

User Guide

Natrix® Process Holder

Contents

- Catalog Numbers..... 3**
 - Natrix® Process Holder 4
- Unpacking and Installation 5**
 - Unpacking the Holder 5
 - Installing the Disposable Fittings..... 6
 - Installing the Natrix® Device 7
- Operation 8**
- Natrix® Device Disassembly..... 9**
- Hydraulic System Maintenance..... 9**
 - Hydraulic Fluid Replacement..... 9
 - Hydraulic Gauge Replacement 10
 - Hydraulic Pump Replacement 10
 - Bleeding the System 11
 - Testing the System 11
 - Hydraulic Gauge Calibration Using the Quick Connector12
 - P&ID - Natrix® Process Holder 13
- Spare Parts and Accessories..... 14**

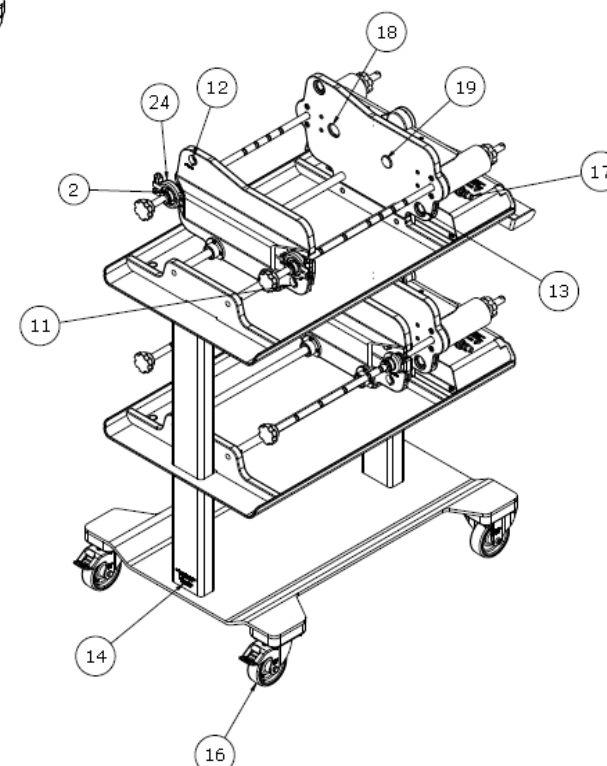
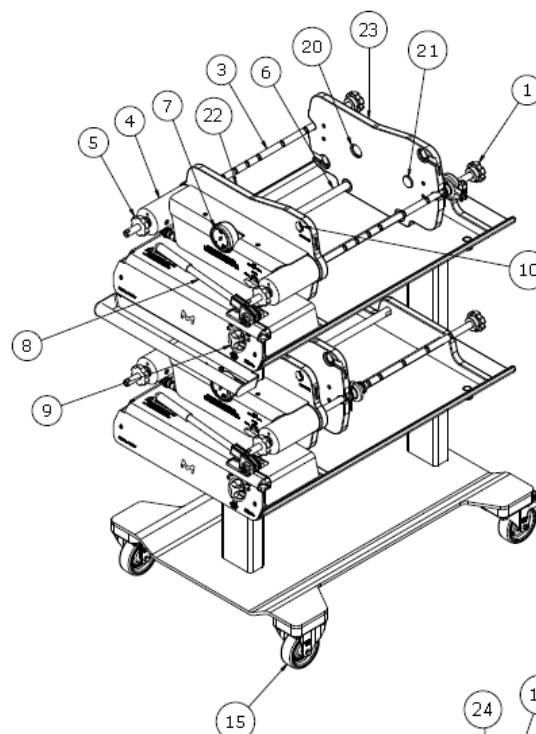
Catalog Numbers

This user guide includes instructions for the following catalog numbers:

Catalog Number	Description	Primary Use	Quantity per Package
NXPH001PR0	Natrix® Process Holder	Manifold or stack up to 10 Pilot or Process devices	1
NXPF001PR0	Natrix® Process Holder Fittings	Fittings kit for Natrix® Pilot and Process devices	4 (2 male and 2 female)

