



**MODEL TP-302**

# **AIR DRIVEN TUBE CLEANER**



## **OPERATING INSTRUCTIONS & SERVICE MANUAL**

Rev: A, 5/11/2007

**TO REDUCE THE RISK OF INJURY AND EQUIPMENT DAMAGE  
USER MUST READ AND UNDERSTAND OPERATOR'S MANUAL.**

### **Thomas C. Wilson, Inc.**

21-11 44th Avenue, Long Island City, New York 11101  
Tel: (718)729-3360 Fax: (718)361-2872 <http://www.tcwilson.com>  
E-mail: [tcwilson@tcwilson.com](mailto:tcwilson@tcwilson.com)

# SAFETY INSTRUCTIONS



## WARNING!

### **READ AND UNDERSTAND ALL INSTRUCTIONS**

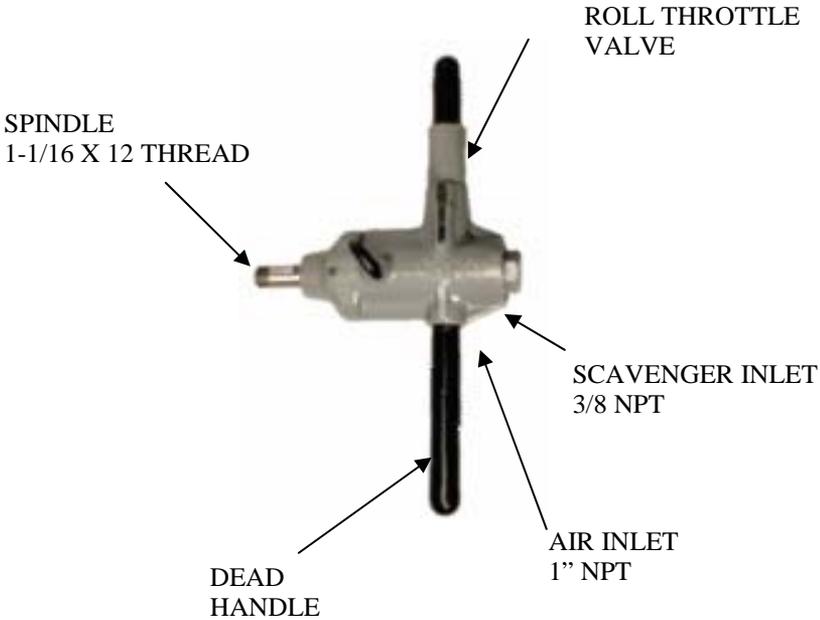
Failure to follow all instructions listed below, may result in accident, fire and/or personal injury.

### **SAVE THESE INSTRUCTIONS**

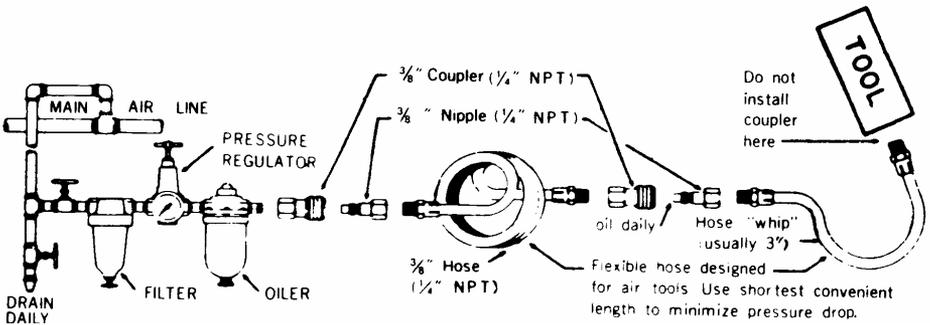
1. Do not allow corrosive gases or foreign material to enter the unit. Moisture, oil-based contaminants, or other liquids must be filtered out.
2. Eye protection is always required when running motor.
3. Hearing protection is recommended when in close proximity to all operating air motors.
4. Dust mask, non-skid safety shoes, hard hat, gloves and other personal safety equipment must be used.
5. Stay alert, watch what you are doing, and use common sense when operating a power tool.
6. Dress properly. Do not wear loose clothing or jewelry.
7. Keep your work area clean and well lit.
8. Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust.
9. Disconnect the tool from the air supply before installing, making any adjustment, changing accessories, servicing or storing tool.

