

Concrete Compression Testing Machines MC-250P & MC-300P



Rev: 05/2021

IMPORTANT – PLEASE READ BEFORE MOVING THIS MACHINE

WARNING! This machine is extremely heavy and may be unstable until properly installed. Attempting to move or reposition it without using proper equipment and procedures may result in severe injury or death. Properly rigged lifting equipment of sufficient capacity must be used, the load must be secured, and lifting equipment operators must be qualified and knowledgeable in the use of the equipment.

IMPORTANT – PLEASE READ BEFORE OPERATING TESTING MACHINE

1. Inspect to see that no visual damage has occurred during shipping. If you see any damage, contact Gilson Company, Inc. right away.
2. Check the equipment you received with your packing list.
3. It is recommended that the machine be located in an area where the atmosphere is free from acidic or contaminating fumes, which could possibly accelerate corrosion to machine surfaces or electrical contacts.
4. Position the machine leaving sufficient space at the rear and sides for calibration or service work.
5. The machine should be leveled.
6. Clean off machined surfaces that have been coated with rust preventative using any suitable non-corroding safety solvent. Wipe machined surfaces with a clean, oil soaked rag to minimize rusting.
7. When adding or changing oil, use only Dexron II or Dexron III automatic transmission fluid.

NOTE: This machine has been operationally tested and calibrated at the factory. In order to fully comply with the requirements stated in ASTM C 39, the compression machine should be calibrated again "On original installation or immediately after relocation." Gilson does not provide calibration services directly, but can provide a list of calibrators in your area. Contact our Technical Department at **800.444.1508** or **techsupport@gilsonco.com**.

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FOREWORD

This section of the manual is designed to provide instructions on the set up of the i720 digital indicator. Please take a few moments to read through it and become familiar with the operation. If you require technical support, please contact Gilson Company, Inc. at 800.444.1508, or email techsupport@gilsonco.com

1.0 INTRODUCTION

Standard information displayed on the indicator during a test is peak load, rate of load, and Sample ID number, if entered. Information displayed after a test is peak load and average rate of load for the last 50% of the test.

1.1 Test Reports

Test reports can be optionally stored to memory, printed on an optional printer or downloaded to a computer with the optional Able Cable RS-232/USB cable. Details for all options can be found in the following pages.

2.0 THE KEYS & THEIR FUNCTIONS

HARD KEYS

2.1 Tare Key

Required at the start of each test.

Function: Clears and stores all displayed test values, sets indicator to start a new test.

To use: Press <TARE KEY>, wait until the words "TARE SUCCESSFUL" are displayed before beginning the test. See section 3.0 on how to perform a test and save test results.

2.2 Units Key

Function: Switches indicator between engineering force units of lb., kg, N and kN.

To use: Press <UNITS KEY> to toggle between force options. When required unit type is displayed, function is set.

NOTE: Rate of load function is fixed in selected force units per second.

2.3 Print Key

Function: The Print Key is a multiple function key used for transferring/printing stored test data, and entering numerical values to memory.

2.3.1 Test data transfer/print functions with required optional cables installed in the Indicator and connected to receiving unit.

To use: Press <PRINT KEY>, the transfer/print function is automatic. When function is complete you will be prompted to either SAVE or CLEAR stored test data. To save stored test data in memory press <SAVE F1> soft key. To clear test data from memory, press <CLEAR F4> soft key. NOTE: Before clearing stored test data from memory transfer or print stored data as cleared data is NOT retrievable.

2.3.2 Entering and Storing a numerical value into a data entry field.

To use: Open function <SAMPLE ID>. Use key pad to input required ID number. When set press <PRINT KEY> to store in memory.

Also used in calibration program to set a numerical value into a field, and select and accept a menu option.

2.4 Number Key

Function: The <NUMBER KEYS> are used to input a numerical value into a data entry field.

To use: Press <NUMBER> key to set required value.

2.5 Menu Key

Function: Opens and displays a list of four (4) menu options. They are Audit Trail, Configuration, (Calibration Program), Test Operation and Contrast (brightness) Adjustment. The Contrast Adjustment setting program is the only menu option for user adjustment. DO NOT attempt to enter any of the other displayed menu programs.

2.5.1 Audit Trail & Test Operation – **DO NOT ENTER**. Entering the program will effect the operation of the digital indicator.

2.5.2 Configuration (Calibration Menu) – **DO NOT ENTER**. Entering the program will **ERASE** the calibration settings stored in memory, and they cannot be restored. This menu is password protected. If you inadvertently enter it you will be prompted to enter a password. Press <1> key and press <PRINT ENTER> key, and the indicator will return to its normal test operation screen.

2.5.3 Contrast - To use: Press <MENU KEY>, then press <DOWN ARROW ▼ G/N KEY> until menu item Contrast Adjustment is highlighted and reads "Less ← Contrast xx% → More". To adjust the brightness setting, press <UNITS > ARROW KEY> to brighten contrast. Press the <TARE < ARROW KEY> to darken contrast. When required adjustment is set press Soft Key <F3 SAVE & EXIT MENU>.

2.6 UP ▲ ARROW/ZERO KEY

Function: Used to scroll back one menu line at a time to a previously displayed menu. Normally used in calibration procedure. This key is NOT to be used to zero the indicator.

To use: Press <UP ▲ ARROW/ZERO KEY> to return to a previously displayed menu. This key is NOT to be used to zero the indicator.

2.7 DOWN ▼ ARROW/G-N KEY

Function: Used to scroll forward on menu line at a time. This key is normally used when adjusting the display screen contrast and calibration procedure. This key is NOT to be used to set a Gross/Net tare function.

To use: Press <DOWN ▼ ARROW/G-N KEY> to scroll forward one menu line at a time until menu option is displayed. This key is NOT to be used to set a Gross/Net tare function.

SOFT KEYS

2.8 AUTO-STORE (F3) KEY

Function: Turns indicators memory function ON or OFF. When activated, automatically stores test results to memory at the end of a test. Auto-Store must be activated to use the Sample ID function.

To use: Press <AUTO-STORE (F3) KEY>. To turn function ON, press the <F4> key. To turn function OFF, press the <F1> key.

2.9 SAMPLE ID (F1) KEY

Function: Opens the indicators memory function and allows an individual sample ID number to be set and stored to memory automatically at the end of a test.

NOTE: Auto-Store must be activated for the ID function to operate.

To use: Press <SAMPLE ID (F1) KEY>. Use <NUMBER KEYS> to select and display ID numbers. Up to 25 digits can be set. If an incorrect number is set, press <BACK SPACE F3 KEY> to go back and cancel one number at a time. Continue to select ID number. When the correct ID number is displayed, press <PRINT/ENTER KEY> to set.

Pressing the <CANCEL F1 KEY> when setting an ID number clears all set numbers and displays the words "Entry Mode Cancelled". Press <SAMPLE ID (F1) KEY> and follow procedure to enter and set ID number.

2.10 TEST RESET

Function: Allows a test in progress to be stopped and cancels sample ID number. Test data will not be stored in memory and display returns to idle mode.

To use: Stop the test by placing the control valve in its hold position. Press <TEST RESET F2 KEY> and test data is cleared. Shift the control valve to retract position and enter new test data.

3.0 TEST PLATEN INSTALLATION AND REMOVAL, 250 SERIES

Gilson compression machines are versatile and can be configured with optional equipment to perform many types of strength tests on a variety of concrete samples. It may be necessary to change the upper platen assembly to meet the requirements of certain ASTM and AASHTO test methods.

Gilson Concrete Compression Machines are shipped without the test platens installed. They are packaged separately in the shipping carton with the machine.

CAUTION: Testing machine platens are heavy and can be difficult to handle. To prevent operator injury, two people are recommended when installing, removing, or changing this equipment. Please contact Gilson Technical Support with questions at techsupport@gilsonco.com or 800 444-1508.

Installation with Two People

1. Turn on the hydraulic pump and use the load control valve to advance the piston downward until the setscrew hole in the bottom front of the piston is fully visible.
2. Place the load control valve in the HOLD position.
3. Turn the hydraulic pump off.

4. Disconnect the compression machine from electrical power and lock-out the connection.
5. From behind the machine, or from the front slightly to one side, one person lifts the platen assembly to the bottom of the of the piston, inserting the platen holding stem all the way into the 1½" diameter hole in the piston.
6. The second person uses the supplied 3/8" Allen wrench to tighten the piston set screw until tight. Do not over-tighten the screw, thread damage may occur.
7. Carefully inspect the fit between the platen and piston. Make sure that the platen is securely locked into the piston and that there are no visible gaps between them.

Users are strongly advised to use two people to install the machine platens. The following method should be used if only one person is available. Extra caution must be exercised to avoid possible injury.

1. Place a 6x12in concrete cylinder on the bottom platen, centered under the bottom crosshead of the compression machine.
2. Place the platen assembly on top of the concrete cylinder, making sure that it is centered under the piston.
3. Turn on the hydraulic pump and use the load control valve to slowly lower the piston, ensuring the platen holding stem aligns with the 1½" diameter hole in the bottom of the piston. Advance the piston down slowly until about 1½" of the holding stem is up inside the piston.
4. Place the load control valve in the HOLD position.
5. Turn the hydraulic pump off.
6. Disconnect the compression machine from electrical power and lock-out the connection.
7. Lift the platen until it makes full contact with the bottom of the piston.
8. Holding the platen in place with one hand, use the 3/8" allen wrench to tighten the piston set screw, being careful not to over-tighten it.
9. Carefully inspect the fit between the platen and piston. Make sure that the platen is securely locked into the piston and that there are no visible gaps between them.

4.0 TEST SETUP

This section describes how to setup the indicator to conduct a test.

Step 1:

The indicator should be ON when the machine is connected to an electrical power source. If display is dark, plug indicator power supply cord into outlet box located behind indicator on its frame mounting bracket.

The electrical voltage requirements for the indicator are listed on the serial number tag on the back of the indicator. If the indicator is being used as a retrofit installation, plug power supply cord into a wall outlet with electrical power supply source compatible with indicator. The indicator's supply cord serves as the power disconnect. The power outlet supplying the indicator must be installed near the indicator and be easily accessible.

Allow the indicator to warm up for 15–20 minutes before beginning a test or calibrating it.

NOTE: The indicator has NO ON/OFF switch. Normal procedure is to allow indicator to remain ON 24 hours a day.

Step 2:

Verify that the correct Engineering Unit of weight measurement is selected. The current unit is displayed on the screen. Press <UNITS> key to toggle through options of lb, kg, N or kN.

Step 3:

Auto-Store – If hard copy test documentation is required, turn Auto-Store function ON. Test results will be stored in memory automatically at the end of each test. See section 2.8.

Step 4:

Clear stored test results IF your test documentation program requires clearing stored results from memory before storing new test data. Note: If stored test results are IMPORTANT, print or transfer before clearing as cleared data is non-retrievable. See section 2.3 Print Key function for instructions.

Step 5:

Set hydraulic loading control valve in its Retract position and switch hydraulic pump motor on. Insert and center test sample in testing machine.

Step 6:

Enter Sample ID number if required, press Sample ID soft key and enter ID number code, and press <PRINT> key to set.

Step 7:

To start test, use the hydraulic load control valve to advance the machines piston to the required starting position, normally a point when an air gap of 1/16" (1.5 mm) or less is between the top of the test sample and the bottom of the upper test platen. Place control valve in Hold position. Press indicators <TARE KEY> to remove all residual load values on indicators display screen. The Load and Rate of Load value lines will display "00" indicating it is ready to start. The indicator will also display the words "Tare Successful" and if used, the sample ID number will move to the right hand side of the display screen.

Step 8:

Many ASTM test procedures permit a higher rate of loading or a preload to be applied to a test sample at the beginning of a test. Review the applicable ASTM standard for the required Rate of Loading for the sample type and size you are testing.

Shift control valve lever to Full Advance position. At sample contact, the top load line of the screen will show a rapid increase in the load being applied to the test sample. When required preload value is reached, shift control valve lever to Metered Advance position.

The second line of the display is now showing the current live Rate of Loading being applied to the test sample. To adjust and set the required loading rate, slowly turn the knob on the control valve clockwise to decrease loading rate and counter clockwise to increase loading rate. All changes in loading rate are updated live on the display screen.

Once the required rate of loading has been established continue to monitor the display screen making any necessary adjustments to the loading rate as needed.

