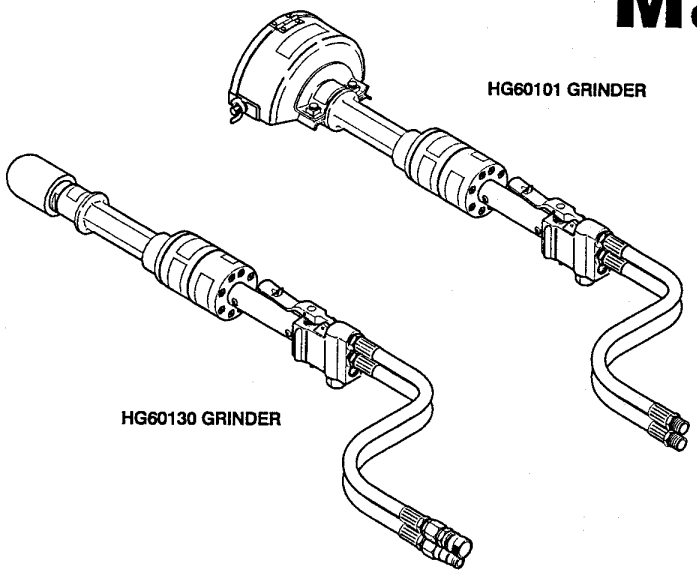
HG60

HYDRAULIC GRINDER

Safety, Operation and Maintenance Manual



⚠ DANGER

SERIOUS INJURY OR DEATH COULD RESULT FROM THE IMPROPER REPAIR OR SERVICE OF THIS TOOL.

REPAIRS AND / OR SERVICE TO THIS TOOL MUST ONLY BE DONE BY AN AUTHORIZED AND CERTIFIED DEALER.

Focused on performance™

STANLEY® Hydraulic Tools

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INDEX

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For the nearest authorized and certified dealer, call Stanley Hydraulic Tools, 1-800-549-0517 and ask for a Customer Service Representative.

SAFETY PRECAUTIONS

Tool operators and maintenance personnel must always comply with the safety precautions given in this manual and on the stickers and tags attached to the tool and hose.

These safety precautions are given for your safety. Review them carefully before operating the tool and before performing general maintenance or repairs.

Supervising personnel should develop additional precautions relating to the specific work area and local safety regulations. If so, place the added precautions in the space provided on page 4.

GENERAL SAFETY PRECAUTIONS

The models HG60 Hydraulic Grinder will provide safe and dependable service if operated in accordance with the instructions given in this manual. Read and understand this manual and any stickers and tags attached to the grinders and hoses before operation. Failure to do so could result in personal injury or equipment damage.

- Operator must start in a work area without bystanders. The operator must be familiar with all prohibited work areas such as excessive slopes and dangerous terrain conditions.
- Establish a training program for all operators to ensure safe operation.
- Do not operate the tool unless thoroughly trained or under the supervision of an instructor.
- Always wear safety equipment such as goggles, ear and head protection, and safety shoes at all times when operating the tool.
- Do not inspect or clean the tool while the hydraulic power source is connected. Accidental engagement of the tool can cause serious injury.
- Always connect hoses to the tool hose couplers before energizing the hydraulic power source. Be sure all hose connections are tight.
- Do not operate the tool at oil temperatures above 140°F/60°C. Operation at higher temperatures can cause higher than normal temperatures at the tool which can result in operator discomfort.
- Do not operate a damaged, improperly adjusted, or incompletely assembled grinder.
- Do not inspect, clean or replace the grinding wheel while the hydraulic power source is connected. Do not inspect or clean the tool while the hydraulic power source is connected. Accidental engagement of the tool can cause serious injury.
- Do not operate the tool with the wheel guard removed.
- Never wear loose clothing that can get entangled in the working parts of the tool.
- Keep all parts of your body away from the rotating wheel. Long hair or loose clothing can become drawn into rotating components.
- Keep the wheel off all surfaces when starting the grinder.
- Do not use a wheel that is cracked, chipped or otherwise damaged. Always inspect wheels for possible damage before installation or use.
- Always use wheels that conform to the specifications given in the OPERATION section of this manual.
- Do not reverse grinding wheel rotation direction by changing fluid flow direction.
- To avoid personal injury or equipment damage, all tool repair, maintenance and service must only be performed by authorized and properly trained personnel.

- If the material being ground creates an emission of dust and fumes, use personal protective devices.
- Never cock, jam or wedge the grinding wheel during operation.
- Never cause sparks in the vicinity of flammable materials.
- Eye injury, and cutting or severing of body parts is possible if proper procedures are not followed.

GRINDING WHEEL SAFETY

- Ensure that the grinding wheel is correctly mounted and tightened before use.
- Operate the Grinder at "no load" for 30 seconds in a safe position and ensure there is no vibration or other defects detected. If considerable vibration or other defects are detected, stop operation of the tool immediately and determine the cause. Do not use the tool until the defect is corrected.
- If the Grinder is dropped with an abrasive wheel installed, the abrasive wheel should be examined throughly before use.
- Only use abrasive wheels that comply with ANSI B7.1/ISO 525, 603.
- Check that the maximum operating speed (rpm - revolutions per minute) of the abrasive wheel is equal to or greater than the rated shaft speed of the grinder.
- Ensure that the grinding wheel dimensions are compatible with the Grinder and that the grinding wheel fits the shaft.
- Ensure that the thread type and size of the grinding wheel exactly matches the tread type and size of the shaft.

SAFETY SYMBOLS

Safety symbols are used to emphasize all operator, maintenance and repair actions which, if not strictly followed, could result in a life-threatening situation, bodily injury or damage to equipment.