# OPERATION

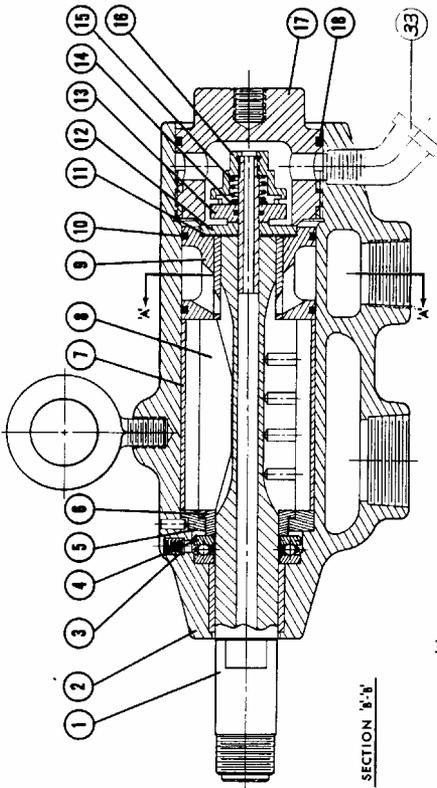
RECOMMENDED OPERATING AIR PRESSURE 90 PSI



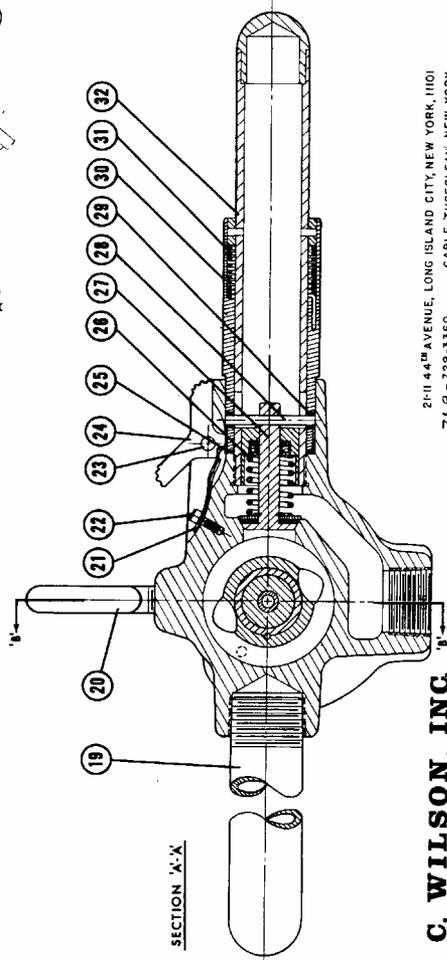
# PROPER PIPING FOR AIR TOOLS



PARTS LIST



SECTION 'B-B'



SECTION 'A-A'

**WILSON**  
HEAT EXCHANGER  
TUBE CLEANER

MODEL TP-302  
CATALOG NO. 9267

2-11 44<sup>TH</sup> AVENUE, LONG ISLAND CITY, NEW YORK, 11101  
718-729-3360  
CABLE TUBECLEAN NEW YORK

**THOMAS C. WILSON, INC.**

Caution: Disassembly or reassembly of the unit must be performed by qualified personnel. It is advisable to return units to the factory or consult the factory for necessary repair.

Key	Part No.	Qty.	Description
1	9182	1	ROTOR ASSEMBLY
2	9274	1	HOUSING ASSEMBLY
	9268	1	DOWEL PIN
	20597	1	BUSHING
3	41334	1	SET SCREW
4	9270	1	THRUST BALL BEARING
5	9272	1	WEAR PLATE
6	9271	1	THRUST BUSHING
7	9273	1	CYLINDER
8	2080	6	ROTOR BLADE (SET OF 6)
9	7802	1	REAR JOURNAL
10	7602	2	'O' RING
11	7605	1	SEAT GASKET
12	7604	1	SEAL SEAT
13	7789	1	SCAVENGER SEAL
	7625	1	'O' RING
14	7608	1	SPRING WASHER
15	7624	1	SEAL SPRING
16	7626	1	SEAL SPRING FORK
17	7593	1	REAR PLUG
18	28102	1	QUAD RING
19	7597	1	DEAD HANDLE
20	7661	1	EYE BOLT
21	7611	2	SPRING
22	7616	1	CAP SCREW
23	7614	1	GRIP LOCK PIN
24	7622	1	GRIP LOCK
25	7613	1	HANDLE GRIP BEARING
26	7615	1	VALVE SPRING
27	8531	1	VALVE ASSEMBLY
28	7623	1	CAM FOLLOWER PIN
29	7619	2	CAM FOLLOWER ROLL
30	7621	1	HANDLE GRIP
31	7620	1	HANDLE GRIP SPRING
32	7598	1	LIVE HANDLE ASSEMBLY
33	6685	1	STREET ELBOW

