ARO®
Tool & Hoist Products

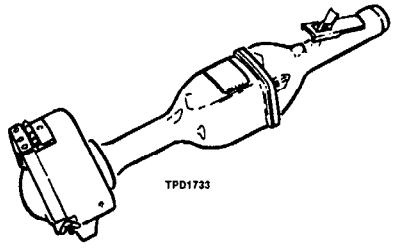
OPERATOR'S MANUAL

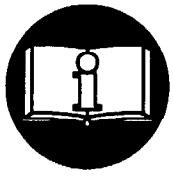
INCLUDING: OPERATION, INSTALLATION & MAINTENANCE

SECTION MANUAL M10 183
Released: 5–31–94
Revised: 5–31–94

MODELS GH20A–06G–6 AND GH22A–09D–5

2.0 H.P. HORIZONTAL GRINDERS





⚠ 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 3/4" (19 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 accessorymay 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

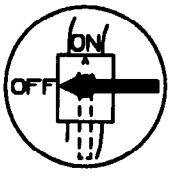
FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

⚠ WARNING

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

⚠ WARNING

Always wear hearing protection when operating this tool.



⚠ WARNING

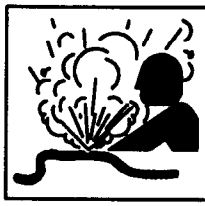
Always turn off the air supply and disconnect the air supply hose before installing, removing or adjusting any accessory on this tool, or before performing any maintenance on this tool.

⚠ 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.

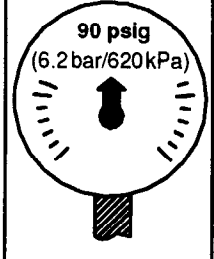


⚠ WARNING

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.

WARNING LABEL IDENTIFICATION

⚠ WARNING

FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

- **Do not use this tool if the actual free speed exceeds the nameplate rpm.**
- **Before mounting a wheel, after all tool repairs and whenever a Grinder is issued for use, check the free speed of the Grinder with a tachometer to make certain its actual speed at 90 psig (6.2 bar/620 kPa) does notexceed the rpm stamped or printed on the nameplate. Grinders in use on the job must be similarly checked at least once each shift.**
- **Always use the ARO Wheel Guard furnished with the Grinder. Failure to do so could result in injury.**
- **Do not use a Grinder without the recommended wheel guard. Do not use any wheel for which the operating speed listed on the blotter is lower than the actual free speed of the Grinder.**
- **Inspect all grinding wheels for chips or cracks prior to mounting. Do not use a wheel that is chipped or cracked or otherwise damaged. Do not use a wheel that has been soaked in water or any other liquid.**
- **Make certain the grinding wheel properly fits the arbor. The wheel should not fit too snugly or too loosely. Plain hole wheels should have about .007" (0.17 mm) maximum diametral clearance. Do not use reducing bushings to adapt a wheel to any arbor unless such bushings are supplied by or recommended by the wheel manufacturer.**
- **After mounting a new wheel, hold the Grinder under a steel workbench or inside a casting and run it for at least 60 seconds. Make certain no one is within the operating plane of the grinding wheel. If the wheel is defective, improperly mounted or the wrong size and speed, this is the time it will usually fail.**
- **When starting a cold wheel, apply it to the work slowly until the wheel gradually warms up. Make smooth contact with the work, and avoid any bumping action or excessive pressure.**
- **Always replace a damaged, bent or severely worn wheel guard. Do not use a wheel guard that has been subjected to a wheel failure.**
- **Make certain the wheel flanges are at least 1/3 the diameter of the grinding wheel, free of nicks and burs and sharp edges. Always use the wheel flanges furnished by the manufacturer; never use a makeshift flange or a plain washer.**
- **Guard opening must face away from operator.**
- **Always use a wheel blotter between each wheel flange and the wheel. The blotters must be at least as large in diameter as the wheel flanges.**
- **Do not attempt to disassemble the Controller. The Controller is available only as a unit and is guaranteed for the life of the tool if it is not abused.**
- **Before installing a new Angle Arbor Housing, always select the correct Assembly for the motor package you are using.**

PLACING TOOL IN SERVICE

LUBRICATION

IRAX No. 50P

IRAX No. 28–1LB

Always use an air line lubricator with this Tool.
We recommend the following Filer–Lubricator–Regulator Unit:

For USA – IRAX No. C31–06–G00
For International – IRAX No. FRL30–C6–A29

Where lubricators cannot be permanently mounted, we recommend using an IRAX No. 8LUB12 Lubricator.