DANGER

This safety symbol may appear on the tool. It is used to alert the operator of an action that could place him/her or others in a life threatening situation.

⚠ WARNING

This safety symbol appears in these instructions to identify an action that could cause bodily injury to the operator or other personnel.

IMPORTANT

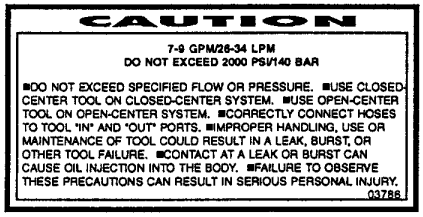
This safety symbol appears in these instructions to identify an action or condition that could result in damage to the tool or other equipment.

Always observe safety symbols. They are included for your safety and for the protection of the tool.

LOCAL SAFETY REGULATIONS

Enter any local safety regulations here. Keep these instructions in an area accessible to the operator and maintenance personnel.

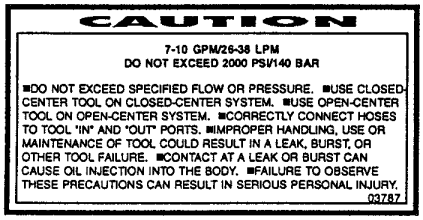
TOOL STICKERS AND TAGS



GPM/PRESSURE STICKER
P/N 03786
(shown actual size)

Different stickers are used on the various models of the HG60 Grinder. The drawing on the next page shows the approximate location of stickers. Review the parts drawing and parts list for an accurate location of stickers on any selected model.

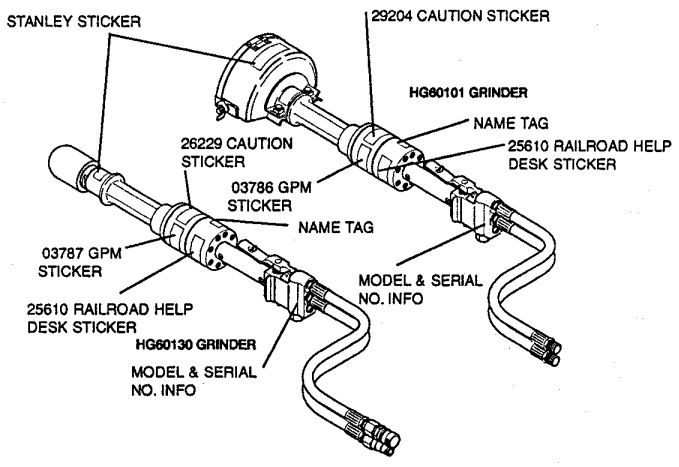
The information listed on the flow and pressure sticker must be legible at all times. Replace this sticker if it becomes worn or damaged. A replacement is available from your local Stanley distributor.



GPM/PRESSURE STICKER
P/N 03787
(shown actual size)

CAUTION STICKER p/n 29204
(Shown approximate actual size)

TOOL STICKERS AND TAGS continued



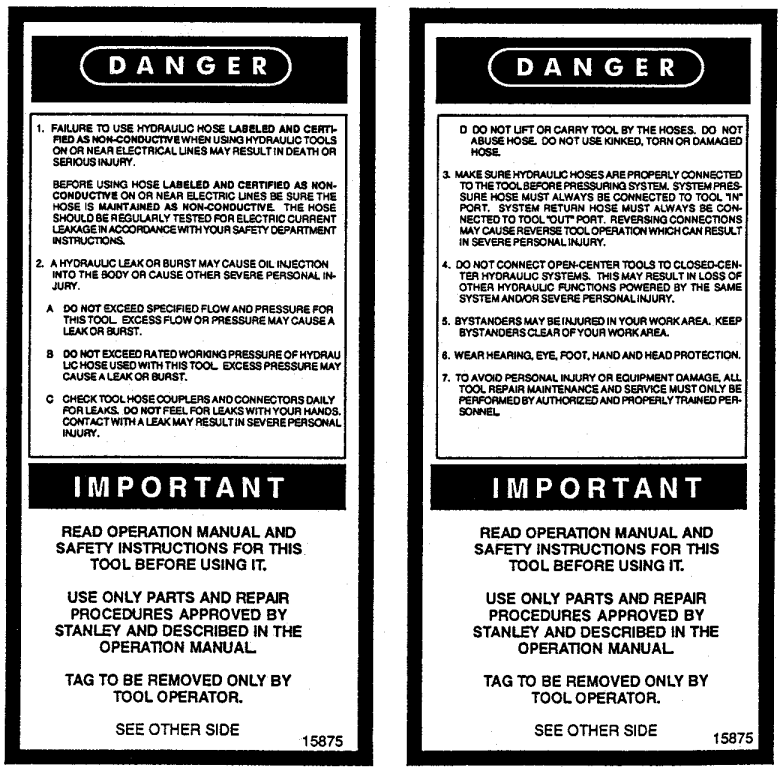
APPROXIMATE LOCATION OF STICKERS

STANLEY RAILROAD HELP DESK
1-800-549-0517
FOR CUSTOMER SERVICE OR TECHNICAL QUESTIONS

RAILROAD HELP DESK STICKER
p/n 25610 (shown actual size)

CAUTION STICKER p/n 26229
(shown approximate actual size)

The safety tag (p/n 15875) at right is attached to the tool when shipped from the factory. Read and understand the safety instructions listed on this tag before removal. We suggest you retain this tag and attach it to the tool when not in use.



