ARO®
Tool & Hoist Products

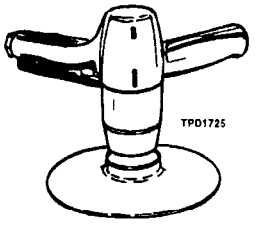
OPERATOR'S MANUAL

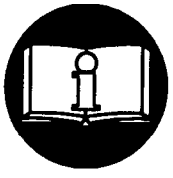
INCLUDING: OPERATION, INSTALLATION & MAINTENANCE

SECTION MANUAL M10 174

Released: 4–30–94
Revised: 4–30–94

MODELS GV08A–03S–7, GV08A–05S–7, and GV08A–06S–7 SANDERS
MODEL GV08A–02P–7 POLISHER





⚠ WARNING

IMPORTANT SAFETY INFORMATION ENCLOSED.
READ THIS MANUAL BEFORE OPERATING TOOL.
FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

- Always operate, inspect and maintain this tool in accordance with American National Standards Institute Safety Code for Portable Air Tools (ANSI B186.1).
- For safety, top performance, and maximum durability of parts, operate this tool at 90 psig (6.2 bar/620 kPa) maximum air pressure at the inlet with 3/8" (10 mm) inside diameter air supply hose.
- 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.
- 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.
- 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.
- Check for excessive speed and vibration before operating.
- Tool accessory may continue to rotate briefly after throttle is released.
- 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.
- Use accessories recommended by ARO Tool.

NOTICE

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

ARO Tool is not responsible for customer modification of tools for applications on which ARO Tool was not consulted.

Repairs should be made only by authorized trained personnel. Consult your nearest ARO Tool Authorized Servicenter.

It is the responsibility of the employer to place the information in this manual into the hands of the operator.

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) 672–0601

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Ingersoll–Rand Company

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WARNING LABEL IDENTIFICATION

⚠ WARNING

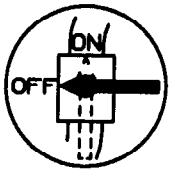
FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

⚠ 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

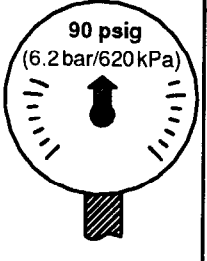
Do not carry the tool by the hose.

⚠ 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.

SANDER/POLISHER SPECIFIC WARNINGS

⚠ WARNING

FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

- **These Sanders and Polishers will operate at the free speed specified on the nameplate if the air supply line furnishes 90 psig (6.2 bar/620 kPa) air pressure at the tool. Operation at higher air pressure will result in excessive speed.**
- **Use only a sanding pad, buffing wheel or polishing bonnet with these tools. Do not use any grinding wheel, bur or metal removing accessory other than a sanding pad with these tools. Never use an accessory having a maximum operating speed less than the free speed of the Sander or Polisher in which it is being used.**
- **When using a pad on a threaded arbor, make certain the flange nut is tightened securely. Check the tightness of the flange nut before operating a Sander or Polisher to make certain it will not loosen during operation.**
- **Before installing a new Motor Housing Assembly, always select the correct Assembly for the motor package you are installing.**

PLACING TOOL IN SERVICE

LUBRICATION

IRAX No. 10

IRAX No. 28

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

For USA – IRAX No. C11–03–G00
For International – IRAX No. C16–C3–A29

After each eight hours of operation, replenish the oil supply. Adequate lubrication is imperative for satisfactory tool life.

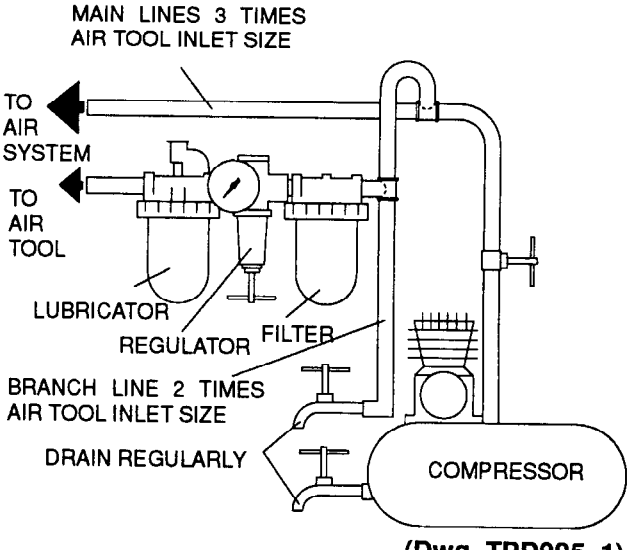
After each 50 000 cycles or each month, whichever occurs first, inject approximately 6 cc of IRAX No. 28 Grease into the Grease Fitting (41).

