

MODEL 130 HYDRAULIC CONTROL MODULE

QUICK DIE CHANGE (QDC) & QUICK MOLD CHANGE (QMC)



N118 W18251 Bunsen Drive
Germantown, WI 53022
(262) 250-4410 • Fax (262) 250-4409

pfa-inc.com

Copyright ©2018 PFA, Inc. All rights reserved. Reproduction or use in any manner of editorial or graphic content herein without the express written permission of PFA, Inc. is strictly prohibited. Every effort has been made to ensure the information within this publication is complete and accurate at the time of printing.

**S3708 HC-130-ALL
REV A - 4/18**

TABLE OF CONTENTS

- 1. System Overview 4
- 2. Drawing: Model 130..... 5
- 3. Mounting Options 6
- 4. System Preparation..... 7
- 5. Die/Mold Exchange..... 8
- 6. Maintenance (Wear Safety Glasses)..... 9
- 7. Drawing: Hydro Schematic Model 130..... 10
- 8. Norgren Regulator Instructions..... 11
- 9. Electro Hydraulic Pressure Switches 13
- 10. Recommended Spare Parts..... 15
- 11. Major Component Index 15

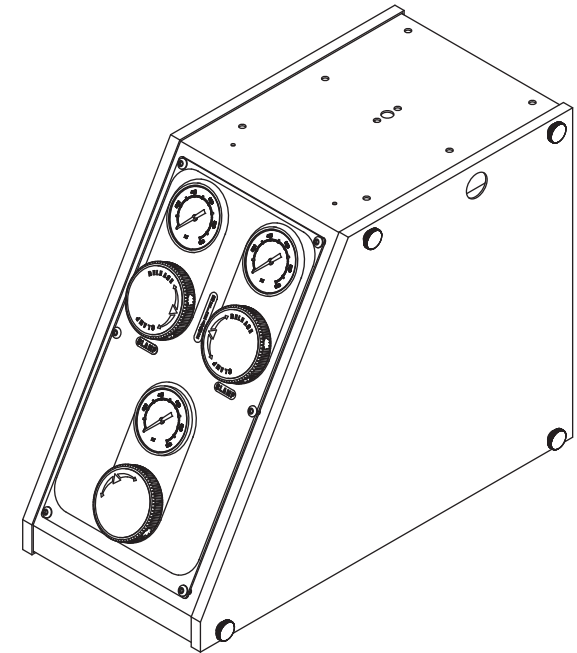
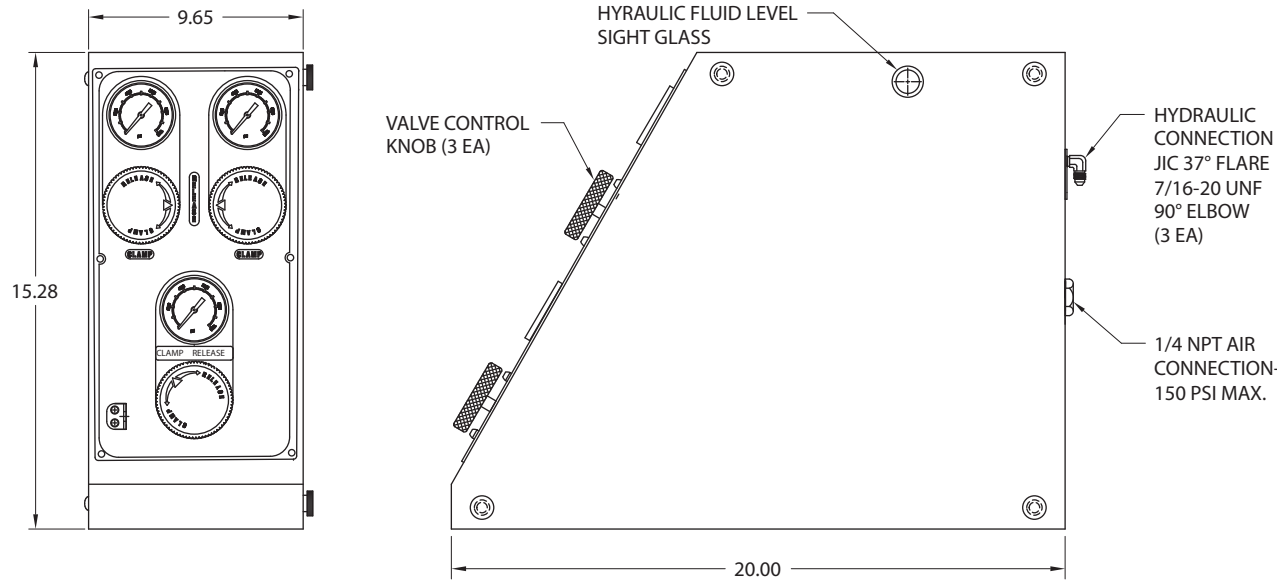
SYSTEM OVERVIEW

1. Shop (compressed) air is connected to the Hydraulic Control Module (HC).
2. Shop air at maximum pressure of 150 psi flows to a regulator, which is factory set to generate hydraulic pressure to 5000 psi. The regulator also contains a particulate filter and a water trap.
3. The regulated air then flows to a second regulator. It may, if necessary, be used to decrease air pressure and consequently hydraulic pressure.
4. The regulated air is connected to an "air over oil" hydraulic pump.
5. When air is applied and with all valve control knobs turned to the RELEASE position, the pump will run until the hydraulic pressure inside the HC is 5000 psi. The pump will then stall.
6. When the valve control knob on a hydraulic circuit is moved to the CLAMP position, the pump will run and hydraulic fluid will flow to the clamp and the clamp is actuated. When 5000 psi hydraulic pressure is achieved, the pump stalls. The pump will again run if hydraulic pressure drops.
7. Each hydraulic circuit contains a check valve located at the control valve. If a hydraulic line is cut, the (stalled) pump will run because the air/hydraulic pressure is not balanced, but the pump will be unable to maintain system pressure. The other hydraulic circuits will remain pressurized because each circuit is checked independently.
8. When the valve control knob of a pressurized hydraulic circuit is moved to the RELEASE position, the hydraulic fluid is allowed to return to reservoir bypassing the check valve.
9. A pressure gauge is attached to each hydraulic circuit and is visible on the face panel.
10. If the HC includes a Pilot Circuit (PC) the valve is double acting. When the valve knob is moved to the CLAMP position the clamps are actuated. When the valve control knob is turned to RELEASE the pilot circuit is pressurized to open the associated check valves, while at the same time allowing fluid in the clamp to return to reservoir.

1. The model 130 hydraulic pump is an air driven hydraulic power and control module which generates 5000 psi of hydraulic pressure.
2. The model 130 weighs 60 lbs. and has an oil reservoir capacity of 4 qts.
3. The model HC-130 may be provided ready for permanent mounting - called Stationary as HC-130S (threaded bolts on bottom) or HC-130B (includes model 385 mounting Bracket) or HC-130P (includes model 380-S Pedestal). The movable version is available on a Roll-Around stand with casters - HC-130R.
4. The model 130 includes a pressure gauge for each of the hydraulic circuits, an air filter/regulator set to generate maximum 5000 psi hydraulic pressure, an additional adjustable valve regulator, two hydraulic control knobs, oil refill port/breather cap on top, oil level sight glass, quick access side panel, 1/4 NPT air inlet fitting and 37° flare 7/16-20UNF 90° elbow outlet ports at the rear of the cabinet.
5. The model 130 with -HM includes a booster button (HM) for use with hydra-mechanical locking (L) clamps.
6. The model 130-PS includes a pressure sensor (PS) for hookup to press controls.
7. Stationary units (S, B, P) are provided with 10' hydraulic hoses - stationary install JIC 37 degree flare 7/16-20UNF JIC swivel fittings each end. Roll-Around (R) controllers have a 10' hose umbilical with quick disconnects.
8. Model HC-130 with -PC1 or -PC2 (Pilot Circuit) makes 1 or 2 valves double acting for release of "at clamp" check valves, if used.
9. Model HC-130 with -DL adds a relief valve to a dedicated circuit for use with Die Lifters.