NOTE: Because of the compressive nature of the materials used in unbonded pad caps, it may be difficult to set and maintain a controlled rate of loading with an applied load value of less than 20,000 lbs. (88 kN) when testing concrete cylinders.

Step 9:

End of test – as the test samples ultimate load is being approached the rate of loading value will begin to decrease due to cracking in the test sample. Make no adjustments in the loading rate when this occurs.

As the test sample yields the displayed live Load will freeze and no longer increase in value. When the indicator detects that the load has fallen below the set sample break percentage, the screen will change and display the words "PEAK LOAD", indicating that the test sample has reached its maximum load value. Shift the control valve lever to the Retract position. The rate of load line will also change and display the words "Avg Rate of Load" and the corresponding value applied to the sample during the test. If the auto-store function is activated, the sample ID number will go blank indicating that all test data has been stored to memory.

If manually documenting test results, record information before starting a new test. When the Tare key is pressed, displayed test results will be LOST.

5.0 CALIBRATION

NOTE: Calibration should be performed by a certified calibration company. These instructions in this section are intended for use by experienced and certified calibration technicians. A load cell, equal to or greater than the capacity of the machine, is required for calibration.

Step 1:

Allow digital to warm up for at least 20 minutes.

Step 2:

Before attempting to calibrate the machine, please verify the accuracy. All new machines are shipped from the factory with a calibration stored in the digital indicator.

Step 3:

Press the "MENU" button on face of digital.

Step 4:

Use the down button and select "Configuration" and push print. Then enter the password and press print.

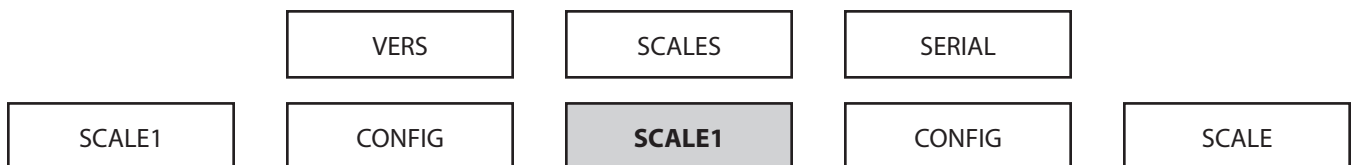
Step 5:

This displays the "SCALE CONFIGURATION" menu. "SCALES" will be highlighted.



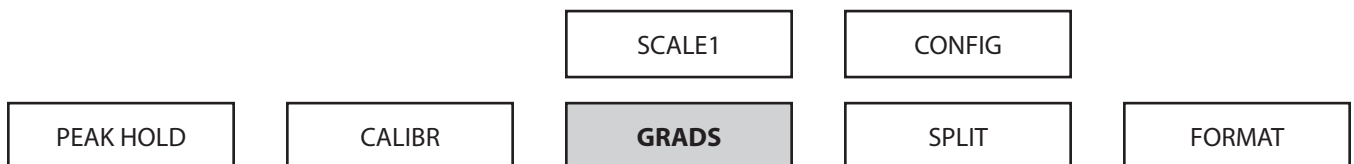
Step 6:

Press the down arrow key once. This displays the "SCALE1 CONFIGURATION" menu. "SCALE1" will be highlighted.



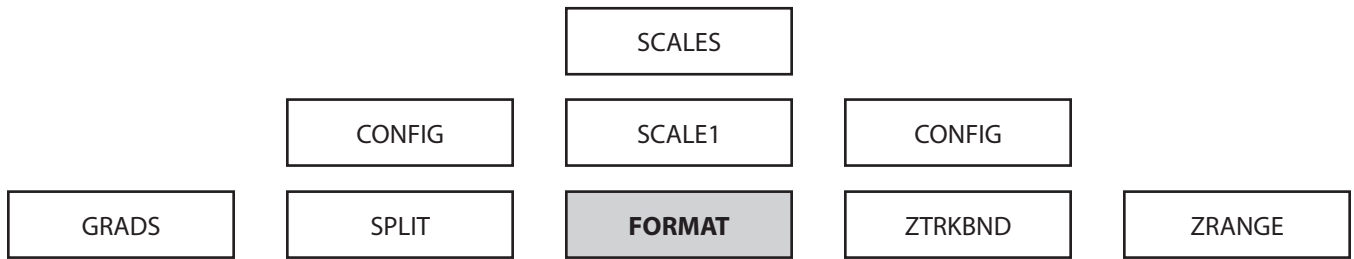
Step 7:

Press the down arrow key once. This displays the "FULL SCALE GRADUATIONS" menu. "GRADS" will be highlighted.



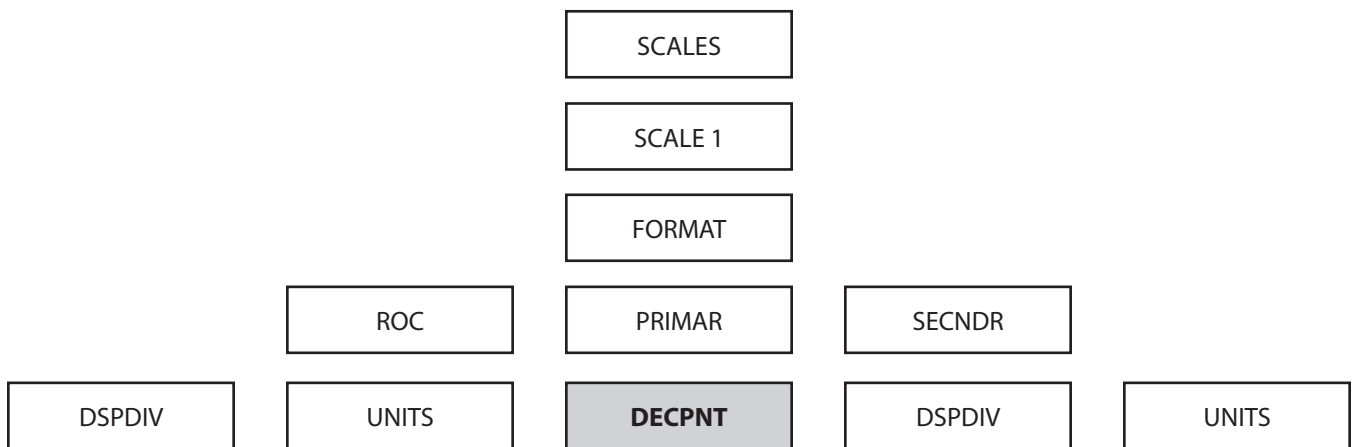
Step 8:

Press the right arrow key 2 times until "FORMAT" is highlighted.



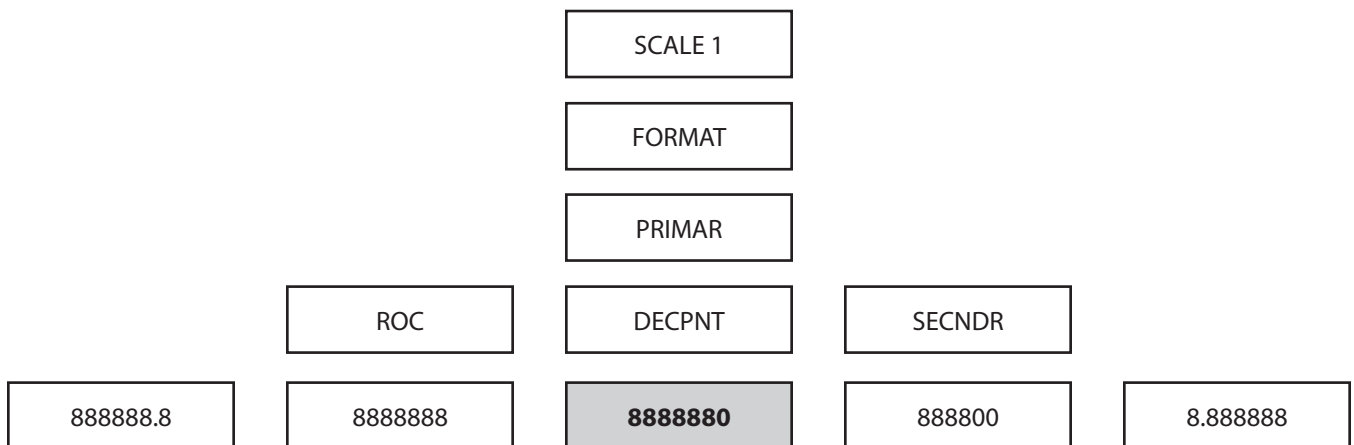
Step 9:

Press the down arrow key 2 times until "DECPNT" is highlighted.



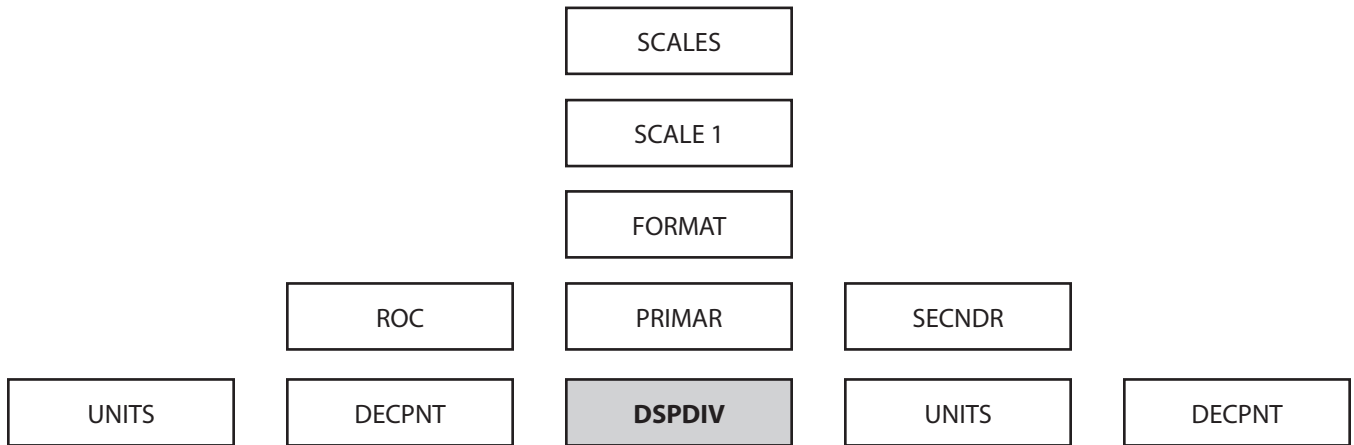
Step 10:

Press the down arrow key 1 time. Press the left or right arrow key until "8888880" is highlighted.



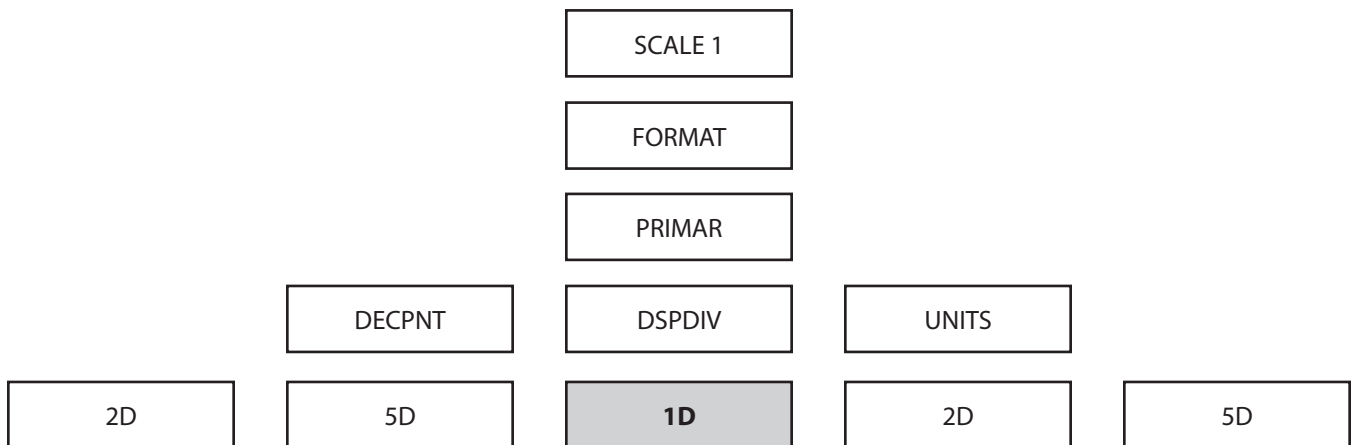
Step 11:

Press the PRINT key. The display will shift back to step 8. "DECPNT" should be highlighted. Press the right arrow key until "DSPDIV" is highlighted.



