



OPERATION AND MAINTENANCE MANUAL
HI VOLUME MANUAL BURST TEST SYSTEM

2015

THE HENSEL GROUP INC

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B Manufacturer's Literature, in final section

Water Filter
Gearmotor
Motor Controller
Bladder Type Accumulator
MaxPro Pump
Joyce Screw Jack
Norgren Air Filter / Regulator
Relief Valve
Tescom Pressure Regulator, Series 26-1000
Whitman Pressure Switch

2.0 IMPORTANT NOTICE

The purpose of this manual is to supplement, **BUT NOT TO REPLACE** the services of qualified personnel to start up and adjust this equipment.

Persons without previous experience with this equipment should not attempt the initial adjustment and check-out procedures required until this installation is considered ready for operation, by a qualified operator.

Each cabinet carries an individual serial number on the nameplate mounted on the cabinet. Please refer to this number when ordering replacement parts or when requesting any further information.

A copy of the complete bill of material applicable to each cabinet and a wiring diagram are shipped with each piece of equipment.

SAFETY PRECAUTIONS

This manual contains important information that **ALL** users should know and understand before using the equipment

This information relates to **USER SAFETY** and **PREVENTING EQUIPMENT PROBLEMS**.

To help you recognize this information, we use the following terms to draw your attention to certain equipment labels and portions of this manual.

Please pay special attention to any label or information that is highlighted by one of these terms:

===== **WARNING** =====

OR

===== **CAUTION** =====

Important information that tells how to PREVENT DAMAGE to equipment, and or how to avoid a situation that may cause PERSONAL injury.

===== **NOTE** =====

Information that you should pay special attention to whenever you are using or operating this equipment.

3.0 SET UP

3.1 Remove the shipping crate and packing material carefully from the BURST SUPPLY CABINET. Do not discard the packing material until all the items on the packing list items have been accounted for.

3.2 Use a fork lift to remove the Burst Supply Cabinet from the shipping pallet and position the cabinet in the desired location and level the cabinet. Be sure to allow adequate floor space for maintenance. See drawing A-1272.

NOTE: Testing Area requires floor drains.

When transferring the burst supply cabinet from the shipping pallet or from location to location, use moving blankets between the cabinet and the moving machinery and follow accepted practices to avoid damage to the equipment.

4.0 DESCRIPTION

This Pressure Supply System is primarily designed for the BURST TESTING of plastic pipe with a low expansion rate.

The air powered water pump provides 3000 PSI pressure and an accumulator provides the volume capacity necessary.

The accumulators can vary from 1 gallon to two 10 gallon units or larger depending upon the volume needed for the individual testing requirements.

The motorized regulator controls the rate of pressurization until the bursting occurs.

A pressure switch automatically controls the time recorder to record elapsed time till failure occurs.

A pressure gauge with a max pressure pointer shows the maximum specimen pressure.

The water filter on the supply system protects the system from dirt particles to help keep maintenance to a minimum.

5.0 CONTROLS

(Refer to Console Arrangement Drawing)

5.1 Main Power switch controls all of the electrical power to the burst test cabinet. It is located on the side of the cabinet. The Electrical cord from the Burst must be plugged into a Ground Fault Receptacle.

5.2 Elapse Time Recorder and Red Timer Light are activated by a pressure switch to indicate time until the specimen bursts or the elapse time in a static test. A pressure on-off switch controls the electrical power to them. Press the button on the time recorder to reset the elapse time recorder to zero.

5.3 The Pressure Switch is located inside the cabinet and mounted next to the pressure gauge. This switch controls the elapsed time recorder and the red timer light once the starting pressure is initiated. This starting pressure is usually 75 PSI.

===== **CAUTION** =====

**CONSULT THE FACTORY BEFORE MAKING ANY
ADJUSTMENTS TO THE PRESSURE SWITCH SETTINGS.**

This pressure switch can be adjusted by the turning the knurled ring if a different starting pressure is desired. Shut off the electrical power before making any adjustments.

5.4 Motorized Pressure Regulator Controls

On-Off Switch - Controls power to the motorized pressure regulator.

Direction (Pressurize/Retract) Switch- Controls the motor direction operating the pressure regulator.

Pressurize Position - increases the pressure to the specimen.

Center Position - holds pressure at the desired level.