CONFIDENTIAL: The information shown on this sheet is confidential. Permission to use, reproduce or transmit in any way not specifically authorized is expressly withheld.

DISCLAIMER: Illustrative drawings, CAD models, and information described herein is proprietary intellectual property of PFA, Inc., accurate to the company's knowledge at time of printing, and intended for reference only. Specifications are subject to change without notice. If the information obtained from this document is critical to a specific application, it should be confirmed by contacting PFA, Inc. PFA Terms of Sale apply.



9. Model HC-130 with -DL adds a relief valve to a dedicated circuit for use with die lifters.
8. Model HC-130 with -PC1 or -PC2 (pilot circuit) makes 1 or 2 valves double acting for release of "at clamp" check valves, if used.
7. Stationary units (S, B, P) are provided with 10' hydraulic hoses - stationary install JIC 37 degree flare 7/16-20 UNF JIC swivel fittings each end. Roll-around (R) controllers have a 10' hose umbilical with quick disconnects.
6. The model 130 with -PS includes a pressure sensor (PS) for hookup to press controls.
5. The model 130 with -HM includes a booster button (HM) for use with hydra-mechanical locking (L) clamps.
4. The model 130 includes a pressure gauge for each of the hydraulic circuits, an air filter/regulator set to generate maximum 5000 psi hydraulic pressure, an additional adjustable valve regulator, three hydraulic control knobs, oil refill port/breather cap on top, oil level sight glass, quick access side panel, 1/4 NPT air inlet fitting and 37° flare 7/16-20 UNF 90° elbow outlet ports at the rear of the cabinet.
3. The model HC-130 may be provided ready for permanent mounting - called stationary as HC-130S (threaded bolts on bottom) or HC-130B (includes model 385 mounting bracket) or HC-130P (includes model 380-S pedestal). The movable version is available on a roll-around stand with casters - HC-130R.
2. The model 130 weighs 60 lbs. Nominal and has an oil reservoir capacity of 4 qts.
1. The model 130 hydraulic pump is an air driven hydraulic power and control module which generates 5000 psi of hydraulic pressure.



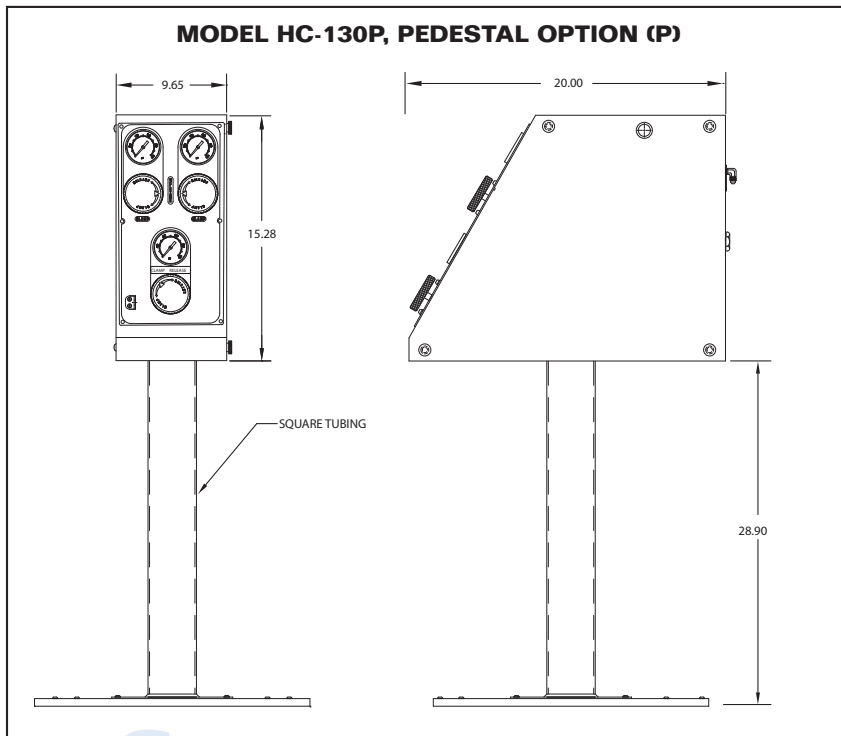
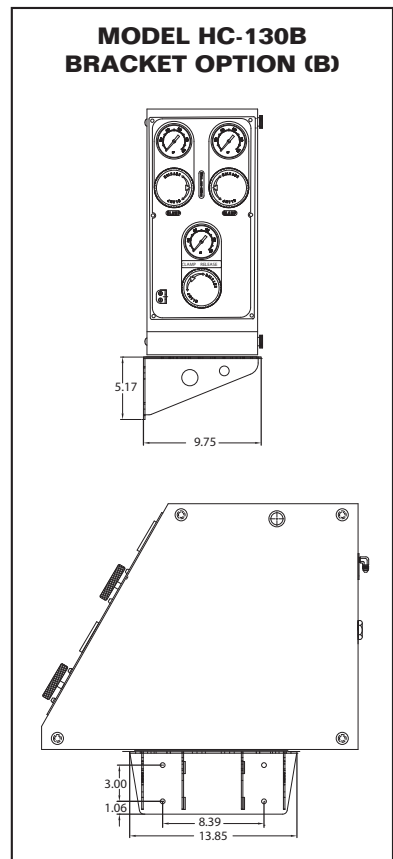
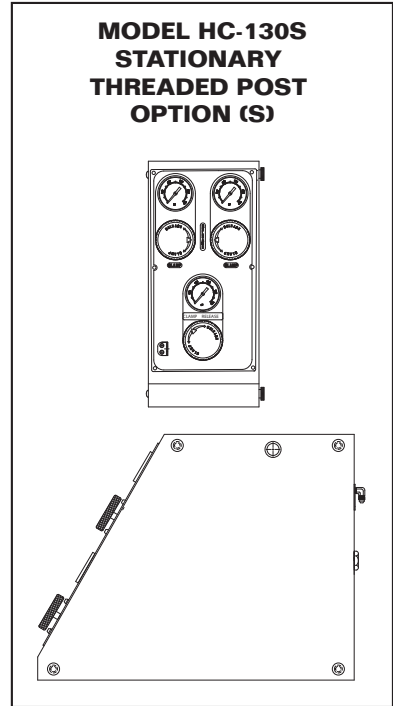
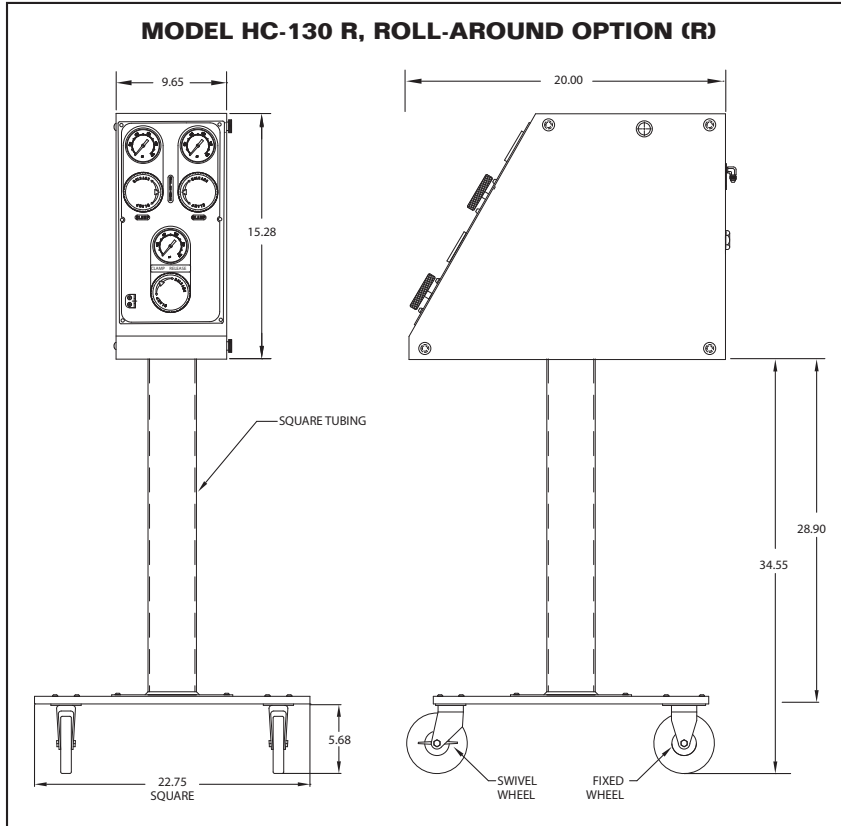
MODEL 130 HYDRAULIC PUMP

