STANLEY®

IP16
HYDRAULIC
INTENSIFIER

USER MANUAL
Safety, Operation and Maintenance

New Britain, CT 06053
U.S.A.
10413 7/2017 Ver. 4

TABLE OF CONTENTS

IMPORTANT

To fill out a product warranty validation form, and for information on your warranty, visit www.stanleyhydraulics.com and select the Company tab > Warranty.

Note: The warranty validation record must be submitted to validate the warranty.

SERVICING: This manual contains safety, operation and routine maintenance instructions. Stanley Hydraulic Tools recommends that servicing of hydraulic tools, other than routine maintenance, must be performed by an authorized and certified dealer. Please read the following warning.

⚠WARNING

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.

For the nearest certified dealer, call Stanley Hydraulic Tools at (503) 659-5660 and ask for a Customer Service Representative.

SAFETY SYMBOLS

Safety symbols and signal words, as shown below, 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.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER — This safety alert and signal word indicate an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING — This safety alert and signal word indicate a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION — This safety alert and signal word indicate a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION — This signal word indicates a potentially hazardous situation which, if not avoided, may result in property damage.

NOTICE — This signal word indicates a situation which, if not avoided, will result in damage to the equipment.

IMPORTANT — This signal word indicates a situation which, if not avoided, may result in damage to the 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.

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.

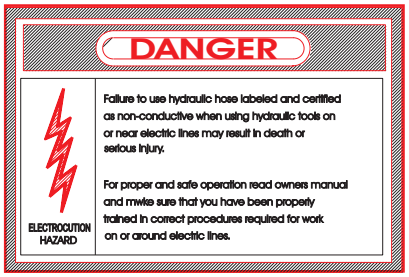
Supervising personnel should develop additional precautions relating to the specific work area and local safety regulations. Place the added precautions in the space provided in this manual.

The IP16 Hydraulic Intensifier 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 tool 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, 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.
- Inlet and outlet hydraulic hoses must be capable of 10,000/700 bar working pressure. They must be fitted with hose guards at each end to help prevent kinks and sharp bends near the fittings. If these requirements are not met, replace the hoses immediately with the correct type before operating the intensifier.
- Be sure all hose connections are tight and inspect hoses for correct pressure rating and for kinks, cuts swelled areas and damage from abrasion. Replace if necessary.
- Check that all fittings, connectors and quick disconnects are rated at 10,000 psi/700 bar working pressure and that they are in good working condition. Replace any improper or damaged components before operating the intensifier.
- Do not operate the tool at oil temperatures above 140 °F/60 °C. Operation at higher oil temperatures can cause operator discomfort and may damage the tool.
- Do not operate a damaged, improperly adjusted or incompletely assembled tool.
- Do not operate the intensifier unless both high-pressure hoses are connected.
- To avoid personal injury or equipment damage, all tool repair, maintenance and service must be performed by authorized and properly trained personnel.
- Do not attempt to locate hydraulic leaks by feeling around hoses and fittings with bare hands. Pinhole leaks can penetrate the skin. To inspect for leaks, depressurize the system, clean around suspected area, repressurize the system and visually check for leaks.
- Always keep critical tool markings, such as labels and warning stickers, legible.
- Always replace parts with replacement parts recommended by Stanley Hydraulic Tools.
- Avoid using tightly curled or twisted hoses.