Step 12:

Press the down arrow key. Use the left or right arrow key until "1D" is highlighted.



Step 13:

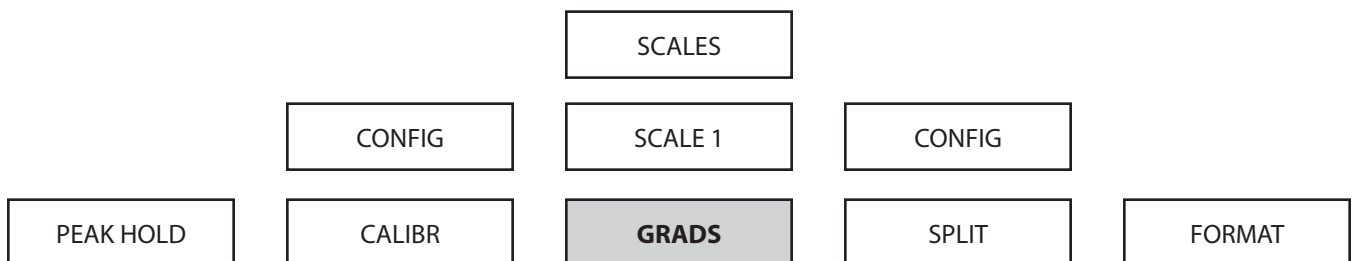
Press Up Arrow to Primary. Then press the left arrow to "ROC". Press down arrow twice to "DECPNT". Press down and set to 88888880. Press Print.

Step 14:

DSPDIV will be displayed, press down to set it to "1D" and press print.

Step 15:

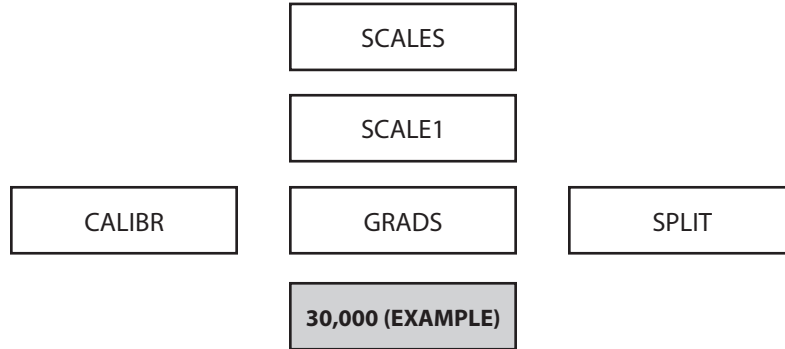
Press the print key. The display will shift back to the same as in step 10. Press the up arrow key 3 times until "FORMAT" is highlighted. Press the left arrow key 2 times until "GRADS" is highlighted.



Step 16:

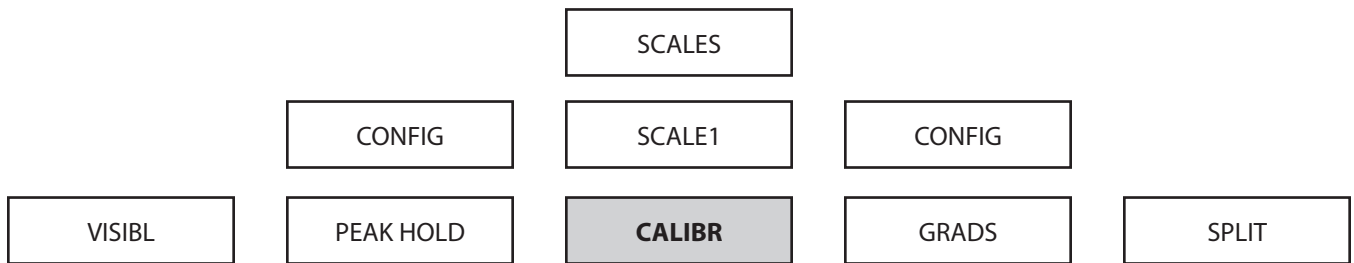
Press the down arrow key 1 time. Take the full scale of the testing machine and divide it by 10. Enter that number manually and press the print key.

Example: $300,000 \div 10 = 30,000$



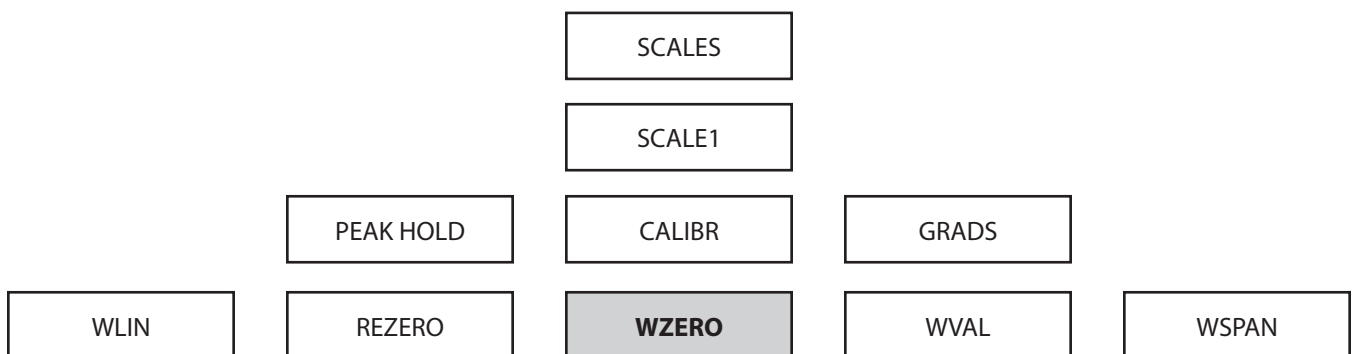
Step 17:

Press the left arrow key 2 times. "CALIBR" will be highlighted.



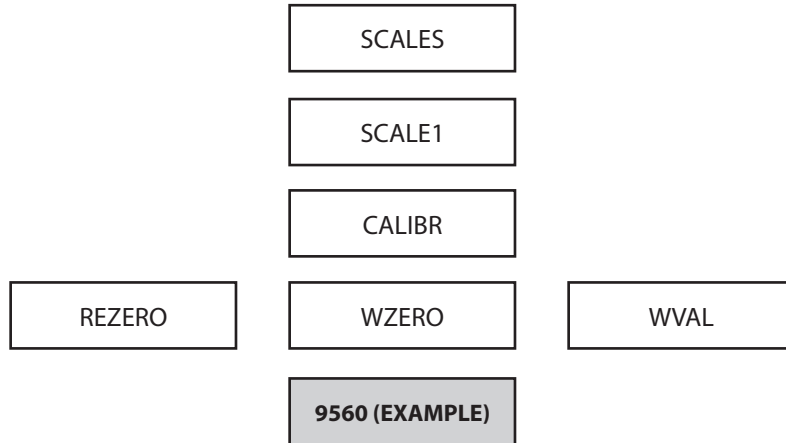
Step 18:

Press the down arrow key once. This displays the "DEADLOAD CALIBRATION" menu. "WZERO" is highlighted.



Step 19:

“WZERO” is where you set the ZERO calibration point. Press the down arrow key. The highlighted box represents the A/D count for ZERO load value.

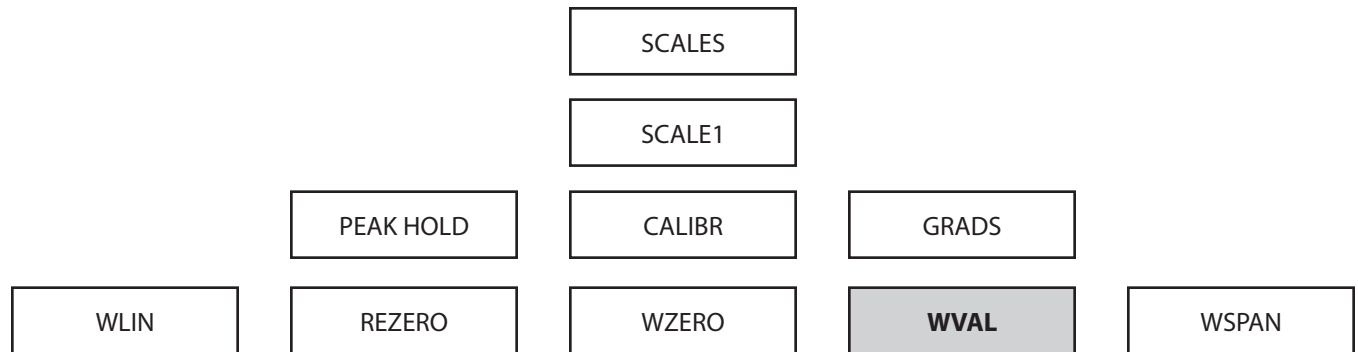


Step 20:

Float the piston approximately 3/16” (4.7 mm). Put the control valve in the metered advance position with the flow control valve open approximately half a turn. Press the “CALIBRATE” soft key along the bottom of the display. The display reads “CALIBRATING ...” DEADLOAD CALIBRATION for several seconds. When the word “CALIBRATING...” disappears from the screen, a new A/D count will appear in the highlighted box. The Zero calibration point and corresponding A/D count have now been stored.

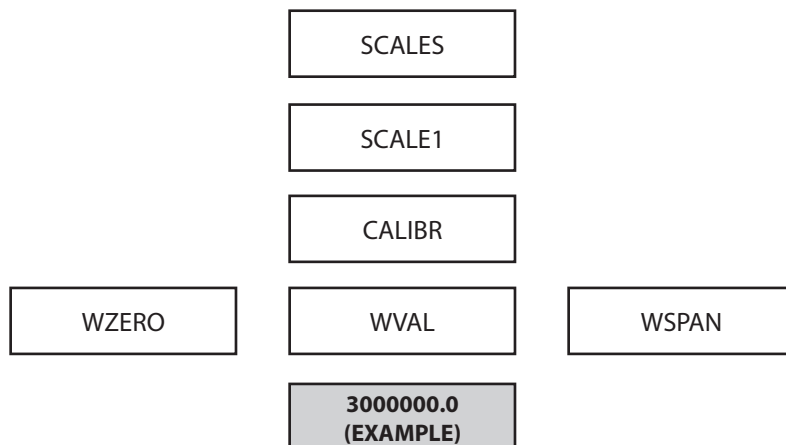
Step 21:

Press the Print key. This returns the display to the “DEADLOAD CALIBRATION” menu. “WVAL” is highlighted.



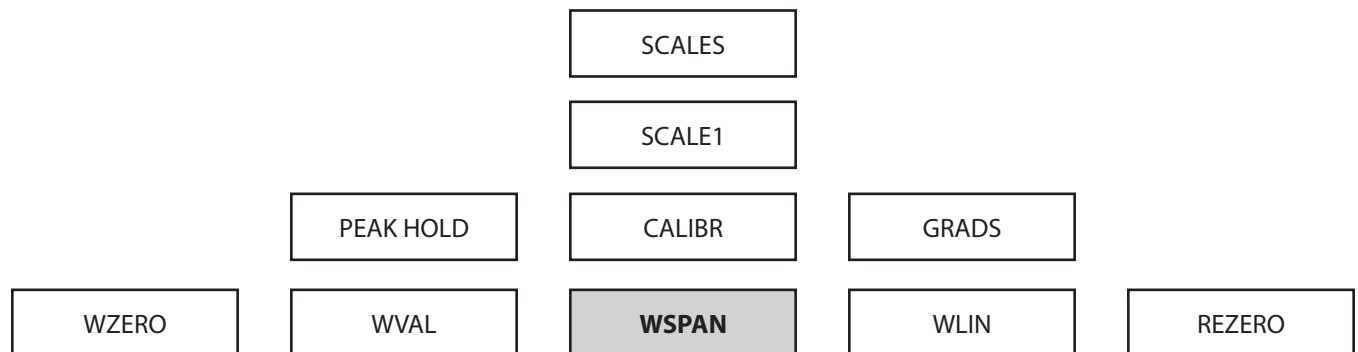
Step 22:

WVAL represents FULL SCALE or the capacity of the machine. To enter full scale, press the down arrow key.