Matrix® Process Holder

Key Number	Description
1	Clamp Rod Knob
2	Split Clamp
3	Notched Clamp Rod
4	Hydraulic Cylinder
5	Clamp Rod Knob (Cylinder)
6	Alignment Rod
7	Pressure Gauge
8	Hydraulic Pump
9	Hydraulic Pump Release Valve
10	Outlet Fitting Port
11	Inlet Fitting Port
12	Blank Fitting Port (Inlet Plate)
13	Blank Fitting Port (Outlet Plate)
14	Catalog Number and S/N Information
15	Fixed Caster
16	Swivel Caster with Lock
17	Quick Test Connector
18	Female Alignment Key, Outlet Plate-Device
19	Male Alignment Key, Outlet Plate-Device
20	Female Alignment Key, Inlet Plate-Device
21	Male Alignment Key, Inlet Plate-Device
22	Outlet Plate, Fixed
23	Inlet Plate, Movable
24	Sanitary Clamp, 1½-inch, Heavy Duty with SHX Nut



Unpacking and Installation

Unpacking the Holder

Refer to Figure 1 and Figure 2 for steps below:

1. Remove the front brace of the crate. Remove all documentation from the crate.
2. Open and remove the top panel and then all side panels of the crate.
3. Put down the front panel, which serves as a ramp.
4. Remove front stopper. Supports with protective pads can be left in place.
5. Leave protective foams in place.
6. Remove orange straps.
7. Unlock the rear wheels by moving the wheel lock to up position.

NOTE Front wheels do not have wheel locks.

8. Carefully roll the holder down the ramp.
9. Once the holder is positioned and ready for use, remove and discard the protective foams.