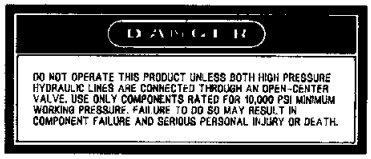
TOOL STICKERS & TAGS

03783
GPM Sticker 3–9 2000 PSI



12412
Warning Sticker—Electrical

10146
IP16 Name Tag



12891
Danger Sticker

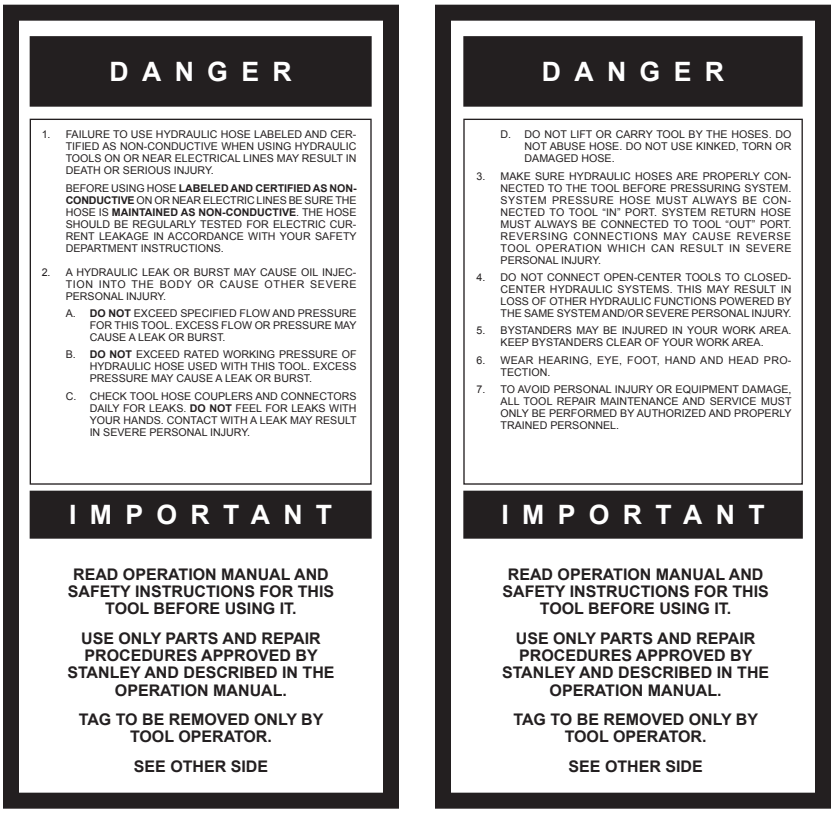
10515
Caution Tag—"SHIPPED W/O OIL"
(Not shown)

NOTE:

THE INFORMATION LISTED ON THE STICKERS SHOWN, MUST BE LEGIBLE AT ALL TIMES.

REPLACE DECALS IF THEY BECOME WORN OR DAMAGED. REPLACEMENTS ARE AVAILABLE FROM YOUR LOCAL STANLEY DISTRIBUTOR.

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)

HOSE TYPES

The rated working pressure of the hydraulic hose must be equal to or higher than the relief valve setting on the hydraulic system. There are three types of hydraulic hose that meet this requirement and are authorized for use with Stanley Hydraulic Tools. They are:

Certified non-conductive — constructed of thermoplastic or synthetic rubber inner tube, synthetic fiber braid reinforcement, and weather resistant thermoplastic or synthetic rubber cover. *Hose labeled **certified non-conductive** is the only hose authorized for use near electrical conductors.*

Wire-braided (conductive) — constructed of synthetic rubber inner tube, single or double wire braid reinforcement, and weather resistant synthetic rubber cover. *This hose is **conductive** and must never be used near electrical conductors.*

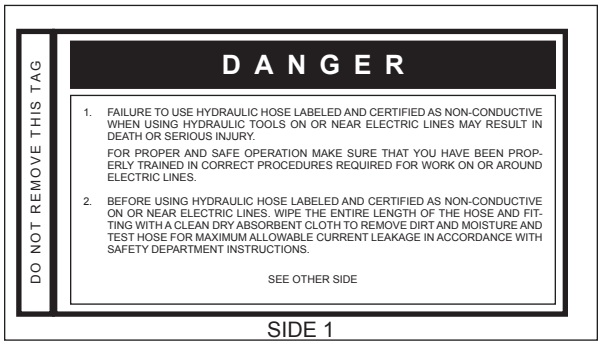
Fabric-braided (not certified or labeled non-conductive) — constructed of thermoplastic or synthetic rubber inner tube, synthetic fiber braid reinforcement, and weather resistant thermoplastic or synthetic rubber cover. *This hose is **not certified non-conductive** and must never be used near electrical conductors.*

HOSE SAFETY TAGS

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 from your Stanley Distributor.

