Belvac Production Machinery
Technical Bulletin
Information for Customers Operating & Maintaining Belvac Machines

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595 Necker Brake System
Upgrade Option

This bulletin outlines available upgrade options on 595 Series Necker machinery brake systems, and clarifies requirements for any such upgrade. This upgrade bulletin supercedes Technical Bulletin #33, vol. 1, September 1997, Technical Bulletin #22, vol. 2, July 1999 and Technical Bulletin #1, vol. 7, May 2004.

Belvac Production Machinery continues to strive for excellence in all aspects of our equipment performance. We pursue the highest standards in safety. In developing the uninterruptible power supply (UPS) system, we took no exceptions.

Implementing the UPS controlled brake system will offer controlled machine stops in the event plant equipment power is interrupted. Non-UPS brake systems cause the machine to stop in an E-stop condition, potentially harming the machine.

Brief Explanation of UPS (Uninterruptible Power Supply):

A UPS is a temporary power supply that offers emergency power to devices during loss of power. The UPS monitors line power and, when voltage drops below the threshold set point, the UPS immediately transfers energy from its reservoir to the connected devices. The UPS provides emergency power to the **brake and main air solenoid** during loss of power. Figure 4 is an example of a system wired with the UPS backup control installed.

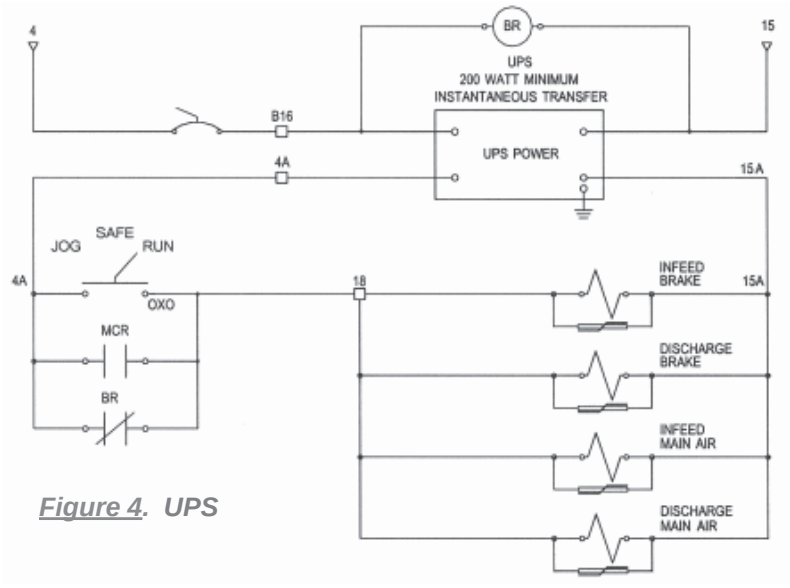

Figure 4. UPS

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How the Brake System is Designed to Function

The Brake and Main Air solenoids are De-Energized during an E-Stop condition (E-Stop push button or Guard opening) which disables air energy to the tooling and engages the brakes, making the machine safe. In this condition, both pressure switches detect zero pressure but do not fault due to the existing stop condition.

*Figure 1. Normal Production Operation**

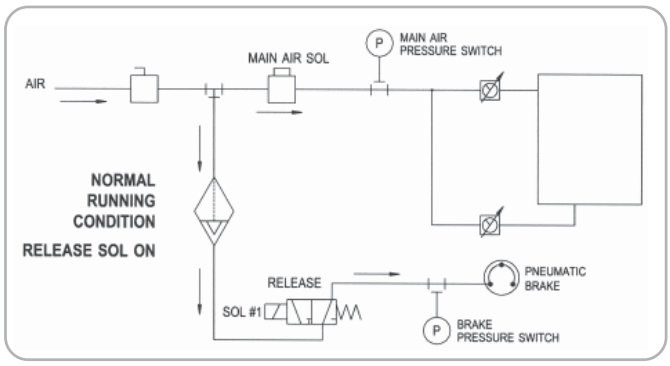
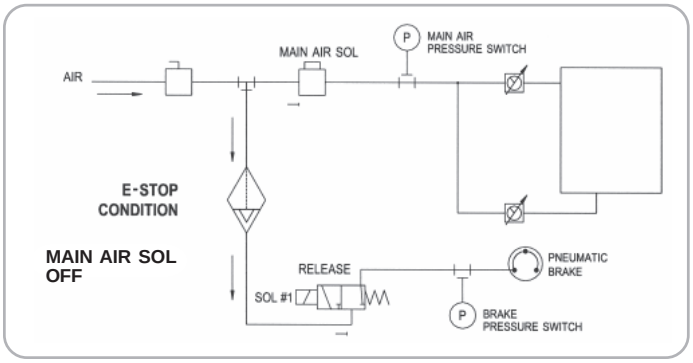


