

NELCONT® 3000 BASIS WEIGHT VALVE With Junction Box

**Installation, Maintenance,
and Operating Instructions
IMO - 3NC73 Supplement A
Issue 1/02**

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READ THESE INSTRUCTIONS FIRST!

These instructions provide information about safe handling and operation of the valve.

If you require additional assistance, please contact your authorized Metso Automation representative.

SAVE THESE INSTRUCTIONS!

Subject to change without notice.

I GENERAL

1.1 Description

The Neles Brand NELCONT® 3000 consists of our segmented ball valve, an SKF actuator complete with a stepping motor, a NEMA IV junction box and an electronic control station.

The valve is our standard R series valve furnished in stainless steel and modified for basis weight service.

The SKF actuator has pre-set mechanical stops as well as adjustable electrical stops (limit switches). The stepping motor provides precise movement and it is capable of continuous duty. This unit also houses the limit switches and feedback potentiometer.

The stainless steel NEMA IV junction box has two terminal strips in it. Customer wiring connections between the electronic control panel and the actuator are made here.

The electronic control station furnished as standard is for automatic operation only. An optionally available control panel with push-buttons is available for both automatic and manual control.

The unit requires either 110 or 220 Vac power at 50/60 Hz and responds to a 24 Vdc pulse signal generated by the host computer.

2 MAINTENANCE

2.1 Valve Maintenance

Refer to IMO-817 for valve installation and maintenance instructions.

2.2 Setting Limit Switch and Potentiometer

Refer to IMO-3NC73 for setting limit switches and potentiometers

3 INSTALLATION

3.1 Valve Installation

Refer to IMO-3NC73 for R-Series segment valve installation instructions.

3.2 Mounting Actuator

Refer to IMO-3NC73 for actuator mounting

3.3 Valve-Actuator Assembly

For valve/actuator assemblies that have been removed from the line but not disassembled from one-another, only the wiring from the electronic control station, ND100, needs to be re-connected to the NEMA IV junction box. See JUNCTION BOX CONNECTIONS. Re-installing an actuator that has been removed from the valve requires reconnecting the wires to the NEMA IV junction box, re-setting of the limit switches and re-calibration of the potentiometer. See JUNCTION BOX CONNECTION section and ACTUATOR MOUNTING section in IMO-3NC73 and LIMIT SWITCH and POTENTIOMETER settings section in IMO-3NC73.

3.4 Electronic Control Station ND100S1 or ND100S2

These control stations are designed for installation in a rack room or a control room and can be located up to 600 feet away from the valve. Mounting these units in a general mill environment would require they be housed in a well ventilated water-proof enclosure.

4 WIRING SPECIFICATIONS

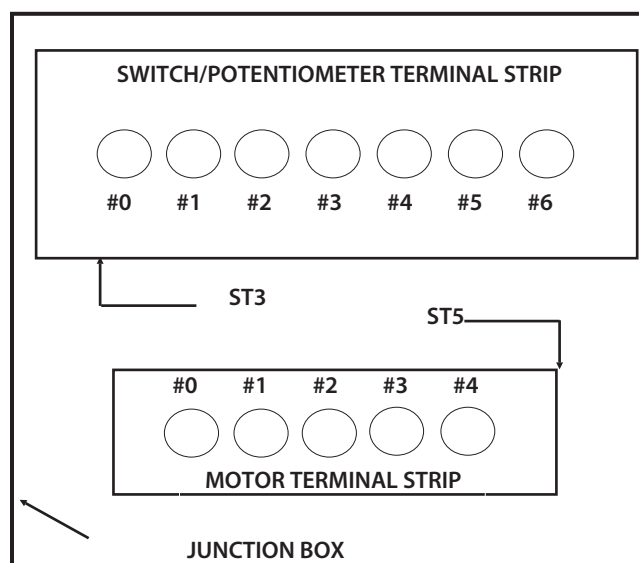
4.1 Wire Sizes

Power supply wiring for 115/220 Vac should be 14-16 ga.

All other wiring to be 18-20 ga.