THE TAG SHOWN BELOW IS ATTACHED TO "CERTIFIED NON-CONDUCTIVE" HOSE

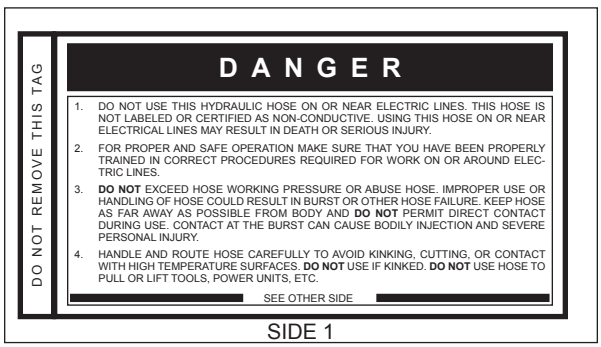


SIDE 1

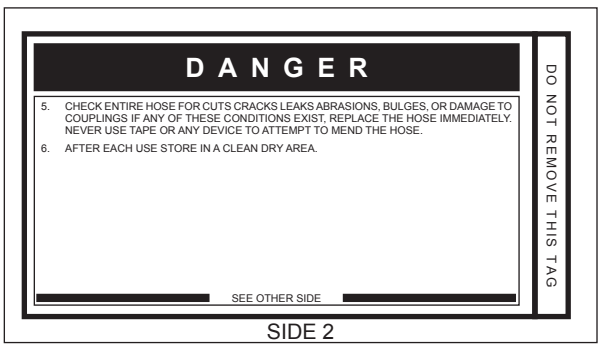
SIDE 2

(Shown smaller than actual size)

THE TAG SHOWN BELOW IS ATTACHED TO "CONDUCTIVE" HOSE.



SIDE 1



SIDE 2

(Shown smaller than actual size)

Tool to Hydraulic Circuit Hose Recommendations

The chart to the right shows recommended minimum hose diameters for various hose lengths based on gallons per minute (GPM)/ liters per minute (LPM). These recommendations are intended to keep return line pressure (back pressure) to a minimum acceptable level to ensure maximum tool performance.

This chart is intended to be used for hydraulic tool applications only based on Stanley Hydraulic Tools tool operating requirements and should not be used for any other applications.

All hydraulic hose must have at least a rated minimum working pressure equal to the maximum hydraulic system relief valve setting.

All hydraulic hose must meet or exceed specifications as set forth by SAE J517.

Oil Flow		Hose Lengths		Inside Diameter		USE (Press/Return)	Min. Working Pressure	
GPM	LPM	FEET	METERS	INCH	MM		PSI	BAR
Certified Non-Conductive Hose - Fiber Braid - for Utility Bucket Trucks								
4-9	15-34	up to 10	up to 3	3/8	10	Both	2250	155
Conductive Hose - Wire Braid or Fiber Braid -DO NOT USE NEAR ELECTRICAL CONDUCTORS								
4-6	15-23	up to 25	up to 7.5	3/8	10	Both	2500	175
4-6	15-23	26-100	7.5-30	1/2	13	Both	2500	175
5-10.5	19-40	up to 50	up to 15	1/2	13	Both	2500	175
5-10.5	19-40	51-100	15-30	5/8	16	Both	2500	175
5-10.5	19-40	100-300	30-90	5/8	16	Pressure	2500	175
				3/4	19	Return	2500	175
10-13	38-49	up to 50	up to 15	5/8	16	Both	2500	175
10-13	38-49	51-100	15-30	5/8	16	Pressure	2500	175
				3/4	19	Return	2500	175
10-13	38-49	100-200	30-60	3/4	19	Pressure	2500	175
				1	25.4	Return	2500	175
13-16	49-60	up to 25	up to 8	5/8	16	Pressure	2500	175
				3/4	19	Return	2500	175
13-16	49-60	26-100	8-30	3/4	19	Pressure	2500	175
				1	25.4	Return	2500	175

