Frequently Asked Questions

Some questions about pallet and tombstone clamping systems are common to both novices and experienced users. The answers to the following questions may help you better understand palletized hydraulic systems. Contact Vektek for assistance in determining if you should use a decoupled fixture or leave the fixture connected to the pump.

What is a pallet decoupler and what is its purpose within a clamping system?

A pallet decoupler is a device which serves as the interface between the stationary pump and the moving pallet. This is the point where the hose(s) from the pump is connected and disconnected from the pallet. The decoupler "rides along" on the pallet and is the regulator of pressurized hydraulic fluid for the clamping circuit while it is disconnected from the pump.

A decoupler must contain a shutoff valve to trap pressurized fluid from the pump within the clamping circuit and allow the hose(s) to be disconnected from the pallet. A decoupler must also contain:

- A coupler(s) for connecting the hose(s).
- Filter screens to minimize the amount of contamination that enters the pallet hydraulic circuit.
- An Accumulator to store pressurized hydraulic fluid. The accumulator maintains pressure to the clamping circuit while the pallet is disconnected from the pump.
- Ports for connection of the pallet hydraulic circuit.
- May include a pressure gauge and an over-pressure relief valve.

What is the difference between a pallet decoupler and a Tombstone Top Plate?

A Tombstone Top Plate is an expanded type of Manual Shutoff Valve Decoupler. A decoupler has one shutoff valve to control one pallet circuit. A tombstone top plate has multiple shutoff valves to provide separate control of each single acting circuit (face). A common accumulator keeps all circuits pressurized when the tombstone is disconnected from the pump. Tombstones that require double acting clamping circuits must use one Automatic Shutoff Valve Decoupler per face or circuit.

If I don't have enough space for a decoupler (or top plate) with its accumulator, can I use just a shutoff valve and a disconnect coupler?

Absolutely not, every hydraulic clamping pallet and tombstone must have an accumulator to be safe! We offer decouplers with integral accumulators to minimize their size and decouplers and top plates that allow the accumulator to be located in a place on the pallet or tombstone that has more space. In addition, we can provide all the individual components required to implement a distributed decoupling system to safely conform to your space limits.

What type of pump do I need to operate decouplers and Tombstone Top Plates?

Most users prefer pendant controlled, pump mounted and electric control valves for decoupling operations. However, pumps can be configured for remote mounted electric and manual control valves and with valves for integration into the machine control or machining cell PLC (Programmable Logic Control). Pumps can be set-up with an automatic Pressure Monitoring System to assure that the pallet and tombstone fixture are properly pressurized before entering the machine.

Pump operations can be set to deliver a different operating pressure to each pallet and tombstone and to deliver different pressures to the clamp/unclamp side of double acting circuits. Contact Vektek for technical assistance.
**New Check Valve**

Valve Decouplers for Single and Double Acting Systems

- Decouplers are a convenient, self-contained package that includes quick connect couplings, filters, pilot operated check valve and an over pressure relief valve.
- Contains a robust pilot operated check valve with a 1:5 pilot to check ratio for proven long term reliability.
- No filtration at remaining ports.
- Integral accumulator available in three operating pressure ranges.
- SAE female external ports and manifold mounting (bottom and rear) connections.
- Single acting pallet circuits require 2 hoses to the Operating Handle for pressure release. For single hose systems see the Manual Shutoff Valve Decoupler.
- Additional filtration available through the use of manifold mount and in-line filtration. Filter kit model # 62-5600-05 (for in-line mounting) or 62-5600-06 (for manifold mounting).

**NOTE:**
These automatic shutoff valve decouplers and operating handle must be used with a suitable pump which includes a 4 port/3 position, P-blocked center ("A" & "B" connected to tank) directional control valve for operation of single or double acting systems. See the pump convenience package for the pump model of your choice, "Pallet Decoupler (two hose)" in section J. One automatic shutoff valve decoupler can be used to operate only one double acting or one single acting circuit. For operation of a single acting circuit, plug the decoupler outlet port "B" (as shown in the schematic).

Decouplers with Integral Accumulator

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Pressure Range (psi)</th>
<th>Accumulator Capacity (cu. in.)</th>
<th>Optional In-Line Filter</th>
<th>Optional Filters</th>
</tr>
</thead>
<tbody>
<tr>
<td>56-0005-42</td>
<td>400-1,500</td>
<td>3.8</td>
<td>70-0401-71</td>
<td></td>
</tr>
<tr>
<td>56-0005-23</td>
<td>1,000-3,500</td>
<td>3.6</td>
<td></td>
<td>70-0437-71 (Ports A3, B3, B4)</td>
</tr>
<tr>
<td>56-0005-24</td>
<td>2,000-5,000</td>
<td>3.2</td>
<td></td>
<td>70-8420-05 (Bottom A4 &amp; B4) OR 70-8420-06 (REAR A3 &amp; B3)</td>
</tr>
</tbody>
</table>

For proper sealing, mating surface must be flat within 0.003 in. with a maximum 63 \( \mu \) in. \( R_a \) surface finish.