Before starting the tool, unless the air line lubricator is used, detach the air hose and inject about 1.5 cc of IRAX No. 50P Oil into the air inlet. Remove the Oil Chamber Plug (24) and fill the chamber.

After each eight hours of operation, or as experience indicates, remove the Oil Chamber Plug (24) and fill the chamber.

PLACING TOOL IN SERVICE

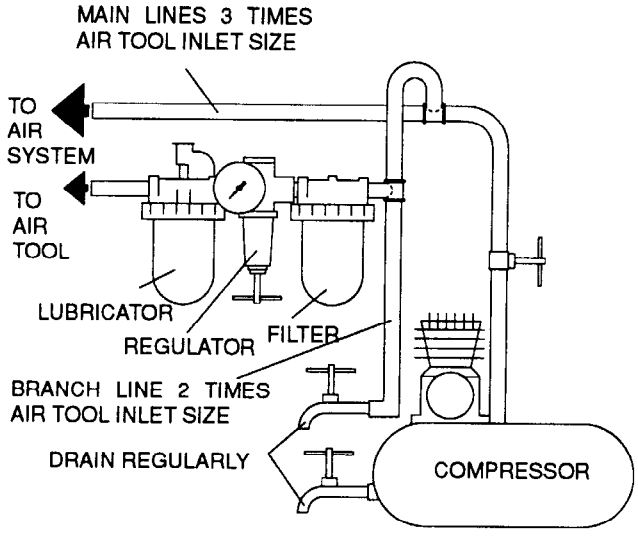
INSTALLATION

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.

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



(Dwg. TPD905–1)

GH20A and GH22A Grinders are designed for metal removal in foundry work and similar applications