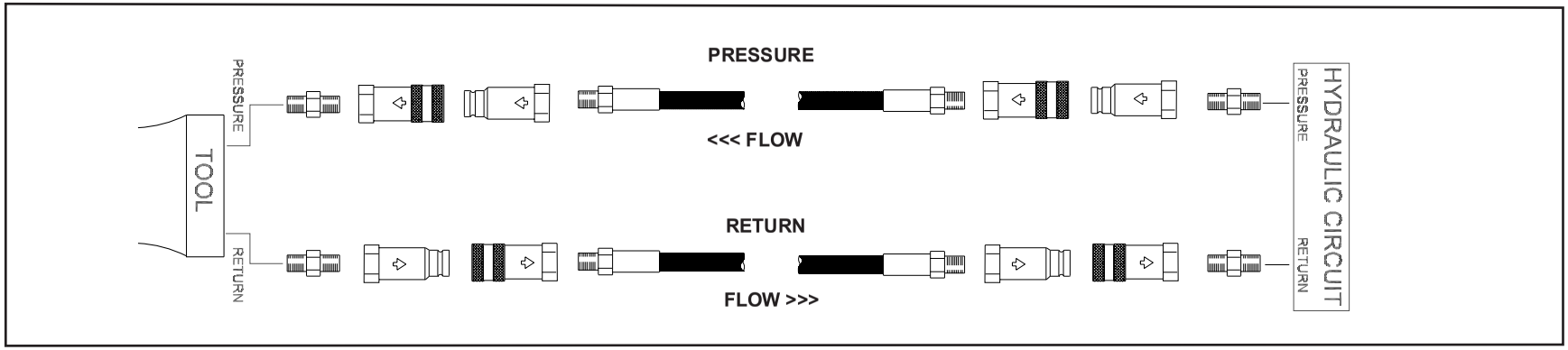


Figure 1. Typical Hose Connections

HTMA / EHTMA REQUIREMENTS

HTMA HYDRAULIC SYSTEM REQUIREMENTS	TOOL TYPE TYPE I	TYPE II	TYPE RR	TYPE III
Flow Range	4-6 gpm (15-23 lpm)	7-9 gpm (26-34 lpm)	9-10.5 gpm (34-40 lpm)	11-13 gpm (42-49 lpm)
Nominal Operating Pressure (at the power supply outlet)	1500 psi (103 bar)	1500 psi (103 bar)	1500 psi (103 bar)	1500 psi (103 bar)
System relief valve setting (at the power supply outlet)	2100-2250 psi (145-155 bar)	2100-2250 psi (145-155 bar)	2200-2300 psi (152-159 bar)	2100-2250 psi (145-155 bar)
Maximum back pressure (at tool end of the return hose)	250 psi (17 bar)	250 psi (17 bar)	250 psi (17 bar)	250 psi (17 bar)
Measured at a max. fluid viscosity of: (at min. operating temperature)	400 ssu* (82 centistokes)	400 ssu* (82 centistokes)	400 ssu* (82 centistokes)	400 ssu* (82 centistokes)
Temperature: Sufficient heat rejection capacity to limit max. fluid temperature to: (at max. expected ambient temperature)	140° F (60° C)	140° F (60° C)	140° F (60° C)	140° F (60° C)
Min. cooling capacity at a temperature difference of between ambient and fluid temps	3 hp (2.24 kW) 40° F (22° C)	5 hp (3.73 kW) 40° F (22° C)	6 hp (5.22 kW) 40° F (22° C)	7 hp (4.47 kW) 40° F (22° C)
NOTE: Do not operate the tool at oil temperatures above 140° F (60° C). Operation at higher temperatures can cause operator discomfort at the tool.				
Filter Min. full-flow filtration Sized for flow of at least: (For cold temp. startup and max. dirt-holding capacity)	25 microns 30 gpm (114 lpm)	25 microns 30 gpm (114 lpm)	25 microns 30 gpm (114 lpm)	25 microns 30 gpm (114 lpm)
Hydraulic fluid Petroleum based (premium grade, anti-wear, non-conductive) Viscosity (at min. and max. operating temps)	100-400 ssu*	100-400 ssu* (20-82 centistokes)	100-400 ssu*	100-400 ssu*

NOTE:
When choosing hydraulic fluid, the expected oil temperature extremes that will be experienced in service determine the most suitable temperature viscosity characteristics. Hydraulic fluids with a viscosity index over 140 will meet the requirements over a wide range of operating temperatures.