4.2 Junction Box Connections

Connections between the limit switch/potentiometer housing and the motor to the NEMA IV junction box are made at the factory. To access the inside of the JUNCTION BOX, loosen the 4 screws holding the locking tabs in place, turn the lock tabs out of the way and remove the cover. The junction box has two terminal strips in it, one for the limit switch/potentiometer connections and one for the stepping motor connections. The wiring going into the junction box from both limit switch/potentiometer housing and the stepping motor will use compression seals as the weatherproofing method. The wiring connections from the ND100 S1 or S2 will be routed thru separate 1/2" conduit connections, one from the ST3 and one from the ST5. See JUNCTION BOX TERMINAL STRIPS diagram below:



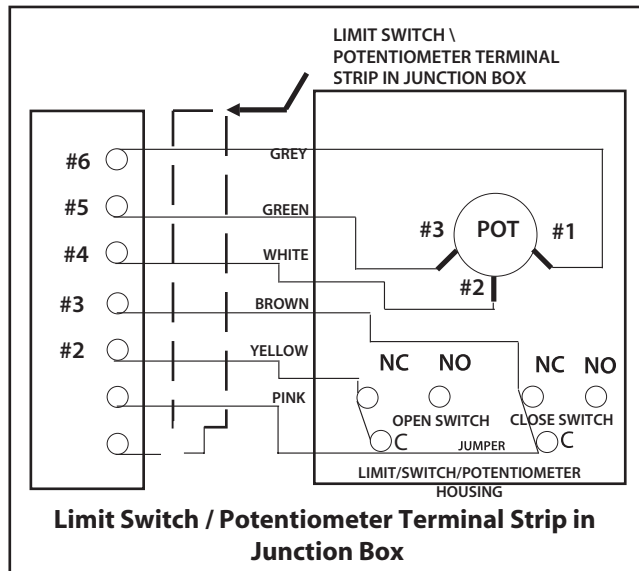
Junction Box Terminal Strips

4.3 Limit Switch Connections

Connections between the limit switch/potentiometer housing and the junction box are made as follows: Actuator Size 1 is hard wired and sizes 2 & 3 use a weatherproof amphenol male/female connector. In all cases the connections between the limit switch/potentiometer housing and the junction box use a 6 wire shielded cable. The connections are as follows: Terminal #1 in the junction box is connected via a PINK wire to the common terminal of the OPEN limit switch. The common terminal of the CLOSE limit switch is connected to the common terminal of the OPEN limit switch. Terminal #2 in the junction box is connected via a YELLOW wire to the NC terminal of the OPEN limit switch. Terminal #3 in the junction box is connected via a BROWN wire to the NC terminal of the CLOSE limit switch. See below.

4.4 Potentiometer Connections

Terminal #4 in the junction box is connected via a WHITE wire to terminal #2 of the potentiometer. Terminal #5 in the junction box is connected via a GREEN wire to terminal #3 of the potentiometer. Terminal #6 in the junction box is connected via a GREY wire to terminal #1 of the potentiometer. See below.



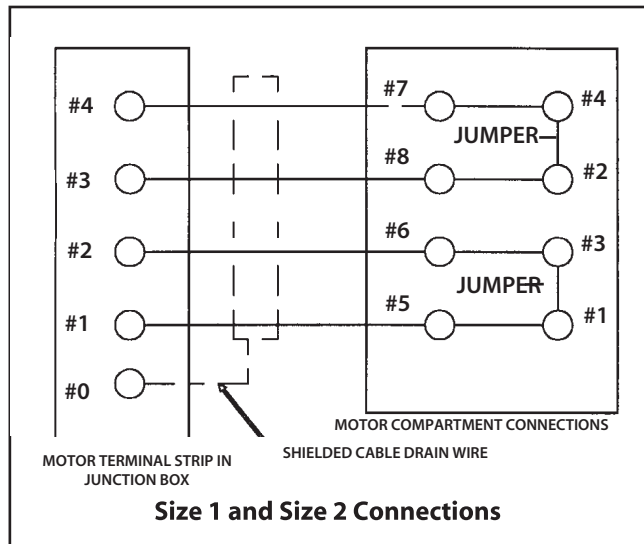
4.5 Stepping Motor Connections

Size 1 and size 2 actuators use the same stepping motor while size 3 uses a separate motor. All connections are from the stepping motor to the junction box.

