



INSTRUCTION MANUAL

DOCUMENT NO. 027 - 0163
Rev. 1.01 July 31, 2003

Air Pressure Sensor & V/I Converter Option Card

Part Number 100-0163-01

Saftronics, Inc.

5580 Enterprise Pkwy
Ft. Myers, FL 33905
Tel. (239) 693 - 7200
Fax (239) 639 - 2431
www.saftronics.com

SAFETY FIRST !

LETHAL VOLTAGES MAY BE PRESENT

PLEASE READ THIS MANUAL THOROUGHLY BEFORE ATTEMPTING ANY INSTALLATION, OPERATION, MAINTENANCE, OR INSPECTION. FAILURE TO FOLLOW THE RECOMMENDED PROCEDURES OR CAUTIONS IN THIS MANUAL COULD RESULT IN INJURY TO PERSONNEL AND / OR DAMAGE TO THE EQUIPMENT.

CAUTION

- 1 – CHECK THE NAME WRITTEN ON THE PRODUCT AND INSURE THAT THE PROPER PART HAS BEEN RECEIVED.
- 2 – THOROUGHLY INSPECT THE PART(S) FOR ANY DAMAGE DUE TO SHIPMENT OR HANDLING.
- 3 - THE PART(S) MAY CONTAIN CMOS CHIPS AND CAN BE DAMGED BY STATIC ELECTRICITY. HANDLING SHOULD BE IN ACCORDANCE WITH INDUSTRY STANDARDS.
- 4 - BEFORE INSTALLING THE PART(S) TURN OFF ALL POWER TO THE EQUIPMENT AND INSURE THE CHARGE INDICATOR LAMP ON THE INVERTER IS **OFF**. **LETHAL VOLTAGES ARE PRESENT**
- 5 - DO NOT CONNECT OR DISCONNECT WIRING WHILE POWER IS **ON !**
- 6 - FOLLOW GOOD STANDARD WIRING PRACTICES AND ANY APPLICABLE CODES THAT MAY APPLY.

AIR PRESSURE SENSOR & V / I CONVERTER OPTION CARD

P/N 100 – 0163 – 01

NOTE: This option card cannot be used with any communications card that is in location B on the GP10 or VG10 Inverter. Please refer to the Options section of the GP10 or VG10 Manual for further details.

DESCRIPTION

The **100 – 0163 – 01** Option Card is designed for use with the **Saftronics GP10** and **VG10** Inverter series. It provides a 4- 20 mA output signal when 3 – 15 PSI is applied to the on board pressure transducer for use in HVAC applications. The card also includes two separate voltage to current converters designed to provide 4 – 20 mA output signals when used with the **GP10** and **VG10** analog outputs **FMA** and **FMP**. The **FMA** signal is an analog output of 0 – 10 VDC. The **FMP** signal is a pulse **frequency** output in the default state. By setting the **F34** parameter, the output frequency becomes fixed at 2,670 p/s and is pulse width modulated (pwm) to give an average dc output. This signal is then conditioned and scaled by the converter. (Refer to the **GP10** or **VG10** manual for further explanation of the **FMA** and **FMP** functions.)

SPECIFICATIONS

C1 OUTPUT - 4 –20 mA into a max. 500Ω load with 0 – 15 PSI applied to the transducer.

FMA0 OUTPUT - 4 –20 mA into a max. 500Ω load with 0 – 10 VDC applied from FMA.

FMP0 OUTPUT - 4 –20 mA into a max. 500Ω load with a pwm signal applied from FMP.

AIR PRESSURE RANGE – 0 – 15 PSI (ABSOLUTE MAX. 22 PSI)

KIT INCLUDES

(1) 100-0163-01 OPTION CARD

(3) P/N 026-6008 SUPPORTS

(1) P/N 029-0212 M3-6 SCREW

NOTE: The dimension for the air inlet connection is shown in Fig. 1. Silicone connecting tubing with a 2 MM I.D.(**customer supplied**) is recommended.

INSTALLATION

Turn off all power to the equipment being worked on before attempting any installation. Fig. 1 shows the appearance of the option card. Ensure that the proper option card has been received along with the accessories listed and that no damage has occurred to the parts.

Following Fig. 2 or Fig. 3, install the option card for the GP10 and VG10 Inverter HP ranges listed. Make the connections to the option card in accordance with Fig. 4 and the application requirements.