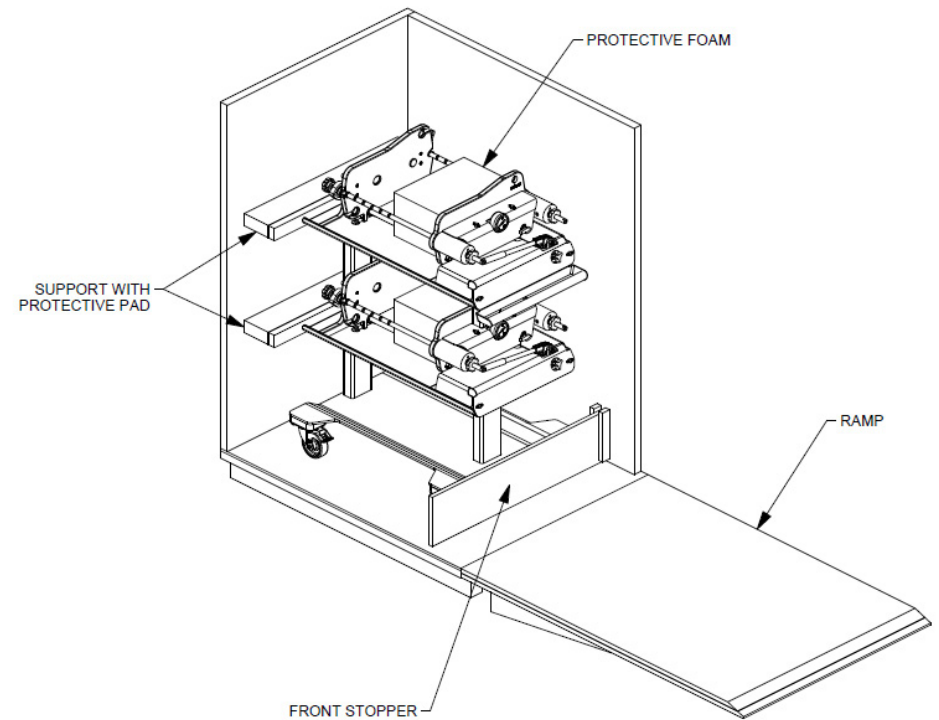


Figure 1

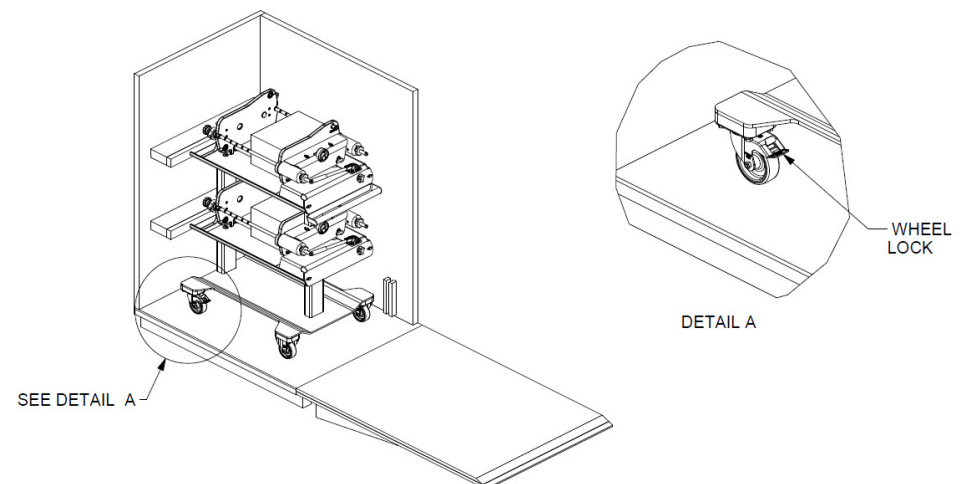


Figure 2

Installing the Disposable Fittings

1. Green gaskets are installed on the disposable fittings and must be in place for proper installation.
2. Install $\frac{3}{4}$ -inch sanitary fittings with through holes into the INLET and OUTLET holes as marked on the stainless plates.
3. Install blank fittings into the PLUG holes as marked on the stainless plates.

Refer to Figure 3 for proper fitting installation:

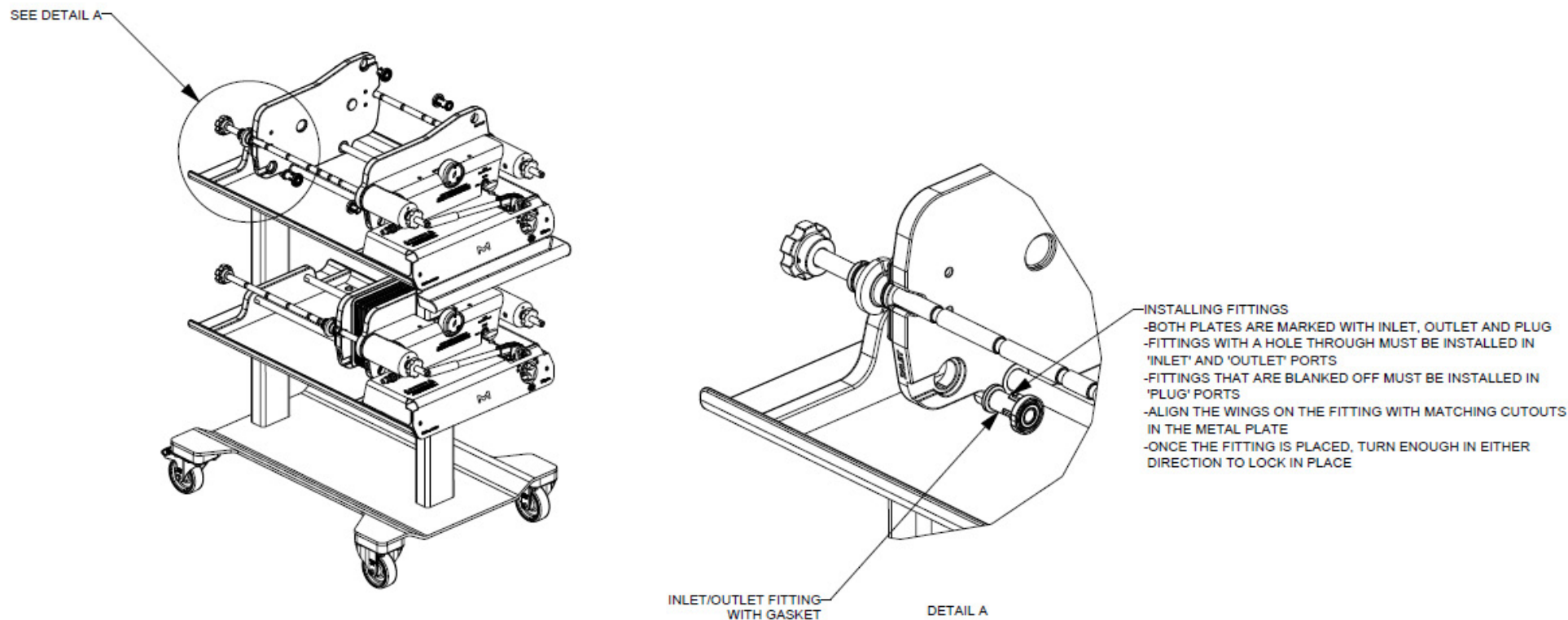


Figure 3

Installing the Natrix® Device

Refer to [Natrix® Process Holder](#) for numbered callout locations.

1. Remove the clamp rod (3) from the side that the devices will be loaded by removing the clamp rod knob from one end and the tri-clover clamp (24) and clamp insert (2) from the opposite end, then pulling the clamp rod through the hydraulic cylinder (4). The hole for the clamp rod in the moveable endplate (23) is slotted so that the clamp rod can be removed without pulling it out completely from the end of the holder.
2. Grasp the channel on the moveable endplate (23) with both hands and pull it open enough to install the devices.
3. Gaskets are installed on the disposable fittings and must be in place for proper operation.