**One-Handed Operating Handle**

Model No. 56-0008-00

For use with Decoupler Model Nos. 56-0005-23, 56-0005-24, 56-0005-25 or 56-0005-26, 56-0005-42 or 56-0005-43

- Provides a fast, positive connection to the Decoupler.
- Positive lock/un-lock design eliminates missed connections.
- Ergonomic design reduces operator fatigue.
- Maximum working pressure is 5,000 psi.
Automatic Shutoff Valve Decouplers for Single and Double Acting Systems

- Decouplers are a convenient, self-contained package that includes quick connect couplings, filters, pilot operated check valve, accumulator and an over pressure relief valve.
- Robust pilot operated check valve with a 1.5 pilot to check ratio for proven long term reliability.
- Internal 25 micron filters for added protection of the pilot operated check valve through ports A1, A2, A3, A4, A5 and C1. Additional filtration at port B1. No filtration at remaining ports.
- External accumulator available in three operating pressure ranges.
- Single acting pallet circuits require 2 hoses to the Operating Handle for pressure release. For single hose systems see the Manual Shutoff Valve Decoupler.
- Additional filtration available through the use of manifold mount and in-line filtration. Filter kit model # 62-5600-05 (for in-line mounting) or 62-5600-06 (for manifold mounting).

For proper sealing, mating surface must be flat within 0.003 in. with a maximum 63 µ in. Ra surface finish.

Decouplers with Integral Accumulator

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Pressure Range (psi)</th>
<th>Accumulator Capacity</th>
<th>Optional In-Line Filter</th>
<th>Optional Filters</th>
</tr>
</thead>
<tbody>
<tr>
<td>56-0005-43</td>
<td>400-1,500</td>
<td>3.8 cu. in.</td>
<td>70-0401-71</td>
<td>70-8420-05 (BOTTOM A5 &amp; B5) OR 70-8420-06 (REAR A4 &amp; B4)</td>
</tr>
<tr>
<td>56-0005-25</td>
<td>1,000-3,500</td>
<td>3.6 cu. in.</td>
<td>(Ports A4, B4, B5)</td>
<td></td>
</tr>
<tr>
<td>56-0005-26</td>
<td>2,000-5,000</td>
<td>3.2 cu. in.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For proper sealing, mating surface must be flat within 0.003 in. with a maximum 63 µ in. Ra surface finish.
Automatic Shutoff Valve Decouplers, Two-Handed Operating Handle

Decouplers are a convenient, self-contained package that includes quick connect couplings, filters, pilot operated check valve, an over pressure relief valve.

- Robust pilot operated check valve with a 1:5 pilot to check ratio for proven long term reliability.
- Internal 25 micron filters for added protection of the pilot operated check valve through ports A1, A2, A3, A4 and C1. Additional filtration at port B1. No filtration at remaining ports.
- Integral accumulator available in three operating pressure ranges.
- SAE female external ports and manifold mounting (bottom and rear) connections on all models.
- Single acting pallet circuits require 2 hoses to the Operating Handle for pressure release. For single hose systems, see the Manual Shutoff Valve Decoupler in this section.
- Additional filtration available through the use of manifold mount and in-line filtration. Filter kit model # 62-5600-05 (for in-line mounting) or 62-5600-06 (for manifold mounting).

For proper sealing, mating surface must be flat within 0.003 in. with a maximum 63 µ in. R surface finish.

### Decouplers with Integral Accumulator

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Pressure Range (psi)</th>
<th>Accumulator Capacity</th>
<th>Optional In-Line Filter</th>
<th>Optional Filters In-Port (For Manifold Mounting)</th>
<th>Optional Filters Filter Plate (For Manifold Mounting)</th>
</tr>
</thead>
<tbody>
<tr>
<td>56-0005-40</td>
<td>400-1,500</td>
<td>3.8 cu. in.</td>
<td>70-0401-71</td>
<td>70-8420-05 (Bottom A4 &amp; B4) OR 70-8420-06 (rear A3 &amp; B3)</td>
<td></td>
</tr>
<tr>
<td>56-0005-17</td>
<td>1,000-3,500</td>
<td>3.6 cu. in.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>56-0005-18</td>
<td>2,000-5,000</td>
<td>3.2 cu. in.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** For use with Operating Handle Model No. 56-0005-04. May be used in conjunction with Safety Interlock Storage Module Model No. 56-0005-05.

**NOTE:** These automatic shutoff valve decouplers and operating handle must be used with a suitable pump which includes a 4 port/3 position, P-blocked center ("A" & "B" connected to tank) directional control valve for operation of single or double acting systems.

See the pump convenience package for the pump model of your choice, “Pallet Decoupler (two hose)” in section J. One automatic shutoff valve decoupler can be used to operate only one double acting or one single acting circuit. For operation of a single acting circuit, plug the decoupler outlet port “B” (as shown in the schematic).