Turn power on to the equipment and program the inverter in accordance with the application requirements. The following table shows the terminal functions and programming parameters. Please refer to the Inverter manual for further information.

The option card is tested and calibrated at the factory. If the card is not performing correctly please refer to the **Calibration Procedure** section and follow the procedures outlined. Also ensure that the programming is correct and that the proper parameters are set. If there is still a problem please contact Service Support.

TERMINAL FUNCTIONS & PROGRAMMING			
INVERTER TERMINALS	OPTION CARD TERMINALS		PROGRAMMING
	INPUT	OUTPUT	
C1 (4 – 20 mA IN.)	3– 15 PSI AIR SUPPLY	C1 (4 – 20 mA OUT)	USED FOR A REFERENCE OR PID FEEDBACK IN HVAC APPLICATIONS
FMA (0 – 10 VDC OUT)	FMA1 (0 – 10 VDC IN.)	FMA0 (4 – 20 mA OUT)	F30 SETS THE VOLTAGE VALUE OF THE MONITOR ITEM SELECTED IN F31 (100% = 10 VDC) SEE BELOW
FMP (0 – 10 V AVG PWM) OUTPUT	FMP1 (0 – 10 V AVG PWM) INPUT	FMP0 (4 – 20 mA OUT)	F34 SETS THE VOLTAGE VALUE OF THE MONITOR ITEM SELECTED IN F35 (100% = 10 VDC) SEE BELOW
11 (FMA & C1 COMMON)	11 (FMA & C1 COMMON)	N/A	N/A
N/A	N/A	COM (FMA0 & FMP0 COMMON)	N/A

F31 & F35 MONITOR SETTINGS		
VALUE	MONITOR ITEM	100% MONITOR AMOUNT
0	Output frequency 1 (before slip compensation)	Maximum output frequency
1	Output frequency 2 (before slip compensation)	Maximum output frequency
2	Output current	2x output current of drive
3	Output voltage	230V series: 250V, 460V series: 500V
4	Output torque	2x rated motor torque
5	Load rate	2x rated load of motor
6	Output	2x rated drive output
7	PID feedback amount	Feedback amount @ 100%
8	PG feedback amount (when option is installed)	Synchronous speed @ max. frequency
9	DC link voltage	230V series: 500V, 460V series: 1000V
10	Universal A0	Output from RS485 or Bus option