INSTALLATION

Air Supply and Connections

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. An air line filter can greatly increase the life of an air tool. The filter removes dust and moisture.

Be sure all hoses and fittings are the correct size and are tightly secured. See Dwg. TPD905–1 for a typical piping arrangement.



(Dwg. TPD905–1)

GV08A Sanders and Polishers are designed for standard duty sanding and polishing operations in automobile repair shops and in sheet metal fabrication applications.

PLACING TOOL IN SERVICE

HOW TO ORDER A SANDER

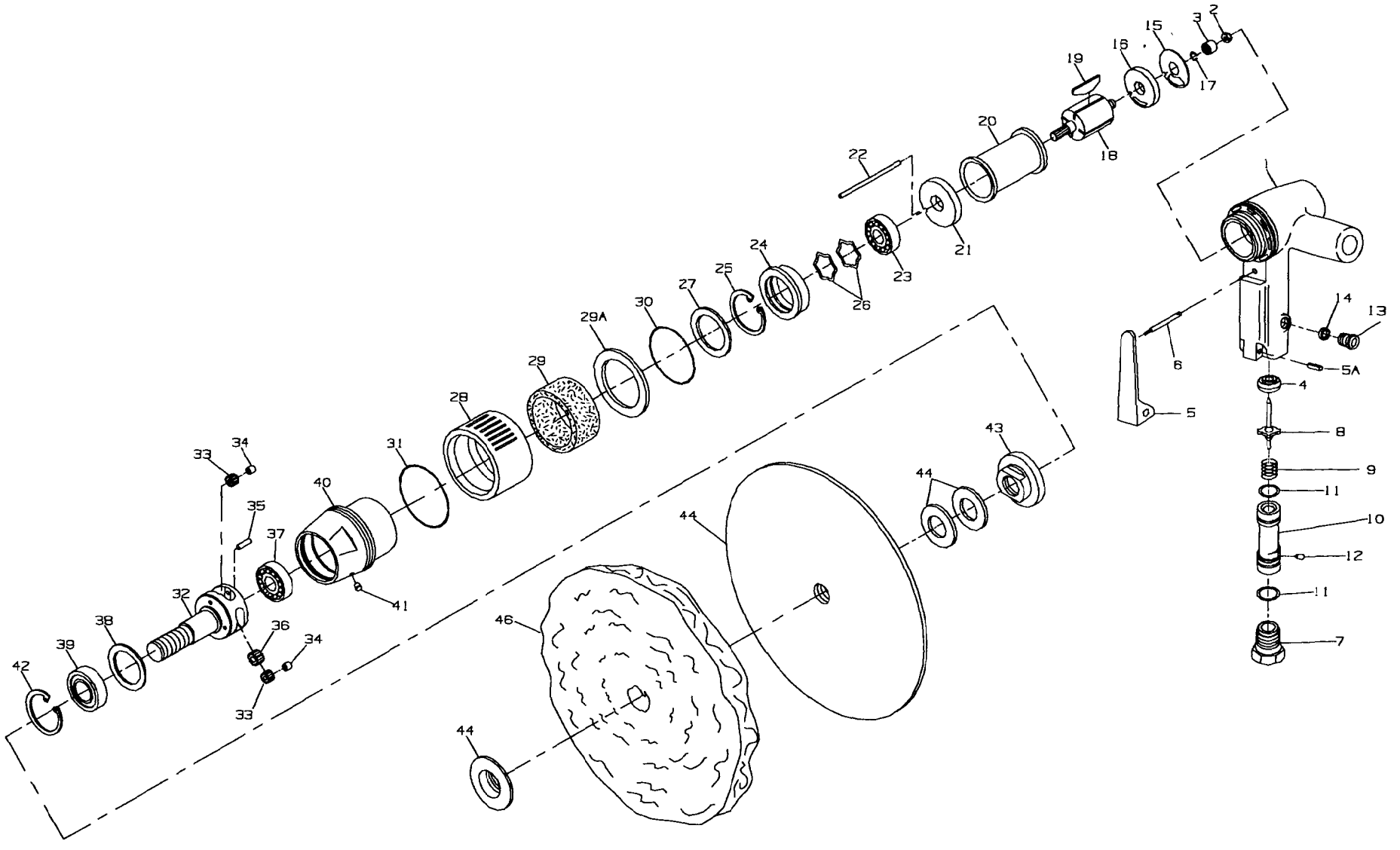
VERTICAL SANDER WITH LEVER THROTTLE

Model	Free Speed, rpm	Spindle and Back Up Pad
GV08A–03S–7	3 000	5/8–11, 7"
GV08A–05S–7	4 800	5/8–11, 7"
GV08A–06S–7	6 000	5/8–11, 7"

HOW TO ORDER A POLISHER

VERTICAL POLISHER WITH LEVER THROTTLE

Model	Free Speed, rpm	Spindle and Polishing Bonnet
GV08A–02P–7	2 400	5/8–11, 7"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(Dwg. TPA1435)

		PART NUMBER FOR ORDERING
1	Motor Housing Assembly	
	for Model GV08A–02P–7	49841–101
	for Model GV08A–03S–7	49841–102
	for Model GV08A–05S–7	49841–103
	for Model GV08A–06S–7	49841–104
*	Decal	49841–105
*	Warning Label	49843–129
+ *	Nameplate	
	for Model GV08A–02P–7	49841–106
	for Model GV08A–03S–7	49841–107
	for Model GV08A–05S–7	49841–108
	for Model GV08A–06S–7	49841–109
*	Nameplate Screw (2)	49843–128
2	Bearing Nut	49841–110
3	Rear Rotor Bearing	49841–111
4	Throttle Valve Seat	49841–112
5	Throttle Lever	49841–114
5A	Throttle Lever Pin	49841–115
6	Throttle Plunger	49841–116
7	Inlet Bushing	49841–117
8	Throttle Valve	49841–118
9	Throttle Valve Spring	49841–119
10	Oiler Body Assembly	49841–120
11	Oiler Body Seal	49460–79
12	Oiler Plug	49842–114
13	Oil Chamber Plug	49841–121
14	Oil Chamber Plug Seal	49845–139

		PART NUMBER FOR ORDERING
15	Rear End Plate Gasket	49841–122
16	Rear End Plate	49841–123
17	Rear End Plate Retainer	49841–124
