Belvac Production Machinery

Technical Bulletin

Information for Customers Operating & Maintaining Belvac Machines

ISSUE 01 VOL. 7 MAY 2004

595 Necker Brake System: Electrical Upgrade

Belvac has upgraded the 595 Modular Necker machine brake system to provide process air to the tooling when a power outage occurs. This upgrade bulletin supercedes Technical Bulletin #33 vol. 1, September 1997 and Technical Bulletin #22 vol. 2, July 1999.

- Allows process air to the tooling to prevent can jams during a power outage.
- Allows for manual rotation of the machine when performing maintenance or routine can inspection, without the necessity of bypassing the pneumatic brake either electrically or mechanically.
- During power outages the machine will coast to a stop, rather than abruptly stopping.
- Emergency stops and opening of guards during operation will continue to provide an immediate machine stop.
- A pressure switch is provided to monitor the status of the brake solenoid. A full description of the brake circuit control system is comprised of (3) conditions:

Figure 1. Normal Production Operation

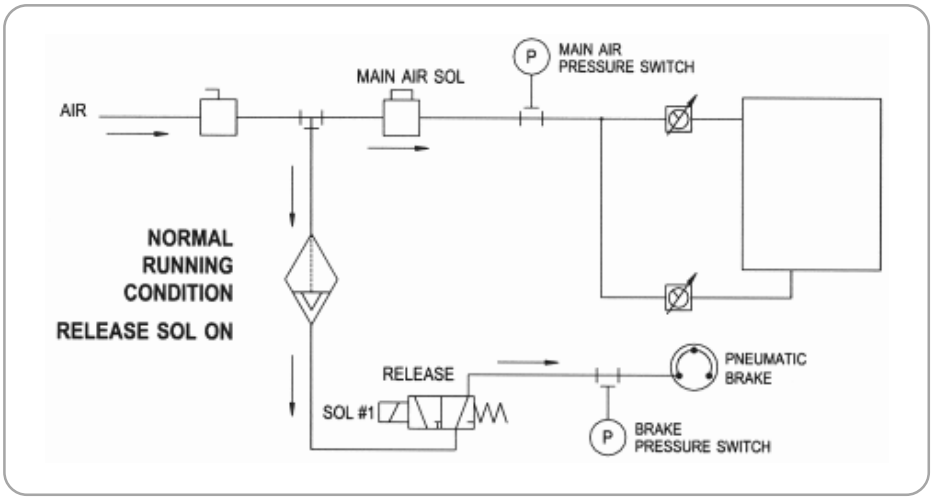
Figure 2. E-Stop or Guard Openings

Figure 3. Loss of All Electrical Power

Normal Production Operation:

The Brake and Main Air solenoids MUST be energized during the machine run or jog condition to allow air to flow into the pneumatic brake(s) and tooling. The Brake solenoid applies air to the pneumatic brake, releasing the machine, and the Main Air solenoid applies air to the tooling. In both conditions, the respective pressure switch detects air pressure and does not fault the PLC until the pressure drops below the set point. If the pressure to the brake drops below 75 PSI the pressure switch will fault and ramp the machine to a stop. If the line pressure drops abruptly below 60 PSI the brakes will engage and the machine will immediately stop.

Figure 1. Normal Production Operation



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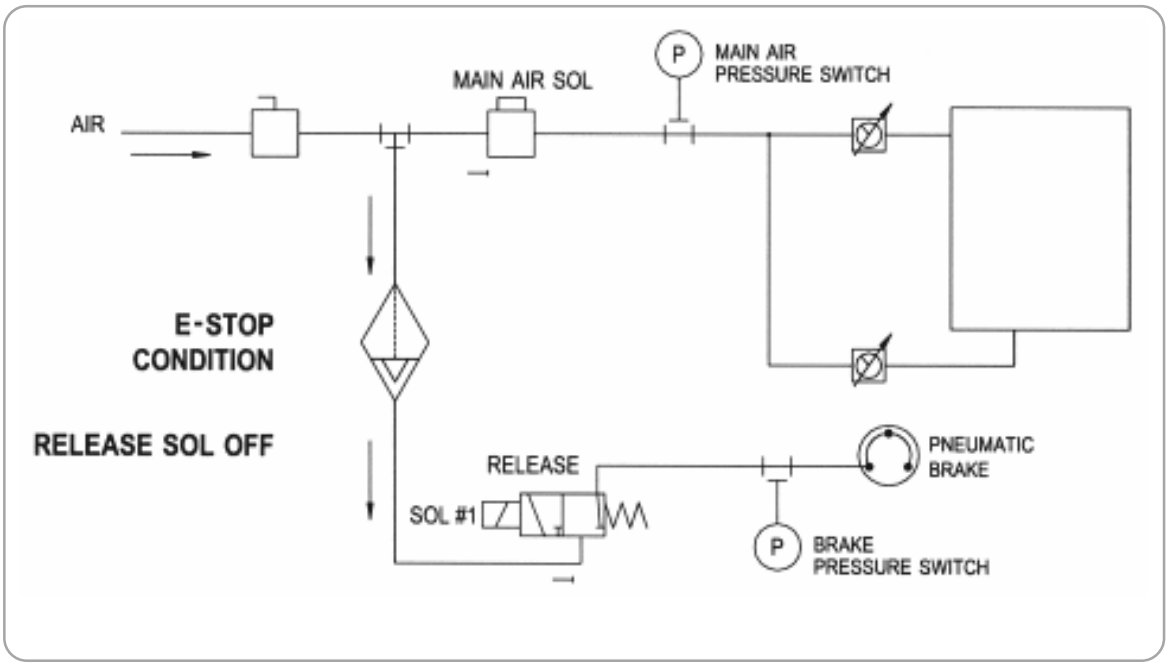
E-STOP or Guard Opening:

