

TPD1469

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OPERATION AND MAINTENANCE MANUAL for MODELS 2X and 22 MULTI-VANE® DRILLS and MODEL 22N51 MOTOR

NOTICE

Close Quarter Multi-Vane® Drills, Nonreversible Models 2XJA1, 2XKA1 and 2XMA2, and Reversible Models 22JA1, 22KA1, 22MA2 and 22NA1, are designed for heavy steel fabrication and maintenance.

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 1/2" (13 mm) inside diameter air supply hose.
- Always turn off the air supply and disconnect the air supply hose before installing, removing or adjusting any accessory on this tool, or before performing any maintenance on this tool.
- Do not use damaged, frayed or deteriorated air hoses and fittings.
- Be sure all hoses and fittings are the correct size and are tightly secured. See Dwg. TPD905-1 for a typical piping arrangement.
- Always use clean, dry air at 90 psig maximum air pressure. Dust, corrosive fumes and/or excessive moisture can ruin the motor of an air tool.
- Do not lubricate tools with flammable or volatile liquids such as kerosene, diesel or jet fuel.
- Do not remove any labels. Replace any damaged label.

USING THE TOOL

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

- Always wear hearing protection when operating this tool.
- Keep hands, loose clothing and long hair away from rotating end of tool.
- 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 shaft may continue to rotate briefly after throttle is released.
- Air powered tools can vibrate in use. Vibration, repetitive motions or uncomfortable positions may be harmful to your hands and arms. Stop using any tool if discomfort, tingling feeling or pain occurs. Seek medical advice before resuming use.
- Use accessories recommended by Ingersoll-Rand.
- This tool can exert strong forces on the operator. Use proper support to control these forces.
- This tool is not designed for working in explosive atmospheres.
- This tool is not insulated against electric shock.

NOTICE

The use of other than genuine Ingersoll-Rand replacement parts may result in safety hazards, decreased tool performance, and increased maintenance, and may invalidate all warranties.

Repairs should be made only by authorized trained personnel. Consult your nearest Ingersoll-Rand Authorized Servicenter.

Refer All Communications to the Nearest Ingersoll-Rand Office or Distributor.

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WARNING LABEL IDENTIFICATION

⚠ WARNING


FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.



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




⚠ WARNING
Always wear hearing protection when operating this tool.




⚠ WARNING
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.




⚠ WARNING
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.




⚠ WARNING
Do not carry the tool by the hose.



⚠ WARNING
Do not use damaged, frayed or deteriorated air hoses and fittings.



⚠ WARNING
Keep body stance balanced and firm. Do not overreach when operating this tool.

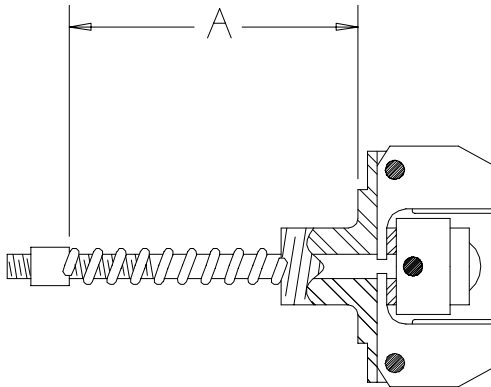


⚠ WARNING
Operate at 90 psig (6.2 bar/ 620 kPa) Maximum air pressure.

ADJUSTMENTS

GOVERNOR ADJUSTMENT

When installing a new Governor Assembly, screw the Adjusting Nut onto the Stem to **dimension "A"** shown in Dwg. TPD497. This will usually result in the proper governed free speed of the Spindle. However, this is only an approximate setting and, after checking with a tachometer, further adjustment may be necessary. Screw the Nut farther onto the Stem to increase the speed; back it off to decrease the speed.



A=1-31/32" for Drills with Standard Throttle
A = 1-7/8" for Motors equipped with Remote Control
(Dwg. TPD497)

The correct governed free speed for the various Models at the Spindle is:

Model	Speed, rpm
22JA1-EU, 2XJA1-EU	1 025
22KA1-EU, 22KWA1-EU, 2XKA1-EU	725
22MA2-EU, 2XMA2-EU	350
22NA1-EU	280

OILER ADJUSTMENT

To adjust oiler, remove the Backhead (12) and turn the Oiler Adjusting Screws (14). Turning the Screws in (clockwise) reduces the oil flow. Backing the Screws out increases the oil flow. The oil flow can be controlled by turning either Screw.

PLACING TOOL IN SERVICE

LUBRICATION



Ingersoll-Rand No. 50 **Ingersoll-Rand No. 28**

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

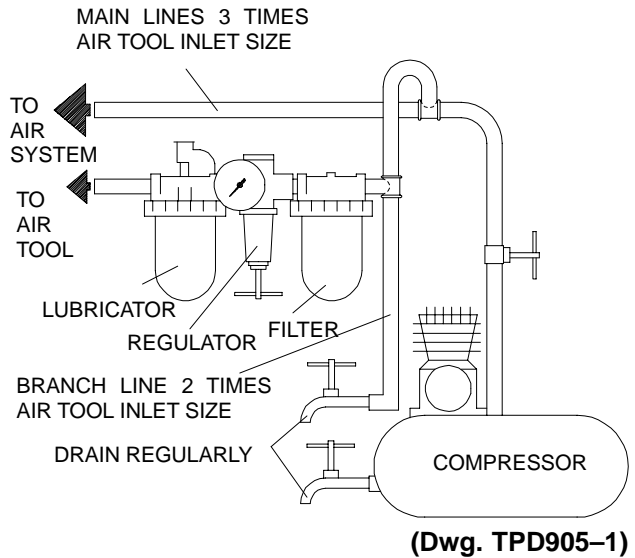
USA N° C28-04-FKG0-28

Before starting the tool and after each eight hours of operation, unless the air line lubricator is used, after detaching the air hose, unscrew the Oil Chamber Plug (18) and fill the chamber in the Backhead (12) with Ingersoll-Rand No. 50 Oil.

After each forty-eight hours of operation, or as experience indicates, inject about 1 to 2 cc of Ingersoll-Rand No. 28 Grease into the Grease Fitting (2 and 17).



Occasionally, inject 2 to 3 drops of Ingersoll-Rand No. 50 Oil into the oil hole in the Throttle Sleeve (83).



HOW TO ORDER A LARGE DRILL

NONREVERSIBLE ROLL THROTTLE

Model	Free Speed rpm	Capacity in Steel				Spindle	Spindle Attachment
		Drilling		Reaming			
		in.	mm.	in.	mm.		
2XJA1	1,025	9/16	14	3/8	10	0.703-16 thread	0-1/2" Chuck
2XKA1	725	9/16	14	7/16	11	0.703-16 thread	0-1/2" Chuck
2XMA2	350	7/8	22	5/8	16	No. 2 Morse Taper Socket	

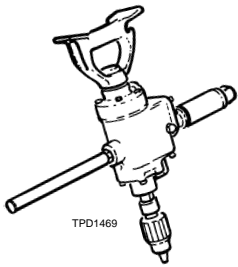
REVERSIBLE ROLL THROTTLE

22JA1	1,025	9/16	14	3/8	10	Stub Taper, Threaded	0-1/2" Chuck
22KA1	725	9/16	14	7/16	11	Stub Taper, Threaded	0-1/2" Chuck
22MA2	350	7/8	22	5/8	16	No. 2 Morse Taper Socket	
22NA1	280	7/8	22	5/8	16	Stub Taper, Threaded	5/8" Square Drive
22KWA1	725	—	—	—	—	Stub Taper, Threaded	1/2" Shank Wood, Bit Chuck

HOW TO ORDER A MOTOR

REVERSIBLE BASE-MOUNTED MULTI-VANE MOTOR

Model	Free Speed, rpm
22N51	280

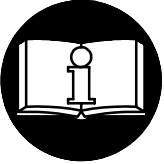


MANUEL D'EXPLOITATION ET D'ENTRETIEN DES PERCEUSES MULTI-PALETTE MODÈLES 2X ET 22 ET DU MOTEUR MODÈLE 22N51

NOTE

Les Modèles non-réversibles 2XJA1, 2XKA1 et 2XMA2, et les Modèles réversibles 22JA1, 22KA1, 22MA2 et 22NA1 des perceuses compactes multi-palettes sont destinés aux gros travaux de fabrication en acier et à l'entretien.

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 SECURITE 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 13 mm de diamètre intérieur.
- Couper toujours l'alimentation d'air comprimé et débrancher le flexible d'alimentation avant d'installer, déposer ou ajuster tout accessoire sur cet outil, ou d'entreprendre une opération d'entretien quelconque sur l'outil.
- Ne pas utiliser des flexibles ou des raccords endommagés, effilochés ou détériorés.
- S'assurer que tous les flexibles et les raccords sont correctement dimensionnés et bien serrés. Voir Plan TPD905-1 pour un exemple type d'agencement des tuyauteries.
- Utiliser toujours de l'air sec et propre à une pression maximum de 6,2 bar. La poussière, les fumées corrosives et/ou une humidité excessive peuvent endommager le moteur d'un outil pneumatique.
- Ne jamais lubrifier les outils avec des liquides inflammables ou volatils tels que le kérosène, le gasol ou le carburant d'aviation.
- Ne retirer aucune étiquette. Remplacer toute étiquette endommagée.