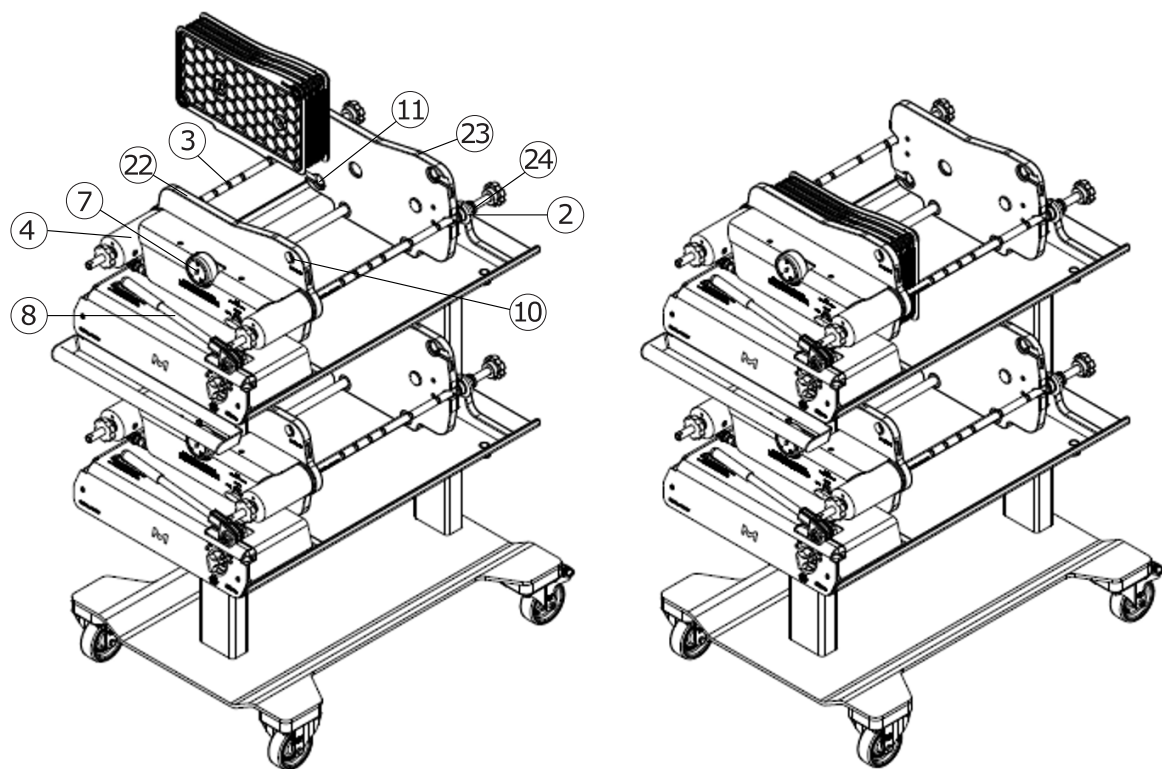


Figure 4

4. Position the device so that the alignment key of the device faces the fixed plate (22) of the holder. **If the devices are installed backwards, the alignment key will prevent the devices from locking into each other or into the endplate (22) and will cause damage to the devices when hydraulic pressure is applied.** Install devices from the side by gently lowering the device into the holder. The devices will self-align on the alignment rods.
5. Push the first device against the fixed plate.
6. Push each additional pod against the next, ensuring that the alignment keys engage.
7. When all devices are installed, push the moveable endplate (23), in the center below the channel, against the last device, ensuring that the alignment keys engage.
8. Replace the clamp rod.
9. Install the clamp inserts and tri-Clover clamps (24) into the clamp rod adjustment groove that is closest to the moveable endplate (23).
10. Turn the clamp rod knobs until they contact the hydraulic cylinders. **If the piston is not retracted to within 5 mm, continue turning the knob until the piston is retracted.**

11. Close the hydraulic pump release valve.
12. The hydraulic pump vent valve must be in the Vent position during operation.
13. Open the hydraulic valve.
14. Using the hydraulic pump ⑧, increase the hydraulic pressure until the hydraulic pressure gauge ⑦ on the holder reads 900-1100 psi (62-76 bar). **Do not increase the pressure if the hydraulic valve is closed.**
15. Once approximately 1000 psi (69 bar) is achieved on the gauge, close the hydraulic valve. To ensure that the moveable endplate ②③ will compress properly, the piston of hydraulic cylinder ④ should not extend more than 40 mm (1.6 in.) beyond the hydraulic cylinder. If it does, relieve the pressure in the hydraulic system, retract the pistons manually and repeat steps 7 through 13.

NOTE A loss in hydraulic pressure due to settling of devices may occur if an assembly is compressed and left unused for an extended period. The minimum hydraulic pressure required to maintain an integral assembly is 800 psi. Should the hydraulic pressure be observed below 800 psi, repeat steps 11 through 13.

16. Connect the process piping to the sanitary fittings. The feed piping must be connected to the inlet port ⑪. The filtrate must be connected to the outlet port ⑩.

Operation

Refer to the applicable device user guide supplied with the Natrix® devices for operating parameters and instructions.

Natrix® Device Disassembly

If applicable, this process should be performed on the lower rack first.

Refer to [Natrix® Process Holder](#) for numbered callout locations. Follow the procedures for [Bleeding the System](#) and [Testing the System](#).

1. Depressurize hydraulic cylinders by opening the hydraulic valve and hydraulic pump relief valve.
2. Loosen the clamp rod knob on the clamp rods and pull the moveable endplate (23) away from the bank of devices. Moveable endplate (23) must be far enough away for alignment keys to disengage.
3. Remove the clamp rod from the side from which the devices will be unloaded by removing the clamp rod knob from one end and the Tri Clover clamp and clamp insert from the opposite end, then pulling the clamp rod through the hydraulic cylinder.
4. The hole for the clamp rod in the moveable endplate (23) is slightly slotted so that the clamp rod can be removed without pulling it out completely from the end of the holder.
5. Pull devices out of holder, keeping device level to minimize dripping.
6. Remove and discard disposable fittings.