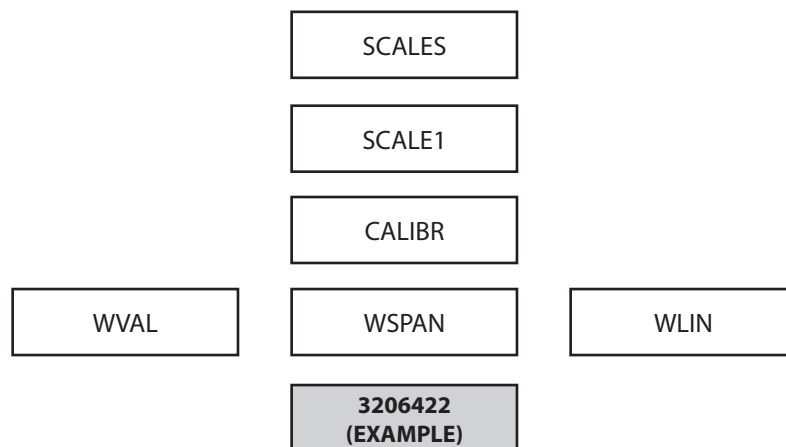
Step 23:

Use the keypad to enter the FULL SCALE or CAPACITY of the machine. Press the Print key to accept the value. The display will say "Value Accepted" and "WSPAN" will be highlighted.



Step 24:

Press the Down Arrow key. The highlighted box represents the A/D count for FULL SCALE load value.



Step 25:

Run the machine up to full capacity. Once full capacity has been reached, press the "CALIBRATE" soft key along the bottom of the display. The display reads "CALIBRATING ..." SPAN CALIBRATION for several seconds. When the word "CALIBRATING..." disappears from the screen, a new A/D count will appear in the highlighted box. The FULL SCALE calibration point and corresponding A/D count have now been stored. Press Print.

Step 26:

Press the Up Arrow key until "SCALE 1" is highlighted. Press the Save and Exit soft key located along the bottom of the display. The display will now read "**STANDBY* SAVING CONFIGURATION", and then will return to the testing screen.

Done. Ready to verify calibration.

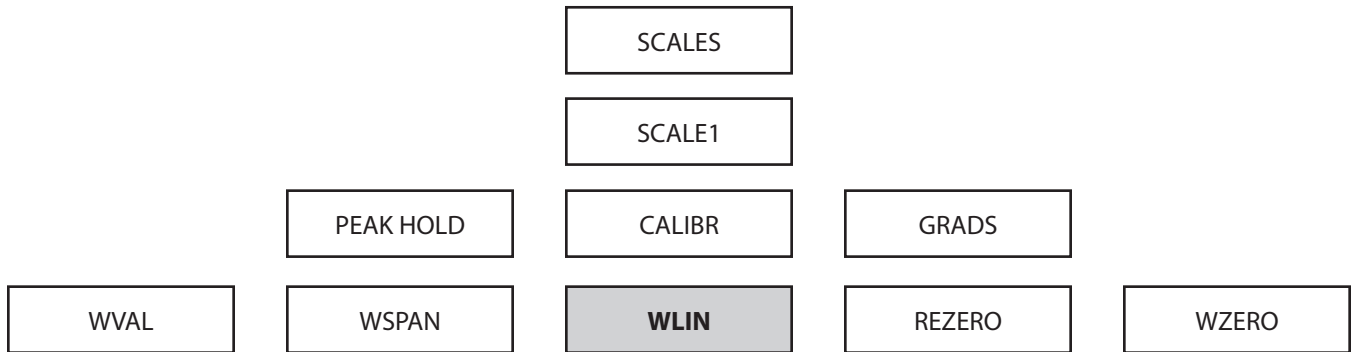
To verify calibration accuracy, load machine to specific load points and compare the reading on the Indicator with those of the load cell standard.

6.0 FIVE-POINT LINEAR CALIBRATION

After setting "0" and FULL SCALE and verifying the calibration, adjustments to the calibration can be made in the 5 Point Linear Calibration program. To access the Linear Calibration program, repeat Calibration Instructions steps 1 through 7. "WZERO" will be highlighted.

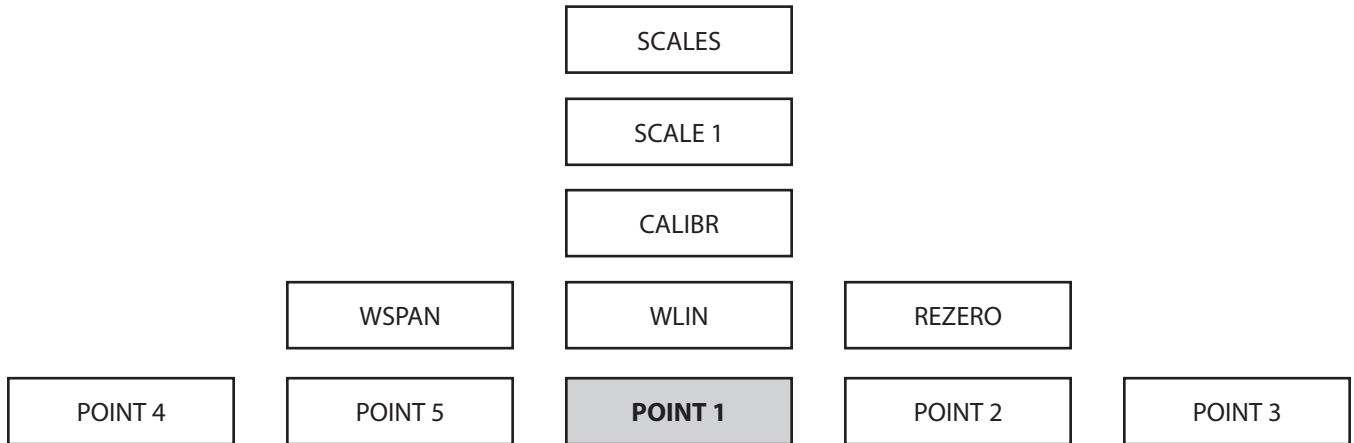
Step 1:

Press the Left Arrow key 2 times until 'WLIN" in highlighted.



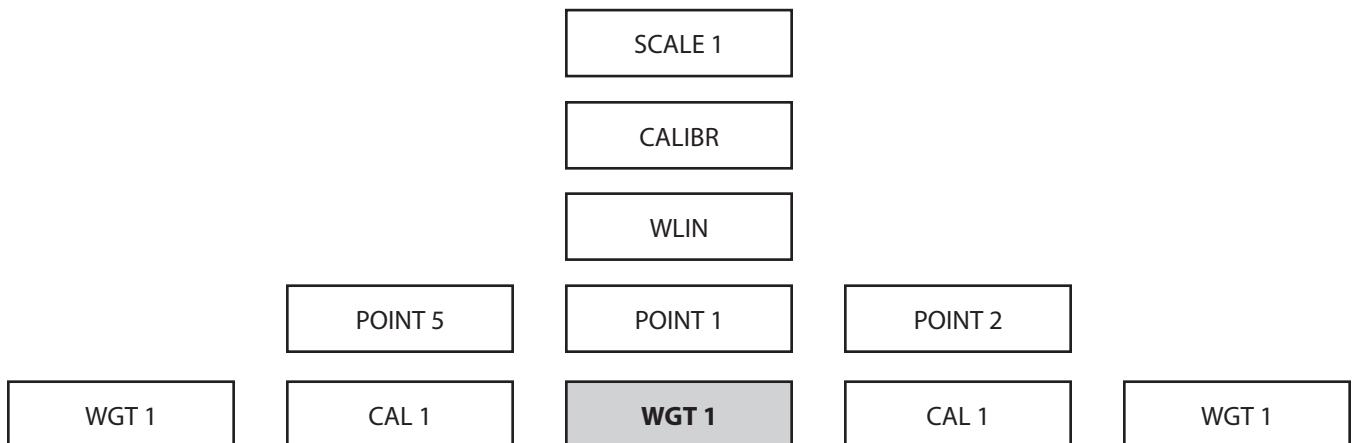
Step 2:

Press the Down Arrow key. "POINT 1" will be highlighted.



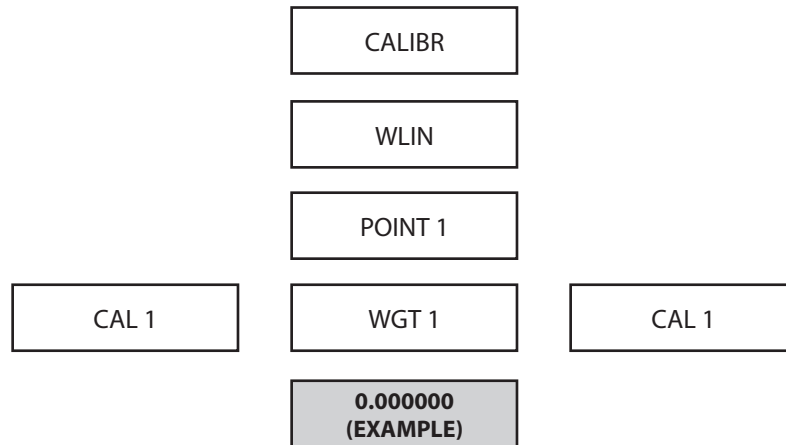
Step 3:

Press the Down Arrow key. "WGT 1" will be highlighted.



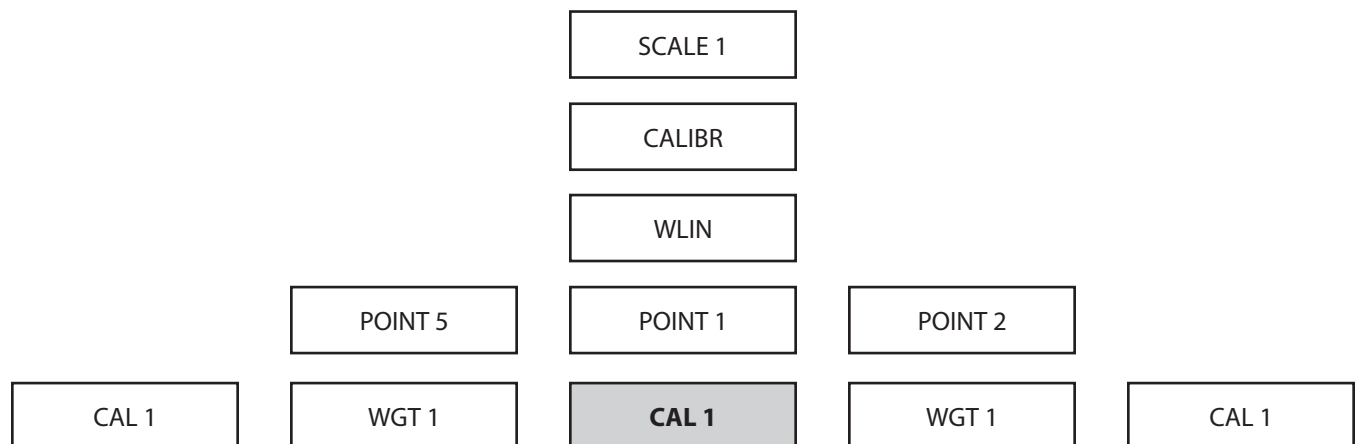
Step 4:

Press the Down Arrow key. The numbers in the highlighted box represent Point 1 value.



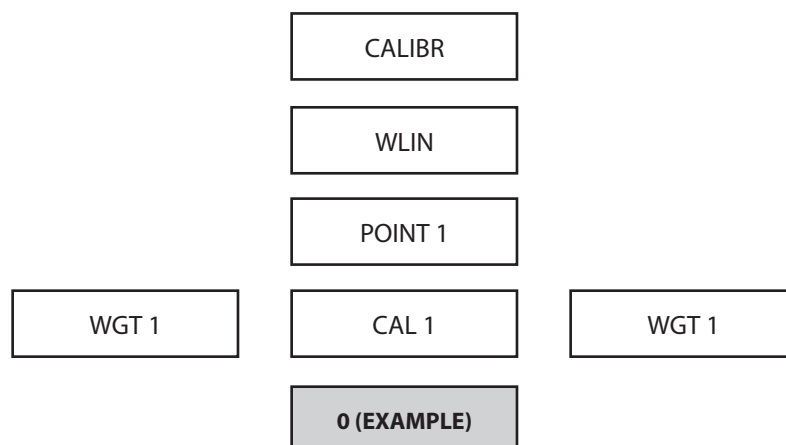
Step 5:

Using the Number keys, enter the value for the first calibration point. Press the Print key to set the value. The display will read "Value Accepted" and "CAL 1" will be highlighted. Note: You can not use "0" or "FULL SCALE" as a value in the 5 Point Linear Calibration program.