Retract Position - returns the regulator to the closed position.

Pressure Rate Control - Allows adjustment of the pressurization rate as desired to perform the burst test. Start with the setting at mid range and adjust as required.

Full Pressure Indicator Light - Indicates when the motor drive has stopped after driving the pressure regulator to the full output limit. (Max. Pressure).

Pressurizing Indicator Light - Indicates that the motor drive is increasing the pressure to the specimen.

Full Retract Indicator Light - Indicates that the motor drive has returned the regulator to the starting (closed or full retract) position.

5.5 Pressure Gage - Indicates the pressure on the specimen as adjusted by the pressure regulator. This gage is active in both burst testing and static testing. The Max pointer (Red Needle mounted through the gage lens) rises with the Black pressure needle as the pressure increases. After the specimen bursts, the Max Pointer remains at the burst pressure.

5.6 Pressure Gage (Supply) - Indicates the pressure available in the accumulator.

5.7 High Pressure Shut-Off - Controls the high pressure water from the pumping system to the burst test controls.

5.8 Reset valve—Used for small diameter pressurization and to relieve the pressure on the dome regulator after Burst testing.

5.9 Fill Valve - Allows the burst supply system to fill the test specimen before pressurizing. Open the fill valve to fill the specimen. Open the specimen's purge valve to bleed the air from the system. Close the fill valve when water flows from the purge valve. Then close the purge valve. A check valve prevents high pressure feed back to the water inlet of the pump should the fill valve be left open after filling the specimens.

5.10 High Pressure Pump - Is an air operated high volume water pump, which provides the high pressure water supply for the burst system. Refer to the manufactures instructions for more specific information about the pump.

5.11 High Pressure Relief Valve - Limits the maximum pressure at the pump. The relief valve discharges the water into the drain outlet to control the maximum pressure.

===== **WARNING** =====

Immediate attention is needed if this valve starts relieving high pressure. Shut off the air to the system and bleed off the high pressure by slowly opening the High Pressure Drain valve on the side the cabinet. Check system thoroughly before returning to service.

===== **NOTE** =====

Avoid running the pump without the water supply turned on.

Operate the pump only when testing the specimens.

TO STOP THE PUMP, TURN OFF THE COMPRESSED AIR SUPPLY TO THE PUMP.

6.0 INSTALLATION

6.1 Connect the water supply line into the "WATER SUPPLY" inlet port on the side of the cabinet, from the customer provided shut off hand valve. It is recommended that additional water filters be added as required to provide clean water to the system.

===== WARNING =====

ALWAYS CONNECT THE WATER SUPPLY FIRST, before applying the compressed air to the system. The pumping system will start as soon as air pressure is supplied to the pump. Damage to the pump may result if the pump is run dry. 40 PSI is the minimum supply water pressure and 100 PSI is the maximum supply water pressure.

Use minimum 1/2" I.D. fittings. Using smaller size fittings could reduce the capacity of the pump.

6.2 Connect the high pressure supply outlet and return to the burst fixture. Use only suitable high pressure hose, tubing and fittings, 3000 PSI rated.

6.3 Start the supply of water into the unit. Open the Fill Valve and High Pressure Shut-Off Valve to purge any air that may be inside the controls.

6.4 Connect the compressed air supply line into the "AIR SUPPLY" port on the side of the cabinet, from the customer provided filtered compressed air shut off hand valve.

For the best performance, the air supply pressure should not drop below 60 psi. The air supply pressure should not exceed 100 psi.

6.5 Plug in the electrical power cable to the customer's power outlet.

6.6 Normal electrical requirements are 120 Volt,60 Hertz,1 Phase

===== OPERATION =====

7.0 BURST TESTING OF A SPECIMEN

- A. Turn power ON. Full retract light should be on.
- B. INSURE that the High Pressure Shut-off Valve is OFF, the MOTOR ON-OFF Toggle Switch is OFF and the Fill Valve is OFF.
- C. TO FILL the SPECIMEN with water:
 - 1. Hook up the sample in the burst fixture.
 - 2. OPEN the customer supplied BLEED-OFF VALVE.
 - 3. OPEN the FILL VALVE.
 - 4. When all the air has been displaced by water in the sample, CLOSE the FILL VALVE.
 - 5. CLOSE the BLEED-OFF VALVE.
- D. TO BURST TEST the SPECIMEN: (ie: blow it up)
 - 1. Reset the Elapse Time Recorder to Zero.
 - 2. Reset the Peak Pressure to Zero.
 - 3. Set the Pressure Rate Control.
 - 4. Turn the HIGH PRESSURE VALVE ON,
 - 5. Turn the MOTOR TOGGLE SWITCH ON
 - 6. Turn the DIRECTION SWITCH to PRESSURIZE.
 - 7. When the test begins, the Red Test Light will LIGHT, the Elapse Time recorder will start and the pressure to the specimen will build until the burst occurs or highest pressure the system can deliver is reached.