For use with Operating Handle Model No. 56-0005-04. May be used in conjunction with Safety Interlock Storage Module Model No. 56-0005-05.

**NOTE:**

- Provides fast, positive connection to the Decoupler.
- The Two-Handed Handle may be used with the optional Handle Docking Module to assure that the hoses are disconnected from the pallet before it is shuttled into the machine.
Automatic Shutoff Valve Decouplers for Single and Double Acting Systems

Decouplers are a convenient, self-contained package that includes quick connect couplings, filters, pilot operated check valve, accumulator and an over pressure relief valve.

- Robust pilot operated check valve with a 1:5 pilot to check ratio for proven long term reliability.
- Check valve through ports A1, A2, A3, A4, A5 and C1. Additional filtration at port B1. No filtration at remaining ports.
- External accumulator available in three operating pressure ranges.
- SAE female external ports and manifold mounting (bottom and rear) connections.
- Single acting pallet circuits require 2 hoses to the Operating Handle for pressure release. For single hose systems, see the Manual Shutoff Valve Decoupler in this section.
- Additional filtration available through the use of manifold mount and in-line filtration. Filter kit model # 62-5600-05 (for in-line mounting) or 62-5600-06 (for manifold mounting).

### Decouplers with Integral Accumulator

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Pressure Range (psi)</th>
<th>Accumulator Capacity</th>
<th>Optional In-Line Filter</th>
<th>Optional Filters</th>
</tr>
</thead>
<tbody>
<tr>
<td>56-0005-41</td>
<td>400-1,500</td>
<td>3.8 cu. in.</td>
<td>70-0401-71 (Ports A4, B4, B5)</td>
<td></td>
</tr>
<tr>
<td>56-0005-19</td>
<td>1,000-3,500</td>
<td>3.6 cu. in.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>56-0005-20</td>
<td>2,000-5,000</td>
<td>3.2 cu. in.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70-8420-05</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For proper sealing, mating surface must be flat within 0.003 in. with a maximum 63 µ in. Rₐ surface finish.

NOTE: For use with Operating Handle Model No. 56-0005-04. May be used in conjunction with Safety Interlock Storage Module Model No. 56-0005-05.

For use with Operating Handle Model No. 56-0005-04.
Automatic Shutoff Valve Decouplers, Two-Handed Operating Handle with Air

**Automatic Shutoff Valve Decouplers for Single and Double Acting Systems**

- Decouplers are a convenient, self-contained package that includes quick connect couplings, filters, pilot operated check valve, accumulator and over pressure relief valve and separate path for compressed air.
- Robust pilot operated check valve with 1 to 5 ratio of pilot to check pressure for proven long term reliability.
- Internal 25 micron filters for added protection of pilot operated check valve through ports A1, A2, A3, A4 and A5. Additional filtration provided at port B1. No filtration at remaining ports.
- External accumulator available in three operating pressure ranges.
- SAE female external ports and manifold mounting (bottom and rear) connections.
- Single acting pallet circuits require 2 hoses to the Operating Handle for pressure release. For single hose systems see the Manual Shutoff Valve Decoupler in this section.
- Additional filtration available through the use of manifold mount and in-line filtration. Filter kit model # 62-5600-05 (for in-line mounting) or 62-5600-06 (for manifold mounting).

**Decouplers with Integral Accumulator**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Pressure Range (psi)</th>
<th>Accumulator Capacity</th>
<th>Optional In-Line Filter</th>
<th>Optional Filters</th>
</tr>
</thead>
<tbody>
<tr>
<td>56-0005-30</td>
<td>400-1,500</td>
<td>3.8 cu. in.</td>
<td>70-0401-71</td>
<td>70-0437-71</td>
</tr>
<tr>
<td>56-0005-21</td>
<td>1,000-3,500</td>
<td>3.6 cu. in.</td>
<td>(Ports A4, B4, B5)</td>
<td>70-8420-05</td>
</tr>
<tr>
<td>56-0005-22</td>
<td>2,000-5,000</td>
<td>3.2 cu. in.</td>
<td>70-8420-06 (REAR A4 &amp; B4)</td>
<td>70-8420-06 (BOTTOM A5 &amp; B5) OR</td>
</tr>
</tbody>
</table>

**NOTE:**
These automatic shutoff valve decouplers and operating handle must be used with a suitable pump which includes a 4 port/3 position, P-blocked center (“A” & “B” connected to tank) directional control valve for operation of single or double acting systems. See the pump convenience package for the pump model of your choice, “Pallet Decoupler (two hoses)” in section J.

One automatic shutoff valve decoupler can be used to operate only one double acting or one single acting circuit. For operation of a single acting circuit, plug the decoupler outlet port “B” (as shown in the schematic).

