

MULTIPRESS®

Hydraulic Press Installation Maintenance and Safety Manual



QPI MULTIPRESS, INC.

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IMPORTANT

Please take note of all the Caution and Warning tags on the press (reproduced below) and in this manual.



WARNING

TO PREVENT SERIOUS BODILY INJURY

NEVER use this machine without guards or safety devices that are intended to prevent hands from remaining in die space.

NEVER operate, service or adjust this machine, or install dies, without proper instruction and without first reading and understanding the instructions in the operator's manual.

NEVER install dies or service this machine with the motor on or ram in an unblocked position.



CAUTION

OPERATOR: TO PREVENT SERIOUS BODILY INJURY

This press shall be used in conjunction with a guard or device to safeguard *the point of operation*. This guard or device shall be provided and installed by the employer.



CAUTION

SAFETY PRECAUTION

Tightness of bolts used to fasten the ram must be checked regularly. Failure may result in platen failing.

See maintenance instructions for proper checking procedures.

INTRODUCTION

SERVICE POLICY

The simplicity of **MULTIPRESS** equipment, the unitized construction of its major components and observance of the instructions in this manual assure ease of servicing by the user.

All field service requested by the user and rendered by our factory representatives will be charged at the established rate per day plus expenses. **MULTIPRESS** equipment may be sent to our factory for inspection and service only upon receipt of purchase order for such service.

Electric current characteristics required by user to be specified at time of order.

MULTIPRESS EQUIPMENT WARRANTY

If any **MULTIPRESS** equipment part of our manufacture which, after prepaid shipment to our factory and upon inspection at our factory or by a qualified factory representative, is proven defective in workmanship or material, it will be replaced free of charge providing that, within a period of six months from date of shipment from our factory it is still owned by the original purchaser and being used in recommended service and using an oil meeting our recommended specifications. Oil is to be filtered via a nominal 10 micron filter (or better) before filling the reservoir.

Parts other than our manufacture bear only such warranties as their manufacturers allow. When upon inspection by a qualified representative, it is indicated that these parts are defective, we will endeavor to secure from the manufacturer the benefits of such warranties for our customers. Please refer to **MULTIPRESS** standard terms of sale for additional information.

SAFETY

It is suggested for the user to be familiar with ANSI B11.2, "American National Standard for Machine Tools - Hydraulic Power Presses - Safety Requirements for Construction, Care and Use", for personal safety of the press operator.

Copies can be ordered from: AMT - The Association For Manufacturing Technology
7901 WESTPARK DRIVE
McLEAN, VIRGINIA 22102-4269
PH 703-893-2900
FAX 703-793-1151

INSTALLATION

GENERAL

This manual is intended for reference when installing and preparing **MULTIPRESS** equipment for operation and is for normal maintenance, repair and upkeep of equipment.

INSTALLATION INSTRUCTIONS

After removing press from shipping crate, stand the press upright near the area where it will be anchored. Care should be taken to avoid twisting or dropping of the press during unpacking and transportation to the area of operation.

ELECTRIC

Your standard press is wired to be connected to current characteristics as specified when ordered. Connection of press to users' power source should be accomplished by qualified personnel.

CAUTION

Do not permit electric motor to operate before press reservoir is filled with oil, or to operate in the wrong direction of rotation. See **STARTING PUMP & MOTOR** (page 3) and direction of rotation arrow plate on pump motor assembly.

RECOMMENDED OIL SPECIFICATIONS

Warranty for **MULTIPRESS** equipment applies only when the proper hydraulic fluid has been used and oil contamination level is equal to or better than NAS...1638...CLASS NO. 8 OR BETTER. NO PARTICLES OVER 200 MICRON. "New" oil as received is not clean. Oil must be filtered via a 10 micron (or better) filter before filling reservoir. A filter cart is recommended.

Certain basic physical and chemical properties are necessary for proper operation of **MULTIPRESS**. The following basic properties should be presented to fluid supplier for their recommendation of a product for use in this **MULTIPRESS**.

VISCOSITY @ 100°F - 300 SUS ±20 SUS
VISCOSITY INDEX - 90 OR HIGHER
RUST & OXIDATION INHIBITORS - YES
ANTI-FOAM ADDITIVE - YES

Specific gravity .882 - .887 @ 60F/ 60F (API Gravity 29-31)

It is suggested that the fluid supplier provide the user with certification that their product meets the above requirements.

FILLING THE OIL RESERVOIR

CLEANLINESS is the most important requisite in proper maintenance of hydraulic equipment. Of the few maintenance difficulties encountered in the operation of oil hydraulic equipment, many of them are directly traceable to dirt or foreign matter in the oil.