===== CAUTION =====

Close the high pressure shut off valve promptly upon bursting of the specimen. If the specimen has not burst, relieve pressure from the specimen before handling.

- 8. IMMEDIATELY AFTER THE SPECIMEN BURSTS or the highest pressure is reached, turn the HIGH PRESSURE VALVE OFF.
- 7. Move the Direction Switch to RETRACT, set the Pressure Rate Control to 100%.

- E. If the specimen burst, read where the MAX POINTER is at on the test gauge or press the MAX button on a digital display, record this PRESSURE and the TIME, then RESET to zero. Remove specimen. Open then close the RESET VALVE and then the HIGH PRESSURE VALVE to relieve the pressure on the dome regulator.

CAUTION:
DO NOT REMOVE SAMPLE
UNTIL TEST PRESSURE READS ZERO

- F. If specimen DID NOT burst. Relieve pressure from the specimen by opening the bleed valve. When the RED RETRACT light comes on, open then close the RESET VALVE and then the HIGH PRESSURE VALVE. Press the MAX pushbutton to display the maximum pressure that the specimen obtained, record this PRESSURE and the TIME, then press the RESET button to zero display. Remove specimen.

8.0 MAINTENANCE

REFER TO THE DRAWINGS AND BILLS OF MATERIAL FOR THE PART NAMES, NUMBERS, AND MANUFACTURER'S INFORMATION THAT IS SUPPLIED FOR THE MAJOR COMPONENTS.

8.1 OILING - The MaxPro pumps do not need any oil.

8.2 WATER SUPPLY FILTER - Replace water filter element annually. Inspect monthly or whenever the water flow becomes restricted. Then change as required.

8.3 PUMP - Maintain in accord with the manufacturer's required maintenance recommendations.

8.4 PRESSURE REGULATOR DRIVE GEAR MOTOR - Sealed lubrication, replace the motor brushes when the brushes are worn to less than a 1/4" long.

8.5 SERVICE OF THE REMAINING COMPONENTS - Pressure regulators, Control valves, and filters per the manufacturer's instructions. These components do not require routine maintenance and should only be serviced if they are not working properly.

8.6 PRESSURE GAGES - Check and calibrate pressure gages or transducers at least annually on a dead weight pressure gage tester, or by other approved methods. This Service is available from THE HENSEL GROUP INC. Call for current pricing.

8.7 TEST the Ground Fault Circuit Breaker by pushing the red "PUSH TO TEST" and insure proper disconnect status. Keep a record of these tests.

8.8 Check the system yearly for signs of wear, corrosion, leaks of air or water. This service is available from THE HENSEL GROUP INC. please contact the factory for current rates and service contract availability.

