MagneTek Drives & Systems

For Lancer GPD 602
Adjustable Frequency Drives

INTEGRAL-MOUNTING OPTION

ANALOG OPERATOR III

MODEL L770

IMPORTANT

Before installing this option, a TECHNICALLY QUALIFIED INDIVIDUAL, who is familiar with this type of equipment and hazards involved, should READ this ENTIRE INSTRUCTION SHEET.

DESCRIPTION

The Analog Operator III mounts within the GPD 602 enclosure. Its front panel (controls and indicators) is accessible with the Drive front cover in place.

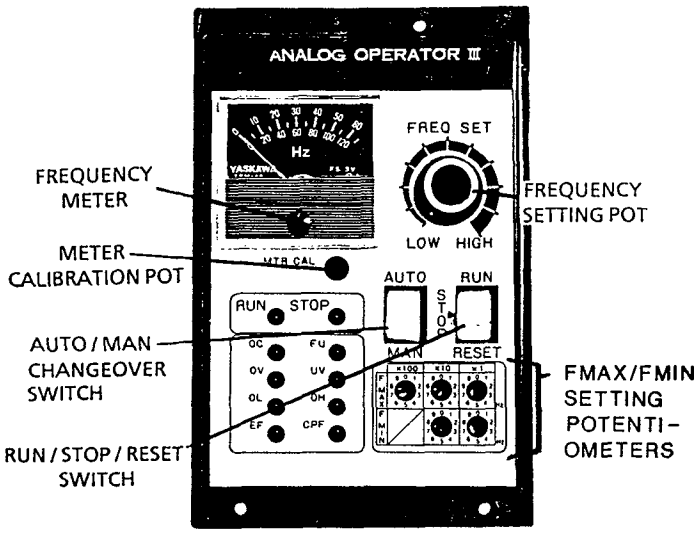

Figure 1. Analog Operator III - Front View

RECEIVING

All equipment is tested against defect at the factory. Any damages or shortages evident when the equipment is received must be reported immediately to the commercial carrier who transported the equipment. Assistance, if required, is available from the nearest MagneTek Sales Office.

Table 1. Analog Operator III Specifications

Storage Temp Range	-20°C to +70°C (-4°F to 158°F)
Operating Temp Range	-10°C to +60°C (14°F to 140°F)
Operating Humidity	90% max relative (No condensation)
Environmental Conditions	- Protected from direct sunlight - Protected from corrosive gases or liquids
Vibration	1G at frequency less than 20HZ 0.2G at 20 to 50HZ
Approx Wt	0.55 lbs
Dimensions (W X H x D)	3.86" x 5.91" x 1.97"

CHANGE RECORD					DWG. NO. 02Y00025-0287 SHEET 1 OF 5 EFF. 3-31-89 (Q)

IMPORTANT

The Analog Operator III will not function properly if the GPD 602 does not have the proper revision EPROM, in socket 31ic at the upper right corner of the Main Circuit Board:

CT - NSH503303 or above
(e.g. P/N 97S01000-0001; NSH503305)
VT - NSH500708 or above
(e.g. P/N 97S01200-0001; NSH500712)

If necessary, order a replacement EPROM before installing the Analog Operator III.

INSTALLATION

WARNING

HAZARDOUS VOLTAGE CAN CAUSE SEVERE INJURY OR DEATH.

LOCK ALL POWER SOURCES FEEDING DRIVE IN "OFF" POSITION.

1. Turn off all electrical power to the GPD 602.

2. Verify that the "CHARGE" lamp is out. Then loosen mounting screws and remove the front cover.

3. See Figure 2. Remove the indicator lamp plate from the Drive by removing three mounting screws.

4. Position the Analog Operator III on the three standoffs on the Control PCB and secure using the mounting screws.

5. Align connector 8CN of the ribbon cable with the pins of header 8CN on the Control PCB. Push downward to seat the connector, then squeeze two lock levers inward until they click in place.

6. Align connector 4CN of wire harness with the pins of header 4CN on the Control PCB. Push downward on the connector until the locking clip clicks in place.