Remove the end bell from the stepping motor and using a 4 wire shielded cable route all wires thru the conduit connection and into the eight terminal connection area of the motor.

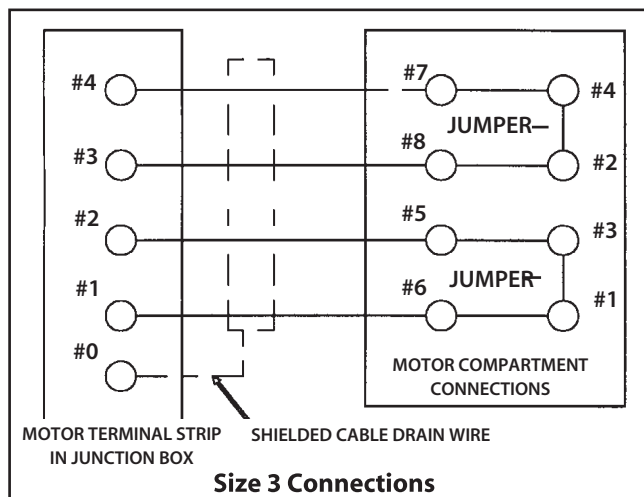
4.6 Size 1 & Size 2 Connections

In the motor compartment place a jumper between connections #1 & 3 and also a jumper between connections #2 & 4. Connection #5 in the motor compartment goes to terminal #1 on the motor terminal strip in the junction box. Connection #6 in the motor compartment goes to terminal #2 on the motor terminal strip in the junction box. Connection #8 in the motor compartment goes to terminal #3 on the motor terminal strip in the junction box. Connection #7 in the motor compartment goes to terminal #4 on the motor terminal strip in the junction box. See the following schematic.



4.7 Size 3 Connections

In the motor compartment place a jumper between connections #1 & 3 and also a jumper between connections #2 & 4. Connection #6 in the motor compartment goes to terminal #1 on the motor terminal strip in the junction box. Connection #5 in the motor compartment goes to terminal #2 on the motor terminal strip in the junction box. Connection #8 in the motor compartment goes to terminal #3 on the motor terminal strip in the junction box. Connection #7 in the motor compartment goes to terminal #4 on the motor terminal strip in the junction box. See the following schematic.

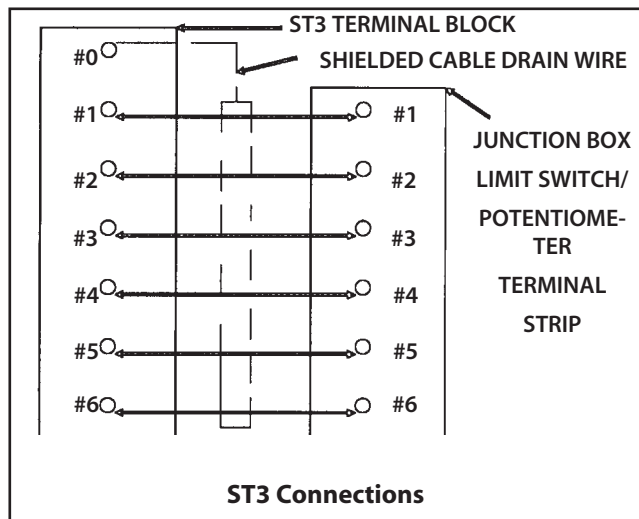


4.8 ND100S1 Connections

The back of the ND100S1 has four (4) different plug-in terminal blocks labeled ST1, ST2, ST3 and ST5. All blocks are one-way plug types with screw connections. For ease in wiring, all terminal blocks may be unplugged from the back of the control station.