SAFETY TAG P/N 15875 (shown smaller then actual size)

HYDRAULIC HOSE REQUIREMENTS

HOSE TYPES

Hydraulic hose types authorized for use with Stanley Hydraulic Tools are as follows:

❶ Certified non-conductive

❷ Wire-braided (conductive)

❸ Fabric-braided (not certified or labeled non-conductive)

Hose ❶ listed above is the only hose authorized for use near electrical conductors.

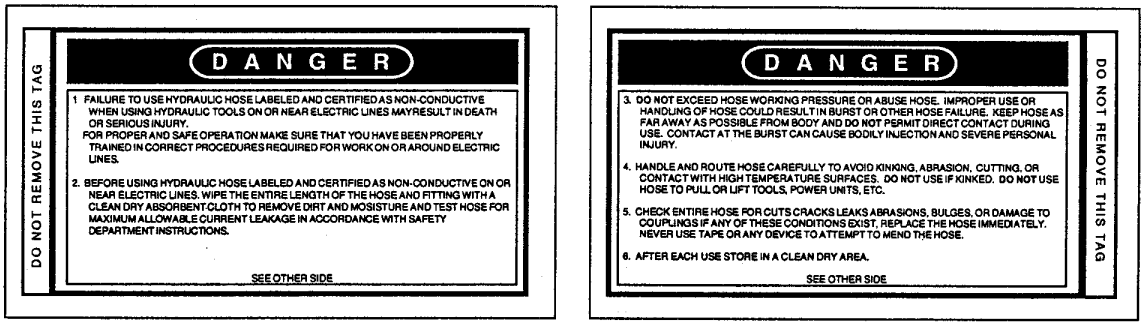
Hoses ❷ and ❸ listed above are **conductive** and **must never** be used near electrical conductors.

To help ensure your safety, the following DANGER tags are attached to all hose purchased from Stanley Hydraulic Tools. DO NOT REMOVE THESE TAGS.

If the information on a tag is illegible because of wear or damage, replace the tag immediately. A new tag may be obtained at no charge from your Stanley Distributor.

❶ CERTIFIED NON-CONDUCTIVE HOSE

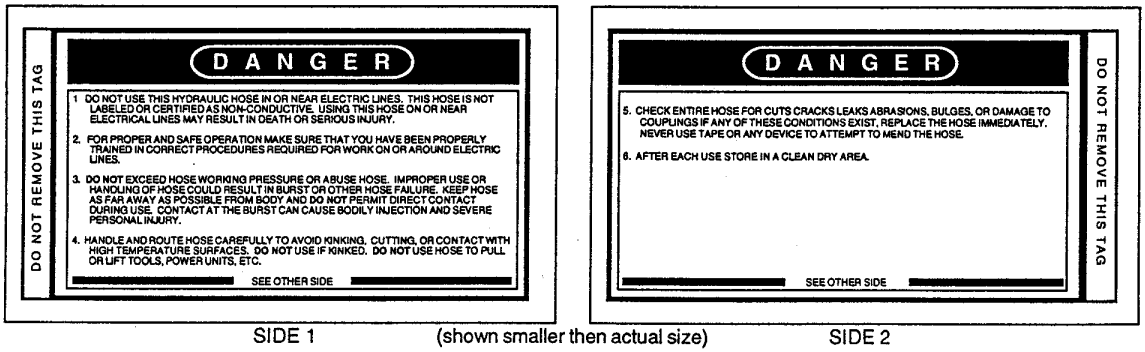
This tag is attached to all certified **non-conductive** hose.



SIDE 1 (shown smaller then actual size) SIDE 2

❷ AND ❸ WIRE-BRAIDED AND FABRIC-BRAIDED (NOT CERTIFIED OR LABELED NON-CONDUCTIVE) HOSE

This tag is attached to all **conductive** hose.



SIDE 1 (shown smaller then actual size) SIDE 2

HOSE PRESSURE RATING

The rated working pressure of the hydraulic hose **must be equal or higher than** the relief valve setting on the hydraulic system.

HYDRAULIC REQUIREMENTS

IMPORTANT

In addition to the Safety Precautions on pages 1 thru 4 of this manual, observe the following for equipment protection and care.

- Always store an idle grinder in a clean dry space, safe from damage or pilferage.

- Do not exceed the rated limits or use the grinder for applications beyond its design capacity.

- Always keep critical tool markings, such as lables and warning stickers legible.

- Always replace hoses, couplings and other parts with replacement parts recommended by Stanley Hydraulic Tools. Supply hoses must have a minimum working pressure rating of 2500 psi/175 bar.

- Permit only experienced personnel to perform tool repair.

- Be sure to wipe all couplers clean before connecting. Use only lint-free cloths.

- The hydraulic circuit control valve must be in the "OFF" position when coupling or uncoupling the grinder. Failure to do so may result in damage to the quick couplers and cause overheating of the hydraulic system.

- Check fastener tightness often and before each use daily.

HYDRAULIC SYSTEM REQUIREMENTS

- The hydraulic system should provide a flow of 7-10 gpm/26-38 lpm at an operating pressure of 1000-2000 psi/70-140 bar. Recommended relief valve setting is 2100-2250 psi/145-155 bar.

- The system should have no more than 250 psi/17 bar backpressure measured at the tool end of the operating hoses. The system conditions for measurement are at maximum fluid viscosity of 400 ssu/82 centistokes (minimum operating temperatures).

- The hydraulic system should have enough heat rejection capacity to limit the maximum oil temperature to 140°F/60°C at the maximum expected ambient temperature. The recommended minimum cooling capacity is 5 hp/3.73 kW at a 40° F/22°C difference between ambient temperature and oil temperature.