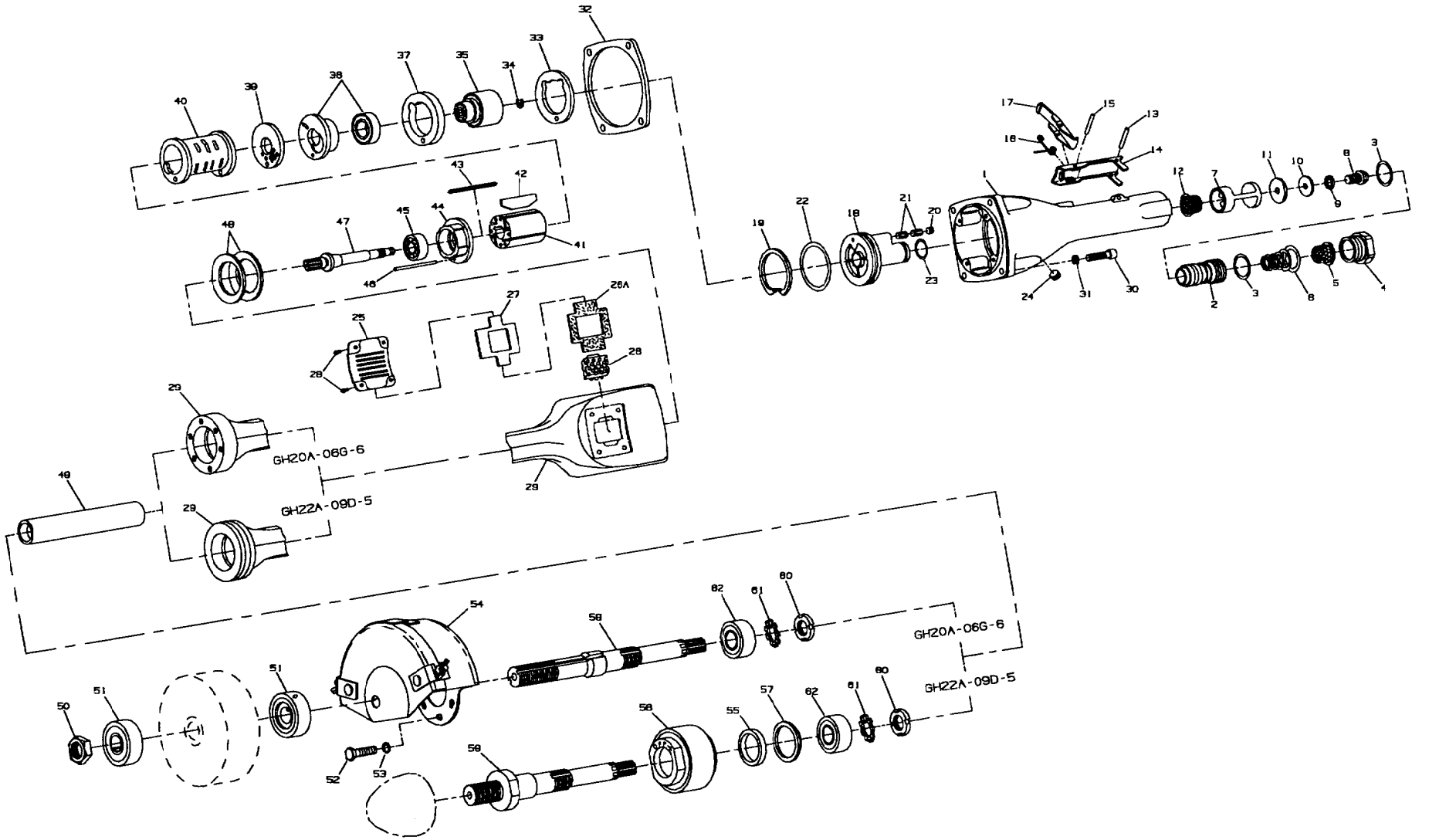
HOW TO ORDER A GRINDER

HORIZONTAL GRINDER with LEVER THROTTLE

Model	Free Speed, rpm	Wheel	Spindle
GH22A–09D–5	9 000	Cone	5/8" – 11

HORIZONTAL GRINDER with LEVER THROTTLE

Model	Free Speed, rpm	Type 1 Wheel		Spindle	Guard
		inches	mm		
GH20A–06G–6	6 000	6	152	5/8" – 11	6"



(Dwg. TPA1439)

		PART NUMBER FOR ORDERING
	1	Throttle Handle Assembly 49844–105
	2	Throttle Valve Assembly 49845–108
•	3	Seal (2) 49845–109
	4	Inlet Bushing 49845–110
•	5	Inlet Bushing Screen 49845–111
•	6	Throttle Valve Spring 49844–135
	7	Throttle Valve Seat Support Assembly 49845–113
	8	Valve Seat Screw 49845–118
	9	Valve Screw Lock Washer 49845–117
	10	Valve Seat Washer 49845–116
•	11	Valve Seat 49845–115
•	12	Air Strainer Screen 49845–111
	13	Throttle Lever Pin 49845–119
	14	Throttle Lever Assembly 49845–120
	15	Lever Lock Pin 49845–123
	16	Lever Lock Spring 49845–122
	17	Lever Lock 49845–121
	18	Oiler Body Assembly 49844–136
	19	Oiler Retainer 49844–137
	20	Oiler Adjusting Screw 49844–138
	21	Oiler Felt (2) 49845–124
•	22	O–ring (Large) 49844–139
•	23	O–ring (Small) 49844–140
	24	Oil Chamber Plug 49843–119
	25	Exhaust Deflector 49844–106
	26	Exhaust Baffle 49844–107
	26A	Exhaust Deflector Gasket 49844–108
	27	Exhaust Diffuser
		for GH20A–06G–6 49844–109
		for GH22A–09D–5 49844–110
	28	Exhaust Deflector Screw (4) 49845–136

		PART NUMBER FOR ORDERING
	29	Arbor Housing
		for GH20A–06G–6 49844–101
		for GH22A–09D–5 49844–102
*		Nameplate
		for GH20A–06G–6 49844–103
		for GH22A–09D–5 49844–104
*		Nameplate Screw (4) 49844–141
*		Warning Label 49845–134
*		Decal 49845–209
	30	Arbor Housing Screw (4) 49844–111
	31	Arbor Housing Lock Washer (4) 49844–112
•	32	Arbor Housing Gasket 49844–113
•	33	Rear End Plate Gasket 49845–156
	34	Controller Retaining Ring 49845–161
	35	Controller Assembly (consists of Controller and Rotor Bearing Seal Assembly)
		for GH20A–06G–6 (Blue) 49845–157
		for GH22A–09D–5 (Red) 49845–159
	36	Rotor Bearing Seal Assembly (consists of Rear Rotor Bearing and Rotor Bearing Seal) 49845–160
	37	Bearing Cage 49844–114
	39	Rear End Plate 49845–155
	40	Cylinder 49845–153
	41	Rotor 49845–151
•	42	Vane Packet (set of 4 Vanes) 49845–152
•	43	Rotor Key 49845–150
	44	Front End Plate 49845–149
	45	Front Rotor Bearing 49845–148
•	46	Cylinder Dowel 49844–115

* 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 tools in service.