130

PAGE 1 OF 1

REV
-

MOUNTING OPTIONS



NOTE: Mounting options may be ordered separately:

- | | | |
|-----------------|------------|---------------|
| B = Bracket | Model 385 | Part #HE04081 |
| P = Pedestal | Model 380S | Part #HC01024 |
| R = Roll-Around | Model 380R | Part #HC01025 |

SYSTEM PREPARATION

1. The oil refill/breather cap port on top of the cabinet is shipped with a plug installed. Replace plug with enclosed breather cap.
Note: Breather Cap shipped inside cabinet.
2. Use enclosed funnel when adding PFA Model 312 Hydraulic Oil. Oil level may be seen through sight glass on side of cabinet.

Note: The Power and Control Module is shipped with one quart of fluid in the reservoir. Add fluid from plastic bottles before using.

3. Connect air and high pressure hydraulic hose(s) to outlet port(s) at rear of cabinet. Make sure color coding on hoses/manifold is matched if system is designed for more than one hose.
3. When clamps are actuated some of the hydraulic oil remains in the lines. Add oil as necessary.
5. Open cabinet door and check for leaks. Tighten any fitting which shows signs of leakage. Do not overtighten.
6. If pump runs but fails to generate hydraulic pressure, it may be necessary to bleed entrapped air (prime pump). Please refer to Maintenance Section or instructions attached to the inside of the removable panel/door.
7. The Power and Control Module may be placed on a suitable flat surface, on a pedestal or shelf bracket.
8. Connect pressure sensor (if used) to press control in accordance with page 12.

Note: Hydraulic plumbing on press/machine depends on the type of clamps used, hydraulic clamping safety employed and other devices which are connected to the system.

DIE/MOLD EXCHANGE

Please refer to instructions included with the hydraulic clamps, die lifters or other device to be operated. The following are general instructions.

1. To supply hydraulic pressure turn selected valve control knob, depending on application, to:
 - CLAMP Supplies hydraulic pressure to clamp. (QDC & QMC)
 - DIE LIFTER RAISE Supplies hydraulic pressure to die lifter rails. (QDC)
 - KO BAR RELEASE Supplies hydraulic pressure to release KO Bar Quick Connect/Disconnect device. (QMC w/KO)
2. To release hydraulic pressure turn selected valve control knob, depending on application, to:
 - RELEASE Shuts off hydraulic pressure to clamp and opens the valve so that hydraulic fluid can flow from the clamp to the reservoir. Clamps open by spring pressure. (QDC & QMC)
 - DIE LIFTER LOWER Shuts off hydraulic pressure to the die lifters and opens the valve so that fluid can flow from the die lifter to the reservoir. Die lifters recess by the weight of the die. (QDC)
 - KO BARS SECURE Shuts off hydraulic pressure to the KO Bar Quick Connect/Disconnect system and opens the valve so that hydraulic fluid can flow to the reservoir. KO Bars are secured. (QMC w/KO)
3. When double acting valves are used, turning valve control knob to RELEASE supplies power to the pilot (release) circuit. Pilot circuits (PC) are used to open check valves which are located in or near clamps. Also certain clamps use separate hydraulic pistons to retract. Note that the pressure gauge on the front of the Power and Control Module does not show hydraulic pressure when the pilot circuit is used. (Clamp opening is evidence of hydraulic pressure.)
4. Hydraulic Controllers used to power Locking (L) Hydro-Mechanical (HM) clamps also have a pressure booster button located on the front panel. When the pressure booster button is pressed the shop air flows through a regulator which is set to deliver hydraulic pressure at about 5500 psi. The pressure booster is only used (pushed for a few seconds) if the mechanical lock is difficult to open. (Note: HC output pressure varies a few percent depending upon final stall pressure. Boosting increases clamping to ensure locks rotate easily.)

Note: Always lock valve control knobs when a mold or die is secured with hydraulic only (NON-LOCKING) clamps.

MAINTENANCE (WEAR SAFETY GLASSES)

1. **TO ADD OIL.** Remove breather cap on top of the Power and Control Module. Use supplied funnel (make sure it is clean) and fill reservoir with the proper amount of PFA Model 312 Hydraulic Oil. Note: The Model 312 Oil is slightly blue and has a special anti-foaming agent. The formulation is compatible with all seals used in clamps.

Replace breather cap and store funnel in a clean place (inside cabinet is preferable).

2. **TO CHANGE OIL.** At recommended one year intervals drain oil from the Hydraulic Controller and refill with PFA Model 312 Hydraulic Oil. To drain reservoir do the following: Remove an oil return line at a valve. The plastic hose is connected to a press lock fitting and is easily removed by pushing on the plastic sleeve on the fitting and pulling the hose out. Drain the oil into a suitable container for proper disposal. The breather cap on the top of the cabinet may be opened for faster oil flow. When finished re-connect the hose by firmly pushing the end into the fitting.

3. **FILTER REGULATOR.** Compressed air flows to the Norgren miniature filter regulator. Please refer to Norgren instructions included. Follow the instructions and note the following:

At the bottom of the water trap (bowl) is a drain fitting. In some cases it has a valve core which can be pushed to drain accumulated water. The other type has a plastic plug which may be turned clockwise to drain. The plug actually screws into the bowl and creates a leak path.

After water is drained turn the plug the opposite direction to close the valve. Note: A small pair of pliers may be necessary to turn the plug. Be careful not to break the plastic plug. Use small strap wrench if necessary to remove bowl. If filter element is replaced be careful when unscrewing the filter holder. The spring and poppet is retained by the filter holder and may drop out when filter holder is removed.

4. **HOW TO SET PRESSURE.** The filter regulator is pre-set to deliver the maximum operating hydraulic pressure -- usually 5000 psi. The second regulator is used to adjust pressure to a setting lower than maximum. Refer to Norgren instructions for setting regulator.

5. **HOW TO BLEED AIR - PRIME PUMP.**

If pump runs but does not develop hydraulic pressure, do the following:

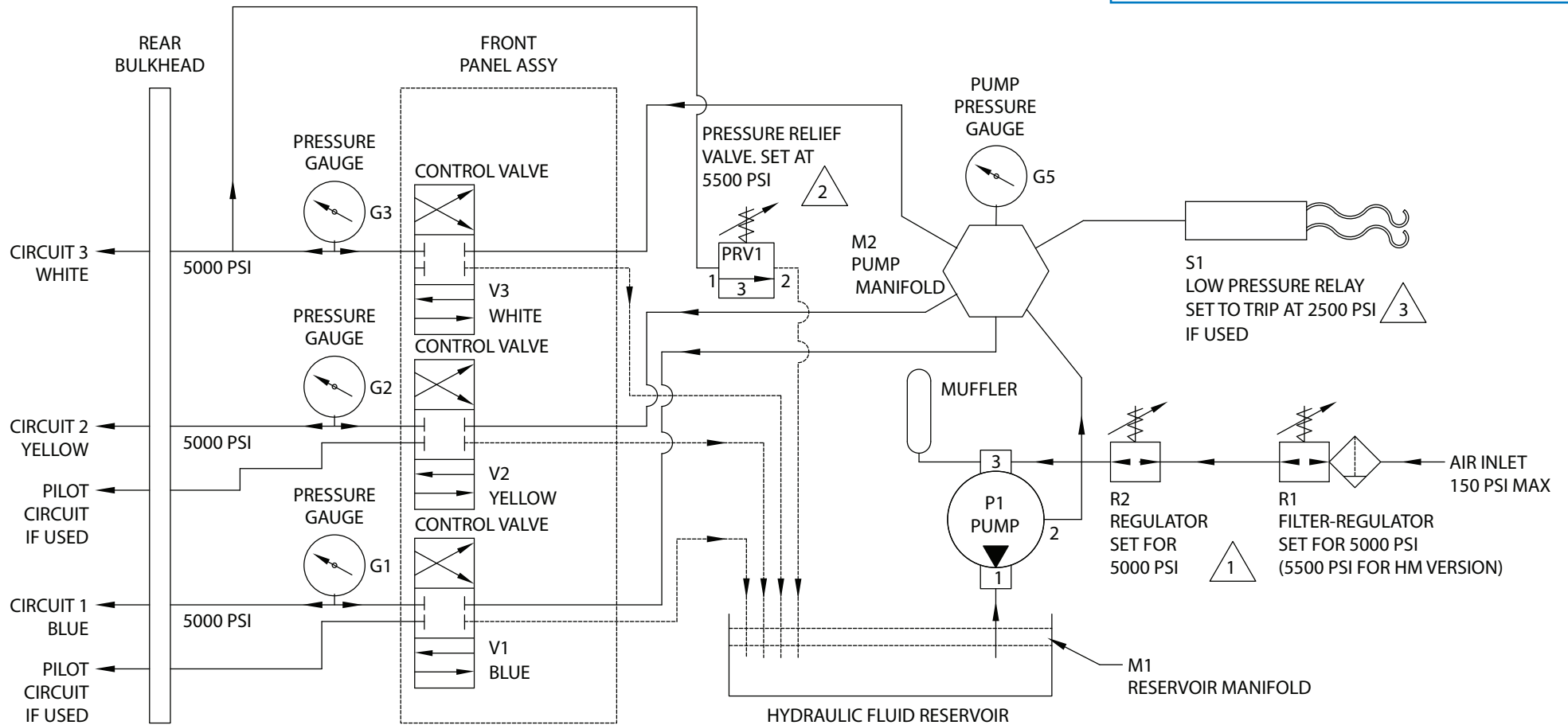
- A. Add Model-312 hydraulic oil if necessary.
- B. Make sure breather cap is installed on top of power & control module. (A pipe plug is used for shipment).
- C. Crack a fitting (nut) close to the pump. The manifold attached to the pump outlet is preferred. The nut attached to the hose in back of the cabinet is ok.

CAUTION: USE A RAG TO AVOID SPILLAGE

4. START THE PUMP BY CONNECTING SHOP AIR AND TURN REGULATOR CLOCKWISE TO BUILDUP AIR PRESSURE. (DO NOT TOUCH THE REGULATOR WITH THE CONDENSATE RESERVOIR.)
5. WHEN OIL FLOWS A LEAKAGE WILL OCCUR AT THE CRACKED FITTING. QUICKLY TIGHTEN THAT FITTING TO AVOID SPILLAGE. CAPTURE ANY SPILLED OIL IN THE RAG. DISPOSE OF THE OILED RAG IAW COMPANY PROCEDURE.
6. IF AIR REGULATOR WAS CHANGED, SET HYDRAULIC PRESSURE BY ADJUSTING THE REGULATOR (NOT TO EXCEED 5000 PSI).

CONFIDENTIAL: The information shown on this sheet is confidential. Permission to use, reproduce or transmit in any way not specifically authorized is expressly withheld.

DISCLAIMER: Illustrative drawings, CAD models, and information described herein is proprietary intellectual property of PFA, Inc., accurate to the company's knowledge at time of printing, and intended for reference only. Specifications are subject to change without notice. If the information obtained from this document is critical to a specific application, it should be confirmed by contacting PFA, Inc. PFA Terms of Sale apply.



4. ON MODULES USED FOR QMC APPLICATIONS WHICH INCLUDE KO BAR QUICK CONNECT/DISCONNECT SYSTEMS THE PRESSURE SOURCE FOR CIRCUIT 1 & 2 MAY BE PLUMBED FROM CIRCUIT 3.

- 3. PRESSURE SENSOR (PS) FOR CONNECTION TO PRESS CONTROLS.
- 2. PRESSURE RELIEF VALVE FOR USE WITH DIE LIFTERS (DL).
- 1. R2 REGULATOR MAY BE CHANGED TO GENERATE LESS THAN 5000 PSI IN ACCORDANCE WITH INDIVIDUAL CUSTOMER REQUIREMENTS.

NOTES: UNLESS OTHERWISE SPECIFIED



HYDRO SCHEMATIC MODEL 130

130 CIRCUIT

PAGE 1 OF 1

REV
-

NORGREN REGULATOR INSTRUCTIONS.

NORGREN B07-201-M1KA Filter Regulator

Link: <https://www.imi-precision.com/us/en/detail/b07-201-m1ka/filter-regulators>



Filter/Regulator B07 - ★★ - ★★

B07

Installation & Maintenance Instructions

Port	Bowl	Relief Type	Gauge	Substitute	Drain	Element	Spring (Outlet Pressure Range) *	Thread Form
1...1/8"	Transparent ..Relieving ..Without.....01	Transparent ..Relieving ..Without.....01	Transparent ..Relieving ..Without.....01	A...Automatic	1...5 µm	A...0.1 to 0.7 bar (1 to 10 psig)	A...PTF	
2...1/4"	Transparent ..Relieving ..With.....02	Transparent ..Relieving ..With.....02	Transparent ..Relieving ..With.....02	M...Manual	3...40 µm	E...0.3 to 3.5 bar (5 to 50 psig)	B...ISO Rc taper	
	Transparent ..Non-relieving ..Without.....03	Transparent ..Non-relieving ..Without.....03	Transparent ..Non-relieving ..Without.....03			K...0.3 to 7 bar (5 to 100 psig)	G...ISO G parallel	
	Transparent ..Non-relieving ..With.....23	Transparent ..Non-relieving ..With.....23	Transparent ..Non-relieving ..With.....23					
	Metal.....Relieving ..Without.....33	Metal.....Relieving ..Without.....33	Metal.....Relieving ..Without.....33					
	Metal.....Relieving ..With.....34	Metal.....Relieving ..With.....34	Metal.....Relieving ..With.....34					
	Metal.....Non-relieving ..Without.....35	Metal.....Non-relieving ..Without.....35	Metal.....Non-relieving ..Without.....35					
	Metal.....Non-relieving ..With.....36	Metal.....Non-relieving ..With.....36	Metal.....Non-relieving ..With.....36					

* Outlet pressure can be adjusted to pressures in excess of, and less than, those specified. Do not use these units to control pressures outside of the specified ranges.

TECHNICAL DATA

Fluid: Compressed air
 Maximum pressure:
 Metal bowl: 10 bar (150 psig)
 Metal bowl: 17 bar (250 psig)
 Operating temperature**:
 Transparent bowl: -34° to +50°C (-30° to +125°F)
 Metal bowl: -34° to +65°C (-30° to +150°F)
 ** Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).
 Particle removal: 5 µm or 40 µm filter element
 Air quality: Within ISO 8573-1, Class 3 and Class 5 (particulates)
 Typical flow with a 5µm element at 7 bar (100 psig) inlet pressure, 6.3 bar (90 psig) set pressure, and a droop of 1 bar (15 psig) from set:
 1/8" Ports: 6.2 dm³/s (13 scfm)
 1/4" Ports: 6.5 dm³/s (14 scfm)
 Nominal bowl size: 31 ml (1 fluid ounce)
 Gauge ports:
 1/8" PTF with PTF main ports
 1/8" ISO Rc with ISO Rc main ports
 1/8" ISO Rc with ISO G main ports
 Drain connection: 1/8" pipe thread
 Automatic drain operation: Splitter type drain operates momentarily when a rapid change in air flow occurs or when the supply pressure is reduced.