UTILISATION DE L'OUTIL

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

- Porter toujours une protection acoustique pendant l'utilisation de cet outil.
- Tenir les mains, les vêtements flous et les cheveux longs, éloignés de l'extrémité rotative de l'outil.
- 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.
- Cet outil peut exercer des forces importantes sur l'opérateur. Utiliser un support correct pour contrôler ces forces.
- Cet outil n'est pas conçu pour fonctionner dans des atmosphères explosives.
- Cet outil n'est pas isolé contre les chocs électriques.

NOTE

L'utilisation de rechanges autres que les pièces d'origine Ingersoll-Rand peut causer des risques d'insécurité, réduire les performances de l'outil et augmenter l'entretien, et peut annuler toutes les garanties.

Les réparations ne doivent être effectuées que par des réparateurs qualifiés autorisés. Consultez votre Centre de Service Ingersoll-Rand le plus proche.

Adressez toutes vos communications au Bureau Ingersoll-Rand ou distributeur le plus proche.

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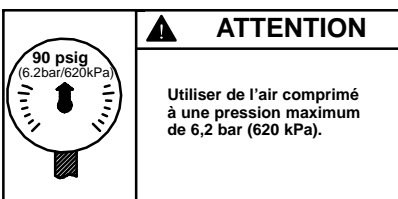
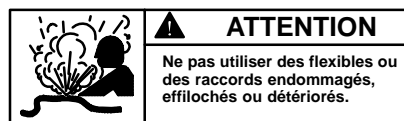
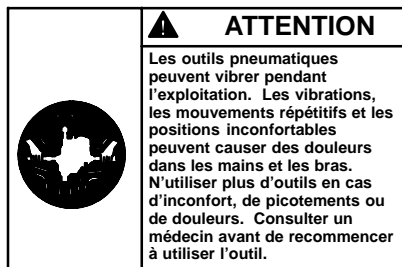
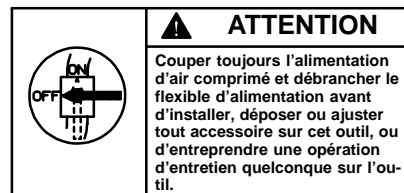
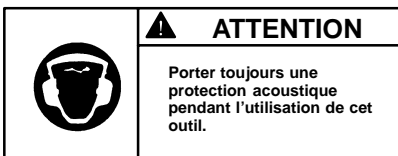
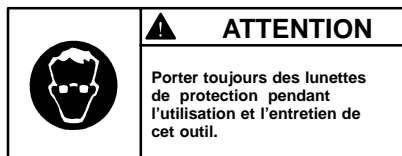
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SIGNIFICATION DES ETIQUETTES D'AVERTISSEMENT

ATTENTION

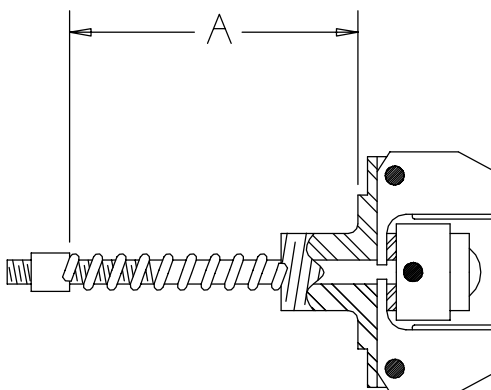
LE NON RESPECT DES AVERTISSEMENTS SUIVANTS PEUT CAUSER DES BLESSURES



RÉGLAGES

RÉGLAGE DU RÉGULATEUR

Lors du montage d'un nouveau régulateur, visser l'écrou de réglage sur la tige à la dimension "A" indiquée sur le plan. Ceci produira normalement la vitesse à vide réglée correcte de la broche. Cependant, ce n'est qu'un réglage approximatif et, après vérification avec un tachymètre, un ajustement supplémentaire sera peut-être nécessaire. Visser l'écrou sur la tige pour augmenter la vitesse; le dévisser pour réduire la vitesse.



A = 1-31/32" pour les perceuses ayant une commande standard.

A = 1-7/8" pour les moteurs équipés d'une commande à distance.

(Plan TPD497)

La vitesse à vide réglée correcte de la broche des divers modèles est la suivante:

Modèle	Vitesse tr/mn
22JA1, 2XJA1	1.025
22KA1, 22KWA1, 2XKA1	725
22MA2, 2XMA2	350
22NA1	280

RÉGLAGE DE L'HUILEUR

Pour régler l'huileur, déposer la tête arrière et tourner les vis de réglage. Le débit d'huile diminue lorsque les vis sont vissées (sens des aiguilles d'une montre) et il augmente lorsque'elles sont dévissées (sens inverse des aiguilles d'une montre). Le débit d'huile peut être contrôlé en tournant l'une quelconque des deux vis.

MISE EN SERVICE DE L'OUTIL

LUBRIFICATION



Ingersoll-Rand No. 50



Ingersoll-Rand No. 28

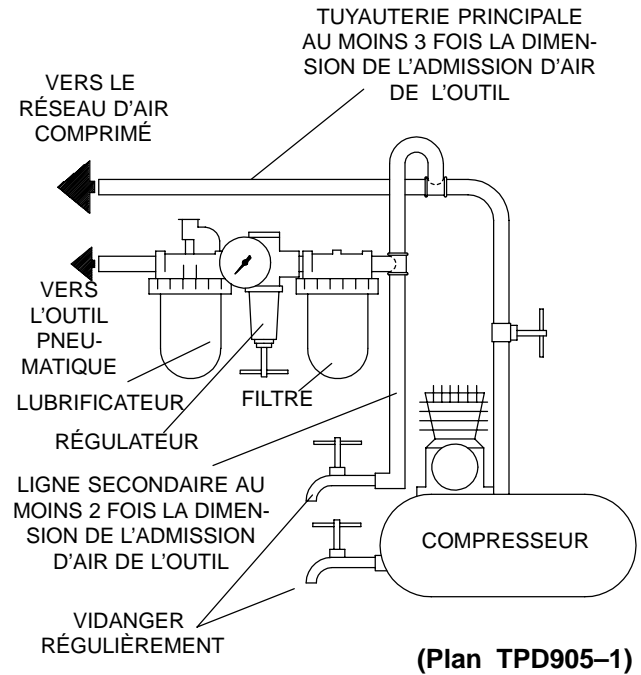
Utiliser toujours un lubrificateur avec cet outil.
Nous recommandons l'emploi du
filtre-régulateur-lubrificateur suivant :

É.U. C28-04-FKG0-28

Avant de mettre l'outil en marche et toutes les huit heures de fonctionnement, si un lubrificateur de ligne n'est pas utilisé, détacher le flexible d'alimentation, dévisser le bouchon de la chambre d'huile et remplir la chambre de la tête arrière avec de l'huile Ingersoll-Rand No. 50.

Toutes les quarante-huit heures de fonctionnement, ou en fonction de l'expérience, injecter environ 1 à 2 cm³ de graisse Ingersoll-Rand No. 28 dans le raccord de graissage.

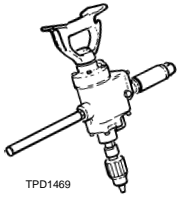
De temps à autre, injecter 2 à 3 gouttes d'huile Ingersoll-Rand No. 50 dans le trou d'huile du fourreau de commande.



SPÉCIFICATIONS

Modèle	Type de commande	Vitesse d'exploitation maximum	Capacité dans l'acier			
			Perçage		Alésage	
			in.	mm	in.	mm
2XJA1	Bague tournante, non-réversible	1.025	9/16	14	3/8	10
2XKA1	Bague tournante, non-réversible	725	9/16	14	7/16	11
2XMA2	Bague tournante, non-réversible	350	7/8	22	5/8	16
22JA1	Bague tournante, réversible	1.025	9/16	14	3/8	10
22KA1	Bague tournante, réversible	725	9/16	14	7/16	11
22MA2	Bague tournante, réversible	350	7/8	22	5/8	16
22NA1	Bague tournante, réversible	280	7/8	22	5/8	16
22KWA1	Bague tournante, réversible	725	---	---	---	---
22N51	Réversible	280	---	---	---	---

Modèle	Accessoire de broche
2XJA1	Filetage 0,703-16 Mandrin 0-1/2"
2XKA1	Filetage 0,703-16 Mandrin 0-1/2"
2XMA2	Douille conique Morse No. 2
22JA1	Cône fileté, Mandrin 0-1/2"
22KA1	Cône fileté, Mandrin 0-1/2"
22MA2	Douille conique Morse No. 2
22NA1	Cône fileté, Carré entraîneur 5/8"
22KWA1	Cône fileté, Mandrin bois queue 1/2"
22N51	_____



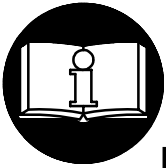
MANUAL DE FUNCIONAMIENTO Y MANTENIMIENTO PARA TALADROS MULTI-ALETA MODELOS 2X Y 22 Y MOTOR MODELO 22N51

E

NOTA

Los Taladros Multi-aleta de Distancia Mínima Modelos No Reversibles 2XJA1, 2XKA1 y 2XMA2, y los Modelos Reversibles 22JA1, 22KA1, 22MA2 y 22NA1, están diseñados para mantenimiento y fabricación de acero pesado.