Hydraulic System Maintenance

Hydraulic Fluid Replacement

1. Relieve the pressure in the hydraulic system by opening the hydraulic valve and hydraulic pump relief valve.
2. Place a drip pan under the hydraulic pump (8) and loosen and remove the drain plug on the pump.
3. Loosen the compression fitting nuts closest to each hydraulic cylinder and pull the steel tubing out of the fitting.
4. Replace and tighten the drain plug on the hydraulic pump.
5. Loosen and remove the hydraulic pump vent valve.
6. Pour approximately 300 mL of hydraulic fluid into hydraulic pump reservoir.
7. Replace the hydraulic pump vent valve and leave in the OPEN position.
8. Close the hydraulic pump relief valve and ensure that the hydraulic valve is open. Operate the hydraulic pump until hydraulic fluid comes out of the steel tubing near the hydraulic cylinders.
9. Connect the steel tubing to each hydraulic cylinder.
10. Tighten each compression fitting approximately $\frac{3}{4}$ turn beyond finger tight.
11. Follow the procedures for [Bleeding the System](#) and [Testing the System](#).

Hydraulic Gauge Replacement

1. Relieve the pressure in the hydraulic system by opening the hydraulic valve and hydraulic pump relief valve.
2. Close the hydraulic valve.
3. Place a drip pan under the pressure gauge and loosen the compression fittings attached to the cross fitting.
4. Disconnect the steel tubing from the cross and lift out the pressure gauge and cross fitting.
5. Place the cross in a vise and rotate off the gauge. Remove any tape left inside the cross.
6. Tape the threads on the new gauge and install on the cross fitting. The connection must be tight and the gauge should point in the correct direction.
7. Connect the steel tubing to each of the other three connections to the cross.
8. Tighten each compression fitting approximately $\frac{3}{4}$ turn beyond finger tight.
9. Follow the procedures for [Bleeding the System](#) and [Testing the System](#).

Hydraulic Pump Replacement

1. Relieve the pressure in the hydraulic system by opening the hydraulic valve and hydraulic pump relief valve.
2. Turn the hydraulic pump vent valve to the CLOSED position.
3. Close the hydraulic valve.
4. Place a drip pan under the hydraulic pump and loosen the compression fitting nearest to the pump.
5. Disconnect the steel tubing from the pump.
6. Remove the mounting bolts from each side of the pump and slide the pump out of the mounting bracket.
7. Note the orientation of the elbow fitting attached to the outlet of the pump. Remove the elbow fitting and remove any tape on the threads.
8. Tape the elbow fitting and install on the new pump outlet. The elbow must be tight and pointing in the same orientation as on the old pump.
9. Slide the new pump onto the mounting bracket.
10. Reinstall the two mounting bolts which hold the pump in place.
11. Re-connect the steel tubing to the pump. Tighten the compression fitting approximately $\frac{3}{4}$ turn beyond finger tight.
12. Follow the procedures for [Bleeding the System](#) and [Testing the System](#).

Bleeding the System

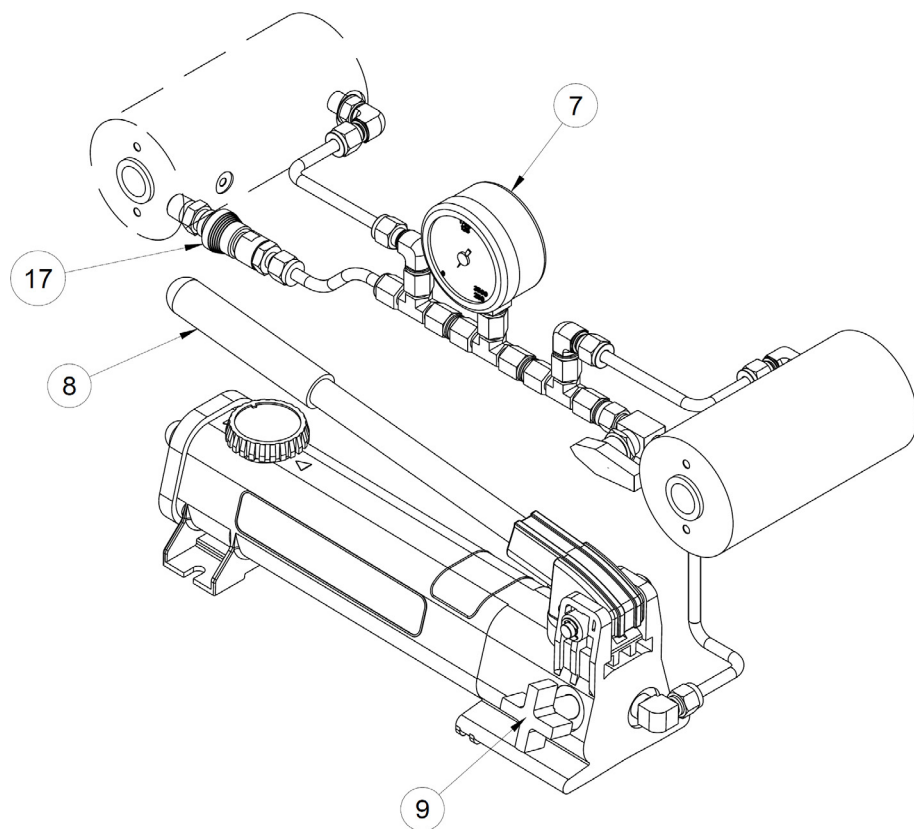
1. Turn the hydraulic pump vent valve to the VENT position.
2. Adjust the clamp rods to allow the hydraulic cylinder pistons to extend to their full length.
3. Open the hydraulic valve.
4. Close the hydraulic pump relief valve.
5. Using the hydraulic pump, increase the hydraulic pressure until the pressure gauge reads 900-1100 psi (62-76 bar).
6. Relieve the hydraulic system pressure by opening the hydraulic pump relief valve.
7. Repeat steps 4 through 6 two more times to allow any air in the system to be pushed back to pump reservoir.