- The hydraulic system should have a minimum of 25 micron filtration. Recommend using filter elements sized for a flow of at least 30 gpm/114 lpm for cold temperature startup and maximum dirt holding capacity.

- The hydraulic fluid used should have a viscosity between 100 and 400 ssu/20 and 82 centistokes at the maximum and minimum expected operating temperatures. Petroleum base hydraulic fluids with antiwear properties and a viscosity index over 140 ssu/28 centistokes will meet the recommended requirements over a wide range of operating temperatures.

- The recommended hose size is .500 inch/12 mm I.D. up to 50 ft/15 m long and .625 inch/16 mm I.D. minimum up to 100 ft/30 m long.

- Quick disconnect couplings must conform to NFPA T3.20,15/HTMA specifications.

PREOPERATION PROCEDURES

• PREPARATION FOR INITIAL USE

Each unit as shipped has no special unpacking or assembly requirements prior to usage. Inspection to assure the unit was not damaged in shipping and does not contain packing debris is all that is required. After installation of a grinding wheel a unit may be put to use.

• CHECK HYDRAULIC POWER SOURCE

1. Using a calibrated flowmeter and pressure gauge, check that the hydraulic power source develops a flow of 7-10 gpm/26-38 lpm at 1500-2000 psi/105-140 bar.

2. Make certain the hydraulic power source is equipped with a relief valve set to open at 2100-2250 psi/145-155 bar minimum.

3. Check that the hydraulic circuit matches the tool for open-center (OC) or closed-center (CC) operation.

• CHECK TOOL

1. Make sure all tool accessories are correctly installed. Failure to install tool accessories properly can result in damage to the tool or personal injury.

2. There should be no signs of leaks.

3. The tool should be clean, with all fittings and fasteners tight.

• CHECK TRIGGER MECHANISM

1. Check that the trigger operates smoothly and is free to travel between the "ON" and "OFF" positions.

• CHECK GUARD ASSEMBLY

1. Inspect the wheel guard assembly for cracks and other structural damage.

• INSTALLING AND REMOVING GRINDING WHEELS

READ AND BECOME FAMILIAR WITH THE SECTIONS IN THIS MANUAL ON SAFETY PRECAUTIONS, TOOL STICKERS AND TAGS, HYDRAULIC HOSE REQUIREMENTS, HYDRAULIC REQUIREMENTS, AND PREOPERATION PROCEDURES BEFORE USING THIS PRODUCT.

HG60 GRINDER (with Wheel Guard)

NOTE: Use 6 inch by 1 inch thick (Type 1) grinding wheels for a 5/8 arbor. Only use grinding wheels which comply with ANSI B7.1/ ISO 525, 603.

1. Remove the jam nut (53) and the outside flange (52).

2. Make sure blotters or labels remain on the grinding wheel. Install the grinding wheel onto the spindle (33) and reinstall the outside flange and jam nut.

3. Tighten the jam nut while gripping the abrasive wheel. Only tighten sufficiently to prevent slippage of the wheel between the flanges.

HG60 GRINDER (with no Wheel Guard)

Use 3 inch diameter up to 5 inch long (Type 16, 17, 18 or 19) grinding cones or plugs with a 5/8-11 threaded arbor hole. Only use grinding cones or plugs which comply with ANSI B7.1/ ISO 525, 603.

1. Install the abrasive cone or plug onto the spindle (33). Using an open end wrench on the flats of the drive flange (51) and while gripping the cone or plug, tighten sufficiently to prevent disengagement of the cone or plug from the spindle.

• CONNECT HOSES

1. Wipe all hose couplers with a clean lint-free cloth before making connections.

2. Connect the hoses from the hydraulic power source to the hose couplers on the grinder. It is a good practice to connect the return hose first and disconnect it last to minimize or avoid trapped pressure within the grinder motor.

3. Observe flow indicators stamped on hose couplers to be sure that oil will flow in the proper direction. The female coupler is the inlet coupler. **NOTE: The pressure increase in uncoupled hoses left in the sun may result in making them difficult to connect. When possible, connect the free ends of operating hoses together.**

OPERATING PROCEDURES

1. Observe all safety precautions.

2. Always start the grinder with the grinding wheel or cone away from the work surface.

3. Move the hydraulic circuit control valve to the "ON" position.

4. Squeeze the trigger momentarily. If the grinder rotation is not correct according to the direction indicated on the caution sticker, the hoses are reverse plumbed. Verify correct connection of the hoses before continuing.

5. Start the grinder and move the grinding wheel or cone to the work surface.

6. Grind a small amount of material at a time.

COLD WEATHER OPERATION

If the grinder is to be used during cold weather, preheat the hydraulic fluid at low engine speed. When using the normally recommended fluids, fluid temperature should be at or above 50° F/ 10° C (400 ssu/82 centistokes) before use.

TROUBLESHOOTING

If symptoms of poor performance develop, the following chart can be used as a guide to correct the problem.

When diagnosing faults in operation of the grinder, always check that the hydraulic power source is supplying the correct hydraulic flow and pressure to the grinder as listed in the table. Use a flowmeter known to be accurate. Check the flow with the hydraulic oil temperature at least 80°F/ 27°C.