*SSU = Saybolt Seconds Universal

EHTMA HYDRAULIC SYSTEM REQUIREMENTS	CLASSIFICATION B (15Lpm at 138bar EHTMA CATEGORY)	C (20Lpm at 138bar EHTMA CATEGORY)	D (30Lpm at 138bar EHTMA CATEGORY)	E (40Lpm at 138bar EHTMA CATEGORY)	F (60Lpm at 138bar EHTMA CATEGORY)
Flow Range	3.5-4.3 gpm (13.5-16.5 lpm)	4.7-5.8 gpm (18-22 lpm)	7.1-8.7 gpm (27-33 lpm)	9.5-11.6 gpm (36-44 lpm)	11.8-14.5 gpm (45-55 lpm)
Nominal Operating Pressure (at the power supply outlet)	1870 psi (129 bar)	1500 psi (103 bar)	1500 psi (103 bar)	1500 psi (103 bar)	1500 psi (103 bar)
System relief valve setting (at the power supply outlet)	2495 psi (172 bar)	2000 psi (138 bar)	2000 psi (138 bar)	2000 psi (138 bar)	2000 psi (138 bar)

NOTE: These are general hydraulic system requirements. See tool specification page for tool specific requirements.

PREPARATION PROCEDURES

FILL RESERVOIR

IMPORTANT

Mil-H 5606 Hydraulic Oil must not be used in the reservoir of the intensifier.

1. Remove the vent plug from the top of the intensifier. Fill with clean hydraulic oil filtered to 10 microns or less. Fill to top of high pressure pump as viewed from the filler hole.

IMPORTANT

Do not fill to top of hole. An air space is required for hydraulic oil expansion as oil temperature increases.

2. An over-full reservoir will cause oil leakage from the vent plug as the oil heats. If this condition occurs, remove the vent plug and lower oil level to the point specified.

CHECK HYDRAULIC POWER SOURCE

1. Using a calibrated flowmeter and pressure gauge, check that the hydraulic power source develops a flow of 4–10 GPM/15–38 LPM at 1000–2000 psi/70–140 bar.
2. Make certain the hydraulic power source is equipped with a relief valve set to open at 2100–2300 psi/145–159 bar maximum.
3. Check that the hydraulic circuit matches the tool for open-center (OC) operation.

CONNECT HOSES

1. Remove the thread protectors and valve caps from the intensifier.
2. Wipe all hose couplers with a clean lint-free cloth before making hose connections.
3. Connect hydraulic lines from the parent circuit to the intensifier inlet fitting. Make certain the “P” (pressure) and “T” (tank) hoses are connected to their respective ports. If incorrectly connected, high pressure output will not be obtained.

NOTE: High-pressure couplings must be used for the high-pressure connections at the output side of the intensifier.

4. Connect the tool to be used (stretcher, cutter, etc,) to the unit. Refer to the applicable Operation Manual for detailed connection procedures.
5. Move the hydraulic circuit control valve to the ON position to operate the intensifier.

NOTE: If uncoupled hoses are left in the sun, pressure increase within the hoses may make them difficult to connect. When possible, connect the free ends of operating hoses together.

TOOL OPERATION

1. Observe all safety precautions.
2. Activate the parent circuit to energize the intensifier. Pressure should now be available at the pressure port of the tool. At this time, the control valve and tool are ready for operation.
3. Verify operating pressure requirements of tool being used and adjust intensifier relief valve as required.

