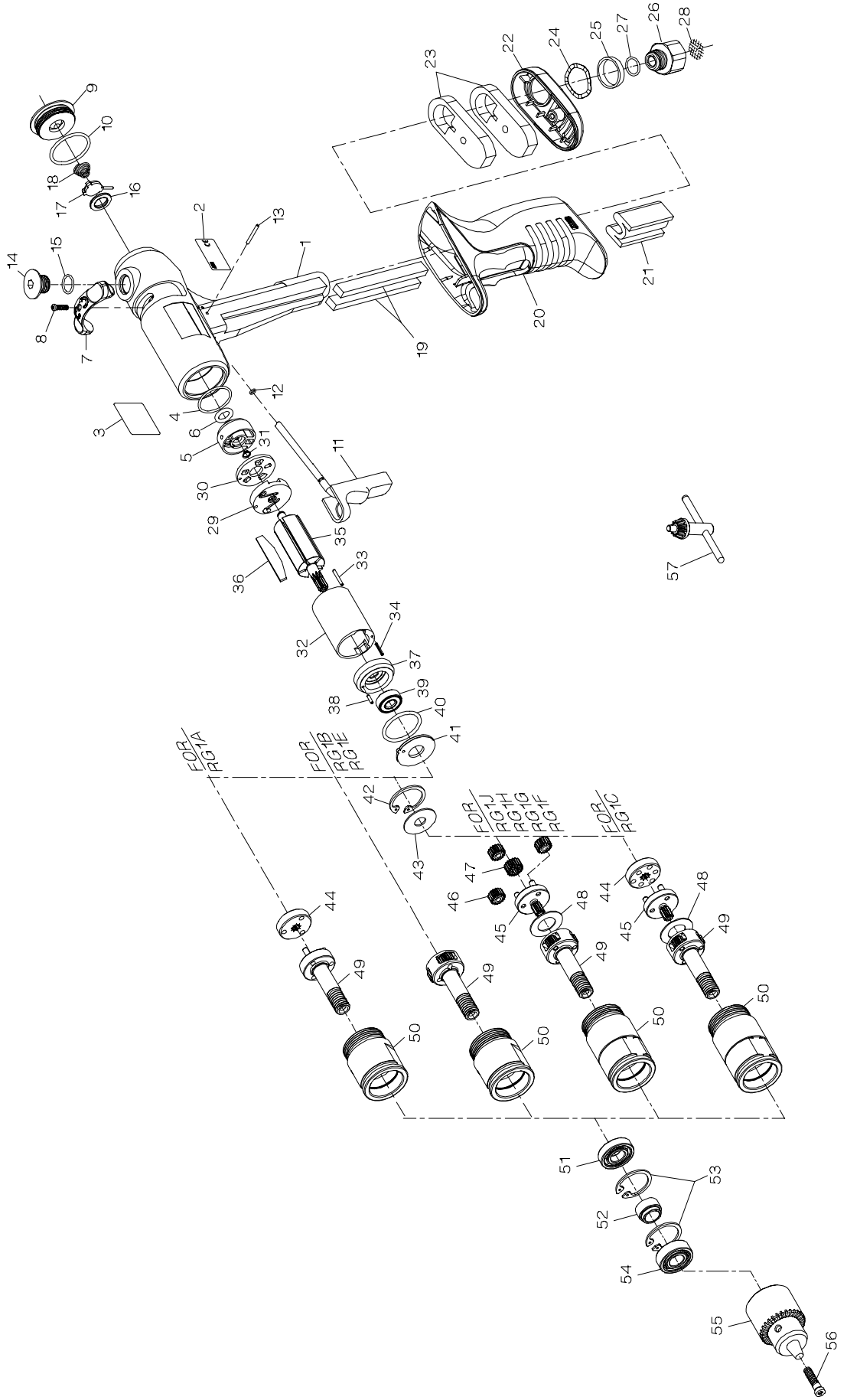


(Desenho TPD905-1)