SYMPTOM	FAULT	REMEDY
Grinder does not run.	Hydraulic power source not functioning.	Check power source for proper flow and pressure (7-10 gpm/26-38 lpm, 1500-2000 psi/105-140 bar.
	Couplers or hoses blocked.	Locate and remove restriction.
	Hydraulic motor failure.	Have inspected and repaired at authorized Stanley service center.
	Hydraulic lines not connected.	Connect lines.
Grinder operates too slow.	Hydraulic motor speed too slow.	Check power unit for proper flow (7-10 gpm/26-38 lpm).
	High backpressure.	Check hydraulic system for excessive backpressure (over 250psi/17 bar).
	Couplers or hoses blocked.	Locate and remove restriction.
	Oil too hot (above 140°F/60°C) or too cold (below 60°F/16°C).	Check hydraulic power source for proper oil temperature. Bypass cooler to warm oil or provide cooler to maintain proper temperature.
	Relief valve set too low.	Adjust relief valve to 2100-2250 psi/145-155 bar.
	Hydraulic motor worn.	Have inspected and repaired by authorized Stanley service center.
	Flow control malfunctioning.	Have flow control serviced at authorized Stanley service center.
Grinder operates too fast.	Flow control malfunctioning.	Have flow control and valve body serviced at authorized Stanley service center.
Spindle rotates in the wrong direction.	Hydraulic flow is in the wrong direction.	Connec the pressure line to the grinder port marked "IN". Connect the return line to the grinder port marked "OUT".

SPECIFICATIONS

Wheel Capacity
- HG60101 Grinder (with wheel guard) ..... 6 in. dia. x 1 in. thk x 5/8 inch threaded arbor (Type 1)
- HG60130 Grinder (without wheel guard) ..... 3 in. dia. x 5 in. lg. x 5/8-11 threaded arbor (Type 16-19)

Pressure Range ..... 1000-2000 psi/70-140 bar
Maximum Back Pressure ..... 250 psi/17 bar
Flow Range ..... 7-10 gpm/26-38 lpm
Porting ..... -8 SAE O-ring
Couplers * ..... HTMA/EHTMA Flush Face Type Male & Female
Connect Size and Type ..... 3/8 in. Male Pipe Adapter
Hose Whips ..... Yes
Weight
- HG60101 (includes whip hoses) ..... 11.3 lb/ 5.13 kg
- HG60130 (includes whip hoses & couplers) ..... 10.8 lb / 4.89 kg

Overall Length
- HG60101 ..... 24.5 inches / 62 cm
- HG60130 ..... 23 inches / 58.4 cm

Overall Width
- HG60101 ..... 9 inches / 22.9 cm
- HG60130 ..... 3.3 inches / 8.4 cm

Overall Height
- HG60101 ..... 7 inches / 17.8 cm
- HG60130 ..... 4 inches / 10.2 cm

RPM ..... 6000 Max
Maximum Fluid Temperature ..... 140° F/60° C

* Couplers and whip hoses are furnished as standard equipment with model HG60130. Model HG60101 is furnished with whip hoses but not couplers.

WARRANTY

Hand held tools and their parts carry a limited warranty against defects in materials and workmanship for a period of 12 months from the date of purchase. Exceptions are cutting parts, steels, and other parts not manufactured by Stanley (such as impact mechanisms, alternators, regulators, and hoses), and parts subject to normal wear and tear (such as o-rings, saw blades, and other parts that become worn through normal use of the tool).

The Warranty Registration Card packed with the tool must be filled out and returned to Stanley upon receipt of the tool.

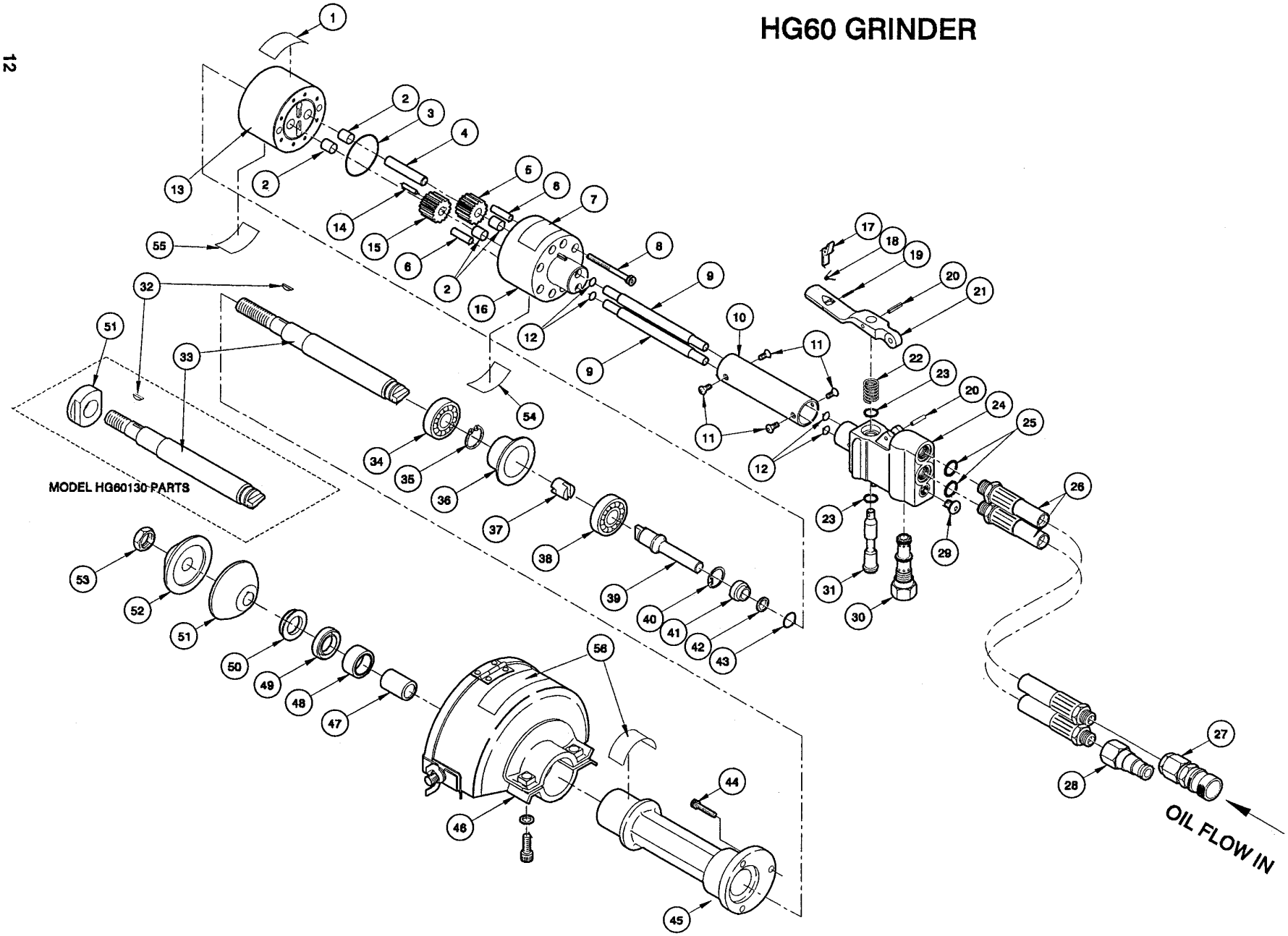
Stanley reserves the right to replace or repair only those parts which under our examination prove to have been defective at the time of purchase.