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



⚠ AVISO

**SE ADJUNTA INFORMACIÓN IMPORTANTE DE SEGURIDAD.
LEA ESTE MANUAL ANTES DE USAR LA HERRAMIENTA.**

**ES RESPONSABILIDAD DE LA EMPRESA ASEGURARSE DE QUE EL OPERARIO
ESTÉ AL TANTO DE LA INFORMACIÓN QUE CONTIENE ESTE MANUAL.**

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

PARA PONER LA HERRAMIENTA EN SERVICIO

- Utilice, examine y mantenga siempre esta herramienta conforme al código de seguridad para herramientas neumáticas portátiles de la American National Standards Institute (ANSI B186.1).
- Para seguridad, máximo rendimiento y vida de servicio de las piezas, use esta herramienta a una presión de aire máxima en la entrada de 90 psig (6,2 bar/620 kPa) con una manguera de suministro de aire con diámetro interno de 13 mm.
- Corte siempre el suministro de aire y desconecte la manguera de suministro de aire antes de instalar, desmontar o ajustar cualquier accesorio de esta herramienta, o antes de realizar cualquier operación de mantenimiento de la misma.
- No utilice mangueras de aire y racores dañados, desgastados ni deteriorados.
- Asegúrese que todas las mangueras y racores sean del tamaño correcto y estén bien apretados. Vea Esq. TPD905-1 para un típico arreglo de tuberías.
- Use siempre aire limpio y seco a una presión máxima de 90 psig. El polvo, los gases corrosivos y/o el exceso de humedad podrían estropear el motor de una herramienta neumática.
- No lubrique las herramientas con líquidos inflamables o volátiles tales como queroseno, gasoil o combustible para motores a reacción.
- No saque ninguna etiqueta. Sustituya toda etiqueta dañada.

USO DE LA HERRAMIENTA

- Use siempre protección ocular cuando maneje, o realice operaciones de mantenimiento en esta herramienta.

- Use siempre protección para los oídos cuando maneje esta herramienta.
- Mantenga las manos, la ropa suelta y el cabello largo alejados del extremo giratorio de la herramienta.
- Note la posición de la palanca de inversión antes de hacer funcionar la herramienta para ser consciente de su dirección giratoria cuando funcione el estrangulador.
- Anticipe y esté alerta sobre los cambios repentinos en el movimiento durante la puesta en marcha y el manejo de toda herramienta motorizada.
- Mantenga una postura de cuerpo equilibrada y firme. No estire demasiado los brazos al manejar la herramienta. Pueden ocurrir reacciones de alto par a, o a menos de, la recomendada presión de aire.
- El eje de la herramienta podría seguir girando brevemente después de haber soltado la palanca de estrangulación.
- Las herramientas neumáticas pueden vibrar durante el uso. La vibración, repetición o posiciones incómodas pueden dañarle los brazos y manos. En caso de incomodidad, sensación de hormigueo o dolor, deje de usar la herramienta. Consulte a un médico antes de volver a usarla otra vez.
- Utilice únicamente los accesorios Ingersoll-Rand recomendados.
- Esta herramienta puede ejercer mucha fuerza sobre el operario. Use un soporte apropiado para controlar esta fuerza.
- Esta herramienta no ha sido diseñada para trabajar en ambientes explosivos.
- Esta herramienta no está aislada contra descargas eléctricas.

NOTA

El uso de piezas de recambio que no sean las auténticas piezas Ingersoll-Rand podría poner en peligro la seguridad, reducir el rendimiento de la herramienta y aumentar los cuidados de mantenimiento necesarios, así como invalidar toda garantía. Las reparaciones sólo serán realizadas por personal cualificado y autorizado. Consulte con el centro de servicio Ingersoll-Rand autorizado más próximo.

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

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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.

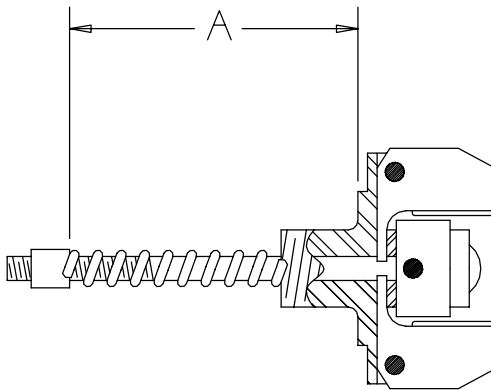


⚠ ADVERTENCIA
Manejar la herramienta a una presión de aire máxima de 90 psig (6,2 bar/620 kPa).

AJUSTES

AJUSTE DEL REGULADOR

Cuando instale un nuevo Conjunto Regulador, atornille la Tuerca de Ajuste en el eje a s la **dimensión "A"** indicada en Esq. TPD497. Normalmente esto tendrá como resultado la velocidad en vacío de husillo apropiada. Sin embargo, éste es sólo un ajuste aproximado y, después de comprobarlo con un tacómetro, puede necesitar un nuevo ajuste. Enrosque un poco más la tuerca en el eje para incrementar la velocidad; desenrosque para disminuirla.



A=1-31/32" for Drills with Standard Throttle
A=1-7/8" for Motors equipped with Remote Control

(Esq. TPD497)

La velocidad en vacío debe conectarse para saber los
Modelos

Modelo	Velocidad rpm
22JA1, 2XJA1	1.025
22KA1, 22KWA1, 2XKA1	725
22MA2, 2XMA2	350
22NA1	280

AJUSTE DEL LUBRICADOR

Para ajustar el lubricador, saque la Cubierta Trasera y gire los Tornillos de Ajuste de Lubricador. Si se enrosca los tornillos (girándolos en el sentido de las agujas del reloj) se reduce el flujo de aceite. si se desenrosca, se incrementa dicho flujo. El flujo de aceite puede controlarse girando cualquiera de los Tornillos.

PARA PONER LA HERRAMIENTA EN SERVICIO

LUBRICACIÓN



Ingersoll-Rand N° 50



Ingersoll Rand N° 28

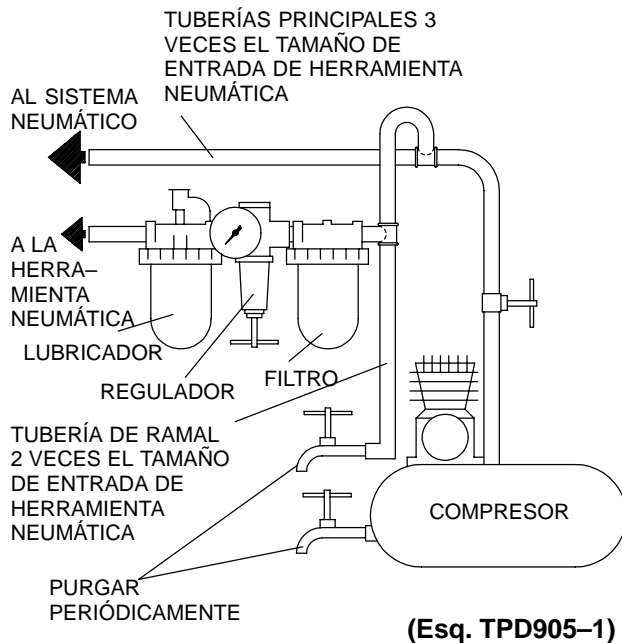
Use siempre un lubricante de aire con esta herramienta.
Recomendamos la siguiente unidad de Filtro-Lubricador-Regulador:

EE. UU. C28-04-FKG0-28

Antes de comenzar a utilizar la herramienta y después de cada ocho horas de uso, a menos que se use un lubricante de línea de aire, después de desconectar la manguera de aire, desenrosque el Tapón de Cámara de Aceite y llene la cámara situada en la Cubierta Trasera de Aceite Ingersoll-Rand N° 50.

Después de cada cuarenta y ocho horas de funcionamiento, o según indique la experiencia, inyecte aproximadamente 1 – 2 cc de Grasa Ingersoll-Rand N° 28 en el Engrasador.