Testing the System

1. With no Natrix® devices in place, adjust clamp rods so that the clamp inserts are snug against the hydraulic cylinder pistons.
2. Open hydraulic valve and close hydraulic pump relief valve.
3. Using the hydraulic pump, increase the hydraulic pressure until the pressure gauge reads 2200 psi (150 bar).
4. Momentarily close and open the hydraulic valve. If this causes a noticeable decrease in hydraulic system pressure, use the hydraulic pump to bring the system pressure back up to 2200 psi (150 bar).
5. Allow the system to sit for a minimum of 15 hours.

The hydraulic system pressure should drop no more than 200 psi over the 15-hour period. No hydraulic connections should be wet. If any hydraulic connections are wet, or if the hydraulic system pressure has dropped more than 200 psi, the system is *NOT* ready for operation. Check all connections and repeat [Bleeding the System](#) and [Testing the System](#) until the hydraulic system is secure.

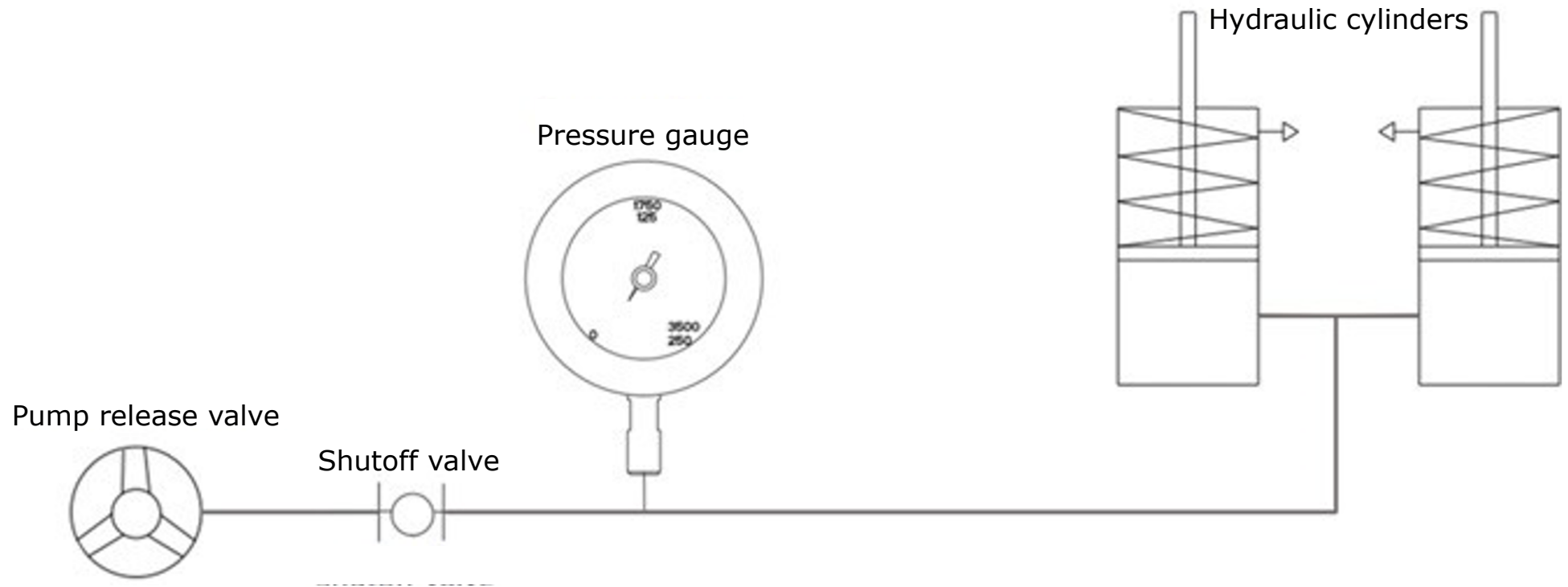
Hydraulic Gauge Calibration Using the Quick Connector