Step 6:

Press the Down Arrow key. The number in the highlight box represents the A/D count for point 1

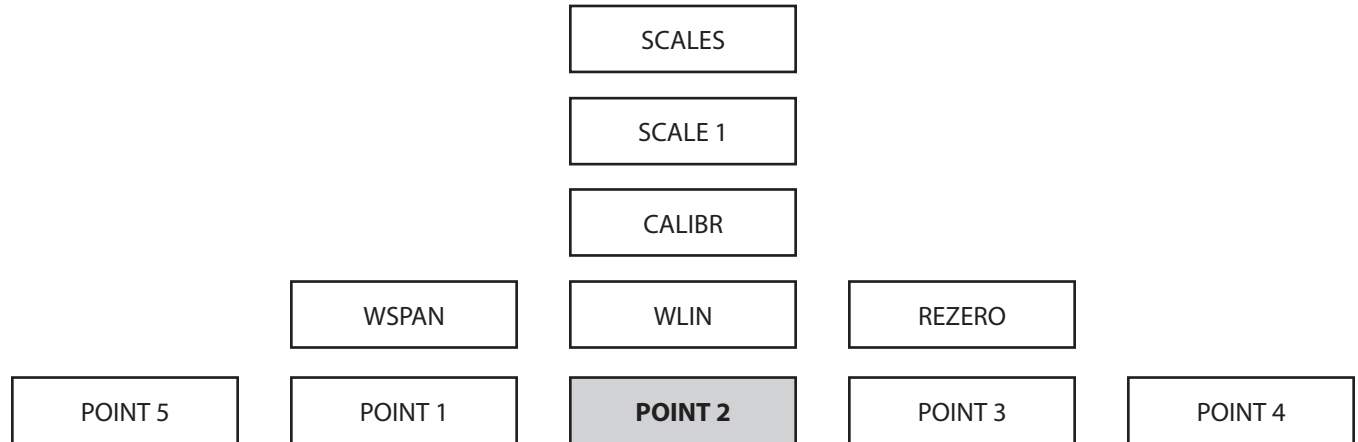


Step 7:

Advance the machine until you have a load applied to the machine that is equal to the number keyed in as point 1. Press the "CALIBRATE" soft key located along the bottom of the display. The display will say "CALIBRATING" LINEAR POINT 1. The number displayed in the highlighted box represents the new A/D count for point 1.

Step 8:

Press the Up Arrow key 2 times until "Point 1" is highlighted. Press the Right Arrow key to move to Point 2.



Step 9:

Repeat steps 3 through 8 to set points 2, 3, 4 and 5.

NOTE: "0" and FULL SCALE cannot be used in the 5 Point Linear Calibration Program.

Step 10:

After all 5 point have been stored, press the Up Arrow key until "SCALE 1" is highlighted, then press the "SAVE AND EXIT" soft key along the bottom of the display.

Step 11:

To verify calibration accuracy, load machine to specific load points and compare the reading on the Indicator with those of the load cell standard. To improve accuracy you can adjust any linear point up or down. Refer back to steps 3 and 4. Adjust the settings under "WGT 1" by slightly increasing or decreasing the value.

NOTE: If "0" is reset in the span calibration, the 5-point linear calibration will be erased.

i720 CONTROLLER LICENSE AGREEMENT

This is a legal agreement between you, the end user, and Gilson Company, Inc. (The Company). By using the i720 Controller, you are agreeing to be bound by the terms of this agreement.

- 1.0 License Grant. The Company hereby grants the end user a personal, nontransferable and non exclusive license to use one copy of the software/firmware and related documentation on a single indicating system.
- 2.0 Intellectual Property Rights. The Company is the sole owner of all right, title and interest to the i720 and all copyrights, trademarks, and trade secrets therein. United States copyright laws and international treaty provision protect The Company. Therefore, the end user must treat the software/firmware like any other copyrighted material and may not copy the written materials accompanying the i720.
- 3.0 Restrictions. This Agreement and the Licensed Software/Firmware may not be assigned, Sub-licensed or otherwise transferred by the Customer. The end user must not reverse engineer, decompile or disassemble the Licensed Software/Firmware or attempt to do so. The Licensed Software/Firmware may not be modified without the written consent of The Company.
- 4.0 Termination. The Company may terminate the license contained in this Agreement by written notice upon any breach of any term by the end user. Upon termination, the end user shall immediately return the i720 to the factory. Section 2.0 of this Agreement shall survive termination of this Agreement.
- 5.0 Purchases by Governmental Agencies. If the end user is a federal, state or local government agency or unit, then as a matter of contract, the end user will accord The Company and the Licensed Program the same rights The Company would have had under the Copyright Act of 1976, as amended.
- 6.0 Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the State of Ohio.

STATEMENT OF WARRANTY

Gilson Company, Inc. warrants this concrete compression machine against defects in workmanship and materials for a period of 24 months from the original date of shipment, provided the equipment has been properly installed, maintained and operated in accordance with installation and operating instructions. This limited and exclusive remedy does not cover normal wear and tear. The Gilson Company, Inc. manufactured product must be free from accident, damage by fire, water or act of God to be eligible for warranty.

Gilson Company, Inc. will repair, replace or credit at Gilson Company's option, defective product or component parts. When repair can be accomplished by exchange of a component part, the customer may be required to remove the part of modular component and install the exchanged part.

Warranty does not cover expenses, either direct or indirect, that may arise from the use or the inability to use Gilson Company, Inc. products, or the secondary owner in the event of resale.

Products not manufactured by Gilson Company, Inc. will carry the warranty of the original manufacturer. Under no circumstances shall Gilson Company, Inc. be liable for any injury, loss, or damages, whether direct or indirect, incidental or consequential, arising out of the use of, or inability to use the products described herein.

This exclusion of liability for loss or damages, whether direct or indirect, incidental or consequential, shall apply to all claims whether sounding in contract, warranty, tort including both negligence and strict liability, or any other basis of liability.

**HYDRAULIC CONTROL VALVE
&
HYDRAULIC PUMP SECTION**

7.0 HYDRAULIC CONTROL VALVE

7.1 Metered Advance Position

Placing Control Handle No. 1 (see Figure 1) into the metered advance position allows the operator to adjust the rate of loading through the use of Control Knob No. 2. To increase the rate of loading, turn Knob No. 2 counter-clockwise. To decrease the rate of loading, turn Knob No. 2 clockwise.

CAUTION: Do not over-tighten Control Knob No. 2.

When testing concrete cylinders, the rate of loading must conform to ASTM C 39 specifications. For a hydraulically operated testing machine, the load must be applied at a constant rate within the range of 20—50psi/sec. Knob No. 2 controls the rate of loading. For 6in (150mm) diameter concrete cylinders, the loading rate should be 565—1,413lbs/sec., or 34,000— 84,000lbs/min.

Please see section 2.0 for digital controller instructions.

7.2 Full/Advance Position

Placing Control Handle No. 1 into the rapid advance position causes the piston to advance rapidly at an uncontrolled rate. This is normally used for pre-loading a specimen or rapidly advancing the piston to reduce the daylight opening between the specimen and the platen.

CAUTION: When pre-loading a specimen, watch the machine's load indicator to prevent overloading, or premature failure of the specimen may occur.

WARNING!

DO NOT ALLOW THE MACHINE TO TRAVEL BEYOND THE MAXIMUM PISTON STROKE TAG LOCATED ON THE FRONT OF THE LOAD FRAME. OVEREXTENDING THE HYDRAULIC RAM MAY RESULT IN DAMAGE TO THE SEALS AND WILL CAUSE THE UNCONTROLLED RELEASE OF HYDRAULIC FLUID UNDER PRESSURE.

See section on O-Ring Replacement for instructions to reseal an over-extended piston.

7.3 Hold Position

Placing Control Handle No. 1 into the hold position (see Figure 1) stops the loading of the specimen and holds the pressure on the specimen at that point.

7.4 Retract Position

Placing Control Handle No. 1 into the retract position releases all pressure in the hydraulic cylinder allowing the piston to retract to its start position. It is not necessary to retract the piston fully between tests. A daylight opening that will allow the specimen to be inserted and removed is all that is required.

NOTE: During continuous operation of the machine, the Flow Control Valve will go through a significant temperature rise. This is not a cause for alarm, as the temperature rise will not affect the operation of the testing machine.

7.5 Figure 1: Control Valve

CONTROL VALVE

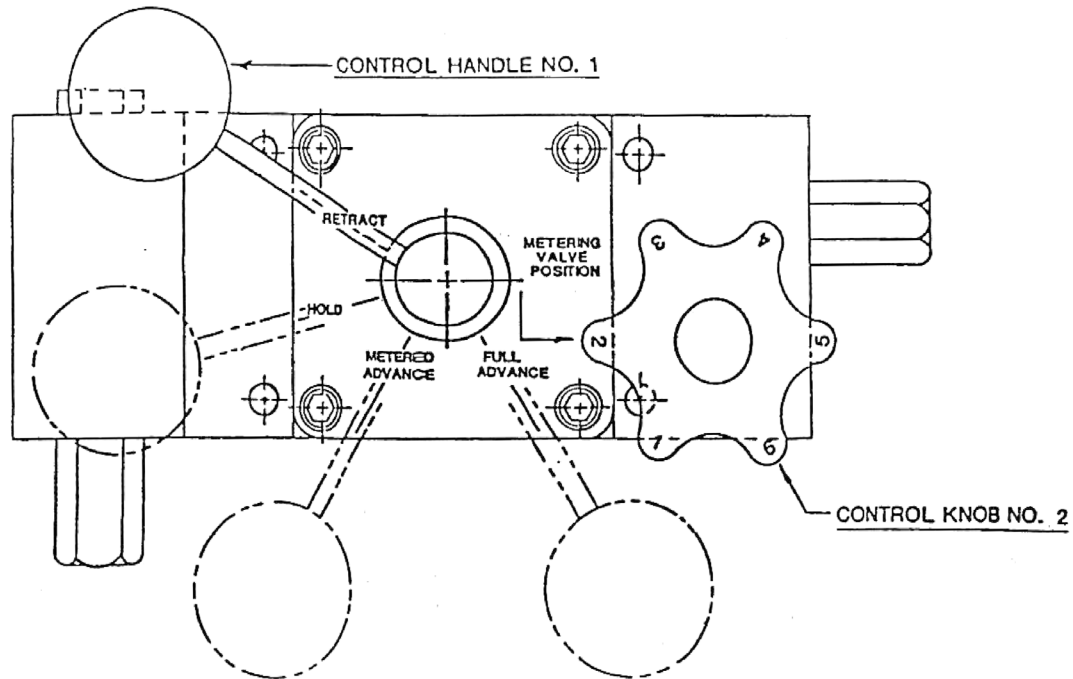


Figure 1

7.6 Sequence of Operation

1. With Pump Motor switched OFF, carefully center specimen in testing machine.
2. Turn Control Knob No. 2 clockwise to a snug position. Never over tighten. (If Knob No. 2 has already been adjusted as in Section 6.1, this step may be skipped until a specimen of different size is tested.)
3. Position Valve Control Handle No. 1 to a "metered advance" position.
4. Switch on pump motor.
5. If a preload of the specimen is desired, position Valve Control Handle No. 1 to "full advance". **Caution is required to avoid overload or failure of the specimen.**
6. Watch the display closely. When the desired preload has been attained, move the Valve Control Handle No. 1 to the "metered position".
7. To increase the rate of loading, turn Control Knob No. 2 counter-clockwise. To decrease the rate of loading, turn Control Knob No. 2 clockwise.
8. To hold pressure at any desired point, position Valve Control Handle No. 1 to the "hold" position.
9. To release pressure so that the platen will return after a test has been completed, position Valve Control Handle No. 1 to the "retract" position.
10. For repetitive testing of identical specimens, Control Knob No. 2 can be preset with a stopwatch, then locked in position by tightening the thumbscrew located beneath the knob.

7.7 Maintenance & Safety Precautions

7.7.1 Hydraulic Pump & Flow Control Valve

This two-stage hydraulic pump incorporates precision design and engineering features. Peak efficiency for either continuous or intermittent operation is assured at the full range of pressures up to 10,000psi. You will have uninterrupted, trouble-free service if you keep it clean and free of dust.