Shipping charges are prepaid by the customer unless otherwise authorized by Stanley.

The warranty is void if maximum flow and pressure ratings are exceeded.

There is no other warranty expressed or implied.

HG60 GRINDER



HG60 PARTS LIST

Item No	Part Number HG60101	Part Number HG60130	Qty	Description
1	29204	26229	1	Caution Sticker
2	06316	06316	4	Bushing
3	00178	00178	1	O-ring, 2-1/8 x 2-1/4 x 1/16 -034 70D ●
4	06305	06305	1	Idler Shaft
5	25667	25667	1	Idler Gear
6	04031	04031	2	Dowel Pin
7	26212	26212	1	Name Tag
8	00494	00494	1	Capscrew
9	27602	27602	2	Oil Tube
10	27604	27604	1	Dipped Tube
11	00181	00181	4	Cap Screw, 10-24 x 3/8
12	00018	00018	4	O-ring, 7/16 x 9/16 x 1/16 -013 90D ●
13	21430	21430	1	Front Bearing Hsg
	21437	21437	1	Front Brg Hsg Assy (incl item 2)
14	04031	04031	2	Dowel Pin
15	25666	25666	1	Drive Gear
16	28564	28564	1	Rear Bearing Housing
	28566	28566	1	Rear Bearing Housing Assy (incl items 2 & 14)
17	27441	27441	1	Thumb Latch
18	27445	27445	1	Torsion Spring
19	00114	00114	2	Roll Pin
20	01851	01851	1	Roll Pin
21	27442	27442	1	Thumb Trigger
22	04097	04097	1	Coil Spring
23	01211	01211	2	O-ring, 5/8 x 3/4 x 1/16 -013 90D ●
24	28595	28595	1	Dipped Valve Body Assy
25	01605	01605	2	O-ring, .644 x .818 x .087 -908 ●
26	25618	25618	2	Hose Assy
27	-----	24058	1	Female Coupler Body
28	-----	24059	1	Male Coupler Body
29	350041	350041	1	-4 SAE Plug
30	25635	25635	1	Flow Regulator Cartridge (pre-set)
31	04480	04480	1	Valve Spool
32	02447	02447	1	Key
33	06296	26206	1	Spindle
34	06314	06314	1	Ball Bearing
35	00708	00708	1	Retaining Ring
36	06300	06300	1	Bearing Spacer
37	06302	06302	1	Coupling
38	00148	00148	1	Ball Bearing
39	06303	06303	1	Motor Shaft
40	00170	00170	1	Retaining Ring
41	29088	29088	1	Seal Gland
42	00669	00669	1	Quad Ring, 1/2 x 5/8 x 1/16 Q-4014 ●
43	350771	350771	1	O-ring, 11/16 x 13/16 xz 1/16 -017 90D ●
44	00769	00769	3	Capscrew, 1/4-20 x 3/4
45	06301	06301	1	Spindle Housing
46	06310	-----	1	Wheel Guard
47	06299	06299	1	Bearing Race
48	06313	06313	1	Needle Roller Bearing
49	06312	06312	1	Seal ●
50	06311	06311	1	V-ring Seal ●
51	06298	26207	1	Drive Flange
52	06297	-----	1	Outside Flange
53	01714	-----	1	Jam Nut
54	-----	25610	1	Railroad Help Desk Sticker
55	03786	03787	1	GPM / LPM Sticker
56	05153	05153	1	Stanley Sticker

SEAL KIT DATA

Seal Kit Part No. 29137

Item No	Part No	Qty	Description
3	00178	1	O-ring
12	00018	4	O-ring
23	01211	2	O-ring
25	01605	2	O-ring
42	00669	1	Quad Ring
43	350771	1	O-ring
49	06312	1	Seal
50	06311	1	V-ring Seal

● Denotes part in seal kit

NOTE: Use Part Number and Part Name when ordering.

GRINDER DISASSEMBLY

• SPINDLE & SPINDLE HOUSING DISASSEMBLY

THE FOLLOWING PARTS MUST BE REMOVED PRIOR TO BEGINNING WITH SPINDLE & SPINDLE HOUSING DISASSEMBLY.

On HG60 models with wheel guards, remove the jam nut (53), both flanges (52 & 51), key (32), and the wheel guard (46).