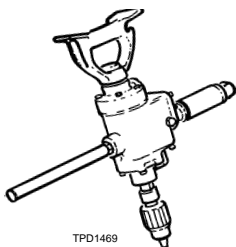
Ocasionalmente, inyecte 2 o 3 gotas de Aceite Ingersoll-Rand N° 50 en el orificio de aceite de Manguito de Estrangulación.



ESPECIFICACIONES

Modelo	Tipo de mando	Velocidad en vacío, rpm	Capacité dans l'acier			
			Taladrado		Escariado	
			pulg	mm	pulg	mm
2XJA1	Accionamiento giratorio, No-Reversible	1.025	9/16	14	3/8	10
2XKA1	Accionamiento giratorio, No-Reversible	725	9/16	14	7/16	11
2XMA2	Accionamiento giratorio, No-Reversible	350	7/8	22	5/8	16
22JA1	Reversible, Accionamiento Giratorio	1.025	9/16	14	3/8	10
22KA1	Reversible, Accionamiento Giratorio	725	9/16	14	7/16	11
22MA2	Reversible, Accionamiento Giratorio	350	7/8	22	5/8	16
22NA1	Reversible, Accionamiento Giratorio	280	7/8	22	5/8	16
22KWA1	Reversible, Accionamiento Giratorio	725	---	---	---	---
22N51	Reversible	280	---	---	---	---

Modelo	Husillo, accoplamiento
2XJA1	Rosca 0,703-16, Portapuntas 0-1/2 pulg.
2XKA1	Rosca 0,703-16, Portapuntas 0-1/2 pulg.
2XMA2	Boca Cónica Morse N° 2
22JA1	Cono corto, Portapuntas 0-1/2 pulg.
22KA1	Cono corto, Portapuntas 0-1/2 pulg.
22MA2	Boca Cónica Morse N° 2
22NA1	Cono corto, Roscado, 5/8 pulg., cuadradillo
22KWA1	Cono corto, Roscado, Vástago 1/2 pulg., Portapuntas
22N51	_____



TPD1469

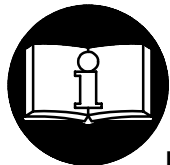
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MANUAL DE FUNCIONAMENTO E MANUTENÇÃO PARA BERBEQUINS DE MULTI-HÉLICE MODELOS 2X e 22 e MOTOR MODELO 22N51

AVISO

Os Berbequins Multi-Hélice para Espaços Reduzidos Não-Reversíveis Modelos 2XJA1, 2XKA2 e 2XMA2, e os Modelos Reversíveis 22JA1, 22KA1, 22MA2 e 22NA1 são concebidos para fabricação e manutenção de aços pesados.

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 SEGUINTE 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 13 mm (1/2").
- 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.
- 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 eixo da ferramenta pode continuar a girar brevemente após a pressão tenha sido aliviada.
- Ferramentas accionadas pneumáticamente podem vibrar em uso. Vibração, movimentos repetitivos ou posições desconfortáveis podem ser prejudiciais às mãos e aos braços. Pare de usar a ferramenta caso ocorra algum desconforto, sensação de formigueiro ou dor. Procure assistência médica antes de retornar ao trabalho.
- Use acessórios recomendados pela Ingersoll-Rand.
- Esta ferramenta pode exercer forças intensas sobre o operador use suporte adequado para controlar estas ferrametas.
- Esta Ferramenta não foi concebida para trabalhos em atmosferas explosivas.
- Esta Ferramenta não está isolada contra choques eléctricos.

AVISO

O uso de peças de substituição que não sejam genuinamente da Ingersoll-Rand podem resultar em riscos de segurança, diminuição do desempenho da ferramenta, aumento da necessidade de manutenção e pode invalidar todas as garantias.

As reparações devem ser feitas somente por pessoal treinado autorizado. Consulte o Centro de Serviços da Ingersoll-Rand mais próximo.

Envie Todos os Comunicados Para o Distribuidor ou Escritório da Ingersoll-Rand Mais Próximo.

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IDENTIFICAÇÃO DO RÓTULO DE ADVERTÊNCIA

⚠️ ADVERTÊNCIA

O NÃO CUMPRIMENTO DAS SEGUINTE ADVERTÊNCIAS PODE RESULTAR EM FERIMENTOS.




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




⚠️ ADVERTÊNCIA
Use sempre protecção contra o ruído ao operar esta ferramenta.



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




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




⚠️ ADVERTÊNCIA
Não carregue a ferramenta segurando na mangueira.



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



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

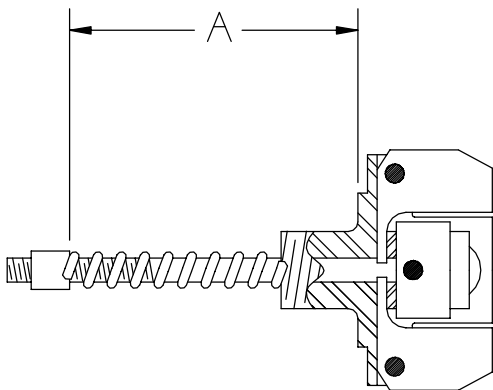


⚠️ ADVERTÊNCIA
Opere com pressão do ar Máxima de 90-100 psig (6,2-6,9 bar).

AJUSTES

AJUSTE DO MESTRE

Quando instalar um novo Conjunto de Mestre, parafuse a Porca de Ajuste para dentro da Haste com **dimensão “A”** mostrada no Desenho TPD497. Isto resultará geralmente numa velocidade livre governada apropriada do Fuso. Porém, isto é somente um ajuste aproximado e, depois de aferir com um tacómetro, outros ajustes podem ser necessários. Aperte a porca para dentro da Haste para aumentar a velocidade, e desaparafuse para diminuir a velocidade.



A = 1-31/32" para Berbequins com Regulador de Pressão Padrão
A = 1-7/8" para Motores equipados com Controle Remoto

(Desenho TPD497)

A velocidade livre regulada correcta no Fuso para vários Modelos no qual o Fuso é:

Modelo	Velocidade, rpm
22JA1, 2XJA1	1 025
22KA1, 22KWA1, 2XKA1	725
22MA2, 2XMA2	350
22NA1	280

AJUSTE DO RESERVATÓRIO DE ÓLEO

Para ajustar o reservatório de óleo, remova o Cabeçote Traseiro e gire os Parafusos de Ajuste do Reservatório de Óleo. Ao girar os Parafusos (sentido horário) reduz-se o fluxo de óleo. O fluxo de óleo pode ser controlado ao se girar qualquer um dos Parafusos.

COLOCANDO A FERRAMENTA EM FUNCIONAMENTO

LUBRIFICAÇÃO



Ingersoll-Rand No. 50



Ingersoll-Rand No. 28

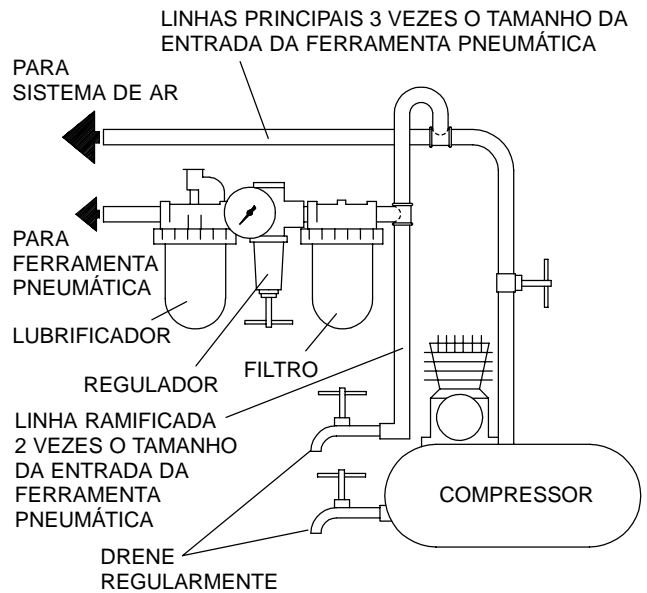
Use sempre um lubrificador de conduta de ar com estas ferramentas. Nós recomendamos a seguinte Unidade Filtro-Lubrificador-Regulador:

Para E.U.A. – No. C28-04-FKG0-28

Antes de ligar a ferramenta e depois de cada oito horas de operação, a menos que esteja usando um lubrificador de ar de linha, desligue a mangueira de ar, remova o Bujão da Câmara de Óleo e encha a câmara no Cabeçote Traseiro com Óleo Ingersoll-Rand No. 50.

Depois de cada quarenta e oito horas de operação, ou conforme a experiência indicar, injecte de 1 a 2 cc de Massa Lubrificadora Ingersoll-Rand No. 28 no Adaptador de Massa Lubrificadora.