18	Rotor	
	for Model GV08A–03S–7	49841–125
	for all others	49841–126
19	Vane Packet (set of 4 Vanes)	49841–127
20	Cylinder	49841–128
21	Front End Plate	49841–129
22	Cylinder Dowel	49841–130
23	Front Rotor Bearing	49841–131
24	Front Rotor Bearing Housing	49841–132
25	Front Rotor Bearing Retainer	49450–28
26	Bearing Spring Washer (2)	49460–10
27	Bearing Housing Spacer	49841–154
28	Exhaust Deflector	49841–134
29	Exhaust Silencer	49841–135
29A	Exhaust Diffuser	49841–136
30	Exhaust Deflector Rear Seal	49841–137
31	Exhaust Deflector Front Seal	49841–138

* Not illustrated.

\+ When ordering a Nameplate, order new Nameplate Screws also.

		PART NUMBER FOR ORDERING
	Arbor Assembly	
	for Model GV08A–06S–7	49841–139
	for Model GV08A–05S–7	49841–140
	for Model GV08A–03S–7	49841–141
	for Model GV08A–02P–7	49841–142
32	Arbor	
	for Model GV08A–06S–7	49841–143
	for Model GV08A–05S–7	49841–144
	for Model GV08A–03S–7	49841–145
	for Model GV08A–02P–7	49841–146
33	Arbor Planet Gear Assembly (3)	
	for Model GV08A–06S–7	49460–89
	for Model GV08A–05S–7	49841–147
	for Model GV08A–03S–7	49450–98
	for Model GV08A–02P–7	49841–148
34	Planet Gear Bearing (1 for each Gear)	
	for Model GV08A–06S–7	49460–90
	for Model GV08A–05S–7	49460–86
	for Models GV08A–03S–7 and GV08A–02P–7	49450–99
35	Arbor Planet Gear Shaft (3)	
	for Model GV08A–06S–7	49440–103
	for Model GV08A–05S–7	49841–149
	for Models GV08A–03S–7 and GV08A–02P–7	49841–150
36	Rotor Pinion	
	for Model GV08A–06S–7	49841–151
	for Model GV08A–05S–7	49841–152
37	Rear Arbor Bearing	49841–153
38	Arbor Bearing Spacer	49841–154
39	Front Arbor Bearing	49841–155
40	Gear Case Assembly	49841–156
41	Grease Fitting	49440–57
42	Arbor Bearing Retainer	49841–157
43	Inner Wheel Flange	49841–158
44	Sanding Pad Assembly (firm)	49845–226
46	Wool Bonnet (for Model GV08A–02P–7)	49842–141
*	Arbor Wrench (15/16")	49841–159
*	Sanding Pad Assembly (medium)	49845–225