		PART NUMBER FOR ORDERING
47	Rotor Shaft	
	for GH20A–06G–6 (13 teeth)	49844–116
	for GH22A–09D–5 (10 teeth)	49844–117
48	Motor Clamp Washer (2)	49845–162
49	Arbor Coupling	
	for GH20A–06G–6 (13 teeth)	49844–118
	for GH22A–09D–5 (10 teeth)	49844–119
50	Wheel Nut (for GH20A–06G–6) (5/8"–11 thd.) ..	49460–69
51	Wheel Flange (2) (for GH20A–06G–6)	49844–120
52	Guard Screw (6) (for GH20A–06G–6)	49844–121
53	Guard Screw Lock Washer (6)	
	(for GH20A–06G–6)	49843–161
54	Wheel Guard (for GH20A–06G–6)	49844–122
*	Guard Latch Screw (for GH20A–06G–6)	49844–124
55	Dust Washer (for GH22A–09D–5)	49844–125
56	Bearing Cap (for GH22A–09D–5)	49844–126
57	Bearing Cap Spring (for GH22A–09D–5)	49844–127
58	Arbor (for Type 1 Grinding Wheels up to 1" wide) (for GH20A–06G–6) (5/8"–11 thd.) (13 teeth)	49844–128

		PART NUMBER FOR ORDERING
59	Cone Wheel Arbor (for GH22A–09D–5)	
	(accommodates 3" Cone Wheel) (10 teeth)	49844–129
60	Bearing Locknut	49844–130
61	Bearing Lock Washer	49844–131
• 62	Arbor Bearing	49844–132
*	Wheel Adapter Kit (for GH20A–06G–6)	
	(consists of four Adapters for mounting	
	Type 1 Wheels as follows:)	
	32 mm wide x 20 mm arbor hole;	
	32 mm wide x 32 mm arbor hole;	
	25 mm wide x 20 mm arbor hole and	
	25 mm wide x 32 mm arbor hole	49844–133
*	Controller Wrench	49845–203
*	Seal Pressing Tool	49845–204
*	Bearing Clamp	49845–205
*	Cone Wheel Arbor Wrench	49845–191
*	Deflector Screw Wrench	49845–206

* 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 tools in service.

MAINTENANCE SECTION

⚠ WARNING

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

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

LUBRICATION

Whenever a GH20A or GH22A Grinder is disassembled for overhaul or replacement of parts, lubricate as follows:

Inject about 1.5 cc of IRAX No. 50P Oil into the Inlet Bushing (4) after assembly. Fill the oil chamber. After each eight hours of operation, replenish the oil supply.

OILER ADJUSTMENT

The built–in lubricator has been properly adjusted at the factory. A lack of oil indicates the Oiler needs filling or the Oiler Felts are clogged and must be replaced as follows:

1. Remove the Arbor Housing Screws (30), Lock Washers (31) and Arbor Housing Gasket (32).
2. Remove the Oil Chamber Plug (24) and pour the oil from the oil chamber.
3. Using snap ring pliers, remove the Oiler Retainer (19).
4. Insert lock ring pliers in the hole of the Oiler Body Assembly (18) and pull out the Oiler Body Assembly.
5. With a thin–blade screwdriver, unscrew the Oiler Adjusting Screw (20).
6. Using tweezers or a piece of bent wire, remove the Oiler Felts and install a new set.
7. Replace the Oiler Adjusting Screw, installing it slightly below flush.
8. Replenish the oil supply.