8.9 Replacement parts, installation and emergency service is available directly from:

THE HENSEL GROUP INC
www.henselgroup.com

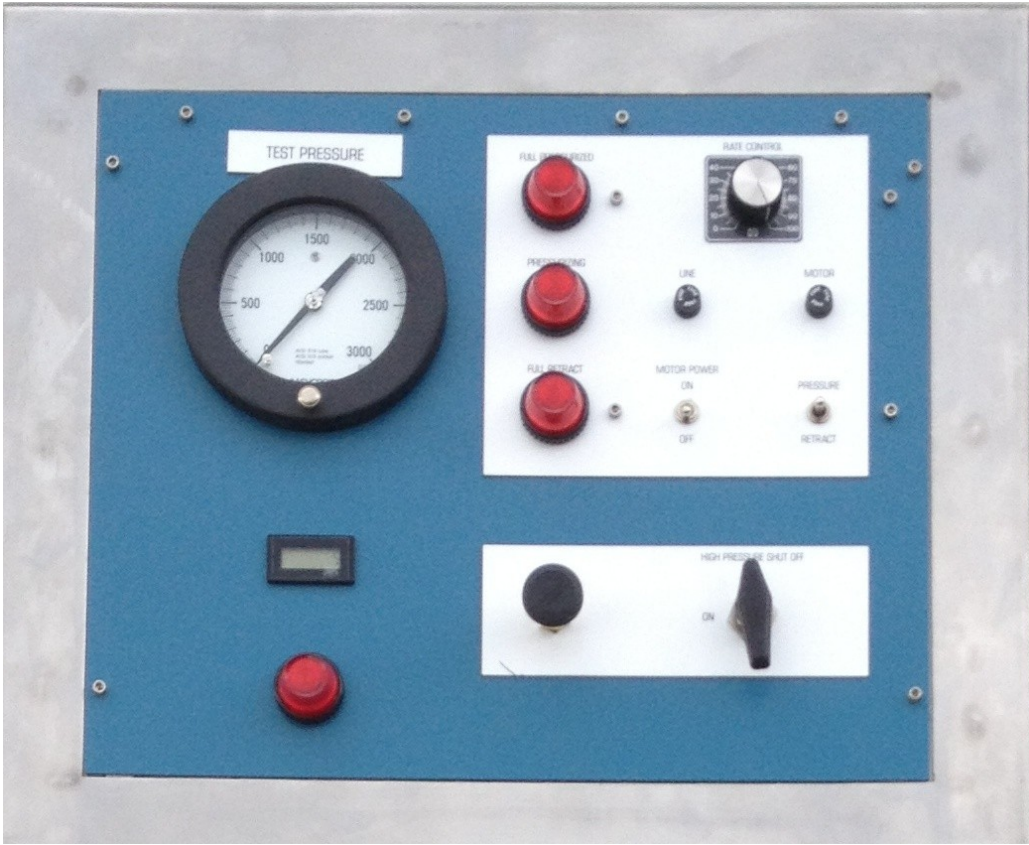
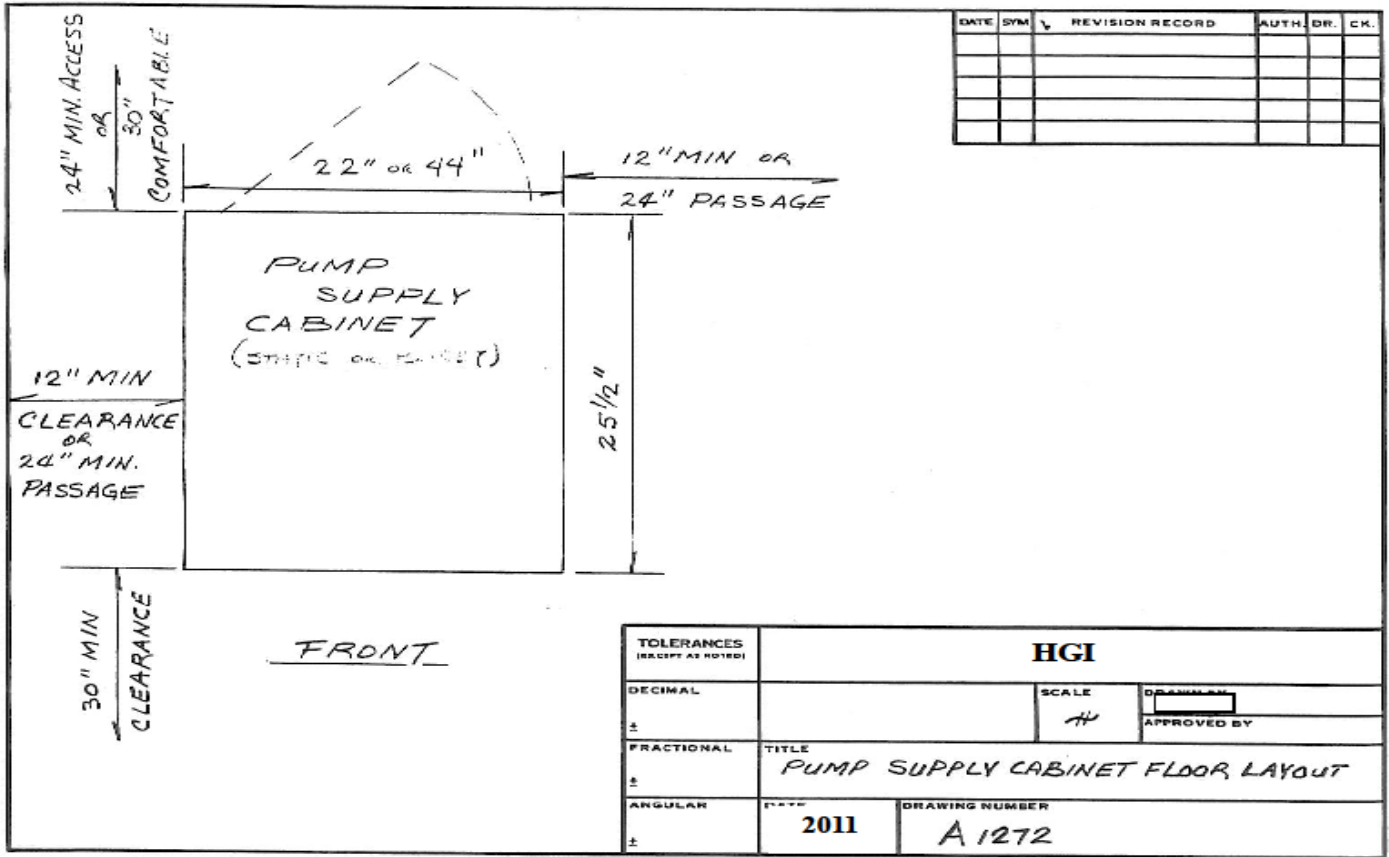
9.0 SYSTEM DRAINAGE FOR LONG TERM STORAGE