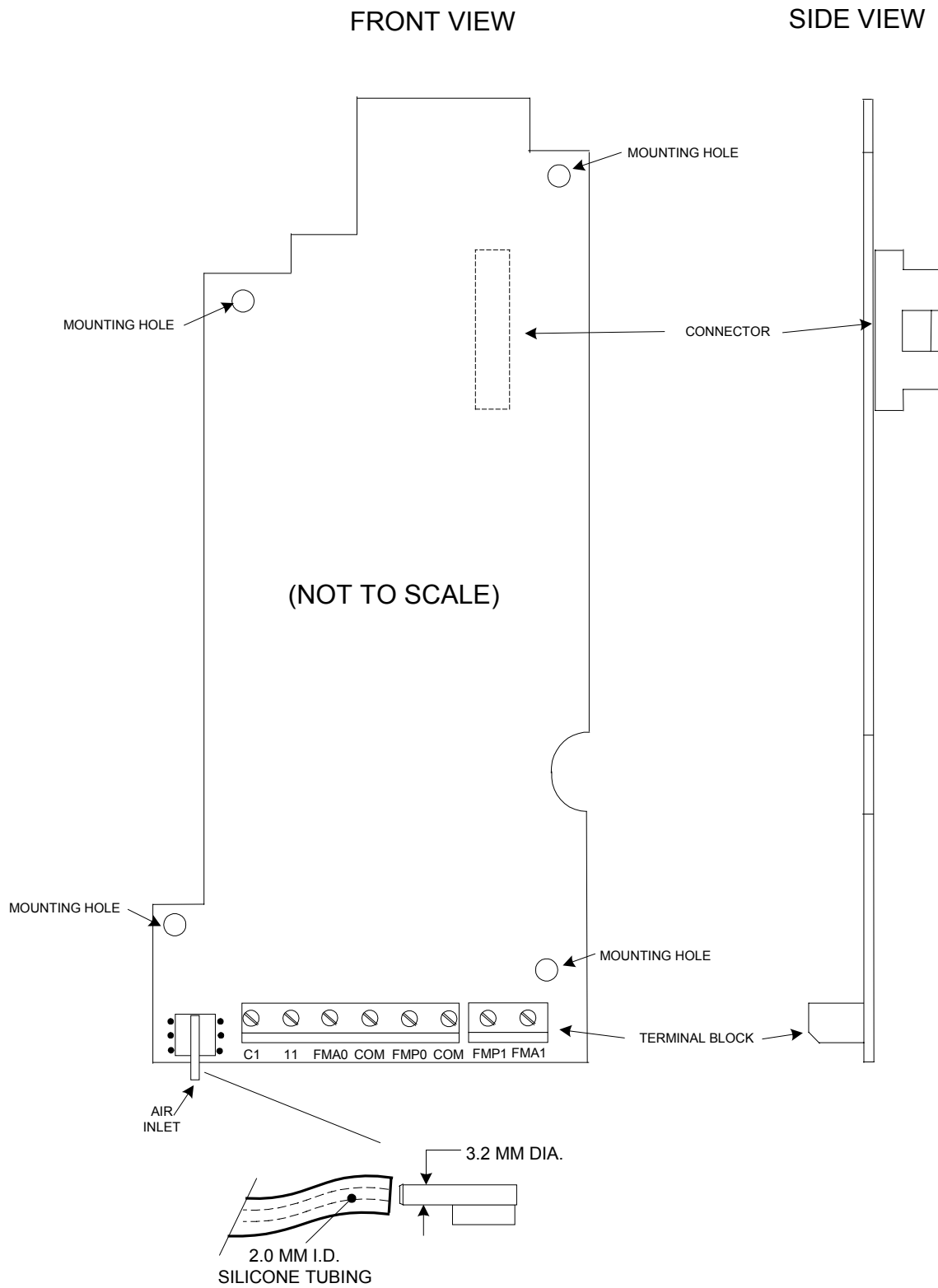
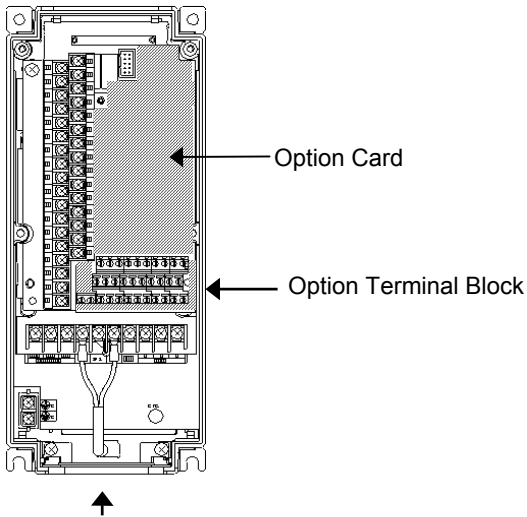
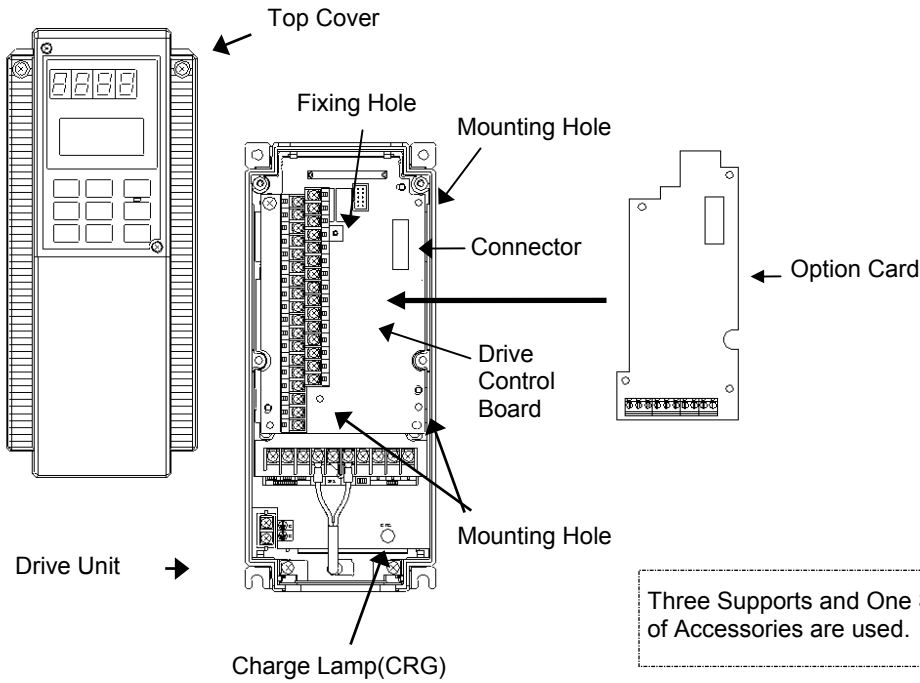