Materials:

Body: Zinc
 Bonnet: Acetal
 Valve: Brass/nitrile
 Valve seat: Acetal
 Bowl:
 Transparent: Polycarbonate
 Metal: Zinc
 Element: Sintered polypropylene
 Elastomers: Nitrile

REPLACEMENT ITEMS

Service Kit (includes items circled on exploded view):
 Relieving, 5 µm element.....3820-02
 Nonrelieving, 5 µm element3820-01
 Relieving, 40µm element.....3820-04
 Nonrelieving, 40 µm element3820-03
 Manual drain (20, 26).....773-03
 Automatic drain (21, 22) (27, 28).....3654-02
 Tamper resistant knob (current bonnet).....18-001-092
 Tamper resistant seal wire (early bonnet).....2117-01

PANEL MOUNTING DIMENSIONS

Panel mounting hole diameter: 30 mm (1.19")
 Panel thickness: 2 to 6 mm (0.06" to 0.25")

INSTALLATION

- Shut off air pressure. Install filter/regulator in air line -
 - vertically (bowl down),
 - with air flow in direction of arrow on body,
 - upstream of lubricators and cycling valves,
 - as close as possible to the air supply when used as a main line filter,
 - as close as possible to the device being serviced when used as a final filter.
- Connect piping to proper ports using pipe thread sealant on male threads only. Do not allow sealant to enter interior of unit.
- On filters equipped with an automatic drain, slip 1/4" I.D. flexible tube over protrusion on bottom of bowl. Avoid restrictions in the tube. Bowl protrusion is also threaded to accept 1/8" pipe thread fitting.
- Turn bowl fully clockwise into body before pressurizing.
- Install a pressure gauge or plug the gauge ports. Gauge ports can also be used as additional outlets for regulated air.

ADJUSTMENT

- Before applying inlet pressure to filter/regulator, turn adjustment (2 or 5A) counterclockwise to remove all force on regulating spring (6).
- Apply inlet pressure, then turn adjustment (2 or 5A) clockwise to increase and counterclockwise to decrease pressure setting.
- Always approach the desired pressure from a lower pressure. When reducing from a higher to a lower setting, first reduce to some pressure less than that desired, then bring up to the desired pressure.

NOTE

With non-relieving filter/regulators, make pressure reductions with some air flow in the system. If made under no flow (dead-end) conditions, the filter/regulator will trap the over-pressure in the downstream line.

- Push adjusting knob down to lock pressure setting; pull up to release. Install tamper resistant knob (see **Replacement Items**) to make setting tamper resistant.

SERVICING

- Depress manual drain to expel accumulated liquids. Keep liquids below element (31).
- Clean or replace filter element when dirty.

DISASSEMBLY

- Filter/regulator can be disassembled without removal from air line.
- Shut off inlet pressure. Reduce pressure in inlet and outlet lines to zero.
- Turn adjustment (2 or 5A) fully counterclockwise.
- Turn bowl and bonnet counterclockwise and remove from body.
- Disassemble in general accordance with the item numbers on exploded view. Do not remove the manual drain unless replacement is necessary. Remove and replace drain only if it malfunctions.

CLEANING

- Clean plastic bowl with warm water only. Clean other parts with warm water and soap.
- Rinse and dry parts. Blow out internal passages in body (15, 16) with clean, dry compressed air. Blow air through filter element (31, 34) from inside to outside to remove surface contaminants.
- Inspect parts. Replace those found to be damaged. Replace plastic bowl with a metal bowl if plastic bowl shows signs of cracking or cloudiness.

ASSEMBLY

- Lubricate seals and o-rings with o-ring grease. Apply a small amount of anti-seize lubricant to full length of threads on metal bowls.
- Assemble the unit as shown on the exploded view.
- Torque Table

TORQUE

ITEM	NM (INCH-POUNDS)
3, 5A (Bonnet)	7.34 to 8.47 (65 to 75)
9 (Early valve seat)	0.45 to 0.68 (4 to 6)†
11 (Current valve seat)	0.34 to 0.56 (3 to 5)†
23, 29, 31, 32 (Element, bowl, stud)	0.56 to 1.13 (5 to 10)
20, 26 (Manual drain valve)	0.17 to 0.28 (1.5 to 2.5)

† Diaphragm pin (8) must slide freely thru valve seat after torquing.

CAUTION

Water vapor will pass through these units and could condense into liquid form downstream as air temperature drops. Install an air dryer if water condensation could have a detrimental effect on the application.

WARNING

These products are intended for use in industrial compressed air systems only. Do not use these products where pressures and temperatures can exceed those listed under **Technical Data**.

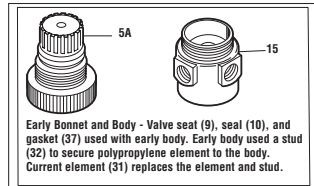
Polycarbonate plastic bowls can be damaged and possibly burst if exposed to such substances as certain solvents, strong alkalies, compressor oils containing ester-based additives or synthetic oils. Fumes of these substances in contact with the polycarbonate bowl, externally or internally, can also result in damage. Clean with warm water only.

Use metal bowl in applications where a plastic bowl might be exposed to substances that are incompatible with polycarbonate.

If outlet pressure in excess of the filter/regulator pressure setting could cause downstream equipment to rupture or malfunction, install a pressure relief device downstream of the filter/regulator. The relief pressure and flow capacity of the relief device must satisfy system requirements.

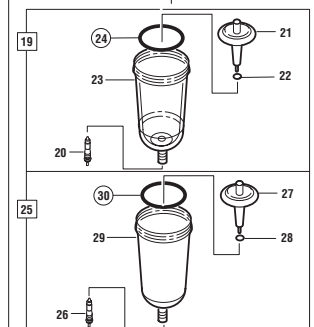
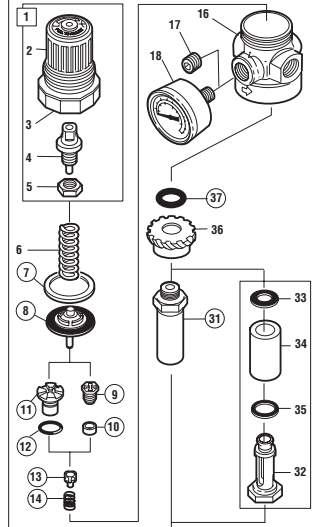
The accuracy of the indication of pressure gauges can change, both during shipment (despite care in packaging) and during the service life. If a pressure gauge is to be used with these products and if inaccurate indications may be hazardous to personnel or property, the gauge should be calibrated before initial installation and at regular intervals during use.

Before using these products with fluids other than air, for non industrial applications, or for life-support systems consult Norgren.



Early Bonnet and Body - Valve seat (9), seal (10), and gasket (37) used with early body. Early body used a stud (32) to secure polypropylene element to the body. Current element (31) replaces the element and stud.

Current Bonnet and Body - Valve seat (11) and seal (12) used only with current body. Gasket (37) also used with current body when sintered bronze element (32, 33, 34, 35) is installed.



NOTES FOR CURRENT AND EARLY BOWLS
 Current bowls use a lip on the bowl inside diameter to retain bowl o-ring. Early bowls use a lip on the bowl outside diameter to retain bowl o-ring. Service kits contain current and early bowl o-rings. The larger of the o-rings is used on the early bowls.