7.7.2 Safety Precautions

WARNING!: To avoid possible injury:

- Disconnect the pump from its electrical supply before performing maintenance or repair procedures.
- Repairs and maintenance should be performed in a dust-free area by a qualified technician.
- Should a hydraulic hose ever rupture, burst or need to be disconnected, immediately shut off the pump and shift the control valve to the retract position to release all pressure and allow the machine piston to return to the at-rest position. Cycle the control valve twice to its retract position to make sure all pressure is released. **Never attempt to grasp a leaking hose under pressure with your hands. The force of escaping fluid could cause serious injury.**
- Do not subject the machines hydraulic hoses to potential hazard such as fire, extreme heat or cold, sharp surfaces or heavy impact. Do not allow the hose to kink, twist, curl or bend so tightly that oil flow within the hose is blocked or reduced.
- Periodically inspect the hoses for wear because any of these conditions can damage the hose and possibly result in personal injury. Should a hose need replaced, contact Gilson Company, Inc. with your machine model number and capacity for replacement parts.

7.7.3 Hydraulic Fluid Level

- When checking the oil level, fully retract the machines hydraulic cylinder to the at-rest position and disconnect the power supply. Clean the area around the filler plug and remove the plug.
- For machines supplied with 3/4hp pump, maximum capacity is when the oil is 1-1/2in (38mm) below the cover plate with the cylinder retracted.
- For machines supplied with 1/2hp pump, maximum capacity is when the oil is 2in (50mm) below the cover plate with the cylinder retracted.
- When adding oil, use only **Dexron II or Dexron III Automatic Transmission Fluid**. To fill, insert a clean funnel with filter, add oil slowly being careful not to overfill the pump. Check oil level when finished and remove any oil if pump is overfilled. Check to see that the breather-hole in the filler cap is open to prevent the build up of excessive air pressure in the reservoir, and to assure that the cylinder retracts smoothly, then replace filler cap.
- The frequency of oil changes will depend upon the general working conditions, severity of use and overall cleanliness and care given to the testing machine and the hydraulic pump. An air hose should never be

used to clean the machine or pump as it will blow dust into the hydraulic system and cause damage to the hydraulic pump and load control valve. The oil should be changed at least every three hundred (300) hours of use under severe working conditions, where dust contamination of the oil is quite likely to happen. When changing the oil drain, flush and refill the reservoir with Dextron III Automatic Transmission Fluid.

7.7.4 How to Operate the Pump

1. Make sure all valve and hose fittings are tight. Plug in electric motor.
2. Set valve in the retract position, set switch on run, and let pump idle for a few minutes.
3. Place a concrete test cylinder in the machine and run piston out to its full travel several times to eliminate air from the system. The pump is now ready to be put into regular operation.

7.7.5 Hydraulic Piston O-Ring Replacement

Supplies Required

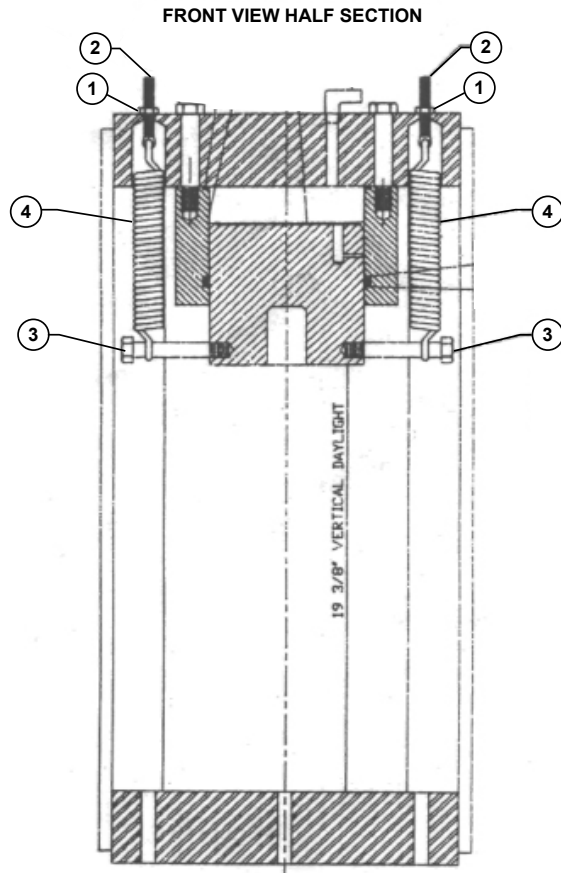
- Wrenches
- Clean rags
- Extra fine emery paper
- Dexron II or Dexron III

Procedure

1. Remove the spherically seated cylinder platen out of the piston. Remove the lower platen off the bottom crosshead.
2. Place a 6x12in concrete cylinder inside the load frame. You will use it to set the piston on.
3. Place a rag under the hydraulic hose fitting on the flow control valve mounted on top of the pump.
4. Loosen the hydraulic hose fitting. You do not need to remove the hose, just loosen it to break the air lock.
5. On the top of the machine, loosen the 3/8in nuts (Part 1) to the end of the tension rod threads (Part 2) and stop. Refer to Figure 1 on page 2.

CAUTION: Do not remove the nuts.

6. Place one hand on each bolt (Part 3) and push the piston down about 2in. Remove both bolts (Part 3) out of the piston return springs (part 4).
7. Put the bolts back into the piston. Carefully, with one



hand on each bolt, push the piston out of the cylinder. Set it on top of the concrete cylinder and then carefully remove it from the load frame.

CAUTION: Be careful not to drop the piston.

8. Wipe out the inside of the cylinder with a clean rag.
9. Look up inside the cylinder for a groove cut in the side of the cylinder. Insert a small blade screwdriver into the groove and carefully remove the white back-up ring and black O-ring.
10. Use a clean rag to clean out the o-ring groove.
11. Stretch the black O-ring over the piston to shape it for easier insertion into the cylinder.
12. Push the new o-rings into the cylinder. Place the black O-ring ABOVE the white back-up O-ring in the same groove.
13. Make sure the O-rings are fully seated in the groove.
14. Wipe the bottom half of the cylinder and new o-ring with clean Dextron II or Dextron III.

15. Inspect the piston for scratches. If any are present, buff them off with extra fine emery paper, then wipe clean.
16. Clean the piston with a clean rag then coat the end of the piston with Dextron II or Dextron III.
17. Center the piston over the cylinder opening. Keeping it level, re-install the piston into the cylinder.

NOTE: If you don't keep the piston level, it will be very hard to get it back inside the cylinder.

18. Place a block of wood or similar under the piston to hold it up inside the cylinder.

NOTE: Do not hold the piston up with anything that can damage it.

19. Remove both bolts (Part 3) out of the piston. Place the bolts through the ring on the end of the return springs (Part 4) and put them back into the piston. Tighten the bolts.
20. On the top of the machine, tighten both 3/8in nuts (Part 1). Alternate tightening equally, about 1/2in of thread each time until the nuts are tight and the piston has been pulled all the way back into the cylinder.
21. Check each bolt to see that you have an equal amount of thread used on each nut rod.

22. Re-tighten the hydraulic hose fitting on the flow control valve.

NOTE: Do not over-tighten the hydraulic hose fitting. Tighten it and then run the machine. Re-tighten it until it stops leaking.

23. Run the machine and check for leaks.

Call Gilson Technical Support with any questions or problems at 800.444.1508

Repair Parts

Model	Description	Part Number
MC-250	6in O-ring	RPMC-250-4
	6in split backup O-ring	RPMC-250-5

7.7.6 Troubleshooting

Correcting Minor Hydraulic Problems

The hydraulic unit should be observed constantly for out of the ordinary performance and unusual noises. If any of these are present, shut off pump and take corrective steps immediately to avoid possible expensive repairs later on. Some of the most common minor problems and their remedies are listed:

PROBLEM	CAUSE	REMEDY
Improper advance or return.	Air in circuit, oil supply low.	Add oil.
Improper advance or return.	Dirt in system causing valves to lock open.	Flush out entire oil system and fill with new oil.
Improper advance or return.	If trouble is not cleared up by above remedies, trouble may be due to dirty or plugged up strainer screen.	Drain oil. Next remove pump base cover and clean or replace screen.

CAUTION: Do not operate pump without screen, as particles of dirt will be sucked into pump and valve mechanisms, seriously damaging valve seats.

PROBLEM	CAUSE	REMEDY
Unable to reach pressure.	Same as above.	Same as above.
Necessary to add oil often.	Oil leaks.	Check for broken lines, loose fittings or connections.
Noise in hydraulic system.	Air in system. Low on Oil.	Add oil. Run pump to work out air.

If the above corrective measures fail to make the pump function properly, it is recommended that you notify Gilson Company, Inc. or a qualified service representative. Under no conditions allow unqualified personnel to attempt to repair the pump, particularly the pump block unit or control valve unit, as serious and irreparable damage may result.