# MAINTENANCE AND LUBRICATION

## AIR SUPPLY

Optimum air tool performance is based upon a clean, dry air supply that delivers 90 psi of air pressure at the tool, while the tool is running. (Lower air pressure will reduce the efficiency of the tool.) Airline filters will effectively eliminate moisture and particles from the air supply. To get the ultimate in performance from your air tools ample air compressor capacity, proper air hose and fittings are essential.

## LUBRICATION

Tools should be oiled daily through the air inlet, or better through lubricators. Airline lubricators automatically provide oil to tools, allowing them to produce at peak efficiency. Use a light oil similar to a SAE#10 spindle oil, or Marvel Oil for best result.<sup>3</sup> Lubrication of the front bearing is through an oil hole marked "oil" at front end of motor. Remove set screw, key 3.

## PERIODIC INSPECTION

For maximum performance and protection of your air operated equipment, inspect all tools regularly to prevent unnecessary damage and prevent down time. All airline accessories should be checked on a regular basis.

# HOW TO SET UP CLEANER

1. Couple 1" air operating hose to air service line and blow out existing lines and hose to insure removal of all foreign matter such as dislodged scale, chips, etc.

2. Attach automatic airline lubricator (if included with your equipment) directly to the TP Air Motor and then connect air hose. If other types of lubricators are used, connect between air hose and main service line or compressor.

3. Couple 3/8" scavenger hose to service line and also blow out this line before finally attaching this line to 45° street elbow at rear of motor.

**IMPORTANT:** For long service life it is important that air supply and scavenging lines do not carry foreign matter as cleaning progresses. The use of a strainer is highly recommended.

The motor is now ready to be coupled to the shaft, shaft support and cutter bit or other Wilson accessory.

4. Select the proper size shaft and assemble with shaft support. The shaft end having the tapered male thread fits into the shaft support having a tapered female thread.

5. Attach the cutter bit adapter or the necessary adapter for Wilson Accessories selected for use.

6. Connect the cutter bit or accessory to the adapter.

7. Attach this assembly to the rotor. Be sure all connections are tight. The assembled unit is now ready for operation.

## **HOW TO OPERATE THE TUBE CLEANER**

1. Insert the cutter bit or cleaning tool into the tube - if length of tube is known, mark the shaft with tape or other visible marking.
2. Turn on scavenging agent.
3. Open the air valve control handle. Do not run free speed (without load) for extended periods.
4. Feed the cutter bit into the deposit by pushing forward on the handles. The rate at which the cutter bit is fed through the tube can best be determined by the operator's judgment, based on his experience with the first few tubes. If the deposit is light or very soft, it may be possible to clean the tube with a constant forward motion. If the tube is plugged with a deposit that is not too hard, but is readily broken down by the cutter bit, it is preferable to withdraw the cutter bit a few inches occasionally to give the scavenging agent which flows through the center of the shaft a chance to clear the cutter and remove the debris which may accumulate in the tube behind the cutter bit. With very hard deposit, more rapid cleaning can be obtained by a constant back and forth motion which jars the cutter bit up against the deposit to be removed.

## **STORAGE OF EQUIPMENT**

1. When securing the equipment overnight, in anticipation of next day's use, and if any liquid has been used as a scavenger (as well as steam) blow clean air through scavenging intake to blow or dry out any residual moisture.
2. The Wilson TP-302 Cleaner can be anticipated to operate satisfactorily over long periods of time when not abused by neglect in storage or otherwise.

Since some condensation and seepage is a normal effect, the motor should be dismantled and thoroughly cleaned and oiled then assembled prior to extended storage periods.