EXTREME CARE should be exercised in maintaining a clean supply of oil in the reservoir and hydraulic system of your **MULTI-PRESS** equipment at all times. Make certain that no lint, dirt, abrasive scale or other foreign materials enters the hydraulic system. Trouble free operation over a long period of time may be obtained from the press by taking these precautions with the oil in the press. See **MULTIPRESS EQUIPMENT WARRANTY** on page 1.

The oil reservoir is filled through the oil filler cap which is located on top of the reservoir. Lift the filler cap and fill the reservoir with any clean oil meeting our recommended oil specifications above. Fill the reservoir to within 1" of the top of the reservoir or to the high mark on the oil level gauge if provided. **CONTAMINANTS ARE FOUND IN NEW OIL SO A FILTER CART SHOULD BE EMPLOYED TO TRANSFER OIL INTO RESERVOIR.**

CAUTION

Never operate press if oil level is low, or if the oil temperature is greater than 150°F. The use of a cooler is recommended when fluid temperatures are expected to exceed 130°F.

SEQUENCE OF OPERATION

STARTING THE PUMP & MOTOR

IMPORTANT: Prior to start-up, start and stop the electric motor in order to check proper rotation. There are arrows clearly marked on the motor indicating the correct rotation. If this is incorrect, check the wiring to the motor leads. Lower the setting of the RELIEF VALVE by loosening LOCKNUT and then turning KNOB counterclockwise until loose but not removed.

CAUTION

If the motor is permitted to operate in the wrong direction of rotation, the pump will be damaged after only a few seconds due to lack of oil to lubricate its precision machined internal parts. When the oil in the reservoir is at the proper level and the pump is operating in the correct direction of rotation the pump will prime itself and provide adequate lubrication.

CAUTION

If the press has been shipped to you with the ram extended, it is necessary to put the selector switch in the JOG UP position and then actuate the pushbuttons. The ram should go up if the motor and pump are operating in correct direction of rotation.

NOTE

Ram may not retract if RELIEF VALVE has been backed out too far.

JOG

Set the selector switch to JOG DOWN. Simultaneously actuate and maintain actuation of both CYCLE START buttons to the desired position of ram. Release of either button allows the ram to stop. Set the selector switch to JOG UP. Actuation of the dual pushbuttons allows the ram to move up.

NOTE

Upper prox or limit switch must be actuated at top of stroke before switching to CYCLE mode. If this switch is not made, unit will not cycle.

SET-UP

JOG the press to your desired lower stop position allowing ram to exert full pressure against a set up block or workpiece.

NOTE

Set-up tooling before setting pressure on ram.

Adjust pressure by loosening relief valve LOCKNUT and turning the relief valve KNOB on front or side of press. Clockwise increases pressure, counterclockwise decreases pressure. JOG the ram to your upper stop position. Set the upper prox or limit switch at that position. Lock the locknut on the relief valve.

NOTE

Ram must contact a set-up block or workpiece to deliver force, so the pressure GAUGE can be read.

CYCLING

Simultaneously actuate and maintain actuation of both CYCLE START buttons. Ram continues down, contacts work, achieves tonnage and reverses. (Pressure Reversal). Release of CYCLE START buttons retracts ram to its upper stop position. If you have position reversal, the ram continues down until it contacts a limit or prox switch and reverses.

AIR IN SYSTEM

It is not unusual for air to be entrapped in the cylinder, lines, or controls during initial start up procedures. Operate with main relief adjustment at low setting until erratic action or noise disappears. It may also be necessary to "crack" a pressure line slightly to allow the air to escape. Re-tighten and proceed normally.

MAINTENANCE

GENERAL

The establishment and implementation of maintenance schedules is essential for the reliable operation of hydraulic press equipment. The elapsed time for periodic maintenance and inspection is based upon environmental and operating conditions (including hours of operation) which are known only to the user of the equipment. Therefore, it is the responsibility of the user to insure that the instructions outlined in this manual are carried out on a time table which will insure reliable and efficient operation of the equipment.

It is the responsibility of the user to maintain the **MULTIPRESS** equipment at all times in a day-to-day operation. The Manufacturer suggests that the following maintenance and service procedures be implemented and regularly practiced by the user.

CAUTION

When any malfunction in **MULTIPRESS** equipment is encountered during the operation or inspection of press, operator(s) should immediately stop the press. Have qualified personnel interrupt the electrical power. Conspicuously tag press indicating malfunction. Report it to the proper authorities. Do not run the press until the malfunction has been eliminated.