ESPECIFICAÇÕES

Modelo	Tipo de Punho	Velocidade Livre	Capacidade do Encabadouro	
		rpm	mm	pol.
RG1AA, RG1AAA, RG1AA2, RG1AA2A	pistola	18,000	6	1/4
RG1BA, RG1BAA, RG1BA2, RG1BA2A	pistola	5,100	6	1/4
RG1CA, RG1CAA, RG1CA2, RG1CA2A	pistola	3,800	6	1/4
RG1EA, RG1EAA, RG1EA2, RG1EA2A	pistola	3,000	6	1/4
RG1FA, RG1FAA, RG1FA2, RG1FA2A	pistola	2,000	6	1/4
RG1FB, RG1FBA, RG1FB2, RG1FB2A	pistola	2,000	10	3/8
RG1GA, RG1GAA, RG1GA2, RG1GA2A	pistola	1,500	6	1/4
RG1GB, RG1GBA, RG1GB2, RG1GB2A	pistola	1,500	10	3/8
RG1HA, RG1HAA, RG1HA2, RG1HA2A	pistola	900	6	1/4
RG1HB, RG1HBA, RG1HB2, RG1HB2A	pistola	900	10	3/8
RG1JA, RG1JAA, RG1JA2, RG1JA2A	pistola	500	6	1/4
RG1JB, RG1JBA, RG1JB2, RG1JB2A	pistola	500	10	3/8

SERIES RG1 DRILLS



(Dwg. ATP67)

SERIES RG1 DRILLS

		PART NUMBER FOR ORDERING			PART NUMBER FOR ORDERING
1	Motor Housing Assembly		29	Rear End Plate Assembly (includes rear	
	for all models with bottom inlet	TAP-A40-B		rotor bearing)	TRH-A12-1
	for all models with top inlet	TAP-A40	30	Rear End Plate Face Plate	TRH-12-2
2	Nameplate	TAH-301	31	Rear End Plate Assembly Retainer	8SL-305
3	Warning Label	TRH-99	32	Cylinder Assembly	TRH-A3
4	Housing O-ring	TRH-104	33	Cylinder Rear Alignment Pin	TRH-98
5	Reverse Valve Assembly	TRH-A3291	34	Cylinder Front Alignment Pin	TRH-98-1
6	Reverse Valve Seal	R1A-159	35	Rotor	TRD-53
7	Reverse Lever	TRP-273	36	Vane Packet (set of 5 Vanes)	TRH-42-5
8	Reverse Lever Screw	TRH-330	37	Front End Plate Assembly	TRH-A11
9	Rear Housing Cap Assembly	TAP-A202	38	End Plate Alignment Pin	TRH-98-2
10	Rear Housing Cap Seal	TRP-158	39	Front Rotor Bearing	TRH-24
11	Trigger Assembly	TRP-A93	40	Motor Seal	TRH-211
12	Trigger Shaft O-ring	TRP-112	41	Motor Clamp Washer	TRH-207
13	Trigger Retaining Pin	400-25-87-4	42	Gear Retainer (for Series RG1C, RG1F, RG1G,	
14	Inlet Plug Assembly (for models with top			RG1H and RG1J)	TRH-28
	inlet only)	TRP-A565	43	Gear Head Spacer (for Series RG1C, RG1F,	
15	Inlet Plug Seal	TRP-103		RG1G, RG1H and RG1J)	TRH-81
16	Throttle Valve Seat	TRP-303	44	Drive Plate (for Series RG1A and RG1C)	TRH-17
17	Throttle Valve	TRP-A302	45	Planet Gear Head Assembly (includes gear	
18	Throttle Valve Spring	TRP-51		shafts)	
19	Housing Muffler Element (2)	TRP-311-2		for Series RG1H and RG1J	TRH-A2169-16
20	Housing Grip			for Series RG1G	TRH-A2169-12
	large size (standard)	TRP-40-2		for Series RG1F	TRH-A2169-10
	small size	TRP-40-1		for Series RG1C	TRH-A216-15
21	Grip Muffler Element	3RA-310	46	Planet Gear (3 for each Gear Head)	
22	Grip End Cap	TAP-40-B		for Series RG1H and RG1J	TRH-10-16
23	End Cap Muffler Element (2)	TRP-311-1		for Series RG1G	TRH-10-12
24	Wave Washer	TRP-761		for Series RG1F	TRH-10-10
25	Inlet Bushing Bezel	TAP-123	47	Gear Head Pinion	
26	Inlet Bushing Assembly	TRP-A465		for Series RG1G	TRH-17-18
27	Inlet Bushing Seal	TRP-103		for Series RG1F	TRH-17-21
28	Inlet Bushing Screen	TRH-61			