NOTE:

Higher flows and/or high back-pressure will increase the output pressure. Adjust the output relief valve under the flow and operating conditions the tool will be used under.

The load valve locks the tool outlet and is to be used to hold the tool in a fixed position. The pressure gauge reads on the tool side of the valve to monitor the load.

COLD WEATHER OPERATION

If the tool 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.

TOOL PROTECTION & CARE

NOTICE

In addition to the safety precautions found in this manual. Observe the following for equipment protection and care.

- Make sure all couplers are wiped clean before connection.
- The hydraulic circuit control valve must be in the **OFF** position when coupling or uncoupling hydraulic tools. Failure to do so may result in damage to the quick couplers and cause overheating of the hydraulic system.
- Always store the tool in a clean dry space, safe from damage or pilferage.
- Always replace hoses, couplings and other parts with replacement parts recommended by Stanley Hydraulic Tools. Supply hoses to the intensifier must have a minimum working pressure rating of 2500 psi/172 bar. Supply hoses from the intensifier to the tool couplings and other high-pressure parts, must have a minimum working pressure rating of 10,000 psi/700 bar.
- All hoses must have an oil resistant inner surface and an abrasion resistant outer surface. Whenever near electrical conductors, use clean hoses labeled and certified non-conductive.
- Never allow the working pressure of the intensifier or tool to exceed 10,000 psi/690 bar.
- Always keep critical tool markings, such as warning stickers and tags, legible.
- Make sure that the compression tool, cutter, etc. to be operated is rated at 10,000 psi/690 bar. If other than 10,000 psi/700 bar, the intensifier relief valve must be adjusted to the pressure for the tool being operated.
- Operate the intensifier within its rated capacity.
- Do not use the intensifier for applications for which it was not designed.
- Tool repair should be performed by experienced personnel only.
- Never connect or disconnect couplers or port connections with hydraulic pressure in the hose.
- Always check high-pressure couplers for leaks and damage before operating the system at maximum rated pressure.
- When the intensifier is not in use, attach thread protectors and install valve caps.