MAINTENANCE AND INSPECTION

The following chart is provided to point out specific check points and the schedule that should be applied for each point. Any (ITEM, ROUTINE, or PERIODIC) inspection points not included in this list but considered to be pertinent to the maintenance of the press, should be included. If in doubt, consult the factory.

ITEMS TO BE INSPECTED	SCHEDULED			MALFUNCTION						
	DAILY ROUTINE	PERIODIC	DAMAGED KINKED	WORN	BROKEN OR CRACKED	HYDRAULIC	MECHANICAL	ELECTRICAL	MISALIGNMENT	OUT OF ADJUSTMENT
FRAME		X			X					
ELECTRIC MOTOR		X	X					X	X	
STARTER		X						X		
PUMPS		X				X	X		X	
VALVES		X				X	X			X
GAUGES		X	X		X					
SWITCHES		X	X	X	X		X	X		
OPERATING CONTROLS	X	X	X	X	X		X			X
TOOLING	X	X	X	X	X		X		X	
FEED AND/OR EJECTION MECHANICAL	X	X	X	X	X	X	X	X	X	X
OIL LEAKS	X	X								
HYDRAULIC LINES - PIPE, TUBE, HOSE		X	X		X		X			
HYDRAULIC FITTINGS		X			X		X			
ELECTRICAL LINES - WIRE, CABLE, CONDUIT		X	X	X	X		X	X		
GASKETS, SEALS, & O-RINGS		X		X		X	X			
RAM PACKING		X	X	X		X	X			
OIL LEVEL TOO LOW OR TOO HIGH		X								
OIL CONTAMINATION TOO HIGH		X								

DAILY INSPECTION

Before operating **MULTIPRESS** equipment, each operator should make inspection checks indicated on Page 4. These checks should be after each shift change.

In addition, the following inspection checks should be made by each operator before operating press and after any break time.

1. Make sure that each component is in the proper condition and position for start up and be aware of any movement which will occur during start up procedure.
2. Check for foreign objects which may cause injury or damage and remove before start up.
3. Connect electric power to starter box and then actuate MOTOR START pushbutton. With the motor running and driving the hydraulic pump, make the following inspection checks:
 - a. Check for oil leaks.
 - b. Make sure each component is in the proper position to start cycling.
 - c. Make sure press operates in manner prescribed by sequence of operations.

SAMPLE ROUTINE LOG

If any check points are malfunctioning or could lead to a malfunction, a written report should be generated indicating the problem and what was done to correct it and then made a part of the press history.

MALFUNCTION CHECK POINTS

OPERATING PSI	NO. OF CYCLES	OIL LEAKS	OIL LEVEL	OIL TEMP	HYD. COMP'S.	ELECT. COMP'S.	MECH. COMP'S.	INSPECT. DATE	NOTES REMARKS

PERIODIC INSPECTION

CHECK

METHOD

REMEDY

EVERY 50 HRS. OPERATION

Lubrication

Visual

Grease & Oil
lubrication points

Check fluid levels in hydraulic
and lubrication tanks

Fill as necessary with
recommended fluids using
filtration when filling
hydraulic oil tanks

EVERY 100 HRS. OPERATION

Cleanliness of hydraulic
system filters if equipped

Visually by indicator
or dismantling

Clean or replace
filter element
according to type

Chafing or wear of hydraulic hoses

Visual

Replace as required

Hydraulic connections for
dryness and tightness

Visual and with
suitable tool

Tighten or reseal as
necessary (under a
pressure condition)

General tightness of
fastenings on rams, switches,
gates, safety shocks, etc.

Visual

Take suitable action

EVERY 500 HRS. OPERATION

Examine the operation
of safety equipment

Visually and by operation
of all parts

As required

Main press frame alignment
deflection under pressure

Visual

As required

Tightness of tie rod nuts
if fitted

Visual & with suitable tool

Tighten as necessary
(according to manufacturers
instructions)

PERIODIC INSPECTION

AFTER 5,000 HRS. OPERATION ANNUALLY

<u>CHECK</u>	<u>METHOD</u>	<u>REMEDY</u>
Cylinder packings	Visual	Replace packings
Frame and tie-rod damage or fatigue	Visual and with suitable non-destructive testing procedures	As required
Flatness of bolsters, platens, etc.	Visual and with suitable measuring equipment	Reface as required
Contamination of hydraulic fluid	Sample sent for analysis	Either top-up with clean fluid or drain and clean reservoir. Replace with new fluid of correct specification.
Reservoir air breather	Visual	Clean or renew element
Hose clamps	Suitable tools	Tighten as required
Hydraulic fluid filters if equipped	Strip and check mechanisms seals, and elements	Replace as necessary according to manufacturers recommendations
Accuracy of hydraulic pressure gauges	Comparison	Re-calibrate or replace as required
Heat exchanger efficiency if equipped	Use suitable temperature measuring equipment	As required
Heat exchanger fluid leakage if equipped	Visual	Strip or reseal or replace as necessary
Solenoids and relays for smooth operation	Audio and visual	Clean or replace as required
Condition of flexible electrical conduit and cable trunking	Visual	Repair or replace as required