* Not illustrated.

⚠ WARNING

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

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

LUBRICATION

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

1. Work approximately 1.5 cc of IRAX No. 28 Grease into the Rear Rotor Bearing (3), Front Rotor Bearing (23), Rear Arbor Bearing (37) and Front Arbor Bearing (39).
2. Work approximately 4 to 6 cc of IRAX No. 28 Grease into the gear train. If the gear train is disassembled, grease the Planet Gear Bearings (34), the teeth of the Planet Gears (33), the teeth of the Rotor Pinion (36) and the Planet Gear Shafts (35). Work the grease into the gearing if the gear train is not disassembled. Grease the teeth inside the Gear Case (40).
3. Inject 1 to 2 cc of IRAX No. 10 Oil into the air inlet before attaching the air hose. Remove the Oil Chamber Plug and fill the oil chamber.
4. Moisten all O–rings with o–ring lubricant.

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 a 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 replacements.

Disassembly of the Sander or Polisher

1. Sprag the Inner Wheel Flange (43) with a wrench and unscrew and remove the Sanding Pad Assembly (44) and the Pad Mounting Nut (44).
2. Remove the Pad Mounting Washers (44) from the Arbor (32).
3. Carefully grasp the handle of the Motor Housing (1) in a vise with leather–covered or copper–covered jaws so that the Arbor is upward.
4. Using a wrench on the flats of the Gear Case (40), loosen, but do not remove, the Gear Case.

NOTICE

Be certain to hold the tool over the workbench to prevent parts from becoming lost.

5. Remove the tool from the vise and, while keeping the arbor in a horizontal position, unscrew the Gear Case by hand and pull it away from the Motor Housing.

Disassembly of the Gear Case

1. Thread two 5/8–11 jam nuts onto the threaded end of the Arbor and lock them together near the end of the Arbor. Grasp the outermost jam nut in vise jaws and, with an open end wrench, loosen the Inner Wheel Flange (43). Unlock the two jam nuts, remove the Arbor and Gear Case from the vise and unscrew and remove the two jam nuts and the Inner Wheel Flange.
2. Using snap ring pliers, remove the Arbor Bearing Retainer (42) from the Gear Case.
3. Grasping the threaded end of the Arbor, pull the Arbor, Front Arbor Bearing (39), Arbor Bearing Spacer (38) and Rear Arbor Bearing (37) from the Gear Case.
4. Using a bearing puller, remove the Front Arbor Bearing from the Arbor.
5. Remove the Arbor Bearing Spacer.
6. Using a bearing puller, remove the Rear Arbor Bearing from the Arbor.
7. Press one of the Arbor Planet Gear Shafts (35) from the Arbor and slide the Arbor Planet Gear (33) and Planet Gear Bearing (34) from the Arbor.
8. **For Models GV08A–05S–7 and GV08A–06S–7,** slide the Rotor Pinion (36) out of the opening created by removing the Planet Gear.
9. Press the remaining Arbor Planet Gear Shafts from the Arbor and remove the remaining Arbor Planet Gears and Planet Gear Bearings.

NOTICE

Do not remove the Planet Gear Bearings from the Arbor Planet Gears unless you have new Bearings on hand for replacement. The old Bearings will be damaged during the removal process.

10. Press the Planet Gear Bearings from the Arbor Planet Gears.
11. Pull the Exhaust Deflector (28) from the Gear Case.
12. Remove the Exhaust Diffuser (29A) from the Exhaust Deflector or the hub of the Motor Housing.

13. Remove the Exhaust Deflector Front Seal (31) from the Gear Case.
14. Work the Exhaust Silencer (29) out of the Exhaust Deflector.