NOTE The Quick Connector is composed by one Male Bulkhead Connection (MBC) and one Female Bulkhead Connection (FBC).

1. Open the hydraulic pump release valve (9) and the hydraulic valve to release the pressure. Check the hydraulic pressure gauge (7) indicates 0 psi.
2. Check the pump vent valve is on Vent position.
3. Connect the reference pressure gauge (calibrated) at the MBC of the quick connector.
4. Plug the MBC assembly in the FBC of the quick connector.
5. Check all system fittings and connections to be sure they are tight and leak free.
6. Verify that the reference pressure gauge and the hydraulic pressure gauge (7) readings are 0.0 psi/0.0 bar when no pressure is applied.
7. Close the hydraulic pump release valve (9).
8. Using the hydraulic pump (8), increase the pressure and cross- check the gauge with the digital indicator on several pressure values.
9. Record all results
10. When the verification is completed, open the hydraulic pump release valve (9).
11. Unplug the MBC assembly.
12. Follow the procedures for [Bleeding the System](#).

P&ID - Natrix® Process Holder



Spare Parts and Accessories

Catalog Number	Description	Quantity per Package
MP0DHYPUMP	Hydraulic pump	1
MP0DHFLUID	Hydraulic fluid (1 liter)	1
VPMHINSERT	Clamp insert	1
MP0DCRKN0B	KNOB, GROOVED, CLAMP ROD	1
VPMHRDKN0B	KNOB CLAMP ROD	1
VPMHS0VALVE	¼-inch ball valve (for design with quick connector)	1
VPMHHYGAGE	Hydraulic system pressure gauge (for design with quick connector)	1

We provide information and advice to our customers on application technologies and regulatory matters to the best of our knowledge and ability, but without obligation or liability. Existing laws and regulations are to be observed in all cases by our customers. This also applies in respect to any rights of third parties. Our information and advice do not relieve our customers of their own responsibility for checking the suitability of our products for the envisaged purpose.

**For technical assistance
please visit:**

www.sigmaaldrich.com

**For additional information and
documentation please contact:**

Merck KGaA, Darmstadt, Germany
Corporation with General Partners
Frankfurter Str. 250
64293 Darmstadt, Germany
Phone: + 49 6151-72 0

**For requests from USA and Canada
please contact:**

MilliporeSigma
A subsidiary of Merck KGaA, Darmstadt, Germany
400 Summit Drive
Burlington, MA 01803 USA
Phone: 1-800-645-5476



Millipore, MilliporeSigma, Natrix and the vibrant M are trademarks of Merck KGaA, Darmstadt, Germany or its affiliates. All other trademarks are the property of their respective owners. Detailed information on trademarks is available via publicly accessible resources. ©2024 Merck KGaA, Darmstadt, Germany and/or its affiliates. All Rights Reserved.