DISASSEMBLY

General Instructions

1. Do not disassemble the tool any further than necessary to replace or repair damaged parts.
2. Whenever grasping a tool or part in a vise, always use leather–covered or copper–covered 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 Arbor

1. Grasp the Arbor Housing (29) in a vise, guard upward.
2. **For Type 1 Wheels (Models GH20A–06G–6),** use an appropriate spanner wrench inserted into the pinhole of the flange to hold the Arbor. Unscrew the Wheel Nut (50) with an open–end wrench. Remove the Wheel Flanges (51).
3. **For Model GH20A–06G–6,** unscrew the Guard Screws (52). Remove the Guard Screw Lock Washers (53) and the Wheel Guard (54).
4. **For Cone Wheel (Model GH22A–09D–5),** using 49845–191 Cone Wheel Arbor Wrench to hold the Arbor, unscrew the cone wheel counterclockwise. Loosen and unscrew the Bearing Cap (56) from the Arbor Housing.
5. **For Model GH22A–09D–5,** unscrew the Bearing Cap from the Arbor Housing.
6. Lift the Arbor (58) or (59) and the Arbor Coupling (49) from the Arbor Housing. Pull the Arbor Coupling off the Arbor.
7. Grasp the Arbor in a vise, spline end up.
8. With pliers, straighten the tangs of the Bearing Lock Washer (61). Unscrew the Bearing Locknut (60) and remove the Bearing Lock Washer.
9. If the Arbor Bearing (62) is to be replaced, press it from the arbor shaft.

Disassembly of the Motor and Throttle

1. Using the No. 49845–206 Deflector Screw Wrench, remove the Exhaust Deflector Screws (28) and lift off the Exhaust Deflector (25), Exhaust Deflector Gasket (26A), Exhaust Diffuser (27) and Exhaust Baffle (26).
2. Grasp the Arbor Housing (29) in a vise.
3. Unscrew the Arbor Housing Screws (30) and remove the Lock Washers (31).
4. Lift off the Throttle Handle Assembly (1) to expose the motor.
5. Remove the Arbor Housing Gasket (32).
6. Grasp the Controller Assembly (35) by hand and pull the motor unit out of the Arbor Housing.
7. Remove the Arbor Housing from the vise. Turn over the Arbor Housing and the two Motor Clamp Washers (48) will drop out.
8. Grasp the Rotor Shaft (47) in the vise.
9. Remove the Controller Retaining Ring (34) and unscrew the Controller Assembly (35) which has a **left–hand thread**. This requires a **clockwise** rotation for removal.

CAUTION

Use only the special 49845–203 Controller Wrench for removing the Controller Assembly. Do not attempt to disassemble the Controller. It is available only as a unit and is guaranteed for the life of the tool if it is not abused.

10. If the Rear Rotor Bearing (36) needs to be replaced, insert the Rear Rotor Bearing into the 49845–205 Bearing Clamp and tighten the nut on the fixture. Insert the 49845–204 Seal Pressing Tool in the center of the Rear Rotor Bearing and press off the Controller. Release the clamp.
11. Lift off the Rotor Bearing Seal (36), Bearing Cage (37) and Rear End Plate (39).
12. Lift off the Cylinder (40).
13. Remove the Vanes (42).
14. Withdraw the Rotor (41) and lift out the Rotor Key (43).
15. Remove the rotor shaft and end plate assembly from the vise. Grasp the Front End Plate (44) in one hand and tap the small diameter end of the rotor shaft with a soft hammer to remove the end plate.
16. If the Front Rotor Bearing (45) is to be replaced, press it from the rotor shaft.
17. Unscrew the Oil Chamber Plug (24) from the Throttle Handle Assembly (1) and pour the oil from its reservoir.
18. Place the Throttle Handle Assembly in a vise to remove the Inlet Bushing (4), Inlet Bushing Screen (5) and the Throttle Valve Spring (6). The Bushing has an interference thread and is tightly fit.
19. Drive out the Throttle Lever Pin (13) to release the Lever Assembly (14).
20. Release the Throttle Valve (2) by tapping the end of the handle with a soft hammer, or by using lock ring pliers.
21. Release the Throttle Valve Seat Support (7) by tapping the end of the handle with a soft hammer.
22. Remove the Valve Seat Screw (8), Valve Screw Lock Washer (9), Valve Seat Washer (10) and Valve Seat (11). The Air Strainer Screen (12) may not be cleaned.