Disassembly of the Motor

1. If the Bearing Housing Spacer (27) remained with the assembled motor, remove it.
2. Remove the Front Rotor Bearing Housing (24) and the two Bearing Spring Washers (26).
3. Grasp the splined end of the Rotor and pull the assembled motor from the Motor Housing (1).
4. Using a pair of external snap–ring pliers with just the tips of the pliers inserted between the ends of the Rear End Plate Retainer (17), spread the Retainer enough to remove it from the groove in the hub of the Rotor.

CAUTION

Make certain the Retainer doesn't fly when it is slipped off the hub of the Rotor.

5. Withdraw the Rear End Plate (16), Cylinder (20) and Vanes (19).
6. While supporting the Front End Plate (21) between two blocks of wood on the table of an arbor press, press the Rotor from the Front Rotor Bearing (23). Check the Bearing for damage or roughness by slowly rotating it.

NOTICE

Do not remove the Rear Rotor Bearing (3) unless you have a new Bearing on hand for replacement. The old Bearing will be damaged during the removal process.

7. To remove the Rear Rotor Bearing, thread a No. 10–24 x 2" long cap screw, having at least 1/2" of thread, through the Bearing Nut (2) located behind the Bearing. Keep tightening the screw to jack the Bearing from the Motor Housing.

Disassembly of the Throttle

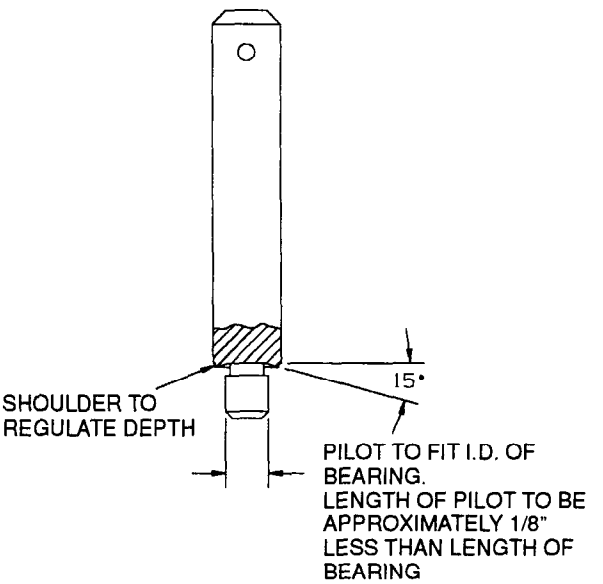
1. Remove the Inlet Bushing (7) and withdraw the Oiler Body Assembly (10), Throttle Valve Spring (9) and the Throttle Valve (8).
2. Remove the Throttle Lever Pin (5A), Throttle Lever (5) and withdraw the Throttle Plunger (6).
3. Do not remove the Throttle Valve Seat (4) unless you have a new one on hand for replacement. The old seat will be damaged during the removal process. To remove the Throttle Valve Seat, thread a 3/8–24 thread cap screw about 3" or 4" long into the Seat; grasp the head of the cap screw in a vise, and pull the Seat from the handle.

ASSEMBLY

General Instructions

1 Always press on the **inner** ring of a ball–type bearing when installing the bearing on a shaft.
2. Always press on the **outer** ring of a ball–type bearing when pressing the bearing into a bearing recess.
3 Whenever grasping a tool or part in a vise, always use leather–covered or copper–covered vise jaws. Take extra care not to damage threads or distort housings.
4. Always clean every part and wipe every part with a thin film of oil before installation.
5. 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 not be cleaned.** Work grease into every open bearing before installation.
6. Apply a film of o–ring lubricant to every O–ring before installation.
7. Unless otherwise noted, always press on the stamped end of a needle bearing when installing a needle bearing into a recess. Use a bearing inserting tool similar to the one shown in Dwg. TPD786.

Needle Bearing Inserting Tool



(Dwg. TPD786)

Assembly of the Throttle

1. Grasp the handle of the Motor Housing (1) in copper–covered vise jaws, positioning the handle so that the inlet end is upward.

NOTICE

Never install a used Throttle Valve Seat; always install a new one.