For proper sealing, mating surface must be flat within 0.003 in. with a maximum 63 µ in. Ra surface finish.
Handle Docking Stations with optional feedback sensor

Docking Stations are now available for both 1-Handed or 2-Handed Automatic Shutoff Pallet Decoupler Handles. These handy devices provide a standard contamination-free location for quick-disconnect handle storage. Handle Docking Stations have a drain pan to keep your work area free of slip and fall hazards created by dripping disconnects.

- The optional Proximity Switch confirms the decoupler handle and hoses are connected to the docking station. The pallet can then be safely shuttled into the machine.
- Adjustable five connector positions insure these stations are ergonomically friendly for all operators.
- Docking couplers are for handle retention only.
- Flexible mounting allows for vertical, horizontal or pole applications.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Proximity Switch</th>
<th>Model Size</th>
<th>A Proximity Switch Height</th>
<th>B Dock Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>56-0005-28</td>
<td>No</td>
<td>Two-Hand</td>
<td>N/A</td>
<td>4.37</td>
</tr>
<tr>
<td>56-0005-29</td>
<td>Yes</td>
<td>Two Hand</td>
<td>1.036</td>
<td>4.37</td>
</tr>
<tr>
<td>56-0008-01</td>
<td>No</td>
<td>One-Hand</td>
<td>N/A</td>
<td>2.95</td>
</tr>
<tr>
<td>56-0008-02</td>
<td>Yes</td>
<td>One-Hand</td>
<td>0.682</td>
<td>2.95</td>
</tr>
</tbody>
</table>

**Decoupler Docking Station**

**Horizontal Mounting**

**Vertical Mounting**

**Pole Mounting**

Mounting Hardware Not Included

| 2X Ø 281 | 2X 3.562 |
| 2X 1.500 | 2X Ø 341 |
| 4X .341 | SLOT HEIGHT |
| 2.185 | Guide Pin with One-Handed Model Only |
| 4.371 | FEMALE M12 TO PIGTAIL END EXTENSION CABLE |

**PROXIMITY SWITCH WIRE DIAGRAM**

1 BROWN + LOAD

**SENSOR FEATURE:**

- Normally Open Contact
- LED Indicator Light
- 10 to 36 VDC Operating Range
- 100 mA Operating Current

**SAFETY FIRST!!**

K-7
Accumulators

Accumulators*

- Maintains circuit pressure while the pallet or tombstone fixture is disconnected from the pump using a decoupler or tombstone Top Plate.
- Piston-type, inert gas precharged accumulators compensate for pallet pressure changes during machining.
- Available in three operating ranges provide up to 3.8 cu. in. of pressure fluid reserve.

Hydraulic fluid compresses the precharged inert gas across the piston during circuit pressurization. The pressurized gas provides additional fluid to the circuit to reduce pressure changes in the event of small seeps, or thermal expansion/contraction while the pallet or fixture is in the machine.

- The 2,000-5,000 psi operating pressure model has a gas precharge of 1,500 psi.
- The 1,000-3,500 psi operating pressure model has a gas precharge of 750 psi.
- The 300-1,450 psi operating pressure model has a gas precharge of 250 psi.

Perform annual maintenance in accordance with the instructions provided with each accumulator. Contact Vektek for additional copies of the annual maintenance instructions or to arrange for factory performed annual maintenance. Strictly observe all safety precautions provided with each accumulator.

Small System Accumulators

- Same functions as the larger accumulators above, except for smaller total volume circuits.
- For system operating pressures of 2,000-5,000 psi unit will provide up to 1 cu. in. of pressurized fluid reserve.

<table>
<thead>
<tr>
<th>Accumulator Model No.</th>
<th>System Operating Pressure Range</th>
<th>Approximate Useable Volume At Maximum System Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-1014-01</td>
<td>2,000 - 5,000 psi</td>
<td>1.0 Cubic Inch</td>
</tr>
<tr>
<td>10-1014-02</td>
<td>1,000 - 3,500 psi</td>
<td>1.0 Cubic Inch</td>
</tr>
<tr>
<td>10-1016-01</td>
<td>2,000 - 5,000 psi</td>
<td>3.2 Cubic Inch</td>
</tr>
<tr>
<td>10-1016-02</td>
<td>1,000 - 3,500 psi</td>
<td>3.6 Cubic Inch</td>
</tr>
<tr>
<td>10-1016-03</td>
<td>300 - 1,450 psi</td>
<td>3.8 Cubic Inch</td>
</tr>
</tbody>
</table>

NOTE: Accumulator’s gas precharge must be checked annually. Consult Vektek for technical assistance.
Manual Shutoff Valve Decouplers

Manual Shutoff Valve Decoupler for Single Acting Systems

- This Decoupler is a convenient, self-contained package that includes a quick connect coupling, manual shutoff valve with handle, accumulator (choose from horizontal or vertical arrangement), filter screen, pressure gauge and over-pressure relief valve.
- Models available for circuits operating at 2,000-5,000 psi and 1,000-3,500 psi with standard and small accumulators.
- Includes auxiliary ports that can be used for double acting pallet circuits or compressed air.