NORGREN R07-200-NNKA NON-RELEIVING NO GAUGE Regulator 0-100 psi

Link: <https://www.imi-precision.com/us/en/detail/r07-200-nnka/r07-series-mini-regulator-1-4-ptf-ports-non-relieving-without-gauge-5-to-100-psi-outlet-pressure-range>



R07

Regulator
R07 - ★★ - ★★

Installation & Maintenance Instructions

Port	Option	Option	Diaphragm	Gauge	Spring (Outlet Pressure Range) *	Thread Form
1....1/8" 2....1/4"	0....Not applicable	0....Standard 2....Low flow seat	R....Relieving N....Non relieving	G....With N....Without	A....0,1 to 0,7 bar (1 to 10 psig) E....0,3 to 3,5 bar (5 to 50 psig) K....0,3 to 7 bar (5 to 100 psig)	A....PTF B....ISO Rc taper G....ISO G parallel

* Outlet pressure can be adjusted to pressures in excess of, and less than, those specified. Do not use these units to control pressures outside of the specified ranges.

TECHNICAL DATA

Fluid: Compressed air
 Maximum pressure: 20 bar (300 psig)
 Operating temperature*: -34° to +65°C (-30° to +150°F)
 * Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).
 Typical flow with 10 bar (150 psig) inlet pressure, 6,3 bar (90 psig) set pressure and 1 bar (15 psig) droop from set:
 1/8" Ports: 6,5 dm³/s (14 scfm)
 1/4" Ports: 7 dm³/s (15 scfm)
 Gauge ports:
 1/8 PTF with PTF main ports
 Rc1/8 with ISO Rc main ports
 Rc1/8 with ISO G main ports
 Materials:
 Body: Zinc
 Bonnet : Acetal
 Valve: Brass/nitrile
 Valve seat: Acetal
 Elastomers: Nitrile

REPLACEMENT ITEMS

Service kit (includes items circled on exploded view)
 Relieving.....3407-02
 Non-relieving.....3407-01
 Tamper resistant knob18-001-092

PANEL MOUNTING DIMENSIONS

Panel mounting hole diameter: 30 mm (1.19")
 Panel thickness: 2 to 6 mm (0.06" to 0.25")

INSTALLATION

- Shut off air pressure. Install regulator in air line -
 - with air flow in direction of arrow on body,
 - upstream of lubricators and cycling valves,
 - as close as possible to the device being serviced,
 - at any angle.
- Connect piping to proper ports using pipe thread sealant on male threads only. Do not allow sealant to enter interior of regulator.
- Install a pressure gauge or plug the gauge ports. Gauge ports can also be used as additional outlets for regulated air.
- Install a Norgren general purpose filter upstream of the regulator.

ADJUSTMENT

- Before applying inlet pressure to regulator, turn adjustment (2 or 5A) counterclockwise to remove all force on regulating spring (6).
- Apply inlet pressure, then turn adjustment clockwise to increase and counterclockwise to decrease pressure setting.
- Always approach the desired pressure from a lower pressure. When reducing from a higher to a lower setting, first reduce to some pressure less than that desired, then bring up to the desired pressure.

NOTE

With non-relieving regulators, make pressure reductions with some air flow in the system. If made under no flow (dead-end) conditions, the regulator will trap the over-pressure in the downstream line.

- Push adjusting knob down to lock pressure setting; pull up to release. Install tamper resistant knob (see **Replacement Items**) to make setting tamper resistant.

DISASSEMBLY

- Regulator can be disassembled without removal from air line.
- Shut off inlet pressure. Reduce pressure in inlet and outlet lines to zero.
- Turn adjustment (2 or 5A) fully counterclockwise to remove all force on regulating spring (6).
- Disassemble in general accordance with the item numbers on exploded view.

CLEANING

- Clean parts with warm water and soap.
- Rinse and dry parts. Blow out internal passages in body with clean, dry compressed air.
- Inspect parts. Replace those found to be damaged.

ASSEMBLY

- Lubricate seals and o-rings with o-ring grease.
- Assemble the unit as shown on the exploded view.
- Torque Table

ITEM	TORQUE
	NM (INCH-POUNDS)
2, 5A (Bonnet)	7,34 to 8,47 (65 to 75)
9 (Early valve seat)	0,45 to 0,68 (4 to 6)†
11 (Current valve seat)	0,34 to 0,56 (3 to 5)†

† Diaphragm pin (8) must slide freely thru valve seat after torquing.

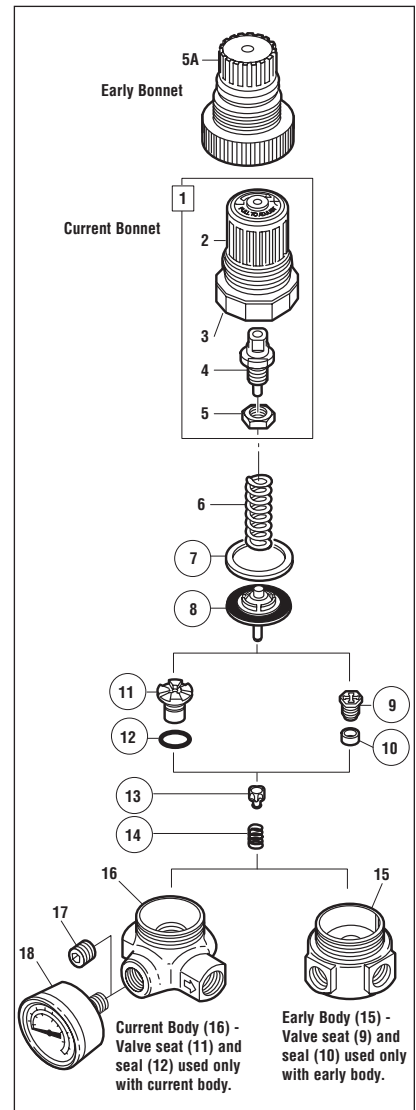
WARNING

These products are intended for use in industrial compressed air systems only. Do not use these products where pressures and temperatures can exceed those listed under **Technical Data**.

If outlet pressure in excess of the regulator pressure setting could cause downstream equipment to rupture or malfunction, install a pressure relief device downstream of the regulator. The relief pressure and flow capacity of the relief device must satisfy system requirements.

The accuracy of the indication of pressure gauges can change, both during shipment (despite care in packaging) and during the service life. If a pressure gauge is to be used with these products and if inaccurate indications may be hazardous to personnel or property, the gauge should be calibrated before initial installation and at regular intervals during use.

Before using these products with fluids other than air, for non industrial applications, or for life-support systems consult Norgren.



ELECTRO HYDRAULIC PRESSURE SWITCHES

See pages 43-47 of the HPS – Oildyne Products Catalog HY22-1131US for further details. Information below is provided for your convenience. Controllers are typically supplied with Parker Part #OE4-SBHS-6K Pressure Switch if "PS" is ordered.

PRESSURE SWITCH FEATURES

- **VERSATILE** - Our designs allow the switches to be used in any mounting orientation. They can sense hydraulic fluid pressure or air/gas pressure. A simple spring change allows the same basic switch to be used through a wide range of pressure settings.
- **DURABLE** - Heavy-duty electrical contacts are rated for 15 amps at 125, 250 or 460 VAC. Normally open and normally closed contacts are provided.
- **RELIABLE** - Repeatability is accomplished through a combination of a PTFE seal and a hardened, nickel-plated steel piston. This use of low-friction materials and the design of the unique PTFE seal (or diaphragm*) prevents the piston from sticking. Repeatability, sensitivity and reliability are excellent. Limited piston movement prevents inertial forces from damaging the piston stop.

*Used for lower pressure differential applications.

