Advanced Workholding Pump

A HIGHER STANDARD FOR WORKHOLDING
The **Advanced Workholding Pump** was specifically designed for fixture workholding. This efficient 2-stage pump easily stands up to high demand circuits. There are no duty cycle limitations because the VFD (Variable Frequency Drive) protects itself from overheating. The VFD also removes any concerns for international electrical service inputs, offering a full range of options. Electrically efficient by design, the pump uses an electronic digital pressure switch setting for the on-demand function. These features combine to create an extremely low carbon footprint.

At the core of the **Advanced Workholding Pump** is a state-of-the-art rotating group pump. This multi-piston radial pump generates sufficient flow to power multiple fixture circuits. The 5-gallon reservoir supplies 3.5 gallons of usable oil to provide ample volume to actuate more clamping devices and can easily feed 1 to 6 circuits.

**What makes the Advanced Workholding Pump so advanced?**

First, it uses the latest in premium efficiency electric motor technology - Variable Frequency Drive (VFD) to control its electric motor.

**What does this do and why is it important?**

It starts the motor by varying both current and frequency allowing a motor to “spin up” rather than surge when started by a direct motor starter. This reduces the in-rush current and the heat that must be dissipated by a motor starting frequently.

It also allows the motor speed to be reduced as it comes close to the projected end-of-run. This is accomplished by analog output from the pump pressure switch that “tells” the VFD control to begin slowing down as it gets close to its set point. This slows the motor from its maximum of 1740 rpm as it approaches the set point of the switch. Older contactor driven pumps are spinning at full rpm when switched off and can often result in pressure “over-runs” as the motor coasts to a stop after the loss of power.

Second, it uses the latest technology in electronic pressure switches to communicate directly with the VFD controller to start and stop the motor.
Why is this important?

It has two adjustable set points that you define specific to your application. Set Point 1, or SP1, defines how high the pump builds pressure to and then the motor turns off. When a circuit is called on to actuate and pump manifold oil pressure is needed, the pressure switch reacts by dropping, this reaction trips the reset point, or RPI. This communication with the VFD will run the motor back up and serve any and all circuit needs until satisfying SP1 and then it rests again. The on-demand feature greatly reduces power consumption and unwanted hot oil, both are valuable benefits. Additional pressure switches can be added to individual circuits at pump mounted directional control valve locations. These can provide a confirmation feedback loop to a machine controller when monitoring for a minimum acceptable individual circuit pressure within machine control logic.

Third, the advanced 2 stage pump design uses two flow rates to power your system with an economical 1HP or 2HP motor rather than a 3 HP or larger motor, which would be required with a single stage pump. It uses positive displacement pistons to provide the low pressure - high flow fluid to position cylinders quickly, as well as the high pressure - low flow fluid at the end of the cycle. The pistons, providing both low and high flow, are positive displacement and will never reduce their output flow - unlike gear and gerotor pumps which will lose performance over time.

Finally, it can be used as a “pendant controlled pump” or with a “machine tool interface cable” to allow the machine to control and monitor the pump. Our Customer Support Specialists can help you choose options to configure the pump EXACTLY as you require. Once the pump part number is determined, you can reorder easily and quickly any time you want the EXACT CONFIGURATION repeated.

1HP·2HP
Two Motor Sizes to Suit Your Needs.

The Advanced Workholding Pump 1HP features a 1HP motor and a 2HP motor energizes the Advanced Workholding Pump 2HP. If clamping speed is a concern, we recommend that you calculate your system’s oil volume to determine if you require a 2 HP pump.

To aid in your pump selection, Vektek has developed “Convenience Packages” that include the most popular configurations. If your application falls outside these convenience packages, call us - we are here to help.
ADVANCED WORKHOLDING PUMP OPTIONS

VEKTEK
The Productivity Devices Company
ADD-ON OPTIONS

- Valve wiring cable or machine tool interface cable
- High oil temperature indicator switch
- Electronic clog indicator upgrade from visual indicator
- Analog pressure confirmation
- Electronic digital pressure confirmation
- Specific control valve functions (many options)
- Pressure Reducing Valves to individual circuits
- Accumulator (might be needed for small circuits, or low pressure systems)
- Change electrical service input to match local supplied voltages
- 2-Hand No-Tie-Down Control Module (for use with decoupled systems only)
- Extra Pendant Switch Control (1 supplied standard with every solenoid valve pump for setup and testing)
  - 2/3 Valve, NO, (On/Off)
  - 2/3 Valve, NC, (Off/On)
  - 2/3 Valve, NC, (Off/Momentary On)
  - 3/4 Valve, CC or PBC, (On/Off/On)
- Extension Cables
- CNC Machine Control Options
  - Pump/Machine Tool Interface Cable

www.vektek.com
DECOUPLED SYSTEM

The hydraulic pump feeds and pressurizes the fixture, clamping the part. Then the hoses are disconnected. An accumulator retains the fixture pressure during the machining cycle.

At part unload, pump hoses are re-connected allowing oil from the fixture to return to the pump tank.

CONVENIENCE PACKAGES FOR DECOUPLED FIXTURES

Single Acting Systems (One Hose)
- Manual 2-Position 3-Port
- 24VDC 2-Position 3-Port Normally Closed “Dump Pump”
- 24VDC 2-Position 3-Port Normally Closed

Double Acting Systems (Two Hose) and for all Auto Shutoff Decoupler handles
- Manual 3-Position 4-Port P-Blocked
- 24VDC 3-Position 4-Port P-Blocked
- 24VDC 3-Position 4-Port P-Blocked Center with A & B Pressure Regulated
LIVE SYSTEM

Clamping devices on a live system fixture are dependent on a continuous hydraulic feed to maintain pressure during the machining process. This is accomplished by feeding pressure through directly connected hoses (ILL. A). For twin pallet machines, a rotating union is used (ILL. B).