8.0 ELECTRICAL HYDRAULIC PUMP

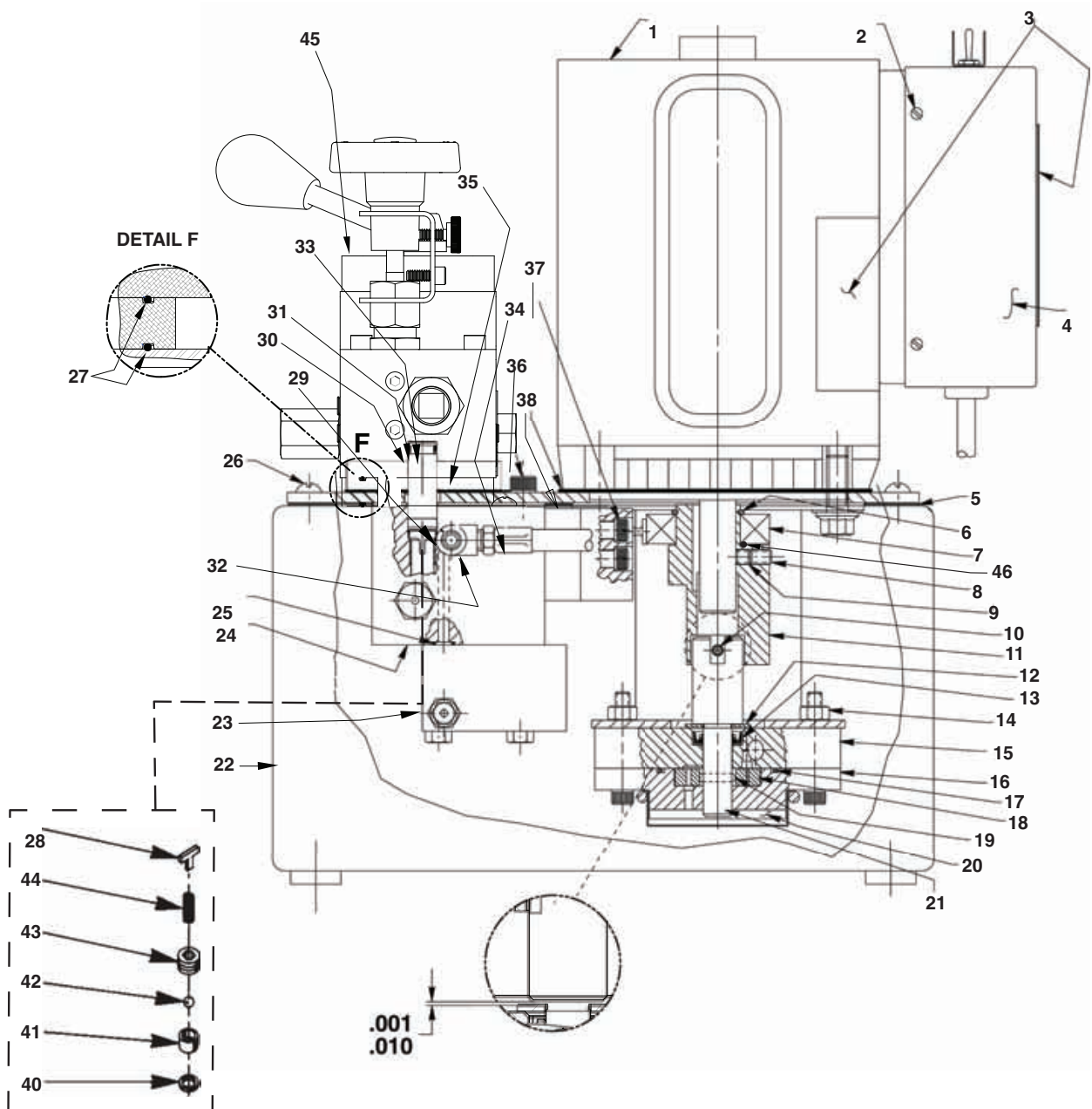


SPX Corporation
5885 11th Street
Rockford, IL 61109-3699 USA

Tech. Services: (800) 477-8326
Fax: (800) 765-8326

8.1 Pump Diagram

ELECTRIC HYDRAULIC PUMP Model B



8.2 Pump Parts List

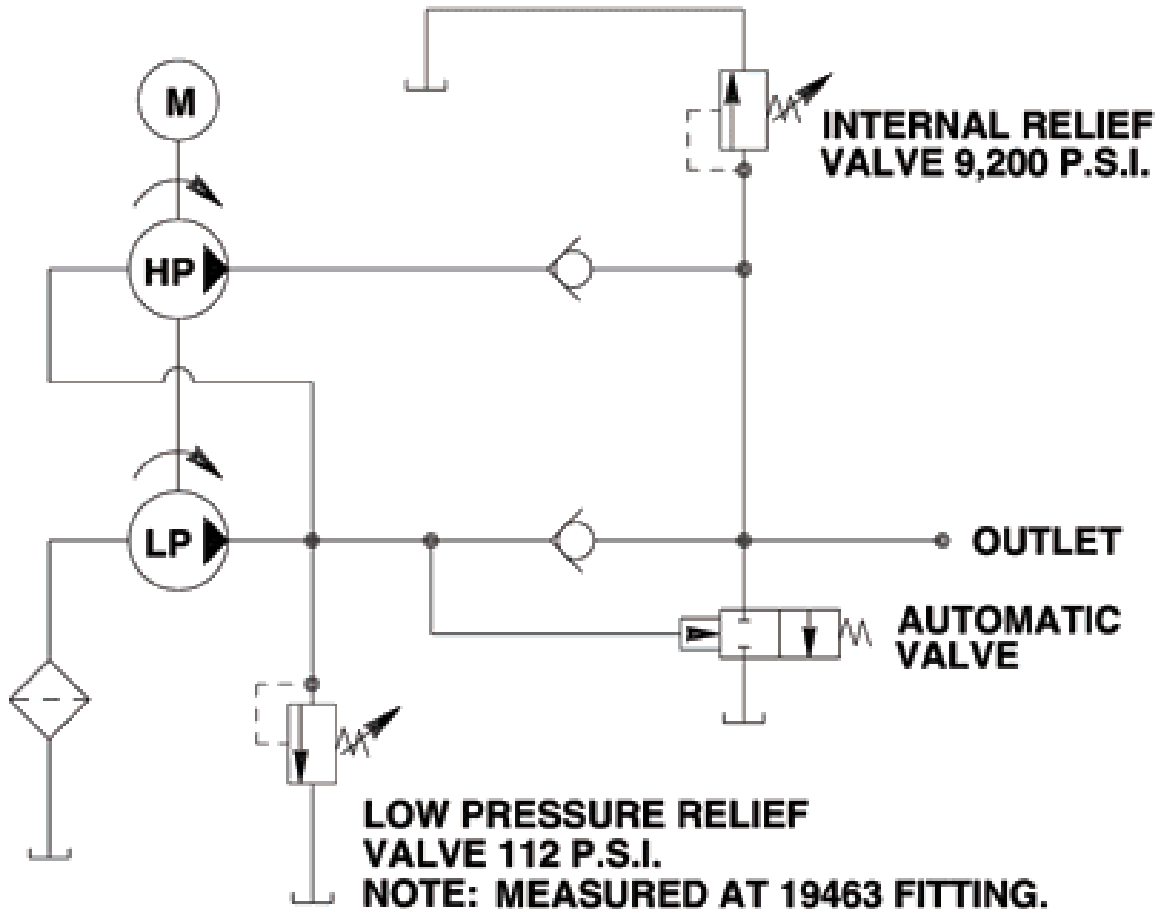


Item No.	Part No.	No. Req'd	Description
1	58196WH2	1	Electric Motor (For PE17-FORN & PE17-TEST)
	303912	1	Electric Motor (For PE17N-TEST)
2	11141	4	Machine Screw (#6-20 X 3/8 Lg.)
3	*200188	1	Decal (IMPORTANT portion is on electric motor; WARNING portion is on control box cover)
4	42576WH2	1	Control Box Cover (For PE17-FORN & PE17-TEST)
	42576BK2	1	Control Box Cover (For PE17N-TEST)
5	*40164	1	Gasket
6	209798	1	Retaining Ring
7	209805	1	Ball Bearing
8	10519	1	Set Screw (1/4-20 UNC X 3/8 Lg.; Torque to 60/80 in. lbs.)
9	10136	1	Set Screw (1/4-20 UNC x 1/4 Lg.; Torque to 60/80 in. lbs.)
10	10973	1	Slotted Spring Pin (NOTE: Locate slot as shown.)
11	45596	1	Eccentric
12	12595	1	Washer (1-1/8 X 1/2 X .077 Thk.)
13	*304830	1	Oil Seal
14	10199	2	Hex Nut (1/4-20 UNC)
15	61170	1	Housing
16	61169	1	Gerotor Housing
17	*10922	1	O-ring (2-1/8 X 1-15/16 X 3/32)
18	304826	1	Gerotor
19	209794	1	Gerotor Drive Pin
20	21846	1	Filter Support
21	304835	1	Drive Shaft
22	40063GY15	1	Reservoir (2 gal.; For PE17-FORN)
	40063BK2	1	Reservoir (2 gal.; For PE17-TEST & PE17N-TEST)
23	52167	1	Block
24	61167	1	Body
25	*10266	1	O-ring (3/8 X 1/4 X 1/16)
26	10177	10	Mach. Screw (1/4-20 UNC X 3/4 Lg.)
27	*18669	2	O-Ring
28	209795	1	Outlet Ball Stop
29	10427	1	Pressure Plug (1/8 NPTF)
30	*10268	2	O-ring (1/2 X 3/8 X 1/16)
31	*11863	2	Backup Washer (1/2 X 3/8 X 1/16)
32	19463	1	Tee
33	209809	1	Coupling
34	304819	1	Hose Assembly
35	52165	1	Manifold
36	10030	1	Cap Screw (5/16-18 UNC X 3/4 Lg.; Torque to 220/240 in. lbs.)
37	10022	4	Screw (1/4-20 UNC X 1-1/2 Lg.; Torque to 180/200 in. lbs.)
38	351060	1	Gasket
39	2007916	1	O-Ring
40	*10442	1	Copper Washer (1/4 Bolt)
41	*209787	1	Replaceable Seat
42	*12223	1	Steel Ball (3/16 Dia.)
43	209797	1	Hollow Lock Screw (7/16-20 UNF-3A; Torque to 110/130 in. lbs.)
44	*14431	1	Compression Spring
45	64529	1	Valve
46	2007916	1	O-Ring

Part numbers marked with an asterisk (*) are contained in Repair Kit No. 300430.

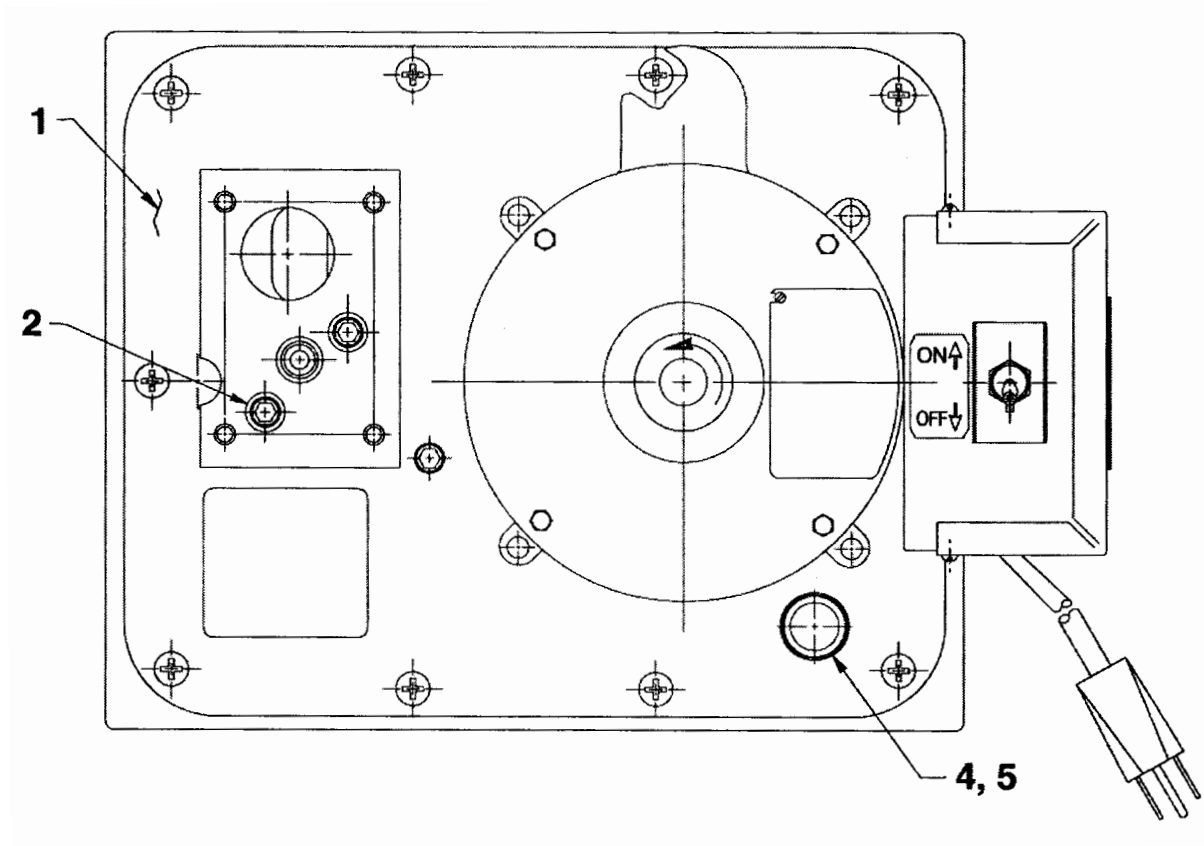
8.3 Hydraulic Schematic Diagram

HYDRAULIC SCHEMATIC



8.4 Top View & Parts List

TOP VIEW



PARTS LIST

Item No.	Part No.	No. Req'd	Description
1	66218BK	1	Cover Plate
2	10030	2	Cap Screw (5/16-18 UNC x 3/4 Lg.)
4	20937	1	Vent Cap
5	200415	1	Rubber Gasket

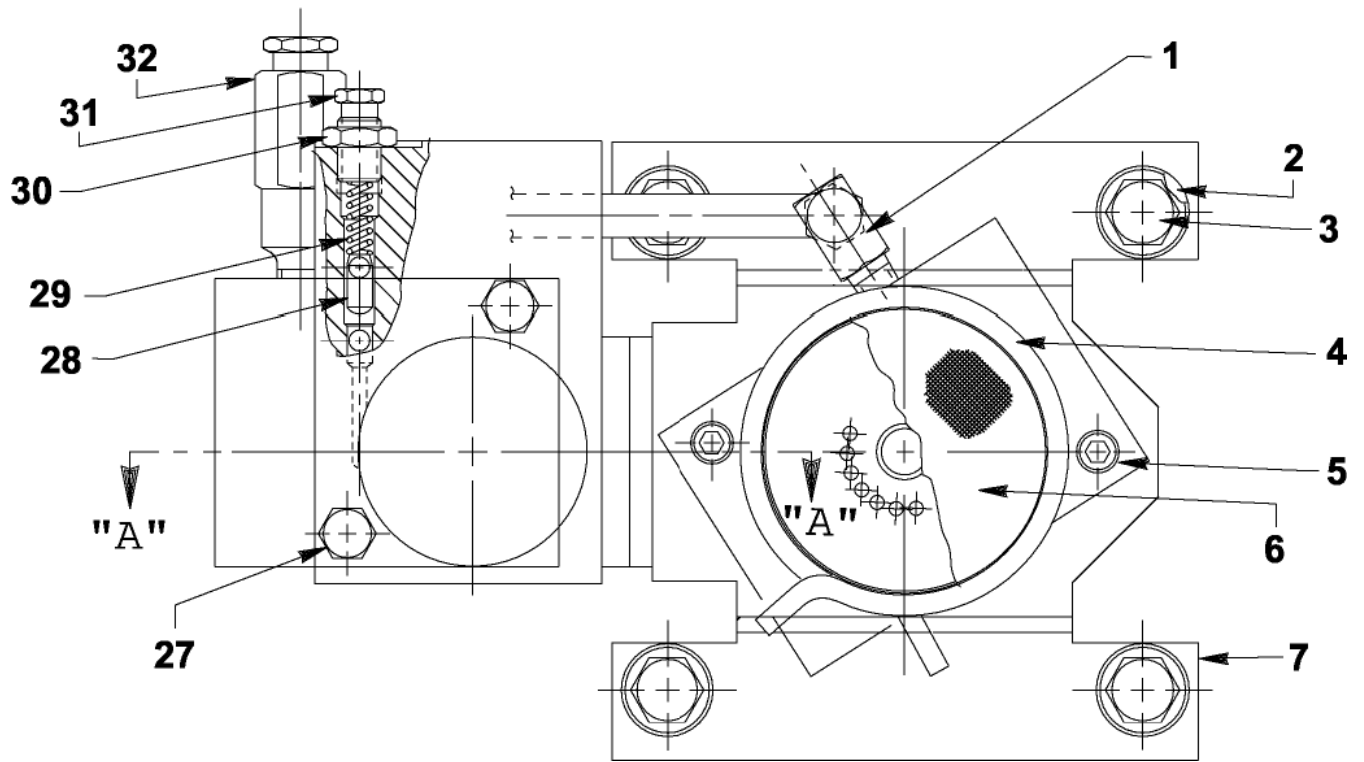
Refer to any operating instructions included with this product for detailed information about operation, testing, disassembly, reassembly, and preventive maintenance.