TYPICAL APPLICATIONS

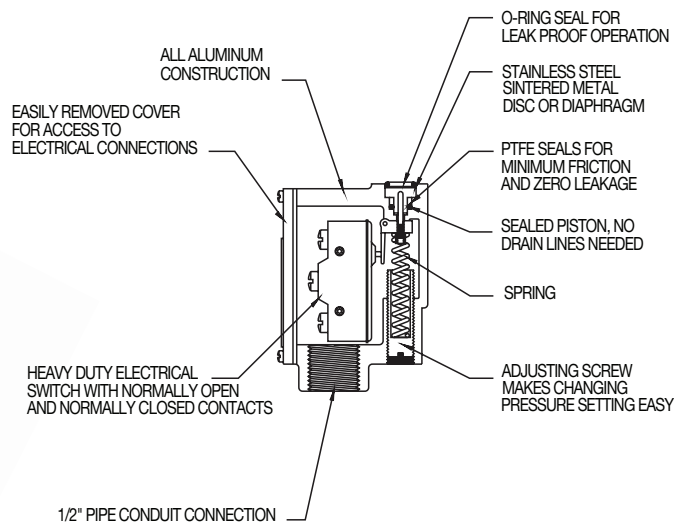
Pressure switches sense when a pre-selected fluid pressure is reached or lost and make or break an electrical circuit. Their operation can stop or start a machine's cycle, actuate indicator lights or sequential operations. Properly installed, their operation is automatic and limited by your imagination and need.

- **SPRING RANGE** - Duplex models contain two separate switches which can be activated by one or two sensing ports depending on the subplate configuration. See dimensional data for options.
- **ENVIRONMENTALLY RESISTANT** - Environmentally resistant models are available on special order.

SUBPLATES

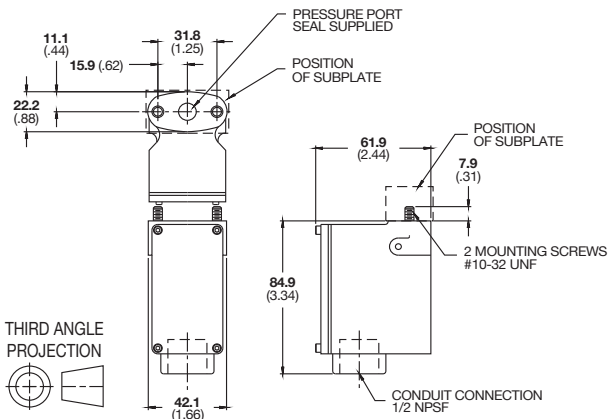
Subplates are available for in-line mounting of Oildyne pressure switches. This allows further flexibility in mounting to existing equipment. Ports in 1/8 NPT or 7/16-20 (SAE-4) straight thread are standard. The duplex switch has two types of subplates, one with a port for each side of the switch, the other with one port only, for both sides of the switch.

Construction



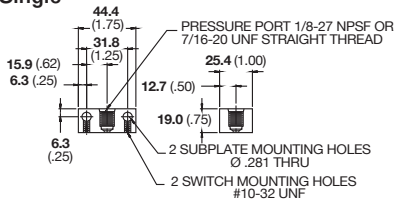
Single Switch

Single Pressure Switch

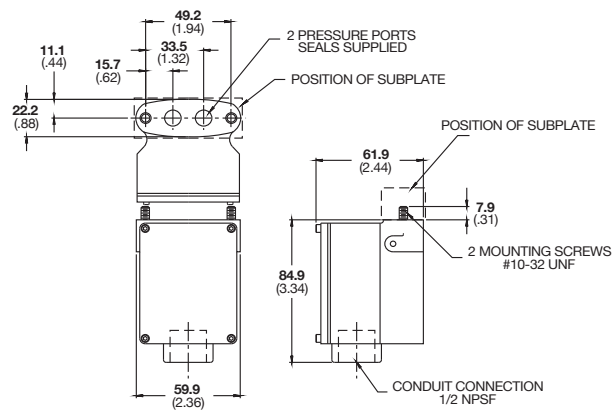


Subplates

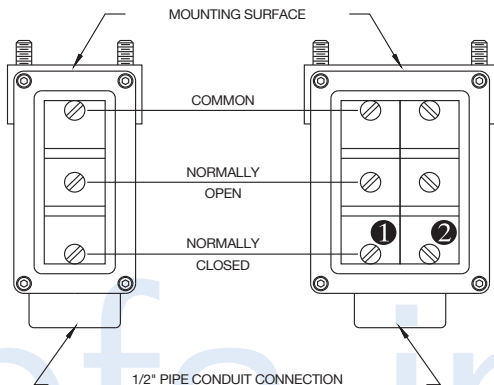
Single



Duplex Pressure Switch



Wiring



Note: All dimensions in mm (inches).

WEIGHT

Single - Standard .3 kg (10 oz.)

ELECTRICAL DUTY

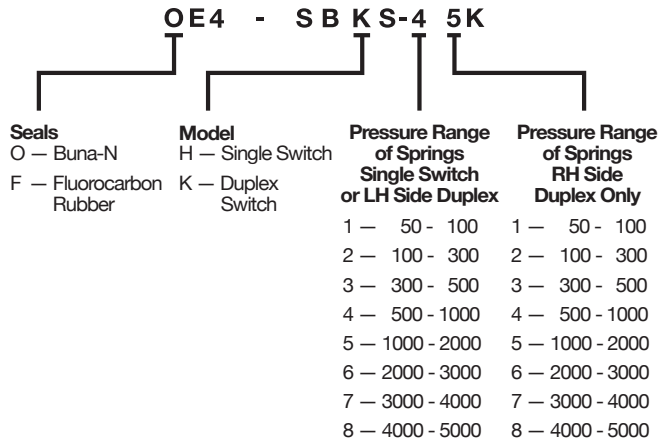
Single pole, double throw element, U.L. rated for 15 amps at 125, 250 or 460 VAC. Electrical leads are not furnished with the switch.

SPRING SELECTION GUIDE

Spring No.	Spring Range (psi)	Adjustment Range (psi)	Repeatability Plus or Minus (psi)	Differential Range (psi)	Spring Color
1	50-100	50-100	2	50-90	Green
2	100-300	75-300	4	50-100	Black
3	300-500	150-500	5	50-125	Red
4	500-1000	200-1000	8	50-150	Blue
5	1000-2000	300-2000	15	75-250	White
6	2000-3000	400-3000	20	75-250	Yellow
7	3000-4000	500-4000	25	125-350	Orange
8	4000-5000	500-5000	50	150-450	Pink

Note: 100 psi = 6.9 bar

STANDARD PRODUCT ORDERING CODE



Single Switch

PK-01B Subplate (1/8" Pipe)
PK-50B Subplate (SAE-4 Str. Thd.)

Duplex Switch

PK-01C Subplate (1/8" Pipe) Two Ports
PK-50C Subplate (SAE-4 Str. Thd.) Two Ports
PK-01D Subplate (1/8" Pipe) One Port
PK-50D Subplate (SAE-4 Str. Thd.) One Port

Triplex

Specify Subplate PK-50H (SAE-4 Str. Thd.) and Three Single Switch Specifications from Chart at Left.

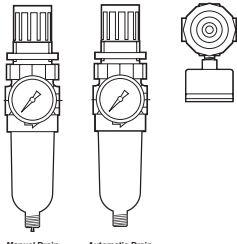
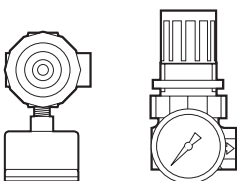
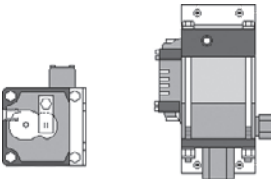
RECOMMENDED SPARE PARTS