To prevent sediment build up - or - Freezing.

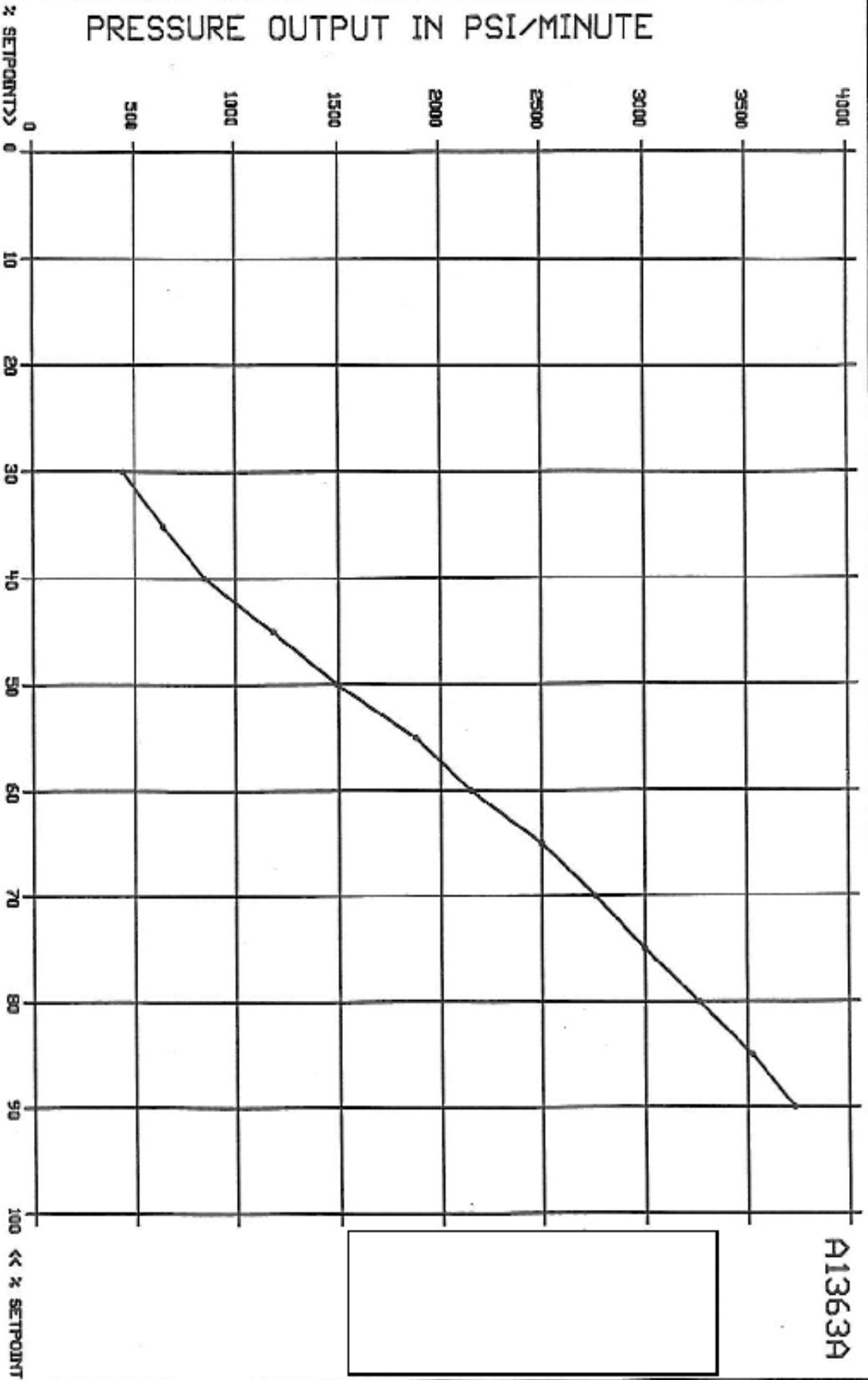
- A. DISCONNECT THE AIR SUPPLY FIRST.
- B. SHUT OFF THE WATER SUPPLY.
- C. BLEED OFF THE PRESSURE. RUN THE MOTOR TO A PRESSURIZING POSITION AND OPEN THE HIGH PRESSURE SHUT OFF VALVE.
- D. CLOSE THE HIGH PRESSURE SHUT OFF VALVE AND BLEED VALVE.
- E. CONNECT AN AIR SUPPLY TO THE WATER SUPPLY PORT THEN TURN ON THE AIR SUPPLY.
- F. ALTERNATELY OPEN THE HIGH PRESSURE SHUT OFF VALVE AND THE BY-PASS VALVE AND BLOW THE WATER FROM THE SYSTEM. SHUT OFF THE AIR WHEN ALL THE WATER IS OUT OF THE SYSTEM.
- G. REMOVE THE WATER FILTER ELEMENT AND DRAIN THE CANISTER.