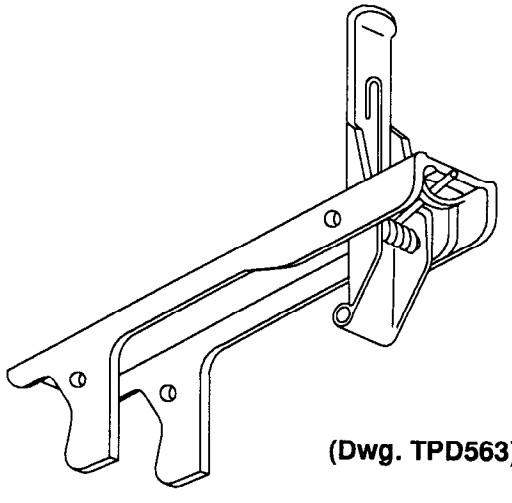
ASSEMBLY

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 in a bearing recess.
3. Whenever grasping a tool or part in a vise, always use leather–covered or copper–covered vise jaws to protect the surface of the part and help prevent distortion. This is particularly true of threaded members and housings.
4. Always clean every part, and wipe every part with a thin film of the recommended oil before installation.

Assembly of the Throttle and Inlet

1. Assemble the Valve Seat Support Parts. Tighten the Valve Seat Screw (8) to 12 in–lb (1.4 Nm) torque.
2. Insert the Assembly in the handle, large diameter first. Locate a punch on the flat of the screw head and tap it with a hammer until the assembly is firmly seated.
3. Apply O–ring lubricant to the Seals (3). Fit the seals to the Throttle Valve (2) and push the assembly, small diameter first, into the handle until it seats firmly.
4. Assemble the Locking Lever Assembly (14) as illustrated in Dwg. TPD563:



(Dwg. TPD563)

Locking Lever Assembly for GH20A and GH22A

5. Align the holes in the Lever Assembly (14) with the slots in the Throttle Handle. With a soft hammer, tap the Throttle Lever Pin (15) through the Lever Assembly. File off any sharp edges. Operate the mechanism internally by hand to assure operation.
6. Grasp the Throttle Handle in a vise.
7. Insert the Throttle Valve Spring (6) small end first.
8. Clean the face of the Inlet Bushing (4) and the Inlet Bushing Screen (5) with a clean, suitable, cleaning solution in a well-ventilated area before assembling into the tool. Insert the parts in the end of the Throttle Handle. With a Wrench tighten the Inlet Bushing to 125 ft-lb (170 Nm) torque.

NOTICE

The Inlet Bushing has an interference thread. Apply a light film of oil to the threads before assembly.

Assembly of the Motor

1. Using an arbor press, press against the inner race of the bearing to install the Front Rotor Bearing (45) onto the Rotor Shaft (47).
2. Inspect the Front End Plate (44) for nicks or burrs. Replace if necessary. Install the Front End Plate over the Rotor Shaft and onto the Front Rotor Bearing. This is a light press fit.
3. Hold the Rotor Shaft in a vise. Insert the Rotor Key (43) in the slot of the Rotor (41). The Rotor has a staked keyway on one end. Place that end up, over the rotor shaft. Apply a light film of the recommended oil to each Vane (42) and insert one vane, straight edge out, into each slot in the Rotor. If any new vanes are required, replace the entire set.
4. Place the Cylinder (40) over the Rotor matching the Cylinder Dowel hole to the alignment hole in the Front End Plate (44), with the kidney holes to the **right** of the dowel hole.
5. Apply the Rear End Plate (39) with the kidney holes to the **right** of the dowel hole.

NOTICE

If the Controller Assembly (35) needs to be replaced, you must also replace the Rotor Bearing Seal Assembly (36) which consists of the Rear Rotor Bearing and Rotor Bearing Seal. If either the Rear Rotor Bearing or Rotor Bearing Seal needs to be replaced, BOTH must be replaced with a new Bearing and Seal. Do not mix old and new parts.

6. Check the outside diameter and large inside diameter of the Rotor Bearing Seal for wear. If the outside diameter of the hub is worn to 1.1764" or smaller, and/or the large inside diameter is worn to 0.9103" or larger, install a new Rotor Bearing Seal Assembly (36).

NOTICE

Take all measurements 30 degrees to the left of the dowel hole when facing the hub side of the Seal. Install the Rotor Bearing Seal.