Ocasionalmente, injecte de 2 a 3 gotas de Óleo Ingersoll-Rand No. 50 no orifício de óleo na Camisa da Válvula Reguladora de Pressão

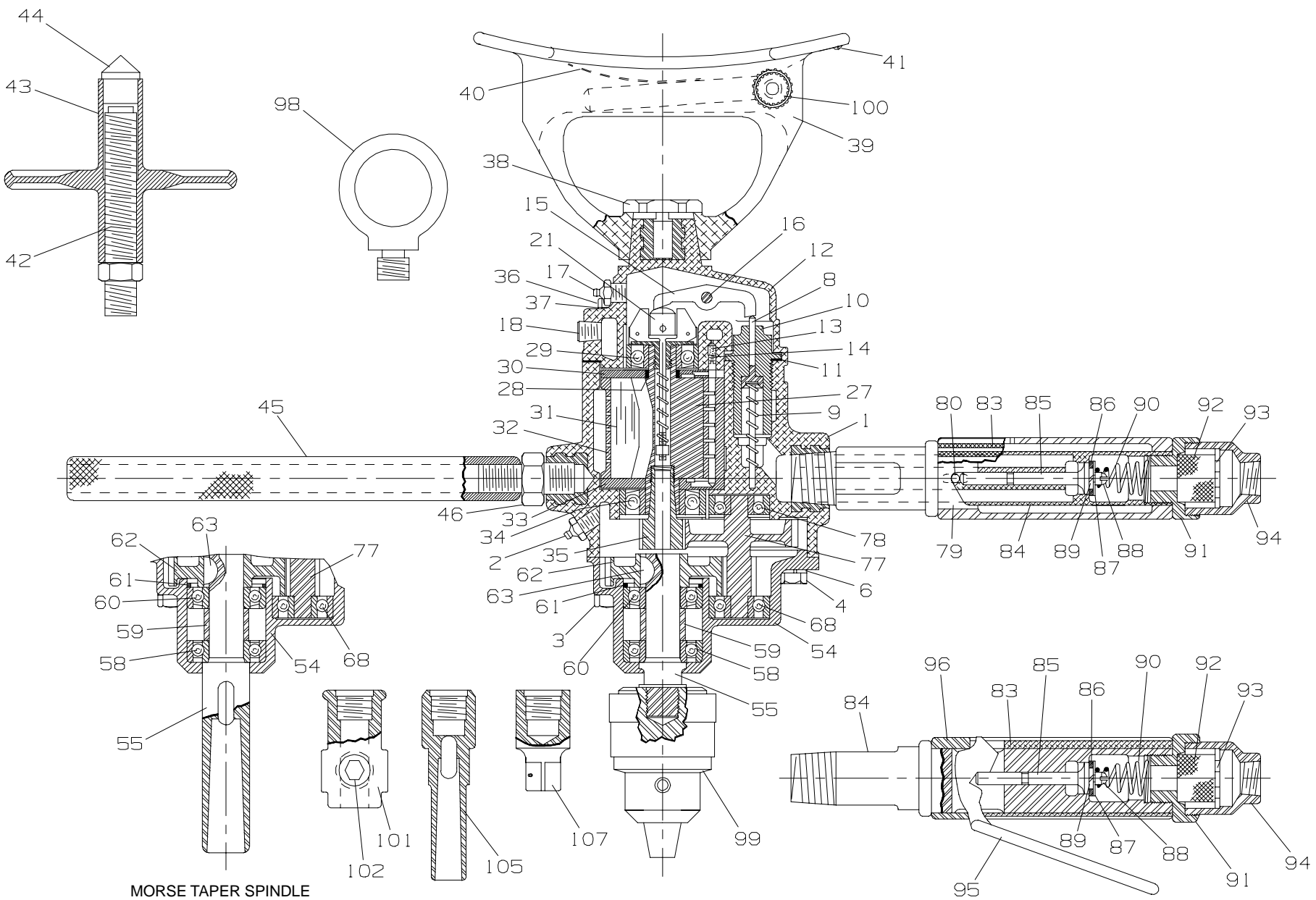


(Desenho TPD905-1)

ESPECIFICAÇÕES

Modelo	Type de Punho	Velocidade Livre rpm	Capacidade da Barrena			
			Perfurando		Alargando	
			pol.	mm	pol.	mm
2XJA1	Rolo, Não reversível	1.025	9/16	14	3/8	10
2XKA1	Rolo, Não reversível	725	9/16	14	7/16	11
2XMA2	Rolo, Não reversível	350	7/8	22	5/8	16
22JA1	Rolo, reversível	1.025	9/16	14	3/8	10
22KA1	Rolo, reversível	725	9/16	14	7/16	11
22MA2	Rolo, reversível	350	7/8	22	5/8	16
22NA1	Rolo, reversível	280	7/8	22	5/8	16
22KWA1	Rolo, reversível	725	---	---	---	---
22N51	Reversível	280	---	---	---	---

Modèle	Fuso, Acoplamento
2XJA1	Rosca de 0,703-16, Encabadouro de 0-1/2"
2XKA1	Rosca de 0,703-16, Encabadouro de 0-1/2"
2XMA2	Soquete Cônico Morse No. 2
22JA1	Fuso Cônico, Rosqueado, Encabadouro de 0-1/2"
22KA1	Fuso Cônico, Rosqueado, Encabadouro de 0-1/2"
22MA2	Soquete Cônico Morse No. 2
22NA1	Fuso Cônico, Rosqueado, Comando Quadrado 5/8"
22KWA1	Fuso Cônico, Rosqueado, Haste de Madeira de 1/2" Encabadouro do Bite
22N51	_____



MORSE TAPER SPINDLE

2X Series (Non-Reversible)

(Dwg. TPA121-2)

MAINTENANCE SECTION



PART NUMBER FOR ORDERING



		2XJ, 2XK and 2XM	22J, 22K, 22M, 22N and 22KW
1	Motor Housing		
	for 22N models	—	R22N-40
	for models ending in -EU	R2XH-EU-40	R22H-EU-K40
	for all other models	R2XH-40	R22H-K40
*	Warning Label		
	for models ending in -EU	EU-99	EU-99
	for all other models	WARNING-8-99	WARNING-8-99
*	Nameplate		
	for models ending in -EU	R2H-EU-99	R2H-EU-99
	for all other models	R2H-99	R2H-99
2	Grease Fitting	23-188	23-188
∅ 3	Housing Stud (for 22N) (4)	R2N-133	R2N-133
	Housing Long Cap Screw (for all others) (4)	R22H-68	R22H-68
∅ 4	Housing Short Cap Screw (2)	R3-7	R3-7
5	Stud Nut (1 for each stud)	T06-139	T06-139
6	Lock Washer (6)	8U-58	8U-58
7	Reverse Valve Bushing	—	R22H-330
8	Governor Valve	R3H-425	R3H-425
9	Governor Valve Spring	503-431	503-431
10	Governor Valve Bushing	R22H-429	R22H-429
• *	Air Port Gasket (1 for 2X Series and 2 for 22 Series)	R22H-210	R22H-210
• 11	Backhead Gasket	R22H-283	R22H-283
12	Backhead	R22H-102	R22H-102
13	Oiler Felt (2)	R1-75	R1-75
14	Oiler Adjusting Screw (2)	R1-71A	R1-71A
15	Governor Lever	R22H-436	R22H-436
16	Governor Lever Pin	T22-306	T22-306
17	Grease Fitting	23-188	23-188
18	Oil Chamber Plug	R2-227	R2-227
21	Governor Assembly	R2XJ-A424	R2XJ-A424

MAINTENANCE SECTION

17

- * Not illustrated.
- ∅ Listed Cap Screw can be used as a replacement for the previously used Stud.
- 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) or each part indicated by a bullet (•) for every four tools in service.

PART NUMBER FOR ORDERING



		2XJ, 2XK and 2XM	22J, 22K, 22M, 22N and 22KW
27	Rotor	R22H-K53	R22H-K53
28	Rotor Bearing Spacer	R2H-65	R2H-65
• 29	• Rear Rotor Bearing	R2-22	R2-22
• 30	• Rear End Plate	R2J-12	R22H-12
• 31	• Vane Packet (set of 5 Vanes)	R2-42B-5	R2-42B-5
32	Cylinder	R2J-3	R22H-3
*	Cylinder Dowel	R22H-98	R22H-98
• 33	• Front End Plate	R2J-11	R22H-11
• 34	• Front Rotor Bearing	R2-24A	R2-24A
35	Rotor Pinion for 2XJ, 2XK, 22J, 22K and 22KW (15 teeth)	R2J-17	R2J-17
	for 2XM and 22M (9 teeth)	R2M-17A	R2M-17A
	for 22N (17 teeth)	R2N-17	R2N-17
36	Backhead Cap Screw (6)	R22H-68	R22H-68
37	Backhead Cap Screw Lock Washer (6)	8U-58	8U-58
38	Breast Plate Screw	T15-278	T15-278
39	Breast Plate	R22H-79	R22H-79
40	Chuck Wrench Clip	R2J-247	R2J-247
41	Clip Screw	R2J-248	R2J-248
	Feed Screw Assembly	T04-A3	T04-A3
42	Feed Screw	T04-3	T04-3
43	Feed Handle	T05-2A	T05-2A
44	Feed Handle Center	T05-244A	T05-244A

* Not illustrated.