10.0 CAUTIONS

- 10.1 Do not connect the air supply to the pumping system without first turning ON the water supply.
- 10.2 Check the thrust capacity of the test fixture, specimen and the enclosures before pressurizing your specimen.
- 10.3 Do not pressurize specimens without adequate shielding to stop the flying debris should the specimen fail and burst.
- 10.4 Be sure all trapped air is bled from the system and specimens before starting the tests.
- 10.5 Shut off the electrical power before servicing or making any adjustments inside the cabinet.
- 10.6 Do not adjust the pump pressure above it's rating. Refer to order specifications.
- 10.7 Do not store system where it may be subjected to below freezing temperatures without proper draining.
(SEE SECTION 9.0)



PRESSURE OUTPUT IN PSI/MINUTE



A1363A

JYCE JACK M/T242-6-INW-13-KEYED-LESS PT
1:1 PULLEY RATIO
96 TURNS PER INCH
42132C DAYTON IRQUE

DISK : D05

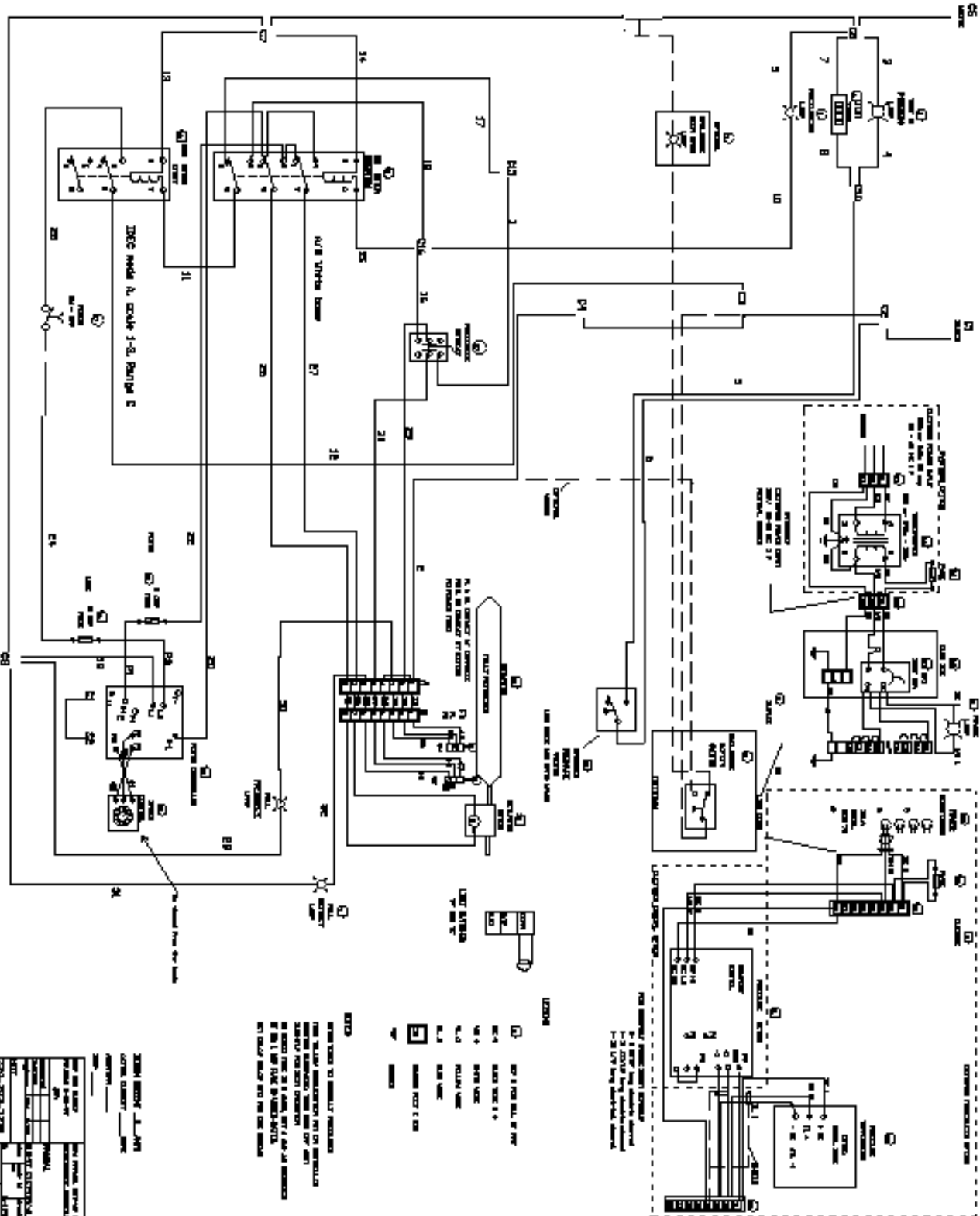
TITLE PRESSURE RAMP CURVE

DATE

DRAWING NO. A1363A

REV.

HGI



- LEGEND**
- FOR 1 PHASE 200 VAC
 - FOR 2 PHASE 200 VAC
 - FOR 3 PHASE 200 VAC
 - FOR 1 PHASE 115 VAC
 - FOR 2 PHASE 115 VAC
 - FOR 3 PHASE 115 VAC
 - FOR 1 PHASE 60 HZ
 - FOR 2 PHASE 60 HZ
 - FOR 3 PHASE 60 HZ
 - FOR 1 PHASE 50 HZ
 - FOR 2 PHASE 50 HZ
 - FOR 3 PHASE 50 HZ

NOTES:

1. ALL WIRING IS TO BE DONE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND THE LOCAL ELECTRICAL CODES.

2. ALL WIRING IS TO BE DONE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND THE LOCAL ELECTRICAL CODES.

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REVISIONS:

NO.	DATE	BY	REVISION
1	10/1/70	J.M.H.	INITIAL DESIGN
2	10/15/70	J.M.H.	REVISED FOR CONSTRUCTION
3	10/30/70	J.M.H.	REVISED FOR CONSTRUCTION
4	11/10/70	J.M.H.	REVISED FOR CONSTRUCTION

APPROVED FOR CONSTRUCTION:

J.M.H.

DATE: 11/15/70

BY: J.M.H.

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