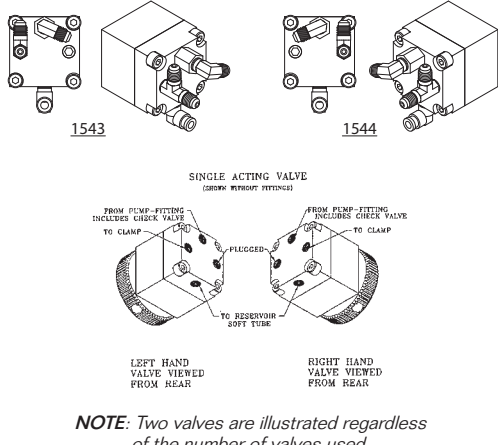
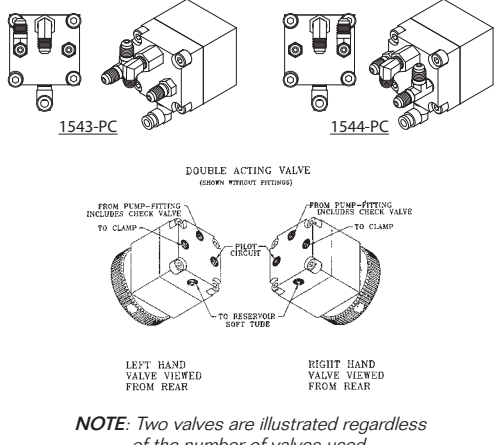


P/N	Description	Qty
1856	Regulator w/filter	1
1855	Regulator	1
312	PFA Model 312 Hydraulic Oil (Blue) 1 Quart	4
For Portable Units*		
3974-120Wht	Hose Assy, Hi Pressure, White Color Coded	1
3974-120Yel	Hose Assy, Hi Pressure, Yellow Color Coded	1
3974-120Blu	Hose Assy, Hi Pressure, Blue Color Coded	1
For Stationary Units**		
3092-120Wht	Hose Assy, Hi Pressure, White Color Coded	1
3092-120Yel	Hose Assy, Hi Pressure, Yellow Color Coded	1
3092-120Blu	Hose Assy, Hi Pressure, Blue Color Coded	1

* Hose has 37° Flare 7/16-20UNF fittings on one end and female hydraulic disconnect at the other.

** Hose has 37° Flare 7/16-20UNF fittings on both ends. Specify length in inches.

MAJOR COMPONENT INDEX

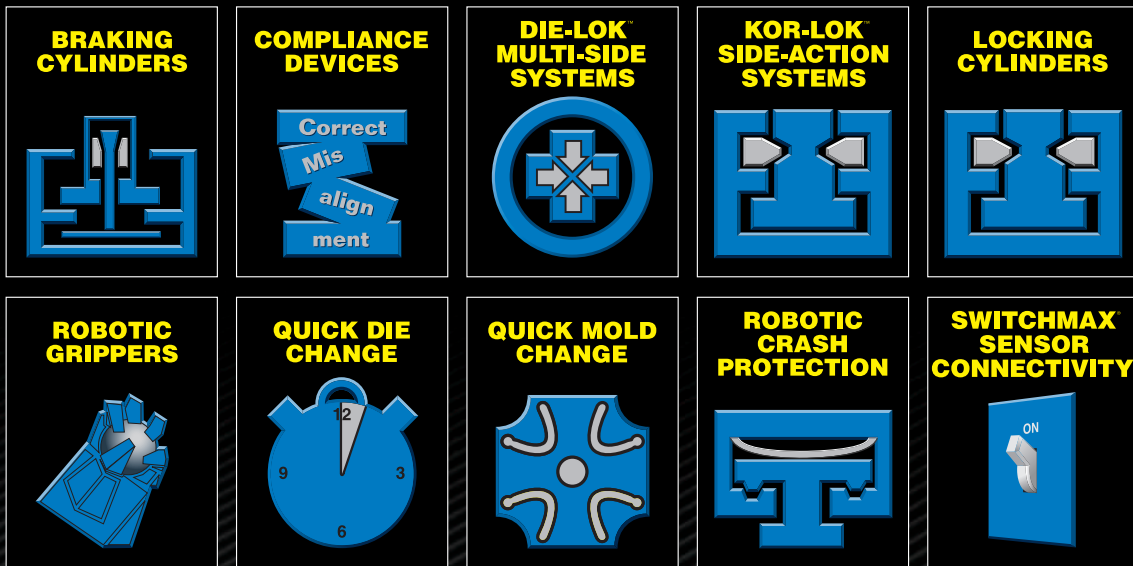
Part No.	Name	Description	Drawing
1856	Filter Regulator	The filter/regulator is pre-set to deliver regulated air pressure to the hydraulic pump to create 5,000 psi hydraulic pressure.	
1855	Regulator	Regulated air flows from Part #1856 to Part #1855 which may be set to generate lesser hydraulic pressure.	
6796	Hydraulic Pump	Air driven, generates 5,000 psi hydraulic pressure. NOTE: The pump may be flat or mounted vertically on a bracket. Part #6796 does not include fittings and regulator.	

1279	Single Acting Hydraulic Control Valve	Single Acting. This single acting valve delivers pressurized fluid flow when the Valve Control Knob is turned to CLAMP, die lifter RAISE or KO Bar RELEASE. Fluid is allowed to return to reservoir when Valve Control Knob is turned to clamp RELEASE, die lifter LOWER or KO Bar SECURE. Part #1279 does not include valve control knob. Please specify 1543 or 1544 as needed.	 <p>1543 1544</p> <p>SINGLE ACTING VALVE (GROSS WITHOUT FITTINGS)</p> <p>FROM PUMP-FITTING INCLUDES CHECK VALVE TO CLAMP</p> <p>TO CLAMP</p> <p>PLUGGED</p> <p>TO RESERVOIR SOFT TUBE</p> <p>LEFT HAND VALVE VIEWED FROM REAR</p> <p>RIGHT HAND VALVE VIEWED FROM REAR</p> <p>NOTE: Two valves are illustrated regardless of the number of valves used.</p>
1279PC	Double Acting Hydraulic Control Valve	Double Acting. This double acting valve delivers pressurized fluid flow in either position while at the same time allowing fluid return to reservoir from the deactivated circuit. For example, when the Valve Control Knob is moved from CLAMP to RELEASE the fluid in the clamps are allowed to return to reservoir while the pilot operated check valve is opened by the RELEASE circuit. Part #1279 does not include valve control knob. Please specify 1543PC or 1544PC as needed.	 <p>1543-PC 1544-PC</p> <p>DOUBLE ACTING VALVE (GROSS WITHOUT FITTINGS)</p> <p>FROM PUMP-FITTING INCLUDES CHECK VALVE TO CLAMP</p> <p>TO CLAMP</p> <p>PILOT CIRCUIT</p> <p>TO RESERVOIR SOFT TUBE</p> <p>LEFT HAND VALVE VIEWED FROM REAR</p> <p>RIGHT HAND VALVE VIEWED FROM REAR</p> <p>NOTE: Two valves are illustrated regardless of the number of valves used.</p>
1852	External 0-10,000 psi Gauges	Full range gauges display hydraulic pressure output at each hydraulic valve. Part #1852 does not include fitting.	
1853	External 0-10,000 psi Gauges	Full range gauges display hydraulic pressure internally. Part #1853 does not include fitting.	

1850	Pressure Sensor	Furnished with modules with PS suffix to model number. The pressure sensor is included in most stationary HC's which are used for QDC and QMC applications. Connected to press controls in the normally closed position it monitors hydraulic pressure. Should hydraulic pressure fall below a pre-set point the electrical circuit is broken to signal press controls to stop press or machine. Part #1850 does not include fitting.	
6744	Relief Valve	Furnished with modules with DL suffix to model number. A relief valve is standard for units used to elevate die lifters. This helps to protect the equipment in the event the clamps are applied on die which is still elevated by die lifters.	
6132	Pressure Booster Button	Used on models with HM suffix to model number. Designated for use with Locking (L) Hydra-Mechanical clamps (HM). Allows a temporary increase in hydraulic pressure if mechanical locks are difficult to open due to pressure variations.	

Notes:

1. Please note that only stationary (S, P, R) HC's have a pressure sensor option for connection to press/machine controls.
2. Relief valves are supplied with units which are used with die lifters.
3. Stationary HC's with double acting valves are used with clamps which are secured by pilot actuated check valves or clamps having a separate opening piston.
4. Valve locks are provided with all HC's.



N118 W18251 Bunsen Drive
 Germantown, WI 53022
 (262) 250-4410 • Fax (262) 250-4409

pfa-inc.com