- 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) or each part indicated by a bullet (●) for every four tools in service.

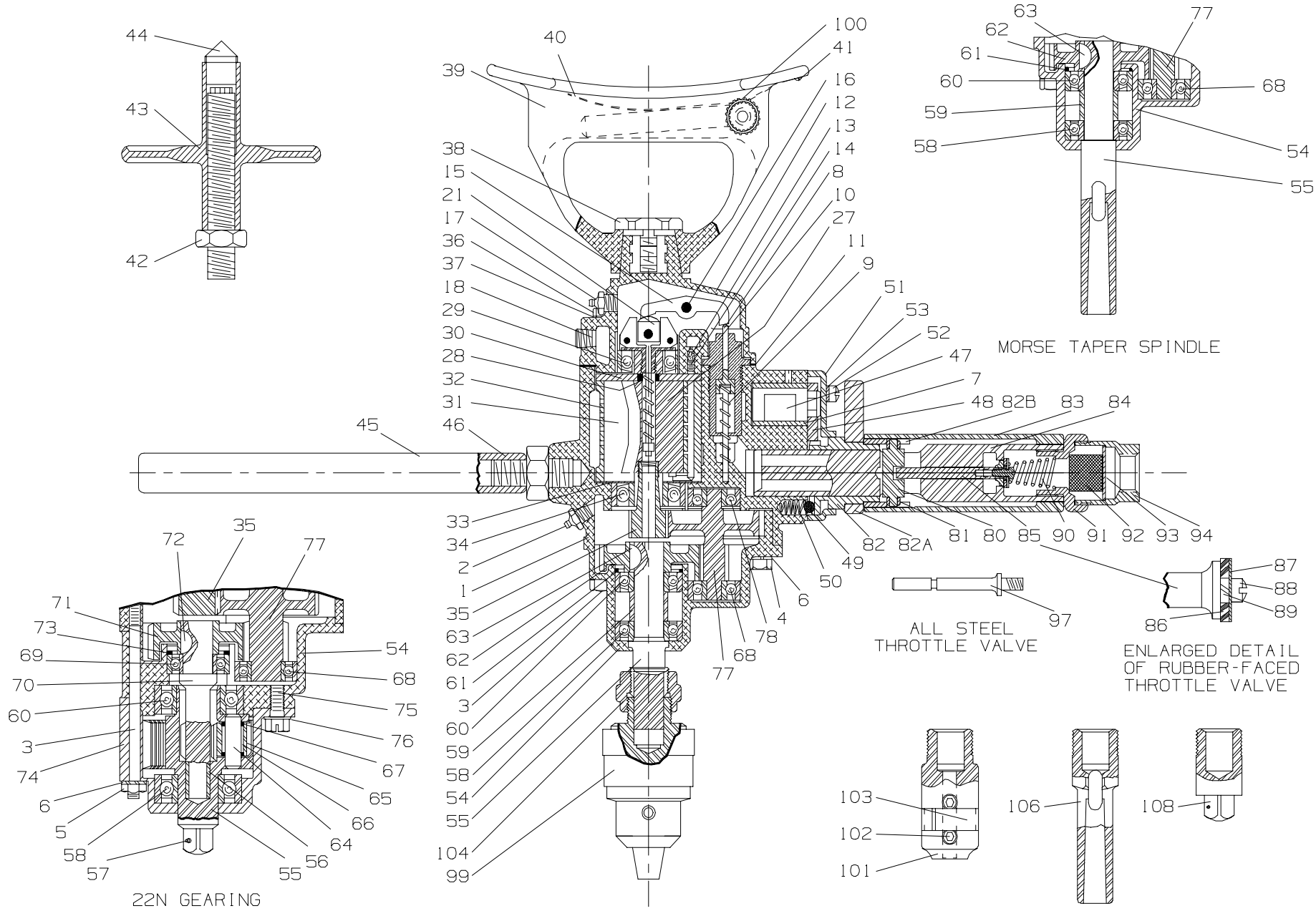
PART NUMBER FOR ORDERING



		2XJ, 2XK and 2XM	22J, 22K, 22M, 22N and 22KW
45	Dead Handle	R2K-48	R2K-48
46	Dead Handle Stud	R2K-364A	R2K-364A
47	Reverse Valve	—	R22H-329
48	Reverse Valve Sector	—	TCC-428
∇ 49	Stop Pin	—	R22H-491
∇ 50	Stop Pin Spring	—	5UT-759
51	Sector Cover	—	TCC-429A
52	Sector Cover Screw (4)	—	TCC-430
53	Sector Cover Screw Lock Washer (4)	—	T05-58
*	Throttle Body Set Screw	—	TCCW-433
*	Throttle Body Set Screw Lock Washer	—	D02-537

* Not illustrated.

∇ Used only with Manual-Closing Throttles. In compliance with the Williams-Steiger Occupational Safety and Health Act, Manual-Closing Throttle Assemblies and parts used exclusively for Manual-Closing Throttles will be furnished only on international orders.



MAINTENANCE SECTION

22 Series (Reversible)

(Dwg. TPA122-3)



PART NUMBER FOR ORDERING



		2XJ, 22J	2XK, 22K, 22KW	2XM, 22M	22N
54	Gear Case				
	for threaded Stub Taper or No. 2 Morse Taper Spindle	RM2J-37	RM2J-37	RM2J-37	—
	for No. 3 Morse Taper Spindle	—	—	R2M-137	—
	for 5/8" Square Drive or Stub Taper Spindle	—	—	—	R2N-37
	Spindle Assembly				
	Threaded Spindle (for Series 2X)	R2J-A8	R2K-A8	R2K-A8	—
	Stub Taper Spindle (for Series 22)	R22J-A8	R22K-A8	R22K-A8	—
	Stub Taper Spindle	—	—	—	R22N-A8
	No. 2 Morse Taper Spindle	R2H-A108	R2M-A108	R2M-A108	—
	No. 3 Morse Taper Spindle	—	—	R2M-A208	—
	5/8" Square Drive Spindle with Pin-Type Retainer	—	—	—	R22N-AP108
	5/8" Square Drive Spindle with Ball-Type Retainer	—	—	—	R22N-AB108
55	Spindle				
	Threaded (703-16 thd.) (for Series 2X)	R2H-8	R2H-8	R2H-8	—
	Stub Taper (for Series 22)	R22H-8	R22H-8	R22H-8	—
	Stub Taper	—	—	—	R22N-8
	No. 2 Morse Taper	R2M-108	R2M-108	R2M-108	—
	No. 3 Morse Taper	—	—	R2M-208	—
	5/8" Square Drive with Pin-Type Retainer	—	—	—	R22N-P108
	5/8" Square Drive with Ball-Type Retainer	—	—	—	R22N-B108
56	Spindle Gear Shaft Bushing	—	—	—	T06-110
57	Socket Retaining Plunger (for 5/8" Square Drive Spindle)				
	Pin-Type	—	—	—	808-716
	Ball-Type	—	—	—	8U-715

PART NUMBER FOR ORDERING



		2XJ, 22J	2XK, 22K, 22KW	2XM, 22M	22N
	Plunger Retaining Spring (for 5/8" Square Drive Spindle)	—	—	—	5UHD-718
58	Spindle Bearing	R2H-510	R2H-510	R2H-510	D01-616
59	Spindle Bearing Spacer	R2H-111	R2H-111	R2H-111	—
60	Thrust Bearing	R2H-97	R2H-97	R2H-97	G7-24
61	Bearing Retainer	R2H-118	R2H-118	R2H-118	—
62	Spindle Gear	R21-9	R2K-9	R2K-9	—
63	Spindle Gear Key	TC-18	TC-18	TC-18	—
64	Planet Gear Shaft (3)	—	—	—	R2N-191
65	Planet Gear (3)	—	—	—	R2N-10
66	Planet Gear Roller (63)	—	—	—	R2N-152
67	Roller Retaining Plate (6)	—	—	—	R2N-655
68	Intermediate Gear Front Bearing	T06-33	T06-33	T06-33	T06-33
69	Spindle Gear Bearing	—	—	—	T06-24
70	Spindle Gear Shaft	—	—	—	R2N-16
71	Spindle Gear	—	—	—	R2J-9
72	Spindle Gear Key	—	—	—	TC-18
73	Bearing Retainer	—	—	—	R2H-1 18
74	Gear Case Cover	—	—	—	R2N-378
75	Gear Case Cover Cap Screw	—	—	—	R2N-103
76	Cover Cap Screw Lock Washer	—	—	—	8U-58
77	Intermediate Gear for 2XJ and 22J (13/45 teeth)	R2J-82	—	—	—
	for 2XK, 22K and 22KW (10/45 teeth)	—	R2K-82	—	—
	for 2XM and 22M (9/50 teeth)	—	—	R2M-82A	—
	for 22N (13/43 teeth)	—	—	—	R2N-82
78	Intermediate Gear Rear Bearing	R1L-24	R1L-24	R1L-24	R1L-24