		PART NUMBER FOR ORDERING			PART NUMBER FOR ORDERING
48	Planet Gear Head Spacer (for Series RG1C, RG1F, RG1G, RG1H and RG1J)	TRH-82	52	Bearing Spacer	TRD-111
49	Spindle Assembly (includes all spindle gearing)		53	Bearing Stop (2)	TRH-28
	for Series RG1A	TRD-A8-D	54	Spindle Cap Bearing	TRH-510
	for Series RG1B and RG1H	TAD-A8-12	55	Drill Chuck	
	for Series RG1C	TAD-A8-15		for Models ending in A (1/4")	R0H-99
	for Series RG1E and RG1J	TAD-A8-16		for Models ending in B (3/8")	6A-99
	for Series RG1F and RG1G	TAD-A8-10	56	Chuck Retaining Screw	105485
50	Gear Case		57	Chuck Key	
	for Series RG1A, RG1B and RG1E	TAH-37-S		for R0H-99 (1/4") Chuck	R1H-J253
	for all others	TAH-37		for 6A-99 (3/8") Chuck	R0J-J253
51	Spindle Bearing	R00H-97	*	Drill Chuck Guard Kit (optional)	
				for Models ending in A (1/4")	TRD-A961-S
				for Models ending in B (3/8")	TRD-A961

* Not illustrated.

MAINTENANCE SECTION

⚠ 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 RG1 Drill is disassembled for maintenance and repair or replacement of parts, lubricate the tool as follows:

1. Coat all exposed gears with IRAX No. 67 Grease and work some of the Grease into the gearing of the Spindle Assembly (49).
2. Use IRAX No. 10 Oil to lubricate the motor. Inject approximately 1 to 2 cc of oil into the air inlet before attaching the air hose to the tool.

CHANGING INLET LOCATION

Series RG1 Drills with the Top Inlet feature are shipped from the factory with the air connection attached to the bottom of the handle. To use the Top Inlet connection on these tools, proceed as follows:

1. Shut off the air supply and disconnect the air supply hose, if the tool is in use.
2. Using a 3/16" hex wrench, unscrew and remove the Inlet Plug Assembly (14) from the top of the Housing (1).
3. Using a 3/4" wrench on the flats of the Inlet Bushing Assembly (26), unscrew and remove the Assembly.
4. Transfer the Wave Washer (24) and Inlet Bushing Bezel (25) from the threads of the Inlet Bushing to the threads of the Inlet Plug. Make certain the Washer is against the Grip End Cap (22) and the smaller end of the Bezel is against the Inlet Plug Seal (15).
5. Thread the assembled Inlet Plug into the bottom of the Handle and tighten it between 15 and 20 ft-lbs. (20 and 27 Nm) torque.
6. Thread the Inlet Bushing with the Inlet Bushing Seal (27) into the top of the Handle and tighten it between 15 and 20 ft-lbs. (20 and 27 Nm) torque.
7. Connect the air supply hose to the Inlet Bushing and turn on the air supply.

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 vice 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 gaskets and o-rings for replacement.

Disassembly of the Tool

Each Series RG1 Drill is made up using three modules or units which include a housing and throttle unit, a motor unit and a combined gearing and spindle unit. The tool can be disassembled for repairs to each individual unit without disturbing the other units. To separate the modules, proceed as follows:

1. Remove the Chuck (55) using the following technique:
   a) Open the Chuck wide enough to insert a Pozi-Drive Screwdriver into it.