Decoupler with External Accumulator

For operation with Female Quick Connect Coupling Model No. 30-7827-66.

Vertical Accumulator

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Pressure Range (psi)</th>
<th>Accumulator Capacity (cu. in.)</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>56-0001-01</td>
<td>2,000-5,000</td>
<td>3.2</td>
<td>6.91</td>
</tr>
<tr>
<td>56-0001-02</td>
<td>1,000-3,500</td>
<td>3.6</td>
<td>6.91</td>
</tr>
<tr>
<td>56-0001-03</td>
<td>2,000-5,000</td>
<td>1.0</td>
<td>5.72</td>
</tr>
</tbody>
</table>

* Depending on where the Decoupler is mounted, a spacer (not furnished) may be needed to offset the overhang of the accumulator.

Horizontal Accumulator

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Pressure Range (psi)</th>
<th>Accumulator Capacity (cu. in.)</th>
<th>A</th>
<th>B Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>56-0002-01</td>
<td>2,000-5,000</td>
<td>3.2</td>
<td>14.47</td>
<td>0.50</td>
</tr>
<tr>
<td>56-0002-02</td>
<td>1,000-3,500</td>
<td>3.6</td>
<td>14.47</td>
<td>0.50</td>
</tr>
<tr>
<td>56-0002-03</td>
<td>2,000-5,000</td>
<td>1.0</td>
<td>13.28</td>
<td>0.25</td>
</tr>
</tbody>
</table>

NOTE: This Manual Shutoff Valve Decoupler must be used with a suitable pump which includes a 2-Position/3-Port, directional control valve for operation of a single acting circuit. Contact Vektek for considerations in the use of this Manual Shutoff Decoupler to control double acting circuits. Also see the Automatic Shutoff Valve Decouplers in Section K.

For proper sealing, mating surface must be flat within 0.003 in. with a maximum 63 µ in. R₀ surface finish.

Pumps for Manual Shutoff Valve Decouplers

A. Basic Manual Shutoff Valve Decoupler Pump: Workholding Pumps with one 2-Position/3-Port, normally closed directional control valve and 2-Position pendant switch providing “Clamp-Unclamp/Disconnect” control (both detented) of the palletized single acting circuit. See the pump convenience packages (Section J) for the pump model of your choice.

B. Other Manual Shutoff Valve Decoupler Pumps: Vektek offers a matrix of pumps with a wide range of electric and hydraulic control features for use with the Manual Shutoff Decouplers to control both single and double acting circuits. Contact Vektek with your specific needs for technical support on other suitable pump configurations.
Self-Closing Manual Release

Decoupler with External Accumulator

For operation with Female Quick Connect Coupling Model No. 30-7827-66.

- This Decoupler is a convenient, self-contained package that includes a male quick disconnect with dust cover, accumulator, filter screens on both sides of system and an over-pressure relief valve. (Pressure gauge sold separately see Section M.)
- Manual shut-off valve automatically closes on system pressurization. Valve is manually opened to release system pressure back to the pump.
- External accumulator can be repositioned into your decoupler mounting and pallet layout.
- Manifold mountable from the bottom or the rear surface.
- External accumulator can be repositioned into ports A3, A6 or A7 to accommodate the decoupler mounting and pallet layout.
- Pressure gauge can be mounted in A5 or A8 port to accommodate the decoupler mounting and pallet layout.
- BHC™ Finish.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>56-0006-06</td>
<td>2,000 psi</td>
<td>5,000 psi</td>
<td>10-1016-01</td>
<td>30-7227-66</td>
</tr>
<tr>
<td>56-0006-07</td>
<td>1,000 psi</td>
<td>3,500 psi</td>
<td>10-1016-02</td>
<td>30-7227-66</td>
</tr>
</tbody>
</table>

For proper sealing, mating surface must be flat within 0.003 in. with a maximum 63 µ in. Ra surface finish.

NOTE: This Self-closing Manual Shut-off Valve Decoupler must be used with a suitable pump which includes a 2-Position/3-Port, directional control valve for operation of one single acting circuit.
Manual Shutoff Tombstone Top Plate for Single Acting Systems

- Provides separate unclamp control of up to four faces of a tombstone or multi-circuit pallet for independent loading and unloading.
- Tombstone Top Plates are convenient, self-contained packages that include a quick connect coupling, manual shutoff valves, accumulator, filter screens, check valves, pressure gauge(s), and a manual pressure bleed port.
- The Four-sided Tombstone Top Plate is provided with one common pressure gauge and auxiliary ports for optional pressure gauges at each shutoff valve.
- Models available for circuits operating at 2,000-5,000 psi and 1,000-3,500 psi pressures.