PART NUMBER FOR ORDERING



		NONREVERSIBLE DRILLS		REVERSIBLE DRILLS
		Roll Throttle	Lever Throttle	Roll Throttle
	Throttle Assembly	R2XH-A417	R2XH-AL401	R22H-A518-2
79	Throttle Cam	T01-317A	—	—
80	Throttle Valve Lift Pin	TCC-306B	—	R4H-306
81	Throttle Valve Lift Pin Roller (2)	—	—	TAA-426
82	Throttle Sector	—	—	R33P5-1487
82A	Reverse Lever (for reversible models only)	—	—	R55H-314
*	Reverse Lever Set Screw (2)	—	—	R2J-561
82B	Throttle Cam (for reversible models only)	—	—	22MA2-317
83	Throttle Sleeve	TCL-305	R2J-269	R4H-305
× 84	Throttle Body	R3H-401	R3H-401	22B518-409
⊕ 85	Rubber-Faced Throttle Valve	R3H-402	R3H-402	R3H-402
• 86	Throttle Valve Face	8000-159A	8000-159A	8000-159A
87	Throttle Valve Face Cap	8000-157	8000-157	8000-157
88	Throttle Valve Face Retaining Screw	R4-158	R4-158	R4-158
89	Retaining Screw Lock Washer	H54U-352	H54U-352	H54U-352
• 90	Throttle Valve Spring	TAA-418	T01-308	TAA-418
	Air Strainer Assembly	R22H-A565	R22H-A565	R4H-A565
91	Air Strainer Cap	R3H-566	R3H-566	R4H-566
92	Air Strainer Screen	R3H-61	R3H-61	R3H-61
93	Air Strainer Screen Support	R3H-567	R3H-567	R3H-567
94	Air Strainer Body	R22H-565	R22H-565	R3H-565
95	Throttle Lever	—	R2J-273	—
96	Throttle Lever Spacer	—	R2J-270	—
*	Rotational Label	R2H-100	R2H-100	R3H-565
97	All Steel Throttle Valve	T01-302	T01-302	T01-302

* Not illustrated.

× If ordered as a replacement for a Throttle Body equipped with an All-Steel Throttle Valve also order the Rubber Faced Throttle Valve (85). The Throttle Body for use with the All-Steel Throttle Valve is discontinued.

⊕ Cannot be used as a replacement for the All-Steel Throttle Valve.

• 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.



MAINTENANCE SECTION

PART NUMBER FOR ORDERING



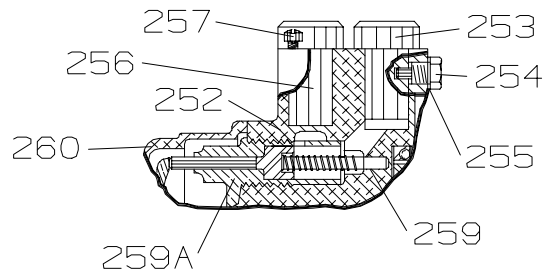
		2XJ, 2XK and 2XM	All Series 22
98	Suspension Ring	T05-365	T05-365
99	Drill Chuck		
	1/8" to 5/8" capacity	R2H-99	—
	0 to 1/2" capacity	T05-99A	—
	5/64" to 1/2" capacity	—	DE-99C
100	Drill Chuck Wrench		
	for 1/8" to 5/8" chuck	T05-J253	—
	for 0 to 1/2" chuck	T05-J253	—
	for 5/64" to 1/2" capacity	—	R1T-J253
101	Wood Bit Chuck	R2H-151	R22W-151
102	Wood Bit Chuck Screw		
	(1 for R2H-51; 2 for R22W-151)	R33W-150	R33W-150
103	Chuck Screw Retainer	—	R33W-149
*	Wood Bit Chuck Wrench (5/16" x 6" long hex wrench)	K-27	K-27
104	Chuck Nut	—	DE-347A
105	Use-Em-Up Socket (No. 2 Morse Taper Socket)	T05-294-2	—
106	Morse Taper Socket		
	No. 1 Morse Taper Socket	T05-323-1	DE-323A-1
	No. 2 Morse Taper Socket	T05-323-2	DE-323A-2
	No. 3 Morse Taper Socket	T05-323-3	DE-323A-3
107	Socket Adapter (1/2" square drive) (Pin-Type Retainer)	R2J-212B	—
• *	Socket Retaining Plunger	804-716	—
*	Retaining Plunger Spring	5UHD-718	—
108	Socket Adapter (Overall length 1-3/4")		
	1/2" Square Drive	—	DE-215A
	5/8" Square Drive	—	DE-215B
*	Hose Nipple (1/2" hose to 3/8" male pipe)	A01-46	A01-46

* Not illustrated.

- 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 tool in service.

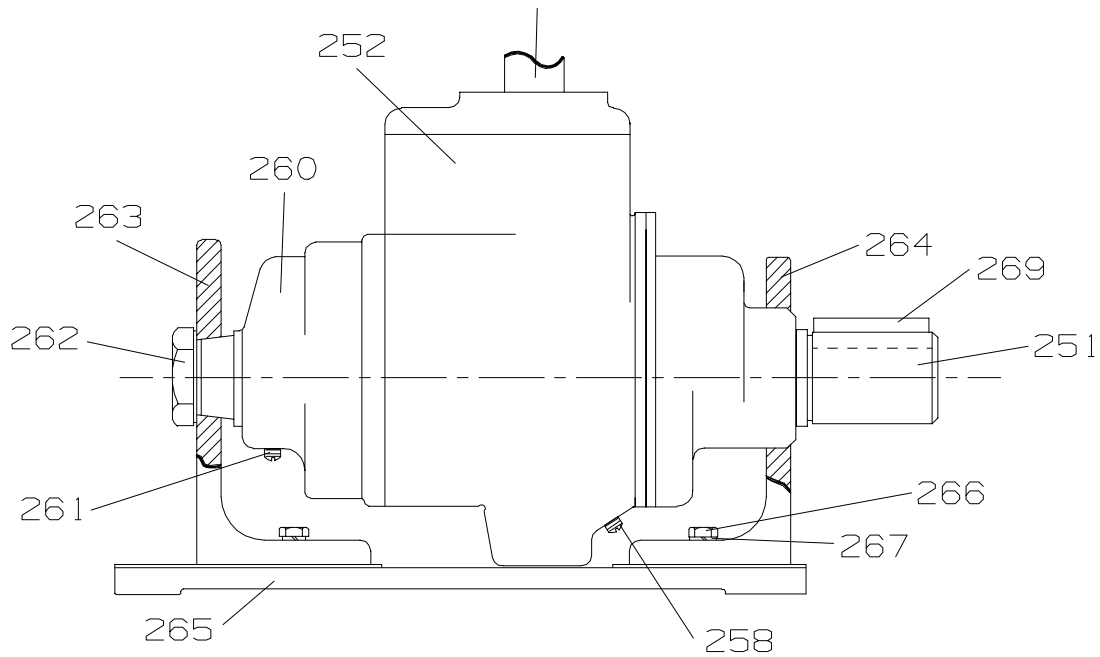
MAINTENANCE SECTION

MODEL 22N51-W/RC BASE-MOUNTED MULTI-VANE MOTOR



REMOTE CONTROL PARTS

NOTE:
SEE DRILL ILLUSTRATIONS AND
LIST OF THROTTLES AVAILABLE



(Dwg. TPB152-2)

MAINTENANCE SECTION

Parts used on Model 22N51–W/RC Base Mounted Motors are illustrated in the accompanying view and from the list below. All others are the same as corresponding parts for Drills illustrated on page 20 and should be ordered accordingly.

PART NUMBER FOR ORDERING



	Spindle Assembly	R2XN51–A8
251	Spindle (All other parts included in the Spindle Assembly are the same as those included in the Spindle Assembly of Drills.)	E22N–8
252	Motor Housing	
	for models ending in –EU	R22N51–EU–RC40
	for all other models	R222N51–RC40
*	Warning Label	
	for models ending in –EU	EU–99
	for all other models	WARNING–10–99
*	Nameplate	
	for models ending in –EU	R2H–EU–99
	for all other models	R2H–99
253	Forward Inlet Stud	R22H–471
254	Forward Inlet Stud Lock Screw	TCCW–433
255	7/16" Lock Washer	D02–537
256	Reverse Inlet Stud	R22H–472
257	Reverse Inlet Stud Lock Screw	T05–44
258	1/8" Pipe Plug	R2–227
259	Governor Valve Spring	R22F61–431
259A	Governor Valve Bushing	R22F61–429
∅	Housing Long Stud (4) (All other parts included in the Motor Housing are the same as those included in the Motor Housing of Drills.)	R22N51–133
⊗	Cylinder	R22H61–3
260	Backhead	R22H–102
261	1/8" Pipe Plug (All other parts included in the Backhead are the same as those included in the Backhead for Drills) (See illustrated part 12)	R2–227
262	Motor Mounting Screw	T15–278
263	Rear Motor Mounting Bracket	R22N51–304
264	Front Motor Mounting Bracket	R22N51–303
265	Motor Mounting Base	R22N51–564A
266	Base Cap Screw (4)	D02–506
267	Base Cap Screw Lock Washer (4)	D02–321
269	Spindle Key	R2XH51–768

* Not illustrated.