   NOTICE

   The Screw in the following step has a left-hand thread. Rotate the screwdriver clockwise to remove the Screw.

   b) Unscrew and remove the Chuck Retaining Screw (56).
   c) Insert the short leg of a 1/4" hex wrench into the jaws of the Chuck and tighten the Chuck.
   d) Using a brass hammer, sharply rap the long leg of the wrench in a counterclockwise direction to loosen the Chuck.
   e) Unscrew and remove the Chuck from the spindle.
2 To separate the Gear Case (50) from the Housing (1), proceed as follows:
   a) Install a standard 1-1/16" open end wrench on the flats of the Gear Case.
   b) Grasp the handle portion of the Motor Housing and rotate the Housing counterclockwise to begin unscrewing it from the Gear Case.
   c) When the Housing begins to turn freely, remove the wrench from the Gear Case and with the spindle upward, finish unscrewing the Housing from the Gear Case.
   d) Set the assembled Gear Case on the workbench.
3. Remove the Motor Clamp Washer (41) and the Motor Seal (40) from the assembled motor in the Housing.
4. Tap the Motor Housing on a block of wood to remove the assembled Motor from the Housing.

Disassembly of the Gearing

1. **For Series RG1C, RG1D, RG1F, RG1G, RG1H and RG1J,** using snap ring pliers, remove the Gear Retainer (42) from inside the Gear Case and remove the Gear Head Spacer (43).
2. **For Series RG1A,** lightly rap the motor end of the Gear Case on a wooden work bench top to remove the Drive Plate (44).
   For Series RG1C, lightly rap the motor end of the Gear Case on a wooden work bench top to remove the Drive Plate (44), Planet Gear Head Assembly (45) and the Planet Gear Head Spacer (48).
   For Series RG1H and RG1J, lightly rap the motor end of the Gear Case on a wooden work bench top to remove the three Planet Gears (46), the Planet Gear Head Assembly (45) and the Planet Gear Head Spacer (48).
   For Series RG1F and RG1G, lightly rap the motor end of the Gear Case on a wooden work bench top to remove the three Planet Gears (46), the Rotor Pinion (47), the Planet Gear Head Assembly (45) and the Planet Gear Head Spacer (48).

NOTICE

If the Spindle Assembly is being removed or replaced, the Spindle Bearing and Spindle Cap Bearing may be damaged during the removal process. We recommend that new replacement bearings be available for installation when the tool is reassembled.

3. Stand the Gear Case on the table of an arbor press with the threaded end of the Spindle Assembly (49) upward. Using a rod slightly smaller than the spindle shaft, press the Spindle Assembly out of the Spindle Cap Bearing (54) and Spindle Bearing (51).
4. Insert a long, small drift through the central opening of the Spindle Bearing and push the Bearing Spacer (52) off to one side. Using a hammer with the drift, tap the inner ring of the Spindle Cap Bearing. Repeat the process at several points until the Bearing is free from the Gear Case. Remove the Bearing Spacer from the Gear Case.
5. Using snap ring pliers, remove the two Bearing Stops (53).
6. Stand the Gear Case on the table of an arbor press with the threaded end upward, and press the Spindle Bearing out of the Gear Case.

Disassembly of the Motor

1. Using snap ring pliers, remove the Rear End Plate Assembly Retainer (31) from the shaft of the Rotor (35).
2. Pull the Rear End Plate Face Plate (30) and Rear End Plate Assembly (29) off the hub of the Rotor.
3. Using a piece of leather or other type of protective material, grasp the shaft of the Rotor and pull the Rotor out of the Cylinder (32).
4. Remove the Vanes (36) from the Rotor.
5. Support the Front End Plate Assembly (37), as near the rotor body as possible, on the table of an arbor press and press the Rotor from the Front Rotor Bearing (39). Remove the Bearing from the Front End Plate.

Disassembly of the Housing

1. Use a wrench to unscrew and remove the Inlet Bushing Assembly (26) from the Motor Housing Assembly (1). Remove the Inlet Bushing Bezel (25) and the Wave Washer (24).
2. Pull the Housing Grip (20) off the Motor Housing.
3. Pull or carefully pry the Grip End Cap (22) off the inlet end of the Grip and remove the two End Cap Muffler Elements (23).
4. Pull the Grip Muffler Element (21) out of the inlet end of the Grip and the two Housing Muffler Elements (19) out of the trigger end of the Grip.
5. **For Top Inlet Models**, use a 3/16" hex wrench to unscrew and remove the Inlet Plug Assembly (14).
6. Using a 1/4" hex wrench, unscrew and remove the Rear Housing Cap Assembly (9). Remove the Throttle Valve Spring (18) and the Throttle Valve (17) from the rear of the Housing.
7. If the Throttle Valve Seat (16) must be replaced, insert a hooked tool through the central opening of the Seat and pull it from the Motor Housing.
8. Use a #2 Phillips Head Screwdriver, to unscrew and remove the Reverse Lever Screw (8) and lift the Reverse Lever (7) out of the Motor Housing.
9. Insert a 5/16" wooden dowel between 6 and 8 inches long, into the Rear Housing Cap opening and push the Reverse Valve Assembly (5) out the motor end of the Housing.
10. Use a hooked tool to pull the Housing O-ring (4) out of the Motor Housing.
11. Use a 1/16" pin punch to drift the Trigger Retaining Pin (13) out of the Motor Housing and pull the Trigger Assembly (11) out of the Housing.