Four-Sided Tombstone Top Plate

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>56-0003-01</td>
<td>2,000 - 5,000 psi</td>
</tr>
<tr>
<td>56-0003-02</td>
<td>1,000 - 3,000 psi</td>
</tr>
</tbody>
</table>

For Operation with Female Quick Connect Coupling
Model No. 30-7827-60 (Section H)

NOTE: These Manual Shutoff Valve Top Plates must be used with a suitable pump which includes a 2-Position/3-Port, directional control valve for operation of single acting circuits only. Each valve on a Manual Top Plate can be used to operate only one single acting circuit. For operation of double acting circuits, see the Automatic Shutoff Valve Decouplers. (See Section K.)

Pumps for Manual Shutoff Valve Decouplers
A. Basic Manual Shutoff Valve Decoupler Pump: Workholding Pumps with one 2-Position/3-Port, normally closed directional control valve and 2-Position pendant switch providing "Clamp-Unclamp/Disconnect" control (both detented) of the palletized single acting circuit. See the pump convenience packages (Section J) for the pump model of your choice.
B. Other Manual Shutoff Valve Decoupler Pumps: Vektek offers a matrix of pumps with a wide range of electric and hydraulic control features for use with the Manual Shutoff Decouplers to control both single and double acting circuits.
Contact Vektek with your specific needs for technical support on other suitable pump configurations.
Manual Shutoff Valve Tombstone Top Plates for Single Acting Systems

- Provides separate unclamp control of up to two faces of a tombstone or multi-circuit pallet for independent loading and unloading.
- Tombstone Top Plates are convenient, self-contained packages that include a quick connect coupling, manual shutoff valves, accumulator, filter screens, check valves, pressure gauge and a manual pressure bleed port.
- The Two-sided Top Plate is provided with a gauge at each shutoff valve.
- Models available for circuits operating at 1,000-5,000 psi and 1,000-3,500 psi.

---

Two-Sided Tombstone Top Plate

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Circuits Operating at</th>
</tr>
</thead>
<tbody>
<tr>
<td>56-0004-01</td>
<td>2,000-5,000 psi</td>
</tr>
<tr>
<td>56-0004-02</td>
<td>1,000-3,000 psi</td>
</tr>
</tbody>
</table>

For operation with Female Quick Connect Coupling Model No. 30-7827-60.

---

NOTE: These Manual Shutoff Valve Top Plates must be used with a suitable pump which includes a 2-Position/3-Port, directional control valve for operation of single acting circuits only. Each valve on a Manual Top Plate can be used to operate only one single acting circuit. For operation of double acting circuits, see the Automatic Shutoff Valve Decouplers. (See Section K.)
Quick Connect with Trigger Mechanism

- Faster connects/disconnects with “Pistol-Grip” Trigger Mechanism, Female Connect and 90° Elbow sold in one convenient package.
- Ergonomic design reduces operator fatigue.
- Easily connect/disconnect to hard-to-reach and tall fixtures.

Quick Connect with Trigger

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>56-0009-01</td>
<td>Quick Connect with Trigger</td>
</tr>
<tr>
<td></td>
<td>For use with Pallet Decouplers or other</td>
</tr>
<tr>
<td></td>
<td>devices using QD coupler Part No. 30-7727-66</td>
</tr>
</tbody>
</table>

Manual Unload Valves-Tombstone

- Manual Dump Valves are compact packages that include a manual shutoff valve, check valve, filter screen, auxiliary gauge port and manifold mounting ports. Available with optional manual pressure bleed port.
- These valves provide separate control of a tombstone face or pallet circuit when integrated into the complete Tombstone Top Plate system shown in the schematic.

Manual Unload Valves

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>70-1017-00</td>
<td>Manual Unload Valve (face mounted)</td>
</tr>
<tr>
<td>70-1017-03</td>
<td>Manual Unload Valve with bleed port</td>
</tr>
</tbody>
</table>

For proper sealing, mating surface must be flat within 0.003 in. with a maximum 63 µ in. R₉ surface finish.
Thread-In Coupling Elements

Coupling elements are designed to deliver a leak-free connection, regardless of pressure state, while coupling. Choose between two flow rates and two nominal diameter sizes. The compact design allows couplings to be recessed into the fixture plate. Stainless steel construction provides long service life with replaceable face seals.

- Axial face seal between coupling mechanism and coupling nipple.
- Both elements must be positioned and guided within specified tolerances before contact with sealing surfaces.
- Coupling force at operating pressure ranges from 0-800 and 0-1800 pounds depending on model.
- Spanner and Seal replacement installation tools available.

Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>End Type</th>
<th>Coupling Type</th>
<th>Nom. Ø</th>
<th>Thread</th>
<th>Max. Operating Pressure</th>
<th>Max Flow Rate (cu.in./min.)</th>
<th>Stroke (in)</th>
<th>Min Coupling Force at 0 PSI</th>
<th>Axial Position Tolerance</th>
<th>Radial Position Tolerance</th>
<th>Permit Angle Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>56-1013-00</td>
<td>Mech.</td>
<td>Pressurized</td>
<td>3</td>
<td>M20 x 1.5</td>
<td>5,000 psi</td>
<td>490</td>
<td>0.18</td>
<td>21 lbs</td>
<td>+0.02</td>
<td>± 0.012</td>
<td>± 1</td>
</tr>
<tr>
<td>56-1023-00</td>
<td>Depressurized</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>56-1015-00</td>
<td>Mech.</td>
<td>Pressurized</td>
<td>5</td>
<td>M24 x 1.5</td>
<td>7,250 psi</td>
<td>730</td>
<td>0.18</td>
<td>22 lbs</td>
<td>+0.02</td>
<td>± 0.012</td>
<td>± 1</td>
</tr>
<tr>
<td>56-1025-00</td>
<td>Depressurized</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>56-1113-00</td>
<td>Nipple</td>
<td>Pressurized</td>
<td>3</td>
<td>M20 x 1.5</td>
<td>5,000 psi</td>
<td>490</td>
<td>0.18</td>
<td>21 lbs</td>
<td>+0.02</td>
<td>± 0.012</td>
<td>± 1</td>
</tr>
<tr>
<td>56-1123-00</td>
<td>Depressurized</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>56-1115-00</td>
<td>Nipple</td>
<td>Pressurized</td>
<td>5</td>
<td>M24 x 1.5</td>
<td>7,250 psi</td>
<td>730</td>
<td>0.18</td>
<td>22 lbs</td>
<td>+0.02</td>
<td>± 0.012</td>
<td>± 1</td>
</tr>
<tr>
<td>56-1125-00</td>
<td>Depressurized</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTE: Clean face of coupling elements with compressed air prior to connecting coupling to protect from contamination intrusion. Both elements must be guided about 1/16 to 1/8 inch before contact of sealing surfaces with radial positioning tolerances.

Tools

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Spanner Tool</th>
<th>Seal Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>56-1013-00</td>
<td>AT-5613-00</td>
<td>AT-5603-00</td>
</tr>
<tr>
<td>56-1023-00</td>
<td>AT-5613-00</td>
<td>AT-5603-00</td>
</tr>
<tr>
<td>56-1015-00</td>
<td>AT-5615-00</td>
<td>AT-5605-00</td>
</tr>
<tr>
<td>56-1025-00</td>
<td>AT-5615-00</td>
<td>AT-5605-00</td>
</tr>
<tr>
<td>56-1113-00</td>
<td>AT-5613-00</td>
<td>N/A</td>
</tr>
<tr>
<td>56-1123-00</td>
<td>AT-5613-00</td>
<td>N/A</td>
</tr>
<tr>
<td>56-1115-00</td>
<td>AT-5615-00</td>
<td>N/A</td>
</tr>
<tr>
<td>56-1125-00</td>
<td>AT-5615-00</td>
<td>N/A</td>
</tr>
</tbody>
</table>
### Palletized Fixture Accessories

#### Thread-In Coupling Cavity

**Model No.**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>End Type</th>
<th>Nom. Dia.</th>
<th>Torque (lb*ft)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>P</th>
<th>Q</th>
<th>R</th>
<th>S</th>
<th>T</th>
<th>U</th>
</tr>
</thead>
<tbody>
<tr>
<td>56-1013-00</td>
<td>Mech.</td>
<td>3</td>
<td>M20 x 1.5</td>
<td>.7090</td>
<td>.848</td>
<td>.398</td>
<td>N/A</td>
<td>1.224</td>
<td>1.142</td>
<td>N/A</td>
<td>.512</td>
<td>.443</td>
<td>1.102</td>
<td>.197</td>
<td>.610</td>
<td>.276</td>
<td>.102</td>
<td>2</td>
<td>.846</td>
<td>.807</td>
<td></td>
</tr>
<tr>
<td>56-1023-00</td>
<td>Mech.</td>
<td>5</td>
<td>M24 x 1.5</td>
<td>.8666</td>
<td>.848</td>
<td>.398</td>
<td>.935</td>
<td>1.224</td>
<td>1.474</td>
<td>.492</td>
<td>.443</td>
<td>1.102</td>
<td>.197</td>
<td>.728</td>
<td>.276</td>
<td>.110</td>
<td>4</td>
<td>.846</td>
<td>.965</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Only one passage is required, choose option best suitable for your application.

---

**Coupling Force Equations:**

ND3: \( F (\text{lbs}) = 0.1457 \times P (\text{psi}) \)

ND5: \( F (\text{lbs}) = 0.2387 \times P (\text{psi}) \)

- Minimum required coupling force between nipple and mechanism resulting from hydraulic operating pressure.
- Must be externally countered by some mechanical means.
Ensures Positive-Pressure Monitoring

- Install pressure switches.
- Find a place on the fixture for your transmitter.
- Find a place on your machine for your receiver.
- Wire your control box.
- No more tool crashes. IT'S THAT SIMPLE!

The Guardian™ gives you wireless, hydraulic pressure monitoring configured for your machine tool fixtures. Equipped with an IP 67 sealed pressure switch, sealed Fixture Transmitter and shielded industrial connectors; Guardian™ ensures positive-pressure monitoring even in the harshest environments. Best of all, you will enjoy easy pressure monitoring and machine tool notification with no interference issues.