TROUBLESHOOTING

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

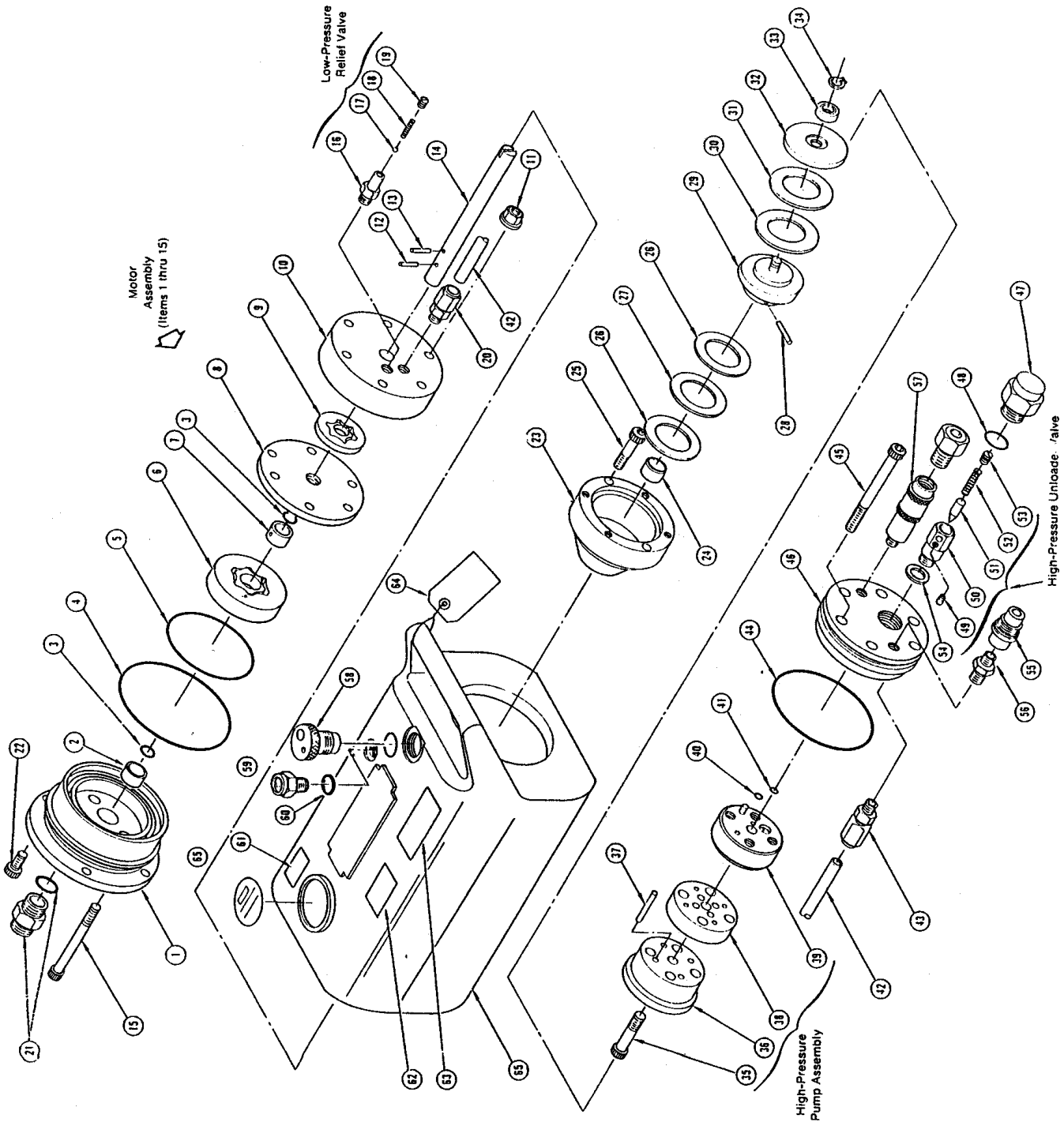
When diagnosing faults in operation of the intensifier, always check that the hydraulic power source is supplying the correct hydraulic flow and pressure to the intensifier as listed in the table. Use a flow meter known to be accurate. Check the flow with the hydraulic fluid temperature at least 80 °F/27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

PROBLEM	CAUSE	SOLUTION
No output.	Couplers or hoses blocked.	Remove obstruction.
	Input pressure and return line hoses reversed at ports.	Be sure hoses are connected to the proper ports.
	No oil in reservoir.	Fill reservoir to proper level.
	High-pressure relief valve stuck open.	Test and adjust as specified in Service section.
	Motor to pump hose leaking.	Remove and replace hose.
	Intensifier turned over with vent assembly down.	Return intensifier to upright position.
Oil mist from center of motor housing assembly.	Rear drive shaft seal bad.	Replace shaft seal located behind shaft bushing in motor housing assembly.
Oil leaking from vent assembly.	Oil reservoir over filled.	Reduce oil level to the top of the high-pressure pump as viewed through the vent assembly port while the intensifier is in the horizontal position. (Reservoir must have room for oil expansion.)
	Defective shaft seal. Seal is located in the oil seal plate between the motor housing assembly and pump housing.	Turn off intensifier. Remove vent assembly and turn on intensifier. Operate compression tool or cutter. If oil reservoir fills up and overflows, replace the shaft seal.

SPECIFICATIONS

Output Pressure	10,000 psi/700 Bar
Input Pressure	Up to 2500 psi/176 Bar
Flow Range	4–10 GPM/15–38 LPM
Porting	3/8 NPT
Connect Size and Type	3/8 NPT
Weight	29.6 lbs/13.4 kg
Length (with couplers)	18 in./46 cm
Width	8 in./20 cm
Height	9 in./23 cm