Items found in this parts list have been carefully tested and selected. **Therefore: Use only genuine Power Team replacement parts!**

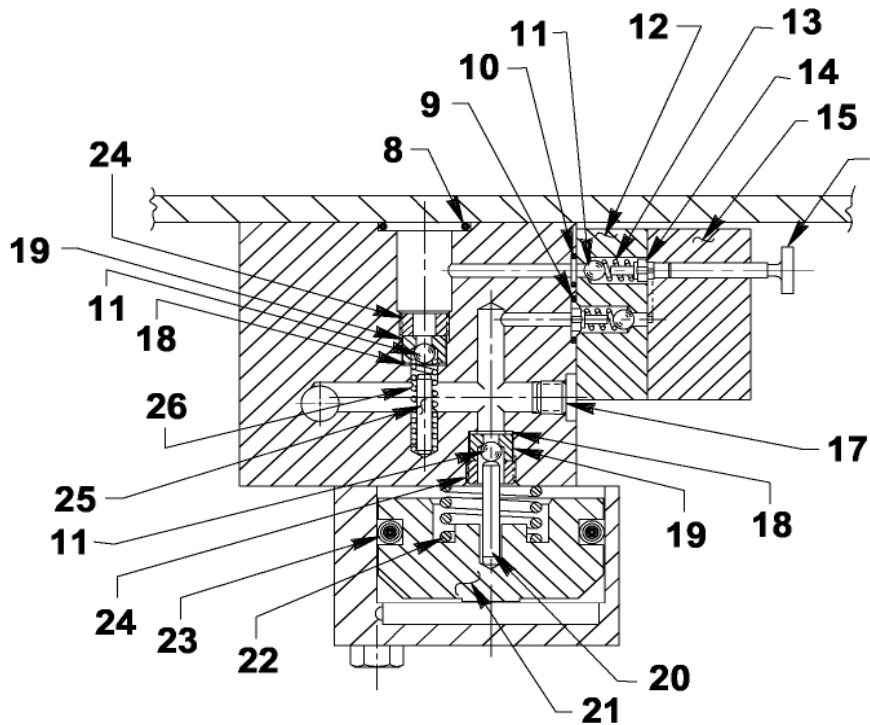
Additional questions can be directed to our Technical Services Department.

8.4.1 Bottom View & Section A-A

BOTTOM VIEW & SECTION A-A



SECTION A-A



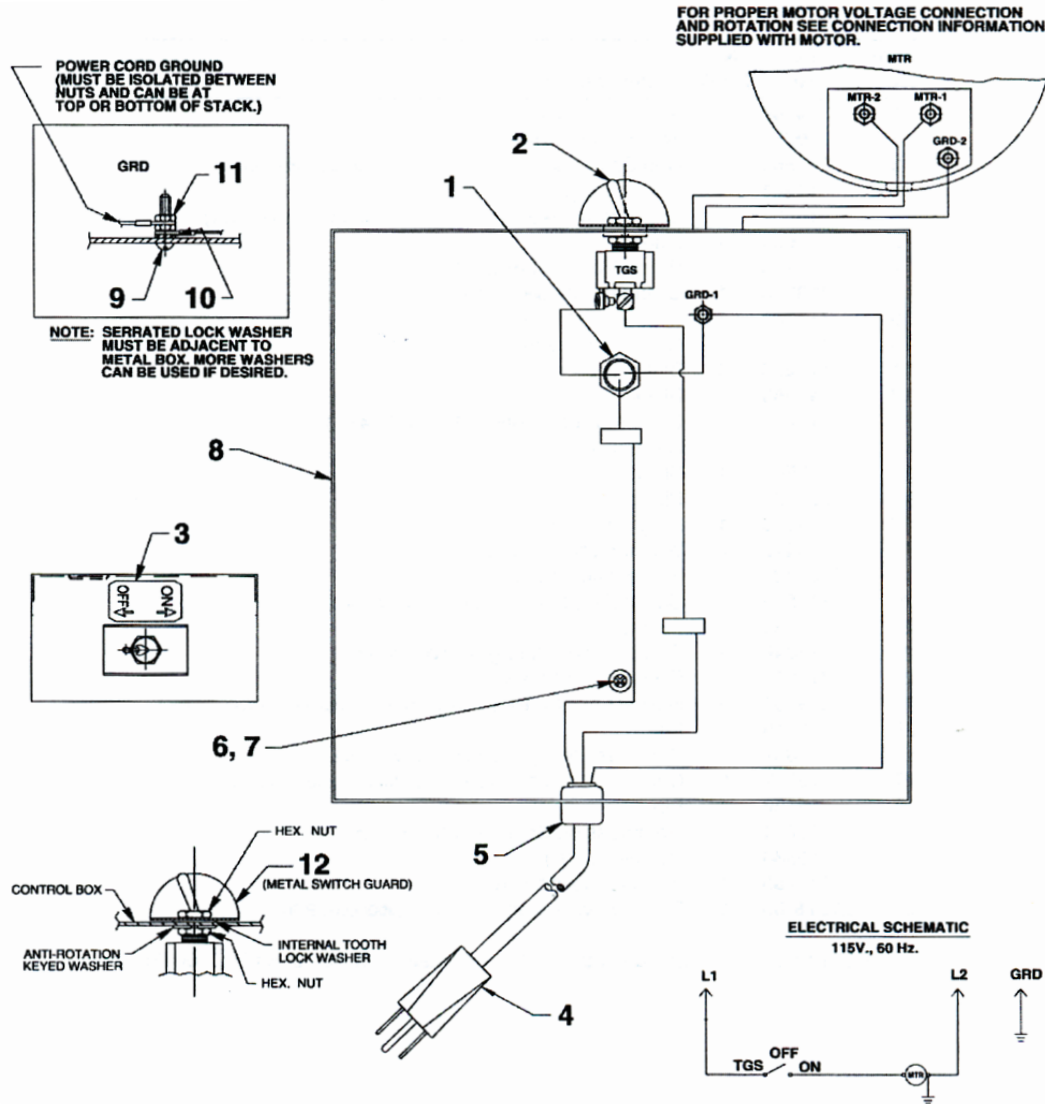
8.4.2 Bottom View Parts List

Item No.	Part No.	No. Req'd	Description
1	14440	1	90° Elbow Fitting
2	10258	4	Washer (For 3/8 bolt)
3	213663	4	Cap Screw (3/8-16 UNC x 1 in Lg.); (Torque to 230/250 in. lbs.)
4	11461	1	Hose Clamp
5	10854	2	Cap Screw (1/4-20 UNC x 1-3/4 Lg.); (Torque to 60/80 in. lbs.)
6	21608	1	Filter
7	52174	1	Pump Mounting Bracket
8	*10273	1	O-ring (13/16 x 5/8 x 3/32)
9	*14763	1	O-ring (7/16 x 5/16 x 1/16)
10	*10265	1	O-ring (5/16 x 3/16 x 1/16)
11	*12223	4	Ball (3/16 Diameter)
12	45559	1	Block
13	*10445	2	Compression Spring (5/32 O.D. x 3/4 Lg.)
14	24549	2	Ball Guide
15	45560	1	Block
16	304820	1	Piston
17	15130	1	Plug (1/16 NPTF)
18	*10442	2	Washer (3/8 x 1/4 x 1/32)
19	*209787	2	Replaceable Seat
20	211843	1	Dowel Pin (NOTE: Install with radius end out.)
21	46063	1	Piston
22	*16346	1	Compression Spring (1in O.D. x 7/8 Lg.)
23	*10283	1	O-ring (2in x 1-5/8 x 3/16)
24	209797	2	Hollow Lock Screw (7/16-20 UNF-3A; Torque to 180/200 in. lbs.)
25	12149	1	Pin
26	*16057	1	Compression Spring (3/16 O.D. x 1in Lg.)
27	13037	2	Cap Screw (1/4-20 UNC x 2in Lg.); (Torque to 40/50 in. lbs.)
28	15156	1	Pin
29	*11221	1	Compression Spring (1/4 O.D. x 1in Lg.)
30	10386	1	Nut (3/8-24 UNF)
31	*29786	1	Valve Adjusting Screw
32	21278-88	1	Relief Valve Assembly (Set at 8,900/9,500 PSI)

Part numbers marked with an asterisk (*) are contained in Repair Kit No. 300430.

8.4.3 Motor Control Assembly & Parts List

MOTOR CONTROL ASSEMBLY



PARTS LIST

Item No.	Part No.	No. Req'd	Description
1	11202	1	Nipple
2	12301	1	Toggle Switch
3	205409	1	On/Off Label Decal
4	24733	1	Cord Set
5	15993	1	Strain Relief Bushing
6	252253	1	Screw (#8-32 x 1/2 Lg.)
7	12355	1	Washer (For #8 bolt)
8	42575WH2	1	Electrical Control Box (For PE17-FORN & PE17-TEST)
8	42575BK2	1	Electrical Control Box (For PE17N-TEST)
9	10167	1	Screw (#10-24 UNC x 3/4 Lg.)
10	11108	1	Lock washer (#10 External Tooth)
11	10197	2	Nut (#10-24 UNC)
12	35206	1	Metal Switch Guard

9.0 TECHNICAL SUPPORT & POWER TEAM SERVICE CENTERS

If a problem should occur with your testing machine:

Call Gilson Company, Inc. Technical Support line at 800.444.1508 (8AM - 5PM EST) Monday - Friday or email us at techsupport@gilsonco.com



SPX Corporation
5885 11th Street
Rockford, IL 61109-3699 USA

Tech. Services: (800) 477-8326
Fax: (800) 765-8326
www.powerteam.com

10.0 STATEMENT OF WARRANTY

STATEMENT OF WARRANTY

Gilson Company, Inc. warrants new compression testing machines manufactured by Gilson Company, Inc. against defects in workmanship and materials for a period of 12 months from the original date of shipment, provided the equipment has been properly installed, maintained and operated in accordance with installation and operating instructions. This limited and exclusive remedy does not cover normal wear and tear. The Gilson Company, Inc. product must be free from accident, damage by fire, water or act of God to be eligible for warranty.

Gilson Company, Inc. will repair, replace or credit, at our option, defective product or component parts. When repair can be accomplished by exchange of a component part, the customer may be required to remove the part or modular component and install the exchanged part.

Warranty does not cover expenses, either direct or indirect, that may arise from the use or the inability to use Gilson Company, Inc. products, or the secondary owner in the event of resale.

Products not manufactured by Gilson Company, Inc. will carry the warranty of the original manufacturer. Under no circumstances shall Gilson Company, Inc. be liable for any injury, loss, or damages, whether direct or indirect, incidental or consequential, arising out of the use of, or inability to use the products described herein.

This exclusion of liability for loss or damages, whether direct or indirect, incidental or consequential, shall apply to all claims whether sounding in contract, warranty, tort including both negligence and strict liability, or any other basis of liability.