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 to protect the surface of the part and help prevent distortion. This is particularly true of threaded members and housings.
4. Except for bearings, always clean every part and wipe every part with a thin film of oil before installation.
5. Apply 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 into every open bearing before installation.

Assembly of the Housing

1. Lubricate a new Trigger Shaft O-ring (12) and install it in the groove on the shaft of the Trigger Assembly (11).
2. Insert the shaft of the Trigger Assembly into the hole in the Motor Housing (1) until the flat on the shaft is aligned with the hole in the Housing for the Trigger Retaining Pin (13). Tap the pin into the Housing to capture the Trigger Assembly.
3. Lubricate the Housing O-ring (4) with o-ring lubricant and install it at the bottom of the cylinder bore in the Motor Housing.
4. Inspect the face on the hub of the Reverse Valve Assembly (5) for nicks or damage. Replace the Assembly if any damage is evident. Examine the Reverse Valve Seal (6) for nicks or cuts and replace the Seal if it is damaged.
5. Lubricate the Reverse Valve Seal with o-ring lubricant and insert the Assembly, Seal end leading, into the cylinder bore of the Motor Housing. Push the Assembly toward the bottom of the cylinder bore until it "snaps" into its proper location.
6. Rotate the Valve inside the Housing until the threaded hole into the side of the Valve for the Reverse Lever Screw (8) is centered radially in the slot in the top of the Housing for the Reverse Lever (7).
7. Install the Reverse Lever in the slot and use a #2 Phillips Head Screwdriver to secure the Lever to the Valve with the Reverse Lever Screw.
8. Install the Throttle Valve Seat (16) in the bottom of the housing cap opening. Use a rod with a flat end and no sharp edges to push the Seat flat at the bottom face of the opening.
9. Install the Throttle Valve (17), flat face leading, in the opening against the Valve Seat. Place the Throttle Valve Spring (18), small end leading, into the Housing against the Valve. Encircle the hub on the Valve with the Spring.
10. Examine the Rear Housing Cap Seal (10) for nicks or cuts. If damaged, carefully install a new Seal over the threads of the Rear Housing Cap Assembly (9).
11. Using a 1/4" hex wrench, thread the Assembly into the rear of the Motor Housing. Tighten the Assembly between 15 and 20 ft-lbs. (20 and 27 Nm) torque.
12. **For Top Inlet Models**, examine the Inlet Plug Seal (15) for nicks or cuts. If damaged, carefully install a new Seal over the threads of the Inlet Plug Assembly (14).
13. **For Top Inlet Models**, use a 3/16" hex wrench to thread the Assembly into the top of the Motor Housing. Tighten the Assembly between 15 and 20 ft-lbs. (20 and 27 Nm) torque.
14. Lay a Housing Muffler Element (19) on each side of the handle rib and use a non-pointed probe to fully push the end of each Element into the recess near the body of the Housing.
15. Install the Housing Grip (20) over the Elements and onto the inlet end of the Motor Housing. Make certain the Grip is fully seated against the Housing and the Trigger Assembly works freely.
16. Fold the Grip Muffler Element (21) in half and then fold each half equally again and insert it into the bottom of the Grip.
17. Stack the two End Cap Muffler Elements (23) inside the Grip and push the Grip End Cap (22) onto the inlet end of the Grip.
18. If the Inlet Screen (28) required replacement, use a wooden dowel to carefully push a new one into the Inlet Bushing (26).
19. If the Inlet Bushing Seal (27) is nicked or damaged, carefully install a new one over the threads of the Inlet Bushing.
20. Install the Inlet Bushing Bezel (25), small end leading, followed by the Wave Washer (24) onto the threads of the Inlet Bushing against the Seal.
21. Thread the assembled Inlet Bushing through the Grip End Cap into the handle of the Motor Housing and tighten the Bushing between 15 and 20 ft-lbs. (20 and 27 Nm) torque.