2. If the Throttle Valve Seat (4) was removed, use a flat–faced rod 1/2" (13 mm) in diameter and about 6" (150 mm) long to press a new Throttle Valve Seat into the handle until it seats.
3. While looking down through the bore of the Throttle Valve Seat, insert the Throttle Plunger (6) until the hole in the Plunger is centered beneath the hole in the Throttle Valve Seat. Install Throttle Lever (5) by aligning hole in the Throttle Lever with holes in Motor Housing (1) and inserting Throttle Lever Pin (5A).
4. Insert the Throttle Valve (8) so that the long–stem end passes through the hole in the Throttle Plunger.
5. Insert the Throttle Valve Spring (9), small coil first, so that the spring encircles the Throttle Valve.
6. Make certain the two Oiler Body Seals (11) are positioned in the annular grooves on the Oiler Body (10) and install the Oiler Body, counterbored end first, into the handle. The large end of the Throttle Valve Spring should seat in the counterbore in the Oiler Body.
7. Thread the Inlet Bushing (7) into the bottom of the handle and tighten it to a minimum 25 ft–lb (33.9 Nm) torque.
8. Remove the Motor Housing from the vise.

Assembly of the Motor

1. If the Rear Rotor Bearing (3) was removed, install a new one as follows:
   a. Place the Bearing Nut (2) in the bore at the bottom of the bearing recess in the Motor Housing (1).
   b. Using a bearing inserting tool (see Drawing TPD786) that has a pilot extending into the Bearing, and a shoulder that contacts the outer radius on the bearing shell, press the Rear Rotor Bearing, unstamped end first, into the bearing recess until it is about .010" (0.25 mm) below flush.
   c. Inject a little grease in the Bearing.
2. Slide the Front End Plate (21), flat side first, over the splined end of the Rotor (18).
3. Using a sleeve that contacts only the inner ring of the Front Rotor Bearing (23), press the Front Rotor Bearing onto the splined hub of the Rotor until it seats against the Front End Plate.

NOTICE

The clearance between the Front End Plate and the Rotor is critical.

4. While holding the Front End Plate, gently tap the splined end of the Rotor until you can insert a 0.001" feeler gauge or shim between the face of the Rotor and End Plate.
5. Grasp the splined end of the Rotor in copper–covered vise jaws so that the short hub of the Rotor is upward.
6. Wipe each Vane (19) with a film of the recommended oil and place a Vane in each slot in the Rotor.
7. Place the Cylinder (20), air port end trailing, down over the Rotor and against the Front End Plate.
8. Place the Rear End Plate (16), flat side first, over the short hub of the Rotor.
9. Install the Rear End Plate Retainer (17) in the groove on the rotor hub.

CAUTION

When installing the Rear End Plate Retainer (17), make certain it does not fly as you slip it on the hub of the Rotor.

10. Smear a film of the recommended grease on the Rear End Plate Gasket (15) and place the Gasket on the End Plate so that the port in the Gasket is aligned with the port in the End Plate.
11. Using an assembly dowel 3/32" in diameter x 10" long (2.3 mm x 254 mm), align the dowel groove in the Front End Plate, Cylinder, Rear End Plate and Gasket. Place the assembly rod in the aligned grooves so that about 3" of the rod extends beyond the Rear End Plate. Insert the extension in the dowel hole at the bottom of the housing bore, and slide the motor into the Motor Housing until it seats.
12. Withdraw the assembly dowel and insert the Cylinder Dowel (22).
13. Place the two Bearing Spring Washers (26) inside the Front Rotor Bearing Housing (24) and against the Front Rotor Bearing Retainer (25).
14. Slide the Front Rotor Bearing Housing over the Front Rotor Bearing.
15. Install the Exhaust Deflector Rear Seal (30) on the Motor Housing.
16. Install the Exhaust Diffuser (29A) on the hub of the Motor Housing.

Assembly of the Gear

1. If the Planet Gear Bearings (34) were removed, press the new Bearings into the Arbor Planet Gears (33) using a bearing inserting tool (see drawing TPD786) that has a pilot and that contacts the outer radius of the Bearings. Press against the stamped end of the Bearing.
2. Smear some of the recommended grease on the Bearings and teeth of the Planet Gears.
3. Using blocks or a ring on the table of an arbor press, place the large shoulder of the Arbor (32), threaded end down, on the blocks or the ring.
4. Position one of the assembled Arbor Planet Gears in one of the machined Arbor openings, carefully aligning the center of the Gear with the hole in the shoulder of the Arbor, and press one of the Arbor Planet Gear Shafts (35) into the Arbor and through the Gear. Make certain both ends of the Shaft are below the faces of the Arbor.
5. Repeat the previous step with the second Planet Gear.
6. **For Models GV08A–05S–7 and GV08A–06S–7,** grease the teeth of the Rotor Pinion (36) and insert it into the center of the Arbor through the remaining machined opening. Make certain the teeth of the Rotor Pinion mesh with the teeth of the Planet Gears.
7. Install the remaining Arbor Planet Gear making certain all gearing meshes and moves freely.