FIG. 1 PRODUCT APPEARANCE

VG10 30HP or less



Step 1

Remove the top cover, and insert the accessory supports into the three mounting holes on the Drive control Board.

Step 2

Set the supports inserted in step 1 on the option card, and insert the Drive control board connector to the option card connector. After that, check that you can see the pins of the supports on the option card.

Step 3

Insert and tighten the screws (M3 x 6) in the fixing holes to secure the option card.

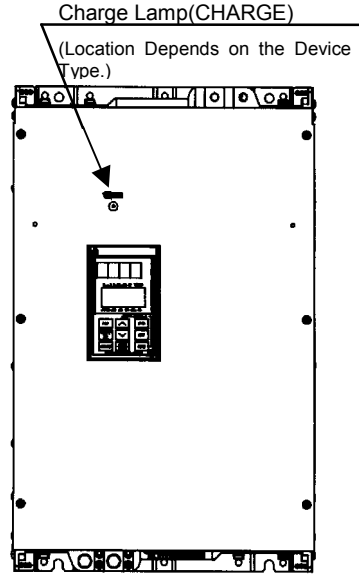
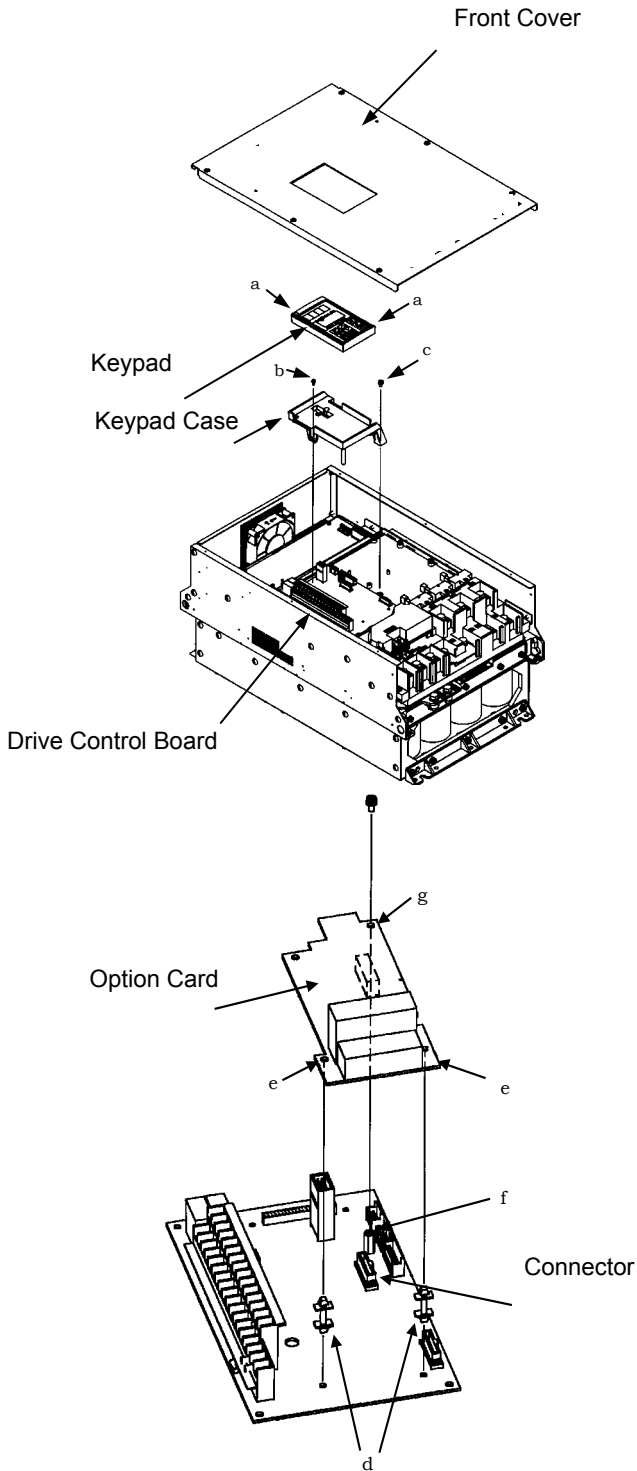
Step 4

Wire the option according to the basic connection diagram.