∅ See illustration No. 3 for Drills. Order by Part Number shown above.

⊗ See illustration No. 32 for Drills. Order by Part Number shown above.

MAINTENANCE TOOLS

DESCRIPTION	OPERATION	TOOL NO.
Grease Gun	Lubrication.	P25–228
Throttle Body Puller	Pulling the Throttle Body (84) from the Motor Housing (1) on Series 22 Drills.	10203
Reverse Valve Bushing Reamer	Reaming the Reverse Valve Bushing (7) after pressing it into the Motor Housing (1) on Series 22 Drills.	22733

MAINTENANCE SECTION

WARNING

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

Always turn off air supply and disconnect air supply hose before installing, removing or adjusting any accessory on this tool, or before performing any maintenance on this tool.

LUBRICATION

Each time the Models 2XJ, 2XK, 2XM, 22J, 22K, 22M, 22N and 22KW Drills and Model 22N51-W/RC Motor are disassembled for maintenance, repair or replacement of parts, lubricate the tool as follows:

1. Inject 1–2 cc of Ingersoll–Rand Impactool No. 28 Grease through the Grease Fitting (2) and (17).
2. Unscrew the Oil Chamber Plug (18) and fill the oil chamber with Ingersoll–Rand No. 50 Oil.
3. Occasionally, inject 2 – 3 drops of Ingersoll–Rand No. 50 Oil into the oil hole in the Throttle Sleeve (83).

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.

Maintenance Procedure

1. Keep the air strainer clean. Periodically, as experience indicates, unscrew the Air Strainer Body (94) from the Air Strainer Cap (91) and wash the Air Strainer Screen (92) in a clean, suitable, cleaning solution. Push the prongs on the Air Strainer Screen Support (93) into one end of the Screen and insert the Screen, support end first, into the Body when assembling the strainer.
2. **For Reversible Tools**, remove the throttle body set screw from the side of the Motor Housing (1 or 252) before attempting to pull the Throttle Body (84) from the Housing.

3. The thread on the Governor Assembly (21) is a **left–hand thread**; turn it **clockwise** to unscrew it from the Rotor (27)

WARNING

Never clamp the Cylinder (32) in a vise.

4. When disassembling the motor, grasp the Cylinder in one hand. Insert a 5/16" diameter rod into the bore of the Rotor (27) and drive the rotor hub out of the Rear Rotor Bearing (29). Unscrew the Rotor Pinion (35) from the Rotor and screw a 3/8"–24 thread bolt in its place. Support the Front End Plate (33) and press the rotor front hub out of the Front Rotor Bearing (34).
5. The front hub of the Rotor contains a tapered socket. The rim of the Front End Plate is flatted, one flat on Series 2X; two on Series 22. When assembling the motor, slip the Front End Plate, crescent grooved side first, over the rotor front hub and retain it by pressing the Front Rotor Bearing shielded side first, onto the rotor hub as far as possible without binding the End Plate against the rotor face. Clean and dry the tapered surfaces of the Rotor and Rotor Pinion and screw the Pinion tightly into the Rotor. Insert a Vane (31) into each vane slot in the Rotor. Place the Cylinder over the Rotor and onto the End Plate. Align the air ports and dowel hole in the Cylinder and End Plate. If they cannot be aligned, invert the Cylinder. Install the Rear End Plate (30), crescent grooved side first, and Rear Rotor Bearing (29), shielded side first.
6. When applying the Backhead (12 or 260), draw it evenly against the Backhead Gasket (11) on the face of the Motor Housing (1 or 252) by turning each Backhead Cap Screw (36) a little at a time until all are tight.

For All Models Except 22N

1. Insert a small screwdriver through one of the holes in the Spindle Gear (62) and pry the Bearing Retainer (61) out of the groove in the Gear Case (54) before attempting to withdraw the Spindle Assembly from the Gear Case.
2. Press the Spindle (55) out of the Spindle Gear and remove the Spindle Gear Key (63) from the Spindle before attempting to press the Spindle out of the Thrust Bearing (60), Spindle Bearing Spacer (59) and Spindle Bearing (58).
3. Press the Intermediate Gear Front Bearing (68) into the Gear Case before installing the Spindle Assembly.
4. In the order named, press the Spindle Bearing, sealed side first, Spindle Bearing Spacer and Thrust Bearing, shielded side first, onto the Spindle.
5. Lay the Bearing Retainer on the web of the recessed hub side of the Spindle Gear and press the Spindle into the Spindle Gear.

MAINTENANCE SECTION

6. Slide the Spindle Assembly into the Gear Case and install the Bearing Retainer in the groove in the Gear Case with a small screwdriver inserted through one of the holes in the Spindle Gear.

For Model 22N

1. Rotate the Spindle Gear (71) until one of the holes in the gear web aligns with the notch in the gear case wall. Insert a small screwdriver into the notch and pry the Bearing Retainer (73) out of the groove in the Gear Case before attempting to remove the Spindle Gear Shaft (70) from the Gear Case.
2. Press the Spindle Gear Shaft out of the Spindle Gear and remove the Spindle Gear Key (72) from the Shaft before attempting to press the Shaft out of the Spindle Gear Bearing (69).
3. Support the short hub end of the Spindle (55 or 251) and press on the front end of the Planet Gear Shafts (64) when removing the Shafts from the spindle gear head. The Planet Gear Rollers (66) and Roller Retaining Plates (67) are free to drop out when the Gears are removed from the Spindle. Use care to prevent loss of these small parts.
4. When assembling the Spindle, coat the inner wall of the Planet Gears (65) with the recommended grease and insert a Planet Gear Shaft through each gear bore. Slide twenty-one Planet Gear Rollers into the space between the gear wall and Shaft. Slip a Roller Retaining Plate over each end of the Shaft and against the Rollers. Carefully withdraw the Shafts and insert the Gears into the gear frame on the Spindle.
5. Install the Spindle Bearing shielded side first on the Spindle. On the shielded side, the face of the bearing inner ring is slightly lower than that of the outer ring. On the opposite side of the Bearing the faces are flush.
6. Press the Intermediate Gear Front Bearing into the Gear Case before installing the assembled Spindle Gear Shaft.
7. Lay the Bearing Retainer on the web of the recessed hub side of the Spindle Gear and press the Spindle Gear Shaft into the Spindle Gear. Slide the assembled Spindle Gear Shaft into the Gear Case. Insert a small screwdriver through the holes in the Spindle Gear and install the Bearing Retainer in the gear case groove.

MAINTENANCE SECTION

TROUBLESHOOTING GUIDE

Trouble	Probable Cause	Solution
Low power or low free speed	Dirty Inlet Bushing or Air Strainer Screen and/or Exhaust Silencer	Using a clean, suitable, cleaning solution in a well-ventilated area, clean the Air Strainer Screen, Inlet Bushing and Exhaust Silencer. Allow to air dry.
	Worn or broken Vanes	Replace complete set of Vanes.
	Worn or broken Cylinder and/or scored End Plates.	Examine Cylinder and replace it if it is worn or broken or if bore is scored or wavy. Replace End Plates if they are scored.
	Dirty motor parts.	Disassemble the tool and clean all parts with a clean, suitable, cleaning solution, in a well-ventilated area. Reassemble the tool.
	Improper positioning of Reverse Valve.	Make certain Reverse Valve is fully engaged to left or right.
Motor will not run	Incorrect assembly of motor.	Disassemble motor, replace worn or broken parts and reassemble as instructed.
Rough operation	Worn or broken Rear Rotor Bearing Assembly or Front Rotor Bearing	Examine each bearing. Replace if worn or damaged.
	Worn or broken Bevel Gear or Bevel Pinion	Examine the Bevel Gear and Bevel Pinion. If either is worn or damaged, replace both the Gear and the Pinion because they are a matched set and must not be used separately.
Air leaks	Worn Valve Face or Valve Face Cap	Replace worn parts.
	Oil Chamber Plug worn or not tight	Tighten the Plug. If the problem persists, replace the Plug.
Gear Case gets hot	Insufficient grease	Clean and inspect the Gear Case gearing parts and lubricate as instructed in LUBRICATION .
	Worn or damaged parts	Clean and inspect the Gear Case and gearing. Replace worn or broken components.

NOTICE

SAVE THESE INSTRUCTIONS. DO NOT DESTROY.