(Continued on Page 8)

PERIODIC INSPECTION

AFTER 5,000 HRS. OPERATION ANNUALLY (Continued)

<u>CHECK</u>	<u>METHOD</u>	<u>REMEDY</u>
Accumulator pre-charge pressure if equipped	With special equipment	Recharge with nitrogen if required, or return to manufacturer if repairs are necessary
Pump Drive Shaft Alignment Couplings	Measure Visual	Adjust as necessary Adjust or renew
Pump Shaft Bearings Output Noise Level	Manual by press performance Audio equipment	Seek expert advice for overhaul or replace complete
Valves (General) Operation Wear	By performance Strip and visually check spools and springs	Clean and adjust or replace as necessary

OPERATOR'S SAFETY PROCEDURES

Each item listed below is related to the operator's safety. It is for your benefit that these procedures be observed. The hydraulic and electrical functioning of the press may not be your responsibility; however, you are responsible for reporting any malfunction in the operation of the press. Be sure you have a working knowledge of the machine you are operating and ask for proper training and instruction before operating. Develop a sense of personal safety awareness and understand that by working safely everyday, you will avoid accidents.

Numbers listed in the brackets () are references to requirements of ANSI B11.2.

1. STOP HYDRAULIC POWER UNIT MOTOR AND INSERT SAFETY BLOCK BEFORE REACHING INTO DIE AREA.
2. Clean press daily and inspect carefully for loose, worn, broken, or damaged parts.
3. Be extremely cautious and alert when operating presses. Report unsafe conditions and improper maintenance to the proper persons.
4. Inspect press, dies, feeding and ejection mechanisms (if used) before cycling press.
5. Check tightness of tooling - clamps, bolts and locknuts that hold dies and bolster plate in position.
6. When the press is not in use, or when the press or dies are being serviced, lock the control panel or disconnect switch in the OFF position to prevent unauthorized use of the press and unintentional start.
7. FINGERS ARE PRECIOUS - Never operate a press without a guard or safety device which will keep hands out of the die area.
8. Make sure that a point of operation guard or safety device is in place and in good working condition with all adjustments properly made and inspected before using.
9. Safety tongs and other parts handling tools should be kept in good condition and should be properly used whenever manual loading or unloading of parts into and out of the die is required.
10. With hydraulic power unit motor turned off, check sight gauges for sufficient lubricant in reservoirs. This includes air line lubricators.
11. With hydraulic power unit running, check for oil leaks.
12. Observe press operation for overloading. Accidental or intentional operation above the maximum rated tonnage will result in excessive wear and abuse of press and dies, and can create a hazardous condition. (7.2)
13. Refrain from talking to anyone while engaged in the operation of a press. If talking is necessary, stop the press and step aside until conversation is completed.
14. Report any questionable operation or unusual sounds, conditions, or actions of the press to the proper persons.

DIE SETUP SAFETY PROCEDURES

1. STOP HYDRAULIC POWER UNIT MOTOR AND INSERT SAFETY BLOCK BEFORE REACHING INTO DIE AREA.
2. Clean bolster plate, dies and press surface before installing dies. Misalignment caused by dirt, chips of metal or other foreign materials could result in injury to operator or damage to press and dies.
3. Lock the control panel or disconnect switch in the OFF position to prevent unauthorized use of the press and unintentional start.
4. Clamp bolster plate firmly to press. Be sure bolts are in good condition so that constant vibration will not allow plate to move out of position.
5. NEVER install worn or damaged dies. Use the proper die for the press size to prevent overloading.
6. All dies should be securely fastened before moving the press to a new location.
7. When a new die is being installed in a press, the press slide should be high enough to provide adequate clearance for the die set.
8. If dies are clamped to the press, use enough clamps and the proper size clamps to hold dies firmly in position.
9. When working with another man or a crew, be sure all persons are clear of the press before jogging or cycling the press.
10. Perform all necessary adjustments during and after die installation before cycling the press.
11. Observe press operation for a sufficient length of time to determine that the press is working properly.
12. Before releasing press for production operation, replace all guards, covers and safety devices for operator protection.
13. Do not leave tools, bolts or other obstructions in or near the die area.

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