On HG60 models without wheel guards, remove the drive flange (51) and key (32).

1. Remove 3 capscrews (44) and lift the spindle housing (45) off of the motor front bearing housing (13). Pick out the coupling (37) and set it aside.

2. Press the spindle, bearing (34) and bearing spacer (36) out of the spindle housing by using an arbor press and pressing on the spindle from the threaded end. This procedure will also remove the v-ring seal (50) from the spindle. Discard the v-ring seal.

3. Remove the retaining ring (35) from the spindle.

4. Remove the bearing (34) from the spindle by placing the spindle in an arbor press and pressing on the coupling end.

5. Remove the bearing race (47) from the spindle by placing the spindle in an arbor press and pressing on the threaded end of the spindle.

6. Pry the seal (49) out of the spindle housing and discard it.

7. Remove the needle roller bearing (48) from the spindle by using a bearing puller tool.

• MOTOR DISASSEMBLY

1. First follow the instructions in step 1 above for removing the spindle and spindle housing.

2. Remove 2 capscrews (11) and work the motor out of the dipped tube (10).

3. Remove 8 capscrews (8) and using a flat-blade screwdriver or similar tool, gently pry the front (13) and rear (16) bearing housings apart. Lift the front bearing housing straight up. **Do Not** tilt the housing or pry on the flat surface inside of the surrounding groove. For prying, only use the groove provided at the split between the parts to prevent scratches on the inner mating surfaces.

4. Remove the two drive gears (5 & 15), needle roller key (14), and the idler shaft (4).

5. Remove the large face seal o-ring (3) while being careful not to damage the o-ring groove or surrounding surface.

6. Hold the front bearing retainer on its side and tap lightly on the small diameter end (gear side) of the motor shaft (39) to remove it and the bearing from the front of the housing.

7. To remove the bearing (38) from the shaft (39), press on the spindle end of the motor shaft while supporting the outer race of the bearing. Discard the old bearing.

8. Remove the retaining ring (40) at the bottom of the ball bearing bore to service the shaft seal. Remove the seal gland (41) using the appropriate o-ring service tools to pry it out of its bore. Take care to avoid damaging the seal surfaces. Note seal orientation. Remove the o-ring (43) from the outside of the seal gland. Remove the quad ring (42) from the inside of the seal gland.

9. Remove the four bushings (2) from the shaft housing and gear chamber using p/n 11930 collet from p/n 05064 bearing puller kit.

• INSPECTION AND CLEANING

Inspect and clean all parts as follows:
Cleaning

Clean all parts with a degreasing solvent. Blow dry with compressed air and wipe clean. Use only lint-free cloths.

Gear Chamber

The chamber bores and bottoms around the shaft bushings should be polished and not rough or

grooved. If the bushing bores are yellow-bronze, replace them and investigate the cause of wear.

The flat surfaces around the chamber and bolt holes should be flat and free of nicks or burrs that could cause misalignment or leaks.

Bushings

The inside of the bushings should be gray with some bronze showing through. If significant yellow-bronze shows, replace the bushings. Inspect motor shaft for corresponding wear and replace as required.

Gears

The drive and idler gears should have straight tips without nicks; square tooth ends and a smooth even polish on the teeth and end faces. Check for cracks between the drive gear keyway and gear tooth root. Replace the gear if cracks are present.

Shaft Housing Assembly

The surface near the gears should show two interconnecting polished circles without a step. The bottom of the o-ring groove should be smooth as should the rest of the flat surface.

The bore for the shaft seal (inside of the seal gland) should be smooth or oil leakage may occur. The bore in which the seal liner fits should also be smooth.

Shake the shaft housing and the two seal check balls (not shown) should rattle. Unless there are leaks at the Allen type plugs which retain the check balls (not shown), or the check balls have jammed because of fluid contaminants, it is not necessary to remove the plugs or check balls. If these are removed, be sure the check seats (the bottom of the holes into which the balls are placed around the small oil holes) are smooth. If not, the seat can usually be fixed by cleaning and then placing the ball in the hole and tapping on the ball with an aluminum or bronze rod.

Reassemble ball and plug with the inner end of the plug **just starting** to show in the hole as viewed through the oil slot on the gear face of the housing. You can also use a wire through this hole to feel when the plug is deep enough.

Note: Use sealant/adhesive such as Loctite PST on plug to seal threads.

Shafts

The shaft diameter at the bearing and seal locations must be smooth. Grooves, roughness or a reduced diameter indicate fluid contamination or damaged bushings. Grit particles may have been imbedded in the bushings grinding into the hardened shaft. If abnormal shaft wear as above occurs (more than normal polishing), replace both the shaft and associated bushings.

Also check the hydraulic system for excess contamination in the fluid and for filter condition. Operating conditions may require changing from a 25-micron filter to an oversized 10-micron filter.

• MOTOR REASSEMBLY

1. Grease and carefully install the quad ring into the groove on the inside of the seal gland. Be certain that the quad ring is not twisted. Carefully install the o-ring onto the smaller outside diameter of the seal gland and install the seal gland into the bore of the shaft housing. Replace the retaining ring.

2. To replace the bearing on the motor shaft, support the bearing inner race and press the motor shaft through the bearing inner race.

4. Place the front bearing housing on a smooth clean arbor press surface (protected from damage) with the large bearing bore facing. If the two bushings were removed, install new bushings using a p/n 11918 bearing pusher. Position the piece so a clearance hole exists for the insertion of the motor shaft.

5. Apply grease to the motor shaft, keyway and bushing then insert it through the shaft seal. Using a sleeve/socket with a diameter equal to the bearing O.D., press the bearing assembly into place. Press only on the outer race.