7. Press the Rear Rotor Bearing onto the hub of the Controller.
8. Slip the Controller Assembly over the Rotor Shaft. Rotate the Controller **counterclockwise** since this is a **left-hand thread.**

CAUTION

Use only the special No. 49845-203 Controller Wrench for applying the assembly.

⚠ WARNING

Tighten the Controller to 14 to 16 ft-lb (19.0 to 21.7 Nm) torque. DO NOT EXCEED 16 ft-lb. The Controller may be damaged if this torque is exceeded. Always check the free speed of a Grinder after it has been reassembled and before it is put back into service. Refer to Test Procedure on Page 12. NEVER use a Grinder which runs in excess of the maximum speed listed in the Test Procedure.

9. Install the Controller Retaining Ring (34), **concave** face closest to the Controller.
10. Grasp the Throttle Handle Assembly (1) in a vise, wide end up with the Throttle Lever facing right.
11. Insert the assembled motor into the Throttle Handle Assembly aligning the Cylinder Dowel (46) with the upper left-hand dowel pin hole.
12. Lightly dampen the Arbor Housing Gasket (32) with oil and align it with the holes in the Throttle Handle Assembly.
13. Insert the two Motor Clamp Washers (48) over the spline of the Rotor Shaft, concave side up so the inner rim contacts the Front End Plate (44).
14. Place the Arbor Housing (29) onto the Throttle Handle Assembly.

NOTICE

Make sure THE NOTCH on the face of the Arbor Housing lines up with the Cylinder Dowel of the motor. Exhaust will be to the right of the operator.

NOTICE

Rotating the housing and motor and aligning the Cylinder Dowel with each of the dowel pin holes changes the direction of exhaust 90 degrees.

15. Place Lock Washers on the Arbor Housing Screws (30) and slightly tighten opposite screws; then tighten all screws to 14 ft–lb (19 Nm) torque.
16. Install the Exhaust Baffle (26), Exhaust Diffuser (27), Exhaust Deflector (25) and Exhaust Deflector Gasket (26A) in the Arbor Housing. Insert the Exhaust Deflector Screws (28) and tighten with the No. 49845–206 Deflector Screw Wrench.

Assembly of the Arbor

1. **For Model GH22A–09D–5,** insert the Dust Washer (55) followed by the Bearing Cap Spring (57), concave side first, into the Bearing Cap (56). Slide the Bearing Cap followed by the Arbor Bearing onto the Arbor shaft from the rear.
2. Press the Arbor Bearing (62) onto the Arbor Shaft (58 or 59).
3. Grasp the Arbor Shaft in a vise, spline end up.
4. Install the Bearing Lock Washer (61) and Bearing Locknut (60). Tighten the Locknut snugly. Bend the tangs of the Bearing Lock Washer into the grooves of the Bearing Locknut.
5. Remove the Arbor Shaft from the vise.
6. Grasp the Arbor Housing (29) in a vise, wheel end up.
7. Coat the spline of the Rotor Shaft (47) and the spline of the Arbor Shaft with 3 to 4 cc of IRAX No. 28–1LB Grease. Insert the Arbor Coupling (49) into the Arbor Housing and onto the spline of the Rotor Shaft. Slip the spline of the Arbor Shaft into the Arbor Coupling.
8. **For Model GH20A–06G–6,** place the Wheel Guard (54) onto the Arbor Housing, making sure the holes are aligned. Install the Guard Screw Lock Washers (53) and Guard Screws (55). Tighten to 15 ft–lb (20.3 Nm) torque.
9. **For Model GH20A–06G–6,** install a Wheel Flange (51), Wheel and the other Wheel Flange (51) onto the Arbor.

NOTICE

Slip the flanges onto the arbor so the keys are opposite each other.

10. **For Model GH20A–06G–6,** use a Spanner Wrench inserted into the pin hole of the flange to hold the arbor, install the Wheel Nut (51) with an open–end wrench. Only tighten sufficiently to drive the wheel and prevent slippage.
11. **For Cone Wheel (Model GH22A–09D–5),** thread the Bearing Cap on the Arbor Housing and tighten to 40 to 45 ft–lb (54 to 61 Nm) torque.
12. **For Model GH22A–09D–5,** use a No. 49845–191 Cone Wheel Arbor Wrench to hold the Arbor, install the cone wheel turning clockwise until hand–tight.
13. Fill the oil chamber with the recommended oil and insert the Oil Chamber Plug (24). Tighten to 4 ft–lb (5.4 Nm) torque.