## **DISASSEMBLY OF TP-302 AIR MOTOR**

1. Check for burrs on rotor wrench flats and remove any with a file. (Flats are apt to burr through wrench slippage.)
2. Place dead handle of motor in a horizontal position in a vise and secure.
3. Unscrew, counter-clockwise, key 17, Rear Plug.
4. Unscrew, clockwise, (left hand thread) key 16, Seal Ring Fork.
5. Remove key 15, Seal Spring.
6. Remove key 14, Spring Washer.
7. Remove key 13, carbon-type Seal Ring, by turning clockwise, with upward movement.

**CAUTION:** Do not directly pull the seal ring off as the threads of tube within rotor will damage inner 'O' Ring Seal inside with resulting leak.

8. Remove keys #1, 8, 9, 10, 11, 12 and 13 as a unit by applying upward pressure or light blows with a soft-faced hammer against the threaded end of the rotor shaft.
9. To remove key 7, Cylinder, and key 5, Wear Plate, release vise and invert body. Cylinder and wear plate should normally slide out, assisted by a slight jar. In stubborn cases grip cylinder internally with fingers to facilitate removal or tap out.

**NOTE:** Cylinder, Wear Plate and Thrust Ball Bearing, key 4, can be left within housing assembly unless repair or replacement is required.

**CAUTION:** Under no circumstances remove the rotor and all parts mentioned under instruction 1 to 8 as a unit at one time. Breakage of the carbon-type Seal Ring, key 13, may occur.

## **ASSEMBLY OF TP-302 AIR MOTOR**

1. Place dead handle of motor in a horizontal position in a vise and secure.
2. Insert key 5, Wear Plate, into body making sure dowel groove in wear plate lines up with dowel hole in Body, key 2, and exhaust notches match exhaust passage in the body.
3. Insert key 6, Cylinder, making sure locating pin on cylinder enters pin hole of wear plate. (Lubricate outside of cylinder prior to assembly.)
4. Insert key 1, Rotor, long end down. (Lubricate all bearing surfaces.)
5. Insert six Rotor Blades, key 7, in slots of rotor.

6. Place "0" Ring Seals, key 10, in outside grooves of Rear Journal and Bushing Assembly, key 9. Place rear journal and bushing within, over rear shaft of rotor, with locating pin downward, aligning pin of rear journal with pin hole in cylinder. Rear journal will have to be lightly pressed or tapped on as the "0" ring seals start bearing against body. Lubricate "0" ring seals to make them slide easier.

**CAUTION:** Be sure locating pin enters pin hole in cylinder and not in cylinder notch. To further assist proper location, note the two "assist" holes 1800 apart on back of rear journal. One of these "assist" holes is in direct line with the locating pin at front end of rear journal. Make a mark at the very end of the motor body in line with correct location of the pin. Aligning the proper "assist" hole with this groove will assure accurate journal location and seating. The only resistance to a "slip fit assembly" is the pressure of the two "0" rings against body wall. A slight lifting of the rotor may facilitate assembly at this point. When rear journal is properly located and seated, the rotor will have approximately .005" end play, barely detected by actual feel. If misalignment does occur, the rear journal should be lifted slightly and then rotated by using a spanner wrench or the insertion of a push pin in the "assist" hole.

7. Place key 11, Seat Gasket, in the counterbored end of the rear journal.

8. Place key 12, Seal Seat, on gasket with the 3/4" diameter projecting hub facing upward. (This hub is part of the actual rotary seal and is lapped to a fine surface--Do not cause any scratches.)

9. Sub-assemble, if not already assembled, scavenger seal (small "0" ring) on inside of carbon-type Seal Ring, key 13.

10. Place Seal Ring with 3/4" diameter projecting hub downward, on to threaded end of scavenger tube in rotor end. (The face of the projecting hub, is the actual rotary seal and is lapped to a fine surface--Do not cause any scratches.) Screw into place counter-clockwise (do not press down over threads) until it meets hub of Seal Seat, key 12. Lubricate slightly at this meeting position.

11. Place Washer, key 14, in position.

12. Place Spring, key 15, in position.

13. Place Seal Ring Fork, key 16, in position and screw home in a counter-clockwise direction.

14. Cap and lock final assembly in place with Rear Plug, key 17. Be sure "0" Ring, key 18, is also in place. The motor is now ready for use or properly prepared for storage.