CAUTION

Do not press against the Rear Arbor Bearing.

8. Press the Rear Arbor Bearing (37) onto the shaft at the unthreaded end of the Arbor.
9. Reposition the Arbor on the pressing table with the threaded end up.
10. Position the Arbor Bearing Spacer (38) on the Arbor and press the Front Arbor Bearing (39), shielded side up, onto the Arbor.
11. Smear some grease on the internal spline of the Gear Case (40) and insert the assembled Arbor, gearing end first, into the unsplined end of the Gear Case. Make certain the teeth of the Planet Gears mesh with the teeth in the Gear Case.
12. Using snap ring pliers, install the Arbor Bearing Retainer (42) in the front end of the Gear Case.
13. Thread the Inner Wheel Flange (43) onto the Arbor. Using two 5/8–11 jam nuts on the end of the Arbor, tighten the Inner Wheel Flange.
14. Lubricate and install the Exhaust Deflector Front Seal (31) in the annular groove of the Gear Case.
15. Being careful not to cut the Seal, slide the smaller end of the Exhaust Deflector (28) onto the Gear Case until it butts against the shoulder of the Gear Case.
16. If the Exhaust Silencer (29) was removed, fold the Silencer in half lengthwise and work it into the open area between the Exhaust Deflector and the Gear Case.

Assembly of the Tool

1. Grasping the handle of the Motor Housing in copper–covered or leather–covered vise jaws with the spline of the Rotor upward, place the Bearing Housing Spacer (27) on the face of the Front Rotor Bearing Housing.
2. Position the Gear Case and Exhaust Deflector over the Motor Housing and while slowly rotating the Arbor to align the Planet Gears with the spline of the Rotor, screw the Gear Case onto the Motor Housing. Make certain the Exhaust Deflector Rear Seal is not cut while threading the Gear Case onto the Motor Housing.
3. With a torque wrench on the flats on the Gear Case, tighten the Gear Case to between 50 to 60 ft–lb (67.8 to 81.4 Nm) torque.
4. Install the Pad Mounting Spacers (44) on the Arbor.
5. Thread the Sanding Pad (46) and the Pad Mounting nut onto the Arbor.
6. Spin the Sanding Pad by hand to make certain nothing is binding, then remove the tool from the vise.

TROUBLESHOOTING GUIDE

Trouble	Probable Cause	Solution
Low power or low free speed	Low air pressure at the Inlet	Check the air pressure at the Inlet. The pressure must not exceed 90 psig (6.2 bar/620 kPa).
	Plugged Inlet Bushing Screen	Clean the Screen in a clean, suitable, cleaning solution. If it cannot be cleaned, replace it. **⚠ WARNING** **Never operate a Sander or Polisher without an Inlet Screen. Ingestion of dirt into the Sander or Polisher can, in some cases, cause an unsafe condition.**
	Worn or broken Vanes	Replace the **complete** set of Vanes.
	Worn or broken Cylinder	Replace the Cylinder if it is worn or broken or if the bore is scored or wavy.
	Improper lubrication or dirt build–up in the motor	Lubricate the Sander or Polisher as instructed in **LUBRICATION**. If lubrication does not result in satisfactory operation, disassemble the motor, inspect and clean all parts.
Rough operation	Worn or broken Rear Rotor Bearing or Front Rotor Bearing	Examine each Bearing. Replace the Rear Rotor Bearing Seal Assembly if worn or damaged or replace the Front Rotor Bearing.
	Bent Arbor	Mount the Arbor on centers. Check the bearing diameter runout with an indicator. Replace the Arbor if runout exceeds .002" Total Indicator Reading.
Scoring	Improper assembly	Make certain that all motor parts are properly aligned prior to clamping the motor assembly.
Air leaks	Worn Valve Throttle and/or Throttle Valve Seat	Replace worn parts.
	Oil Chamber Plug worn or not tight	Tighten the Plug. If the problem persists, replace it.

NOTICE

SAVE THESE INSTRUCTIONS. DO NOT DESTROY.