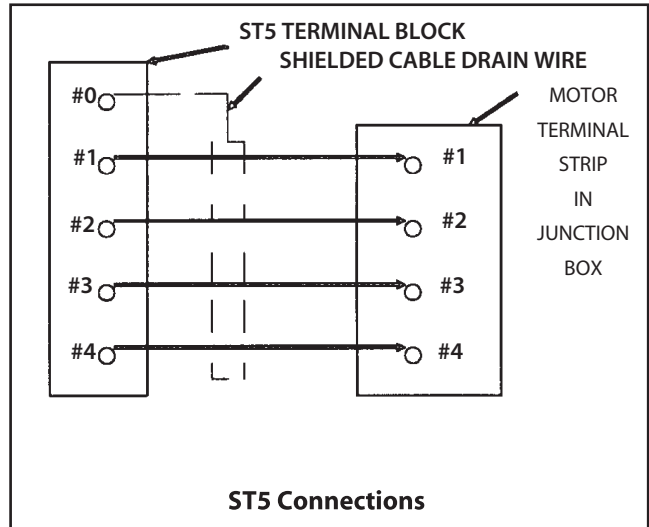
4.9 Limit Switch/Potentiometer ST3

Connections #1 thru 6 on the ST3 terminal block should be connected to the same numbered terminals on the LIMIT SWITCH/POTENTIOMETER TERMINAL STRIP in the junction box. Route the wiring thru the furthest right 1/2" conduit connection on the front of the JUNCTION BOX. The ST3 terminal block may now be plugged back into the control panel. See the following connection diagram for ST3.



4.10 Stepping Motor ST5

Connections #1 thru 4 on the ST5 terminal block should be connected to the same numbered terminals of the MOTOR TERMINAL STRIP in the junction box. Route the wiring thru the furthest left 1/2" conduit connection on the front of the JUNCTION BOX. The ST5 terminal block may now be plugged back into the control panel. See the following connection diagram for ST5.



5 NELCONT 3000 Replacement Parts

DESCRIPTION	PART NO.
NC100 S1 Control Station	H4487
NC100 S2 Push-Button Panel (Cover only)	H4281
ND100 S1 Control Station	H4485
ND100 S2 Push-Button Panel (Cover only)	H4282
NC300 4-20 mA Card	235843
SM100A11 Power Card (NC100)	235836
PC100A11 Power Card (ND100)	235190
Comb Power Cooler Card (NC100)	235845
Limit Switch	235840
Potentiometer (Crab 12 Actuators)	235838
Potentiometer (Crab 20 & 30 Actuators)	235839
LS/POT. Housing (Crab 12/20 Actuators)	3914017
LS/POT. Housing (Crab 30 Actuators)	3915051
Stepping Motor (Crab 12 & 20 Actuators)	235664
Stepping Motor (Crab 30 Actuators)	235812
Crab 12/P20 Actuator w/Step Motor	376476
Crab 20/W25 Actuator w/Step Motor	376478
Crab 30/W30 Actuator w/Step Motor	376479
Crab 30/W34 Actuator w/Step Motor	376480
Crab 30/O45 Actuator w/Step Motor	376477
Crab 30/O50 Actuator w/Step Motor	371609
Override Handwheel (Crab 12/20 Actuators)	235857
Override Handwheel (Crab 30 Actuators)	235928
Red Lens Cover and Collar	235961
Yellow Lens Cover and Collar	235962
Slo-Blo Fuses #GMA4 4 AMP	20232070
Amphenol Connector (Crab 20/30 Actuators)	235861
Lamp Extraction Tool	H3844
SS Junction Box Assembly	20350216
ST1 Terminal Block	H2797
ST2 Terminal Block	H2798
ST3 Terminal Block	H2799
ST4 Terminal Block	H2800
ST5 Terminal Block	H2801

ACTUATOR SELECTION	
Valve Size	Actuator
1" – 4"	Crab 12 / P20
6" – 8"	Crab 20 / W25
10"	Crab 30 / W30
12"	Crab 30 / W34
14"	Crab 30 / O45
16"	Crab 30 / O50

Note:

NOTES

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