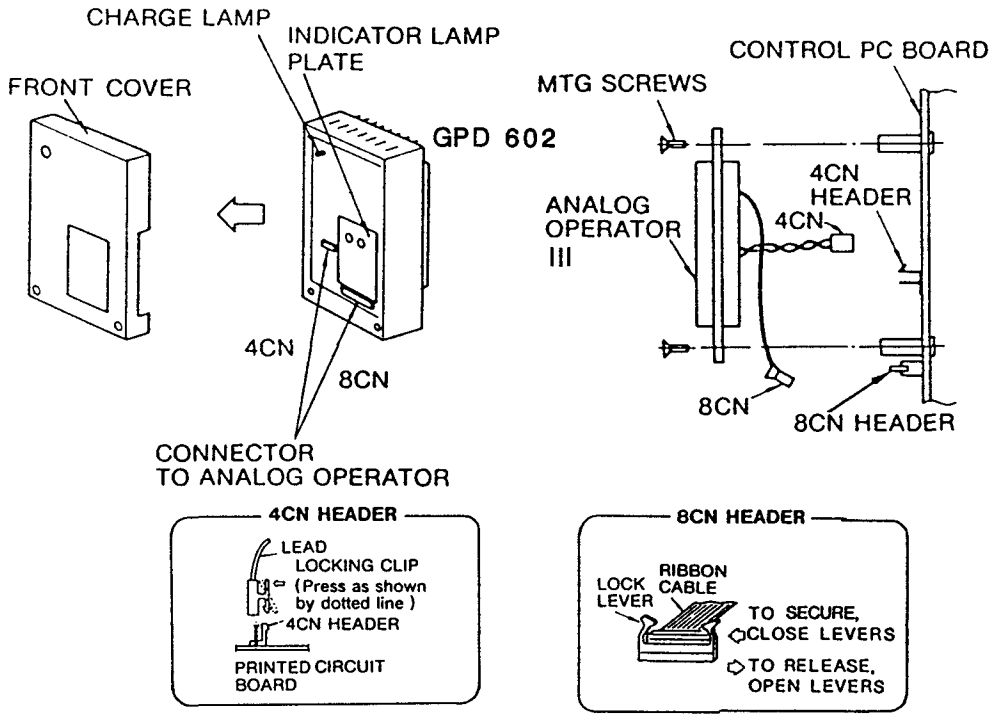

Figure 2. Installation

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7. On the Control PCB, set the Auxiliary Frequency Reference Signal Selector shunt to the "L" position.

NOTE

With the shunt in this position, any external SPEED pot wired to the Drive will be disabled.

IMPORTANT

EPROMs are Electrostatic Discharge sensitive devices. Handle accordingly.

8. If necessary, remove the existing EPROM from socket 31ic at the upper right corner of the Main Control PCB in the GPD 602, and insert in its place the revised EPROM previously obtained.

9. Replace and secure the GPD 602 front cover.

FUNCTION OF SELECTOR SWITCHES

AUTO/MAN - This two position switch selects whether the Drive will operate in Automatic mode (responding to external control signal inputs) or in Manual mode (responding to settings on the Analog Operator).

RUN/STOP/RESET - This three position switch is used to start the Drive (in Manual mode) or to Stop the drive. Regardless of whether the Drive is operating in Manual or Auto mode, the Stop command takes priority over any other control signal.

Setting this switch momentarily to the RESET position will reset any fault indication and reset the Drive's fault relay. This function is disabled when the AUTO/MAN switch is set to AUTO.

F MAX/F MIN SETTING POTENTIOMETERS

Potentiometers below the AUTO/MAN and RUN/STOP/RESET switches allow setting of the minimum and maximum output frequencies for the Drive (see Figure 3). Each digit of the desired value is set separately. FMAX can be set from 0 to 120HZ, and FMIN from 0 to 99HZ.

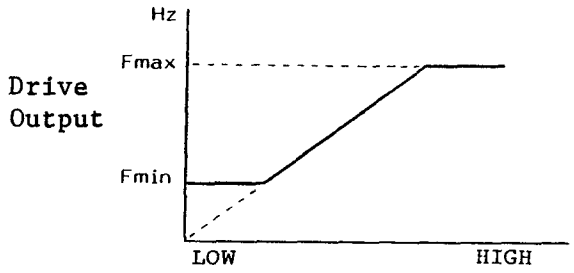

Figure 3. Fmin/Fmax Adjustment

STATUS INDICATORS

RUN Lamp. This green lamp is illuminated whenever the Drive is running, regardless of Auto or Manual mode of operation.

STOP Lamp. This amber lamp is illuminated whenever the Drive is in stopped condition with power applied.

Fault Indicator Lamps. When Drive fault shutdown occurs, the STOP lamp will be illuminated and one of the eight red fault indicator lamps will illuminate to identify the type of fault that has occurred (see Table 2).