CONVENIENCE PACKAGES FOR LIVE SYSTEM FIXTURES

**Single Acting Live System**
- Manual 2-Position 3-Port
- 24VDC 2-Position 3-Port Normally Open

**Double Acting Live System**
- Manual 3-Position 4-Port Closed Center
- 24 VDC 3-Position 4-Port Closed Center
Machine Tool Interface Control Operated Pump

Complete integration of the pump and valve control to the CNC machine can be accomplished with 1 of 3 options, all using the Harting Series Han 10B connector system in a single 16 ft (5M) cable. The Harting Series Han 10B connector utilizes A, B, or C modules with 12 pins each to connect valve control, pressure switch monitoring, and pump status monitoring. In the standard 1-4 valve or 5-6 valve system, power for the pump motor is supplied in a separate service cable. In the optimized 1-4 valve system, power for the pump motor is included in the C module of the single machine tool interface cable (5-6 valve not possible). Each system is supplied with a mating female cable receptacle with a 16 ft (5M) pig tail to be mounted and connected to the machine tool controller or PLC (Programmable Logic Controllers).

The pump is supplied with a mating male cable receptacle that is already prewired to the pump enclosure for complete control. Input pump status monitoring for each configuration includes oil level, oil temperature, oil filter clog indicator, and VFD fault status. Output from PLC to the pump includes emergency stop and fault rest. This allows for complete control and monitoring of the pump system in all configurations. All Machine Tool Interface Control options must be configured at the time of order and built at the factory. These options cannot be added or upgraded in the field.

Machine Tool Mounted Optional Interface

Currently available to interface with Okuma machines. Other interfaces available upon request.

Ask your machine tool supplier for interface options for your machine.
Air Control and Monitoring Unit for Pneumatic Confirmation Systems

• Controls inlet pressure and air flow to downstream valves.
• Electronic pressure switch with 2 digital set points and analog feedback of pressure.
• Can be used with pneumatic confirmation valves, part presence sensing work supports, and double acting work support position sensors.
• Connect to shop air supply, workholding fixture, and CNC machine control system.
• Tune pressure and flow to each specific air system and adjust pressure switch set points to switch when pressure changes due to change in flow.

Wireless Pressure Monitor

The Guardian gives you controlled “pre-machining” or “in-cycle” hydraulic pressure monitoring. The Guardian is the simplest monitoring system for decoupled fixtures. No transmitter pairing is required, and you can add new fixtures easily and hassle free.

Guardian’s sealed system ensures positive pressure monitoring - even in the harshest environments. Best of all, you will enjoy constant pressure monitoring with no interference issues.

Easy, Simple, Dependable

For more information call: 800-992-0236
sales@vektek.com
www.vektek.com
To select the Advanced Workholding Pump that best fits your needs follow these seven selection points:

1. Type of system to be powered - Live System or Pallet Decoupled
2. Single or Double Acting System
3. Control Interface
   - How do you want to control your pump?
     • Manual Valve
     • Pendant
     • 2 Hand No-Tie-Down
     • Machine Tool Control
4. Number of Valves (Up to 6 circuits)
5. Electrical Source
6. 1hp or 2 hp pump
7. Options

For assistance call: 800-992-0236
email: customersupport@vektek.com

**CONTROL INTERFACE**

- **Manual Valve**
  - 2-Position/3-Port or 3-Position/4-Port manual control.
- **Controller Pendant**
  - All Advanced Workholding pumps come with a pendant. They can be used to control the pump with simple systems or as a temporary control when setting up a larger system.
- **2 Hand No-Tie-Down**
  - A Two-Hand No-Tie-Down Control is a device which requires an operator to have both hands on the control in order to activate a cylinder. This safety device gives a maintained output signal when both buttons are pressed and held.

**MACHINE TOOL CONTROL**

- Interface with CNC Machine controller.
- Pump/Machine Tool Interface Cable, 1-6 Valves, 24 Pin or 36 Pin.

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<tr>
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<tr>
<td>MANUAL 2-POSITION/3-PORT</td>
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<td>24VDC 2-POSITION/3-PORT NORMALLY OPEN</td>
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<td>24VDC 3-POSITION/4-PORT CLOSED CENTER</td>
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<tr>
<td>24VDC 3-POSITION/4-PORT P-BLOCKED CENTER WITH A &amp; B INDIVIDUAL CIRCUIT PRESSURE ADJUSTMENT</td>
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<tr>
<td>24VAC 3-POSITION 4-PORT P-BLOCKED</td>
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<tr>
<td>MANIFOLD ONLY (NO CONTROL VALVES INCLUDED)</td>
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**VALVING**

**LIVE SYSTEM**

- **Direct Connect or Rotary Union**

**PALLETT DECOUPLED**

- **(ONE HOSE) SINGLE ACTING FIXTURE**
- **(TWO HOSES) SINGLE OR DOUBLE ACTING FIXTURE**
  - Includes all Auto Shutoff Decoupler handles

**2 PORT PUMP - BASIC**
For assistance in selecting options, contact your sales representatives for details.

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### ELECTRICAL SOURCE

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<tr>
<th>1HP</th>
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### FLOW RATE (CU. IN./MIN.)

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<tbody>
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**Power Boss Cart**

Order Number
62-5595-00