Figure 2. E-Stop or Guard Opening



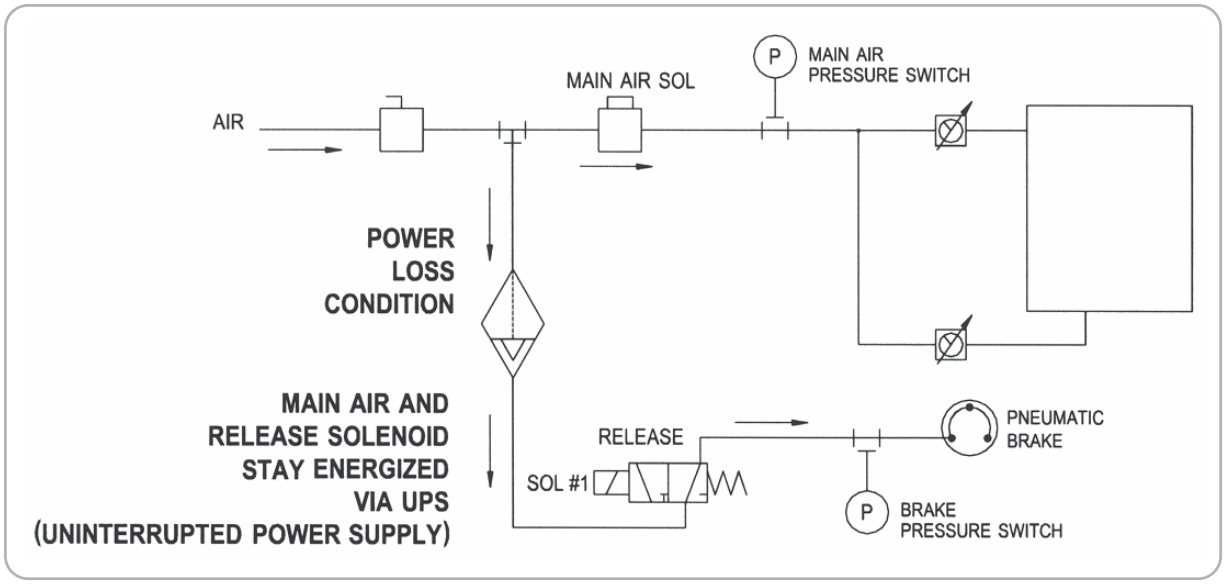
*NOTE: The new valve, C28864, replaces 6511210. The new style is equipped with position feedback and manual override that must be monitored using the feedback 'tattle-tale' contacts on solenoid valve. These are a normally closed set of dry contacts.

How the UPS (Uninterruptible Power Supply) is Designed to Function

In the event of machine power failure the brake and main air solenoids are kept energized via UPS (uninterruptible power supply). The Necker will coast to a stop, avoiding an unexpected sudden stop that would otherwise occur if the UPS system were not in place.

This option is standard if the LCP (Logic Control Panel) is purchased with the machine and the on-machine control power is 24V DC. The customer may purchase the UPS if the LCP is not provided by Belvac Engineering.

Figure 3. Loss of All Electrical Power



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When upgrading your brake system, the following combination of parts may be required.

For existing systems without UPS, equipped with a +24V DC system, add 2753663 as indicated below.

Description of Existing	Control	Part #
✦ 595 Modular Brake System Upgrade	+24 volts DC	2751357 and 2753663
✦ 595 Fixed Base Brake System Upgrade	+24 volts DC	2701281 and 2753663

Belvac does not currently supply an AC backup system. If this system is a requirement in your facility a customer supplied, commercially available UPS system can be used.

UPS circuitry is standard on all 595 Modular Necker machinery shipped since June 1, 2004. For customers with pre-1998 brake circuits, prior to the dual solenoid with differential pressure switch, conversions to this latest design may be ordered as follows:

Part #	Description
2751358	595 Modular Brake System Upgrade Kit -- 110 volts AC
2751357	595 Modular Brake System Upgrade Kit -- 24 volts DC
2701282	595 Fixed Base Brake System Upgrade Kit -- 24 volts DC
2701281	595 Fixed Base Brake System Upgrade Kit -- 110 volts AC

NOTE: If existing machine has 1 brake, 1 kit 2753663 is required. If existing machine has 2 brakes, 2 kits are required.

For customers having the dual solenoid design with differential pressure switch, the system may be converted allowing process air during a power outage with the addition of a UPS.

Contact Belvac Sales and Service for more information.