Assembly of the Motor

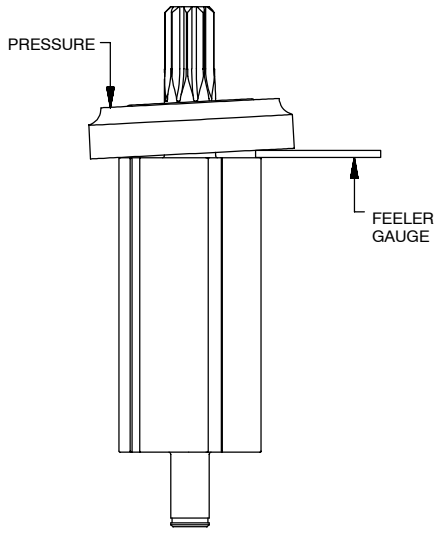
1. Place the Front End Plate (37) on the splined shaft of the Rotor (35) with the bearing recess away from the rotor body.
2. Place the Front Rotor Bearing (39) onto the shaft and using a sleeve or piece of tubing that contacts the inner race of the Bearing, press the Bearing onto the shaft until the Front End Plate nearly contacts the rotor body.

NOTICE

In the following step, the measurement must be made at the end corner of the large rotor body.

3. The clearance between the Front End Plate and Rotor is critical. While pressing down with your finger on the outer edge of the Front End Plate on the bearing side, insert a 0.004" (0.1 mm) feeler gauge between the face of the rotor body and the face of the End Plate at a point that is 180 degrees from where the pressure is applied. Refer to Dwg. TPA1740. To increase the gap, support the End Plate and lightly tap the rotor shaft with a plastic hammer; to decrease the gap, press the Bearing farther onto the rotor shaft.

Measurement of Front End Plate Clearance



(Dwg. TPA1740)

4. Wipe each Vane (36) with a light film of IRAX No. 10 Oil and place a Vane in each slot in the Rotor.
5. One end of the Cylinder Assembly (32) has a notch that breaks the outer wall and end face of the Cylinder. With that end trailing, install the Cylinder Assembly over the Rotor and Vanes against the Front End Plate. Make certain the Cylinder Alignment Pin (34) enters the hole in the Front End Plate.
6. Install the Rear End Plate Assembly (29), flat face leading, on the rear hub of the Rotor. Make certain the Cylinder Alignment Pin enters the hole in the Rear End Plate.
7. Examine the Rear End Plate Face Plate (30) for scratches. If it is scratched, replace it. If it is not, slide it onto the rear hub of the Rotor and onto the Cylinder Rear Alignment Pin (33) against the Rear End Plate. Some pressure may be required to fit the hole in the Plate onto the Alignment Pin.
8. Using snap ring pliers, install the Rear End Plate Assembly Retainer (31) in the annular groove on the rear rotor hub to secure the assembly in position.
9. Set the assembled motor aside.