The Simple Guardian™ installs with four wires (Two power wires and a pair of output wires). It is a quick and clean installation needing no modifications to the machine tool control.

The Base Guardian™ Continuous system requires six wires and continuously monitors only the pallet in the machining envelope. The pallet being loaded is ignored during the unload/reload process until it enters the machine. Once inside the machine enclosure, Guardian’s™ “focused field” monitors the pallet. Guardian notifies your machine immediately of any critical pressure loss.

- Fixture Transmitters require no batteries, EVER!
- Simplified connection via standard connectors and cables.
- Dedicated in-cycle monitoring or machine code polling of fixture status.
- Will not affect other plant wireless systems.
- Master Control Unit power requirements; 10-36 VDC from Machining Center.
- Fully Sealed Fixture Transmitters.

Simple and Base Guardian™ Continuous Systems

- 2 Single Circuit Fixture Transmitter Units
- 2 Pressure Switches and Cables
- 1 Machine Tool Receiver
- Master Control Unit
- All Necessary Wiring

Convenience Packages

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>33-0111-10</td>
<td>Simple</td>
<td>Simple Guardian Package for on demand monitoring. Includes Master Control Unit, Machine Tool Receiver, two fixture transmitters, two mechanical pressure switches and pressure setter/checker*</td>
</tr>
<tr>
<td>33-0111-20</td>
<td>Base</td>
<td>Base Guardian Package for continuous monitoring. Included Master Control Unit, Machine Tool Receiver, two fixture transmitters, two mechanical pressure switches and pressure setter/checker*</td>
</tr>
</tbody>
</table>

Convenience Kits

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>33-0101-10</td>
<td>Simple</td>
<td>Machine Kit with Master Control Unit and Machine Tool Receiver*</td>
</tr>
<tr>
<td>33-0101-20</td>
<td>Base</td>
<td>Machine Kit with Master Control Unit and Machine Tool Receiver*</td>
</tr>
<tr>
<td>33-0101-03</td>
<td>Single Circuit</td>
<td>Fixture transmitter with cable and pressure switch</td>
</tr>
<tr>
<td>33-0101-04</td>
<td>Dual Circuit</td>
<td>Fixture transmitter with two cables and two pressure switches</td>
</tr>
<tr>
<td>33-0101-05</td>
<td>Quad Circuit</td>
<td>Fixture transmitter with four cables and four pressure switches</td>
</tr>
</tbody>
</table>

*All necessary wiring and hardware included.
Palletized Fixture Accessories

Wireless Pallet Pressure Monitor

Master Control Unit
33-0110-14 Simple
33-0110-24 Base

Cables
- Model No. 27-6424-04: Cable, M12 8 Pin Male Connection for Machine Feedback (32.8 ft Cable Included)
- Model No. 27-7422-03 and 27-9422-01: M12 5 Pin Male Connector

Machine Tool Receiver
33-0111-02

Extension Cable
- Model No. 27-7424-01: M8 3 Pin Extension Cable to Fixture Transmitter (1.6 ft)

Fixture Transmitters
- Model No. 33-0111-03: One Circuit
- Model No. 33-0111-04: Two Circuits
- Model No. 33-0111-05: Three or Four Circuits

NOTE: All Guardian cables are shielded and PUR jacketed.

Accessories
- Model No. 27-6424-04: M12 8 Pin Female Connector (See Table)
- Model No. 27-7422-03 and 27-9422-01: M12 5 Pin Female Connector

NOTE: Includes 19.7 inch M8 Shielded Cable P/N 27-7424-01 For Direct Connection to Fixture Transmitter

Model No. Description | Connection | Length (ft)
--- | --- | ---
27-6424-04 Cable, M12 8 Pin Master Control Unit Machine Tool Interface* | Female Straight - Open End | 32.8
27-9422-01 Extension Cable M12 5 Pin Master Control Unit to Machine Tool Receiver Communication Cable** | Female Straight - Male Straight | 32.8
27-7422-03 Extension Cable M8 3 Pin Pressure Switch to Fixture Transmitter | Female Straight - Male Straight | 16.4
27-7424-01 M12 5 Pin Male Connector | | 1.6

Pressure Switches
- Model No. 70-7500-78: 750-5000 PSI Pressure Switch with 19.7 IN Cable (Shown)
- Model No. 70-7500-74: 750-5000 PSI Pressure Switch with M8 Male Connection Only***
- Model No. 33-0110-15: Pressure Setter / Checker to assist setting mechanical pressure switches

* Included with 33-0110-10/20. Can be purchased separately for replacement or additional hook up.
** 27-9422-01 is included with 33-0110-10/20. Cables can be purchased separately for extension or replacement.
*** 70-7500-74 Requires User Provided 3 Pin M8 Shielded Cable.