## GENERAL IMPORTANT NOTES

Worn parts should be replaced as required.

Synthetic rubber "O" ring seals may be pried out of their grooves in the rear journal and the rear plug and replaced.

Replacement of the Front Bushing, in housing, involves pushing the old bushing inward from the front end of the body and forcing a new bushing into place from the inside of the body.

The rear bushing may be pushed out of the rear journal in either direction, preferably rearward. To replace, observe that longitudinal pin is in place, align the groove in the bushing with the pin and press into place from the rear until the front of bushing and front face of the journal is flush.

Great Care should be taken to avoid damage or distortion to the 3/8" diameter scavenger tube, force-fitted into the end of rotor. This tube must run concentric with the rotor, otherwise leaks may develop.

The motor should be run a short time at low speed, after assembly, without any scavenging flow to fully seat the sealing surfaces. Do not run at free (no load) speeds over extended periods. Be sure to introduce lubricating oil into the operating air line whenever the TP-302 is in operation.

Keep the oil-impregnated front bushing and thrust ball bearing supplied with oil by filling the reservoir through the oil hole in the nose of the body. Remove Set Screw, key 3.

## **AIR THROTTLE - DISASSEMBLY**

To remove, turn grip lock, key 24, to unlocked position and unscrew live handle assembly, key 32, taking care not to lose the small cam follower rolls, key 29, when pulling the handle from the body. The entire throttle assembly comes out, permitting cleaning.

Further disassembly will require pushing out the pin, key 28, which passes through the cam follower rolls, key 29, in the helical slots of the handle grip, key 30. This releases the valve and stem, key 27. Compressing the valve spring, key 26, slightly will facilitate this. (Be careful not to lose the small rolls.)

The valve stem seal in live handle assembly, key 32, is press-fitted into its bushing - within. It may be pulled out with a hooked instrument. The replacement seal should be pressed into place with its sealing member facing in the same direction as that of the previous seal. It is recommended, however, that instead of performing those operations, a right handle sub-assembly, Catalog #7598 be purchased which includes the handle, plug, bushing, and seal.

## **AIR THROTTLE - ASSEMBLY**

The handle grip spring, key 31, is compressed into the handle grip, key 30, forcing the end of the spring into hole in the grip. The grip is then slipped onto the handle so that the other spring end enters the hole in the band of the handle. The valve spring, key 26, is placed over the stem of the assembled valve, key 27, and the stem carefully inserted through the valve seal. (Oil on the stem will facilitate this.) With the handle grip rotated clockwise (viewed from the valve end) as far as the spring will permit, the cam follower pin, key 28, is passed through the helical cam slots in the grip and with the valve spring compressed, through the hole in the valve stem. The assembly is completed by placing the cam follower rolls, key 29, on the pin. In order to do this, it is necessary to have the valve spring compressed.

Before the right handle assembly, Catalog #7598 is screwed home in the body, key 2, the handle grip bearing, key 25, should be placed at the bottom of the bore for the grip. This bearing should be replaced if it wears thinner than 1/32". It is desirable to use some anti-seize lubricant (such as Parker Appliance Company "Thread-Lube") on the handle threads.

# SPECIFICATIONS

<b>Model no.</b>	<b>TP-302</b>
<b>Tube ID Range</b>	5/8" to 2-1/4"
<b>RPM</b>	6500
<b>Spindle</b>	1-1/16 X 12 THREAD
<b>Dimensions</b>	5" X 12" X 13"
<b>Weight (LBS)</b>	16
<b>Air Pressure (PSI)</b>	90
<b>Air Inlet</b>	1" NPT
<b>Operating Hose</b>	1"
<b>Air Flow</b>	130 CFM
<b>Scavenger Inlet</b>	3/8" NPT

# TROUBLE-SHOOTING

<b>PROBLEM</b>	<b>CAUSE &amp; SOLUTION</b>
<b>Tool becomes sluggish</b>	Dirt or oil gum accumulation on internal parts —Flush with kerosene, operate for 30 seconds and re-lubricate.
<b>Loss of Power</b>	<ol style="list-style-type: none"> <li>1. Worn Blades —Replace the Blades.</li> <li>2. Worn Rotor, Cylinder, or accessory —Replace worn parts.</li> </ol>

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