If several fault conditions were sensed by the Drive's control circuit before the Fault relay tripped, only the first fault in sequence will be identified.

If the settings of switches 1S thru 6S on the Control PCB are changed while power is applied to the Drive, the new setting will not be acknowledged by the control circuit, and the CPF lamp will blink. This condition can be cleared in one of two manners:

Table 2. Failure Indication

INDICATION	SYMPTOM
OC (Overcurrent)	More than 200% of rated current flow in Drive output side. (Instantanious operation)
OV (Overvoltage)	DC bus voltage higher than 790V for 460V units, 375V for 230V units.
OL (Overload)	Overload of motor and Drive detected by electronic thermal circuit.
EB (External Failure)	External fault signal input at Drive terminal 7.
FU (Fuse blown)	Main circuit fuse blown. (Does not apply to inverters of 10HP or below.)
UV (Undervoltage)	DC bus voltage lower than 450V for 460V units, 225V for 230V units.
OH (Heat Sink (Overheat)	Thermoswitch on semiconductor heat sink detected excessive temperature.
CPF (Control Function Error)	Detection of the failure of CPU or main control function by self-diagnostic function.

a. Set the switches as they were before they were changed, and momentarily set the RUN/STOP/RESET switch to RESET. The CPF lamp will go out.

b. Remove input power and wait for "CHARGE" lamp to go out. Then re-apply power. The new switch settings are now accepted by the control circuit.

When switch 6S notch 5 on the Control PCB is set to ON, and a momentary power failure (2 seconds or less) occurs, the Drive will continue to operate; the UV lamp will blink for approximately 2 seconds and then go out. If a power failure of longer than 2 seconds occurs, a normal UV fault shutdown will occur.

FAULT RESET

After a fault shutdown, once the fault indication has been noted, the indicator lamp can be turned off and the Fault relay reset as follows:

a. If necessary, set the AUTO/MAN switch to MAN.

b. Momentarily place the RUN/STOP/RESET switch to RESET.

If the above procedure does not turn off the indicator lamp, the fault is still present.

The reset function will occur automatically if power is removed from the Drive and then reapplied.

OPERATION MODES (See Table 3)

When the AUTO/MAN switch is set to AUTO, the Drive operates in response to external signals; only the RESET switch position and FMAX and FMIN settings on the Analog Operator III are acknowledged.

When the AUTO/MAN switch is set to MAN, the Drive operates in response to signals from the Analog Operator III; only external Fault and Fault Reset signals are acknowledged.

Table 3. Operation Modes

A = Useable operation signal or function.
-D- = Disabled function, or input signal disregarded by inverter.
▲ = Valid only if changed while Drive is stopped.

	Commands	"AUTO" Mode	"MAN" Mode
External Signal Inputs	RUN (terminal 2)	A	-D-
	STOP (terminal 3)	A	-D
	FWD/REV (Note 1) (terminal 5)	A	-D-
	AUTO/MAN (terminal 6)	A	-D-
	External Fault (terminal 7)	A	A
	Fault Reset (terminal 8)	A	A
	Auto Mode Speed Reference (terminals 9 & 10)	A	-D-
	Manual Mode Speed Reference (terminals 21 & 22)	A	-D-
Analog Operator III	RUN/STOP	-D-	A
	RESET	A	A
	AUTO/MAN	▲	▲
	FREQ SET	-D-	A
	F MAX (Note 2)	A	A
	F MIN (Note 2)	A	A

Notes:
1. Not used for centrifugal (VT) Drive.
2. When a Memory Module is also present on the Drive, Constant No. 10 (Upper Limit) and Constant No. 11 (Lower Limit) in the Memory Module will be disregarded by the inverter.

FREQUENCY METER CALIBRATION

The frequency meter on the Analog Operator III has been adjusted prior to shipping so that the meter reading synchronizes with the rated frequency. After installation of the Analog Operator III in the Drive, if the accuracy of meter indication is questioned, perform the following calibration procedure.

1. Remove input power.
2. Note the setting of switch 2S on the Control PCB, then turn it to notch F.
3. Apply input power to the Drive.
4. Insert an insulated screwdriver through the hole in the front panel of the Analog Operator III and adjust the MTR CAL potentiometer so that the meter indicates maximum frequency.
5. Remove input power. Return switch 2S to the setting noted in step 2.