Assembly of the Gearing

1. Work some IRAX No. 67 Grease into the gearing of the Spindle Assembly (49).
2. Insert the threaded end of the Spindle Assembly into the threaded end of the Gear Case (50) while meshing the teeth of the gears with the spline inside the Gear Case.
3. Support the gear end of the Spindle Assembly on the table of an arbor press while leaving clearance for the Gear Case. Using a piece of tubing that will clear the shaft and contact the inner ring of the Spindle Bearing (51), press the Bearing onto the shaft of the Spindle Assembly until it contacts the gear hub.
4. Using snap ring pliers, install one of the Bearing Stops (53) in the internal groove nearest the Bearing.
5. Apply some IRAX No. 67 Grease to the Bearing Spacer (52) and slide it onto the shaft of the Spindle Assembly with the smaller end trailing.
6. Using snap ring pliers, install the second Bearing Stop in the internal gear case groove nearest the threaded spindle end.
7. Stand the assembled Gear Case on the table of an arbor press with the output Spindle upward. Install the Spindle Cap Bearing (54) over the output shaft, and using a piece of tubing that contacts the outer ring of the Bearing, press the Bearing into the Gear Case against the Bearing Stop.
8. **For Series RG1C, RG1F, RG1G, RG1H and RG1J,** insert the Planet Gear Head Spacer (48) and Planet Gear Head Assembly (45), spline hub leading, into the open end of the Gear Case.
9. **For Series RG1F, RG1G, RG1H and RG1J,** apply IRAX No. 67 Grease to the three Planet Gears (46) and install them on the shafts of the Planet Gear Head Assembly.
10. **For Series RG1G and RG1F,** apply IRAX No. 67 Grease to the Gear Head Pinion (47) and while meshing the gear teeth, insert it in the opening between the three Planet Gears.
11. **For Series RG1C,** install the Drive Plate (44) on the shafts of the Planet Gear Head Assembly.
    For Series RG1A, install the Drive Plate (44) on the shafts of the Spindle Assembly.
12. **For Series RG1C, RG1F, RG1G, RG1H and RG1J,** place the Gear Head Spacer (43) in the Gear Case and secure the assembly by using snap ring pliers to install the Gear Retainer (42) in the annular groove inside the Gear Case.

Assembly of the Tool

1. Grasp the spline of the Rotor (35) and align the assembled motor so that the End Plate Alignment Dowel (38) is positioned at twelve o'clock in the Housing. It must be aligned with the notch through the threads in the Motor Housing. Insert the assembled motor in the Housing. When the motor is seated properly, the groove below the housing threads for the Motor Seal (40) will be clearly visible.
2. Moisten the Motor Seal with o-ring lubricant and carefully work it into the Housing against the Front End Plate (37). Use a hex wrench, ball point pen or other non-damaging tool to make certain it is completely seated under the housing threads against the End Plate.
3. Align the tab on the Motor Clamp Washer (41) with the notch in the Housing and the hole in the Washer with the Alignment Dowel in the End Plate and insert the Washer into the Housing . Make certain the Dowel enters the hole in the Washer and the Washer is flat against the Motor Seal. Failure to have the Washer flat, will cause the motor to lock up.
4. Apply some IRAX No. 67 Grease to the spline on the rotor shaft.
5. While engaging the spline of the rotor shaft with the gearing in the assembled Gear Case (50), thread the two assemblies together hand tight.
6. To tighten the Gear Case on the Housing, proceed as follows:
   a) Install a standard 1-1/16" open end wrench on the flats of the Gear Case.
   b) Grasp the handle portion of the Motor Housing and rotate the Housing clockwise to tighten it on the Gear Case.
   c) Tighten the joint between 15 and 20 ft-lbs. (20.3 and 27.1 Nm) torque.
7. Thread the Chuck (55) tightly onto the Spindle (49).
8. Open the Chuck wide enough to insert a Pozi-Drive Screwdriver into it.

NOTICE

The Screw in the following step has a left-hand thread. Rotate the screwdriver counterclockwise to install the Screw.

9. Screw the Chuck Retaining Screw (56) into the Spindle through the chuck opening.

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 Inlet Bushing Screen	Clean the Inlet Bushing Screen using a clean, suitable cleaning solution. If the Screen cannot be cleaned, replace it.
	Worn or broken Vanes	Replace a **complete** set of Vanes.
	Worn or broken Cylinder	Replace the Cylinder if it is cracked or if the bore appears wavy or scored.
	Exhaust control restricted	Make certain the exhaust control plate in the Housing is in the fully open position.
Motor won't run	Motor Clamp Washer binding	Remove the Gear Case make certain the Washer is flat and the Motor Seal is properly positioned.
	Gears binding	Clean and inspect all gearing. Replace any worn or damaged gearing.
Leaky Throttle Valve	Worn Throttle Valve and/or Throttle Valve Seat	Replace the Throttle Valve and/or Throttle Valve Seat.
	Dirt accumulation on Throttle Valve and/or Throttle Valve Seat	Clean or replace the Throttle Valve and/or Throttle Valve Seat.
Gear Case gets hot	Excessive grease	Clean and inspect 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.