TEST AND INSPECTION PROCEDURE

Run the performance tests at 90 psig (6.2 bar/620 kPa) air pressure at the inlet of the tool with an eight foot (2.44 m) length of 3/4" (19 mm) diameter air supply hose.

1. Without a wheel on the tool, operate the Grinder with the Throttle Lever fully depressed and check the free speed by applying a hand–held tachometer to the spindle end. The minimum and maximum allowable free speeds are as follows:

Model	Stamped	Free Speed	
		Minimum	Maximum
GH20A–06G–6	6000	5650	6050
6H22A–09D–5	9000	7950	8550

2. Test the Grinder motor for power to determine these **minimum** performance levels. The Throttle Lever must not be actuated repeatedly during the test. Depress the Lever and hold it in the open position until the test is complete.

Model	Torque		Speed, rpm (r/min)
	ft–lb	Nm	
GH20A–06G–6	1.89	2.6	5000
GH22A–09D–5	1.60	2.2	6500

If a dynamometer is not available, test the Grinder using a properly calibrated test fan and fan cage combination to determine the following **minimum** speeds:

Model	Fan	Minimum Speed, rpm (r/min)
GH20A–06G–6	R3	4700
GH22A–09D–5	R2	5900

3. There must be no objectionable leaks in any non–exhaust area. The Throttle must not leak when it is closed.
4. There must be no leaks past the closed Throttle that will run the motor.
5. The Grinder must start smoothly when the Throttle Lever is depressed and must shut off completely when the Throttle Lever is released.
6. The Grinder must be equipped with a spring–loaded window style Lock (17). The Lock must return to the locked position when the Throttle Lever is released.
7. The tool must run smoothly without noticeable vibration or unusual sound.

⚠ WARNING

DISCONNECT THE GRINDER FROM THE AIR SUPPLY HOSE AND SHUT OFF AIR TO THE TOOL BEFORE PROCEEDING WITH THE TEST AND INSPECTION PROCEDURE.

8. The Arbor (58 or 59) must turn freely with no evidence of brinelled bearings.
9. The Threads on the arbor must be free of nicks and damage.
10. The Nameplate must be legible, in place and securely fastened. Make replacement if necessary.

TROUBLESHOOTING GUIDE

Trouble	Probable Cause	Solution
Low power or low free speed	Low air pressure at the Inlet of the Grinder	Check the air pressure at the Inlet. For maximum performance and durability of parts, the pressure must not exceed 90 psig (6.2 bar/620 kPa).
	Plugged Screens	Clean the Screen in a clean, suitable, cleaning solution in a well-ventilated area. If it cannot be cleaned, replace it. **⚠WARNING** **Never operate a Grinder without an inlet screen. Ingestion of dirt into the Grinder can, in some cases, cause an unsafe condition.**
	Worn or broken Vanes	Replace a **complete** set of Vanes.
	Worn or broken Cylinder	Replace the Cylinder if it appears cracked or if the bore is wavy or scored.
	Improper lubrication or dirt build-up in the motor	Lubricate the Grinder as instructed in **LUBRICATION SPECIFICATION.** If lubrication does not result in satisfactory operation, disassemble the motor, inspect and clean all parts.
High free speed	Worn Rotor Bearing Seal	Replace the Rotor Bearing Seal Assembly if the outside diameter of the hub is worn to 1.1764" or smaller and/or the large inside diameter is worn to 0.9103" or larger.
Rough operation	Worn or broken Rear Rotor Bearing or Front Rotor Bearing	Examine each Bearing. Replace Rotor Bearing Seal Assembly or Front Rotor Bearing if worn or damaged.
	Worn Rotor Key	Replace the Key. Check the Rotor Shaft or Rotor for key slot wear and replace if necessary.
	Bent Arbor	Mount the Arbor on centers. Check the bearing diameter for runout with an indicator. Replace the Arbor if runout exceeds 0.002" (0.051 mm) 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 Seat or Valve Seat Washer	Replace worn parts.
	Worn Throttle Valve Seals	Replace both Seals.
	Worn Arbor Housing Gasket	Replace the Gasket.
	Oiler Plug worn or not tight	Tighten the Plug. If the problem persists, replace the Plug.

NOTICE

SAVE THESE INSTRUCTIONS. DO NOT DESTROY.

NOTES

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