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 2. E-Stop or Guard Opening

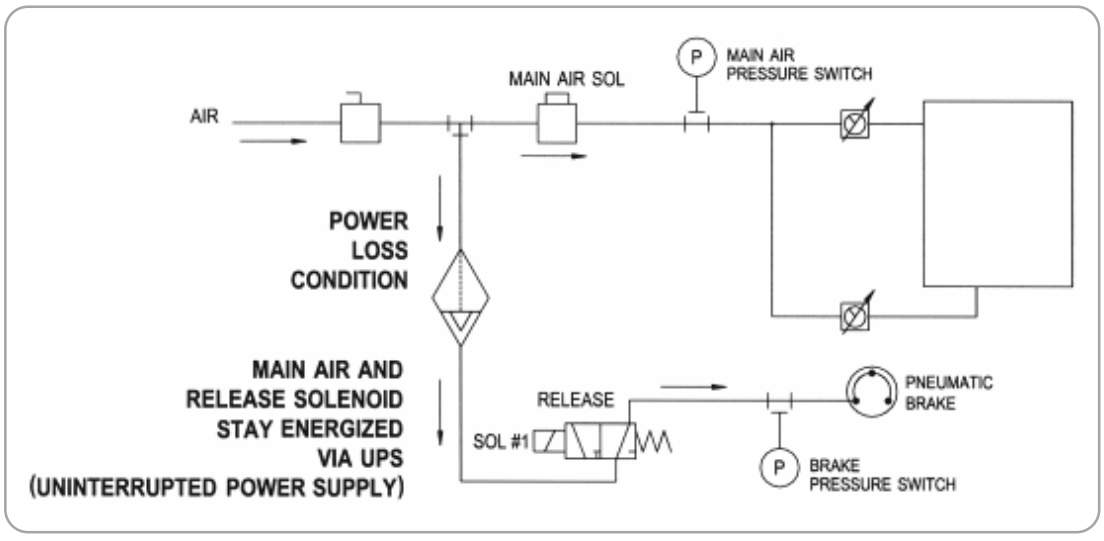


Loss of ALL Electrical Power:

The Brake and Main Air solenoids are Energized in this condition via UPS (Uninterrupted Power Supply). The Necker will coast to a stop using the remaining air from the system. Once plant air supply has been purged below the brake(s) normal operational level (60 PSI), the pneumatic brake(s) engage and rotation ceases.

This option is standard if the LCP (Logic Control Panel) is purchased with the machine. The customer must provide the UPS if the LCP is not purchased.

Figure 3. Loss of All Electrical Power

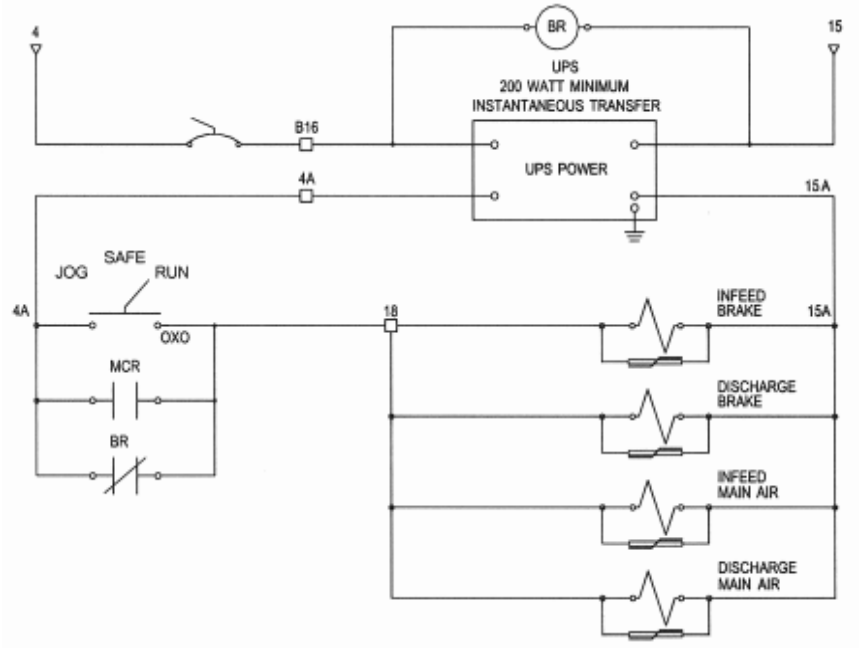


UPS (Uninterrupted Power Supply):

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, the UPS immediately transfers energy from its reservoir to the desired devices. The UPS provides emergency power to the **Brake and Main Air Solenoid** during loss of power.

Figure 4. UPS

IF POWER IS OFF FOR AN EXTENDED PERIOD AND THE UPS BATTERIES ARE DEPLETED, UPON POWER-UP THE UPS WILL NEED TO BE RESET.



This circuitry will be standard on all new 595 Modular Necker machinery shipping 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 AC
2701282	595 Fixed Base Brake System Upgrade Kit -- 24 volts AC
2701281	595 Fixed Base Brake System Upgrade Kit -- 110 volts AC

NOTE: *If existing machine has 1 brake, 1 kit 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 the UPS.

Contact Belvac Sales for more information.

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