IP16 PARTS ILLUSTRATION



STANLEY

IP16 PARTS LIST

ITEM	PART NO.	QTY	DESCRIPTION
	09853	1	MOTOR ASSY (INCL ITEMS 1–15)
1	09868	1	MOTOR HOUSING (INCL ITEM 2)
2	05207	1	BUSHING
3	13996	2	O-RING 1/2 × 11/18 × 3/32 *
4	01257	1	O-RING 3-1/2 × 3-5/8 × 1/16 *
5	05641	1	O-RING 2-3/8 × 2-1/2 × 1/16 *
6	09594	1	GEROTOR
7	09839	1	GEROTOR BUSHING
8	09844	1	OIL SEAL PLATE
9	09895	1	GEROTOR
10	09850	1	PUMP HOUSING
11	09901	6	FLANGE NUT
12	09900	1	DOWEL PIN
13	09867	1	DRIVE PIN
14	09838	1	DRIVE SHAFT
15	09883	6	CAPSCREW 10-24 × 3 IN SOCKET HEAD
	09861	1	LOW PRESSURE VALVE ASSY (INCL 15–18)
16	09841	1	LOW-PRESSURE VALVE
17	02436	1	CHECK BALL
18	09893	1	SPRING
19	09892	1	SETSCREW
20	09898	1	MALE CONNECTOR
21	00936	2	ADAPTOR FITTING
22	09886	3	CAPSCREW, 10-32 × 3/8 IN SOCKET HEAD
23	09871	1	WOBBLE PLATE HOUSING (INCL ITEM 23)
24	05207	1	BUSHING
25	09882	2	CAPSCREW 10-32 × 1 IN SOCKET HEAD
26	09877	2	THRUST WASHER
27	09878	1	THRUST BEARING
28	01851	1	ROLL PIN 1/8 × 1 IN
29	09845	1	WOBBLE PLATE
30	09879	1	THRUST WASHER
31	08148	1	THRUST BEARING
32	09840	1	THRUST WASHER
33	09881	1	BEARING
34	00077	1	RETAINING RING
	15283	1	PUMP ASSY (INCL ITEMS 34–38)
35	08253	4	CAPSCREW 1/4-20 × 1-1/2 IN SOCKET HEAD
36	09847	1	PISTON BLOCK
37	09836	4	PISTON
38	09866	1	CHECK BALL BLOCK ASSY
39	09869	1	MANIFOLD ASSY

ITEM	PART NO.	QTY	DESCRIPTION
40	09884	1	O-RING 7/32 × 11/32 × 1/18 *
41	09887	1	O-RING URETHANE *
42	09870	1	HOSE
43	09898	1	MALE CONNECTOR
44	00149	1	O-RING 3-3/4 × 3-3/8 × 1/16 *
45	09883	6	CAPSCREW 10-32 × 3 IN SOCKET HEAD
46	09857	1	END PLATE ASSY
47	09842	1	VALVE CAP
48	00012	1	O-RING *
	09862	1	HIGH-PRESSURE UNLOADING VALVE ASSY
49	09891	1	SETSCREW
50	09843	1	VALVE BODY
51	09837	1	PINTAL UNLOADING VALVE
52	09309	1	SPRING
53	09834	1	ADJUSTING PLUG
54	09835	1	SEAL WASHER *
55	05337	1	HIGH-PRESSURE NIPPLE
56	05148	1	HEX NIPPLE
57	05338	1	HIGH-PRESSURE COUPLER
58	09865	1	VENT ASSY (INCL O-RING)
59	11720	1	SIGHT GLASS
60	03364	1	O-RING .414 × .558 × .072
61	03783	1	GPM/PRESSURE STICKER
62	12412	1	WARNING STICKER
63	12891	1	DANGER STICKER
64	10515	1	CAUTION TAG, UNIT SHIPPED W/O OIL
65	10146	1	NAMEPLATE STICKER
66	11718	1	PUMP CASE
—	06345	2	PLASTIC PLUG, SAE8 (NOT SHOWN)
—	14785	1	SEAL KIT (* INDICATES PART OF KIT)

STANLEY®

Stanley Hydraulic Tools
3810 SE Naef Road
Milwaukie, Oregon 97267-5698 USA
(503) 659-5660 / Fax (503) 652-1780
www.stanleyhydraulics.com