Fig. 2 30 HP or Less

VG10 40 HP and above

Two Supports and One Screw of Accessories are used.



Step 1

Remove the front cover and loosen the two M3 screws (a) to remove the keypad panel.

Step 2

Remove one M3 screw (b) and one M4 screw (c) to remove the keypad panel case.

Step 3

Insert the two accessory supports (d) into the drive control board.

Step 4

Insert the two supports (d) into the holes (e) on the option card. Align the support (f) with the hole (g) on the option card, then and insert one connector.

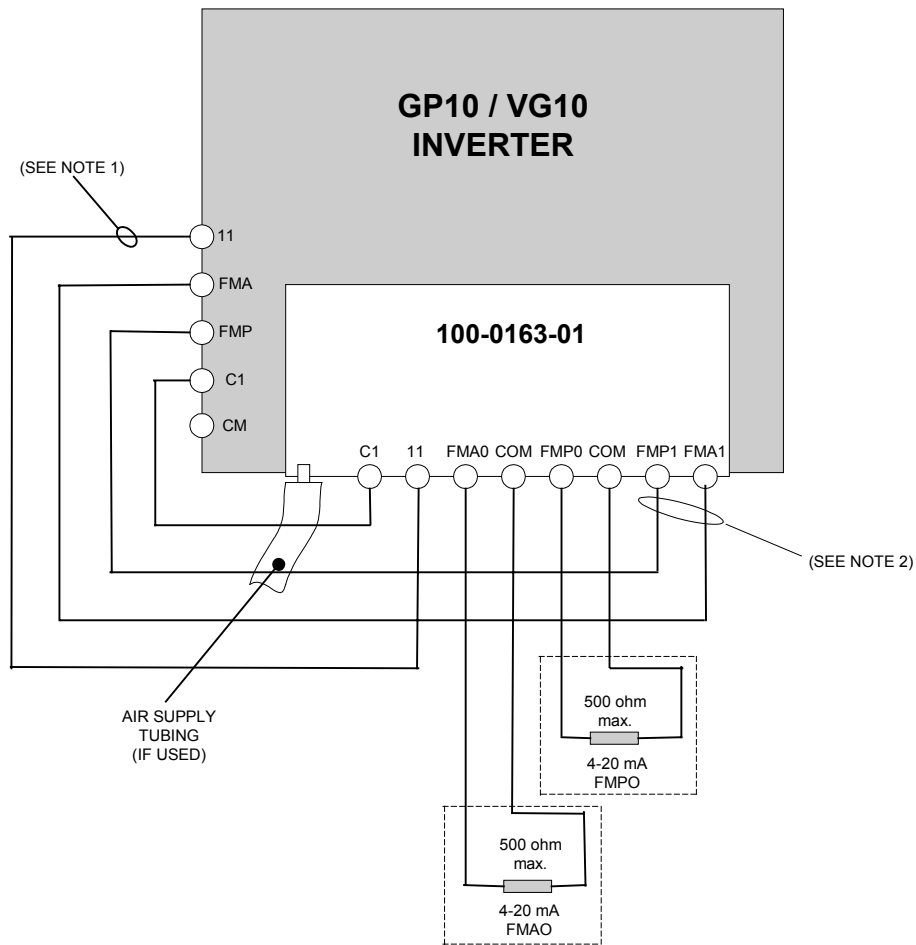
Step 5

Insert and tighten the accessory screws (M3 x 6) at (f) and (g) to secure the option card.

Step 6

Replace the keypad panel, case, keypad, and the front cover. then reassemble the drive.