6. Install the needle roller in the keyway of the motor shaft. Use grease to keep the roller in place. Slide the drive gear over the roller and shaft. Install the idler shaft and gear.

7. Apply grease to the face seal o-ring groove; then install the o-ring.

8. Note the screw hole pattern on both housings. They will only assemble one way. With all parts aligned, carefully slide the gear housing assembly over the gears until it contacts the bearing housing assembly. **Do not force parts together.**

9. Turn the motor shaft manually to check for free rotation. Install the eight capscrews and then

recheck rotation.

• VALVE HANDLE DISASSEMBLY

1. Remove the 2 capscrews (11) which fasten the valve body (24) to the dipped tube (10).

2. Remove the valve body and related parts from the dipped tube by wiggling the valve body and pulling at the same time.

3. Remove the oil tubes (9) from the valve body. If one or both oil tubes remained in the dipped tube, remove the 2 capscrews (11) which fasten the dipped tube to the motor assembly and then remove the dipped tube and the oil tubes.

4. Knock out the roll pin (20) which holds the valve spool (31) to the trigger (21) and remove the valve spool assembly and spring (22).

5. Knock out the roll pin (20) which holds the trigger to the valve body and remove the trigger.

6. The flow regulator cartridge (30) may be removed by placing a wrench on the hex flats and unscrewing the cartridge assembly. The flow regulator cartridge is preset and is not field serviceable.

7. Pry out the 2 o-rings (23), the 2 o-rings (12) and discard them.

GRINDER REASSEMBLY

• VALVE HANDLE REASSEMBLY

1. Apply grease and install 2 o-rings (23). Grease and install 2 o-rings (12).

2. Install the flow regulator cartridge (30).

3. Apply grease to the outer surface of the valve spool assembly and install it into the valve body as shown in the parts drawing.

4. Place the spring (22) and trigger (21) over the valve spool. Align the roll pin hole in the valve spool with the roll pin hole in the trigger and install the roll pin (20).

5. Align the roll pin hole in the trigger with the roll pin hole in the valve body and install the roll pin (20).

• OIL TUBES AND DIPPED TUBE REASSEMBLY

1. Apply grease to 2 o-rings (12) and install them into the oil ports of the rear bearing retainer (16) of the motor.

2. Apply grease to the end of each oil tube (9) and insert one end of each tube into an oil port in the rear bearing retainer of the motor.

3. Slide the dipped tube (10) over the two oil tubes and align the fastener holes with those in the motor. Apply 242 Loctite™ and install the 2 capscrews (11). Tighten to 68-75 in. lbs.

4. Place the valve handle (24) over the other end of the oil tubes making sure the tubes are not twisted and are aligned with the correct ports (directly in line with ports in the valve handle and motor). Push the valve handle onto the oil tubes and into the dipped tube until the valve handle is up against the end of the dipped tube. Some wiggling of the handle may be required to successfully perform this procedure. Apply 242 Loctite™ and install the 2 capscrews (11). Tighten to 68-75 in. lbs.

5. If removed, reinstall the hoses and couplers (female coupler to the "IN" port, male coupler to the "OUT" port).

• SPINDLE & SPINDLE HOUSING REASSEMBLY

1. Lubricate the needle roller bearing (48) thoroughly with lithium based grease for extreme pressure applications and containing an NLGI rating of 2. Install the bearing into the spindle housing using an arbor press.

2. Apply grease and install the seal (49) into the spindle housing, on top of the roller bearing, with lips facing down.

3. Lubricate the bearing (34) thoroughly with lithium based grease for extreme pressure applications and containing an NLGI rating of 2. Install the bearing on the motor end of the spindle using an arbor press. Secure the bearing in place with the retaining ring (35).

4. Install the bearing race (47) onto the spindle using an arbor press. Lubricate the outer surface of the race with the lithium grease used for the needle roller bearing.

5. Install the spindle (threaded end first) into the motor end of the spindle housing (45). Using an arbor press, press the spindle into the spindle housing.

6. Place the bearing spacer (36) into the spindle housing.

7. Apply grease and install the v-ring seal (50) onto the spindle with the beveled side facing toward the threads of the spindle.

8. Lubricate the coupling (37) and coupling ends of the spindle and motor shaft with the extreme pressure lithium grease. Install the coupling onto the spindle and then install the completed spindle and spindle housing assembly to the motor being careful to assure the coupling is aligned with the motor shaft and spindle. Secure the assembly in place with the 3 capscrews (44).

9. Do not install the flanges (51 & 52) or grinding wheels until after testing the grinder for operation and performance.

• TESTING FOR OPERATION & PERFORMANCE

1. Connect the grinder to a hydraulic power source and check for smooth running. Observe for leaks.

Note: Make sure the hydraulic power source is running at the lowest gpm/lpm rate it can while still producing full pressure.

2. Motors will sometimes be tight and require "break-in".

⚠ WARNING

During this break-in procedure, maintain grip on wrench while hydraulic power is applied to motor. Loosing grip may result in injury.

Break-in is accomplished by turning the shaft while applying hydraulic pressure. On the HG60 Grinders this procedure can be accomplished by obtaining a 5/8-11 nut and enough thick washers to permit the nut to be tightened against the washers on the spindle shaft.

Using a wrench, turn the shaft while applying hydraulic power. Turn the shaft both with and against the hydraulic pressure until the motor starts and runs freely.

3. Install the key, flanges, grinding wheel and jam nut or if a HG60130 model, the flange and grinding cone or plug. Run the grinder for approximately one minute without grinding before putting the grinder to work.

SERVICE AND REPAIR NOTES