Fig. 3 40 HP and Above



NOTES :

- 1 - The option card can provide one or all three outputs depending on the application. If a specific output is not used, the interconnections for that particular function is not necessary. However, the connection from terminal **11** on the Inverter control card to terminal **11** on the option card must be made if either the **C1** or **FMA0** output is used.
- 2 - If input **FMP1** is not used, place a jumper between **FMP1** and **CM** on the Inverter. If **FMA1** is not used, place a jumper between **FMA1** and **COM** on the option card.

FIG. 4 100-0163-01 INTERCONNECTING DIAGRAM

CALIBRATION PROCEDURE FOR THE 100 – 0163 – 01 OPTION CARD

(VG10 / GP10 PRESSURE SENSOR & V / I CONVERTER)

OVERVIEW

The **100 – 0163 – 01** Option Card provides a 4- 20 mA output signal when 3 – 15 PSI is applied to the on board pressure transducer. The card also includes two separate voltage to current converters designed to provide 4 – 20 mA output signals when used with the **GP10** and **VG10** analog outputs **FMA** and **FMP**. The **FMP** signal is a pulse **frequency** output in the default state. By setting the **F34** parameter the output frequency becomes fixed at 2,670 p/s and is pulse width modulated (pwm) to give an average dc output. This signal is then conditioned and scaled by the converter. (Refer to the **GP10** or **VG10** manual for further explanation of the **FMA** and **FMP** functions.)

CALIBRATION

- 1 - With the Inverter powered down, Install the **100 – 0163 – 01** Option Card by plugging it into the **CN3** connector on the **GP10** or **VG10** Inverter following the option card installation procedure in the manual. Connect terminal **11** of the Inverters' control card to terminal **11** of the option card.
- 2 - Power-up the Inverter and, with a voltmeter connected between **TP1** and **COM**, adjust **RV2 (off-set)** so that **TP1** reads zero VDC. (**Ensure that there is no air supply connected to the transducer.**)

NOTE: The card is supplied with approx. 24 VDC through connector **CN3** of the Inverter.

This voltage may be checked by placing a voltmeter between **TP2 (+24)** and **TP3 (24C)**.

- 3 - Connect a milliammeter between terminal **C1** and **COM** on the option card and check that the reading is between 3.8 – 4.2 mA. Next with input **FMA1** jumpered to **11** and **FMP1** jumpered to terminal **CM** on the Inverter, connect the milliammeter between terminal **FMA0** and **COM** and then from **FMP0** and **COM**. Both outputs should also read between 3.8 – 4.2 mA.
- 4 - Connect a suitable adjustable air supply (3 – 15 PSI) to the transducer and set to zero. Connect a milliammeter between **C1** and **COM** and apply 15 PSI. Adjust **RV1 (Max I)** to achieve an output of 20 mA at **C1**. The air pressure should be varied and the output current should track the changes.
- 5 - Referring to the **GP10** or **VG10** manual, set parameters **F30** and **F34** to 100%. This should provide an output of 0 – 10 VDC with an output frequency of 0 – 60 Hz (**F31 & F35 = 0**) from both **FMA** and **FMP**. Remove the jumpers from **FMA1** and **FMP1** on the option card and connect terminal **FMA1** to terminal **FMA**, and terminal **FMP1** to terminal **FMP** on the Inverters' control card. Set the output frequency to 60 Hz and measure the output current from terminals **FMA0** and **FMP0** to **COM**. Both should be approximately 20 mA. This value can be adjusted by the percentage setting in **F30** and **F34**.

WARNING!

Saftronics manufactures component parts that can be used in a wide variety of industrial applications. The selection and application of *Saftronics* products remains the responsibility of the equipment designer or end user. *Saftronics* accepts no responsibility for how it's products may be incorporated into the final design.

Under no circumstances should any *Saftronics* product be incorporated into any product or design as the exclusive or sole safety control. Without exception, all controls should be designed to dynamically fault detect and fail safe under all circumstances. All products designed to incorporate a component part manufactured by *Saftronics*, must be supplied to the end user with appropriate warnings and instructions as to the safe use and operation. Any warnings provided by *Saftronics* must be passed through to the end user.

Saftronics offers an express warranty only as to the quality of it's products to conform to the catalog specifications. NO OTHER WARRANTY, EXPRESS OR IMPLIED, IS OFFERED. *Saftronics* assumes no liability for any personal injury, property damage, losses or claims, arising out of the mis-application of it's products.