



# REPLACEMENT INSTRUCTIONS

## FOR THE DIGITAL CONTROL MODULE (DCM-H AND DCM-L) (KIT PART NOS. 12-8061-04, -15)

### PURPOSE

These instructions describe the steps for replacing the Group 22-309 Digital Control Module (DCM). A systematic replacement procedure is provided.

### REQUIRED TOOLS

- 1/2" socket wrench
- #3 Phillips head screwdriver
- Torque screwdriver with #3 Phillips head bit (appropriate for 50 lb-in)
- Torque wrench (appropriate for 10 lb-ft)
- Communications device for calibration

#### CAUTION

**To prevent Electro-Static Discharge damage to the electronics, wear a grounding strap during this procedure.**

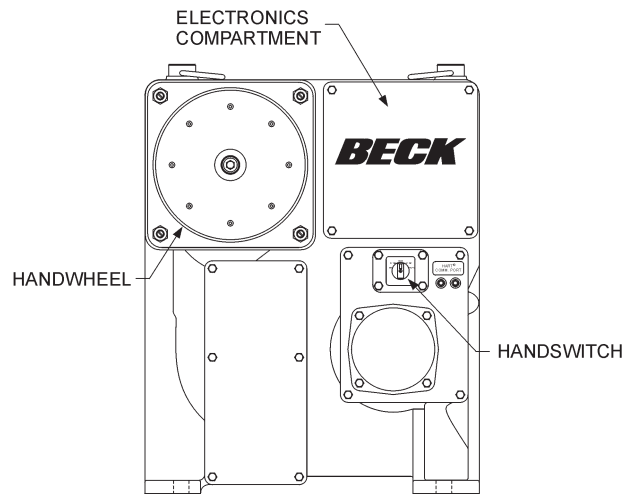
### PROCEDURE

Refer to Figure 2 to locate the following points on the DCM:

- Wiring connectors (5 places)
- Handle
- Captive mounting screws (4 places)
- Locating pin holes (2 places)
- LEDs
- Test points
- RS-232 connector (J20)

The DCM is located in the Electronics Compartment (see Figure 1 for identification). Loosen the (4) captive 5/16-18 hex mounting screws and remove the electronics compartment cover.

For the replacement DCM to operate properly, there are some DCM settings that must match the intended application. The most important setting



**Figure 1**

is whether CW or CCW drive rotation represents an increasing signal. Other settings are important, but less critical. Table 1 lists these settings in approximate order of importance.

If replacing a DCM-H (HART® interface) and HART® communication is still possible, read and record the values listed in Table 1. These values can be obtained through a HART® handheld communicator or through the RS-232 connection (J20) and the Beck Command Set. Refer to instruction manual 80-4280-02 for procedures.

If replacing a DCM-L (Local interface) and serial communication is still possible, read and record the values listed in Table 1. These values can be obtained through the RS-232 connection (J20) and the Beck Command Set. Refer to instruction manual 80-4280-02 for procedures.

The default factory configuration is shown in Table 1.

**Table 1**

(These values will be used to check the calibration of the drive after the replacement DCM is installed).

OPERATING PARAMETERS	RECORDED VALUE	HART INTERFACE		SERIAL INTERFACE	
		Variable Name	Default Value	Command	Default Value
Drive Rotation (Increasing Signal)		Drive Dir	CW	drvrotation	0 (CW)
Operation Mode		Op Mode	Follow	opmode	0 (follow)
Torque Zero		Trq Null	0*	torq0k	0*
Torque Constant		Trq Const	550*	torqconst	550*
CPS Volts at 0 Degrees		CPS Zero	1.300	cpsvat0deg	1.300
CPS Volts per 100 Degrees		CPS Span	2.400	cpsvper100deg	2.400
Degrees Rotation		Deg Rot	100.00	degsrot	100.00
Demand LOS Threshold (mA)		DemLimLwr	3.20	demlos	3.20
Demand LOS Mode		LOS Mode	Stay	demlos	sip
Demand LOS Go To Position (%)		LOS Pos	50.00	demlosgtp	50.00
0% Demand (mA)		DemRngLwr	4.00	dem0pctma	4.00
100% Demand (mA)		DemRngUpr	20.00	dem100pctma	20.00
Stall Time (Sec)		Stall Time	300	stalltime	300
Demand Function		Dem Curve	Linear	demfunc	linear
Step Size		Step Size	0.10	stepsize	0.10
IO Mode		Feedback	Enabled	iomode	1 (fdbk)
0% Feedback (mA)		FB RngLwr	4.00	fdbk0pctma	4.00
100% Feedback (mA)		FB RngUpr	20.00	fdbk100pctma	20.00
Torque Enable		Trq Snsr	Enabled	torqenable	1 (enabled)
Over Torque Stop		Ovt Prot	Disabled	ovtstop	0 (go)
Polling Address		Poll Addr	0	polladdr	0
Drive Model		Model	22-309	drvmodel	12 (22-309)

\*Default values only – The specific numbers for these values are unique to each drive and are determined during manufacture. These specific numbers are noted on a tag affixed to the drive body within the Electronics Compartment. Default values should only be used if the specific numbers are unknown.

## WARNING

**Electrical shock hazard—disconnect power before proceeding. Remove the drive from line voltage and shut off any external power sources feeding the auxiliary switches.**

1. Place the Handswitch in STOP.
2. Disconnect power to the drive.
3. Disconnect the (5) wiring connectors shown in Figure 2.
4. While holding the DCM handle, loosen the (4) captive mounting screws with a #3 Phillips head screwdriver.
5. Using the handle, remove the DCM from the Electronics Compartment and set it aside.

### *Install the new DCM assembly:*

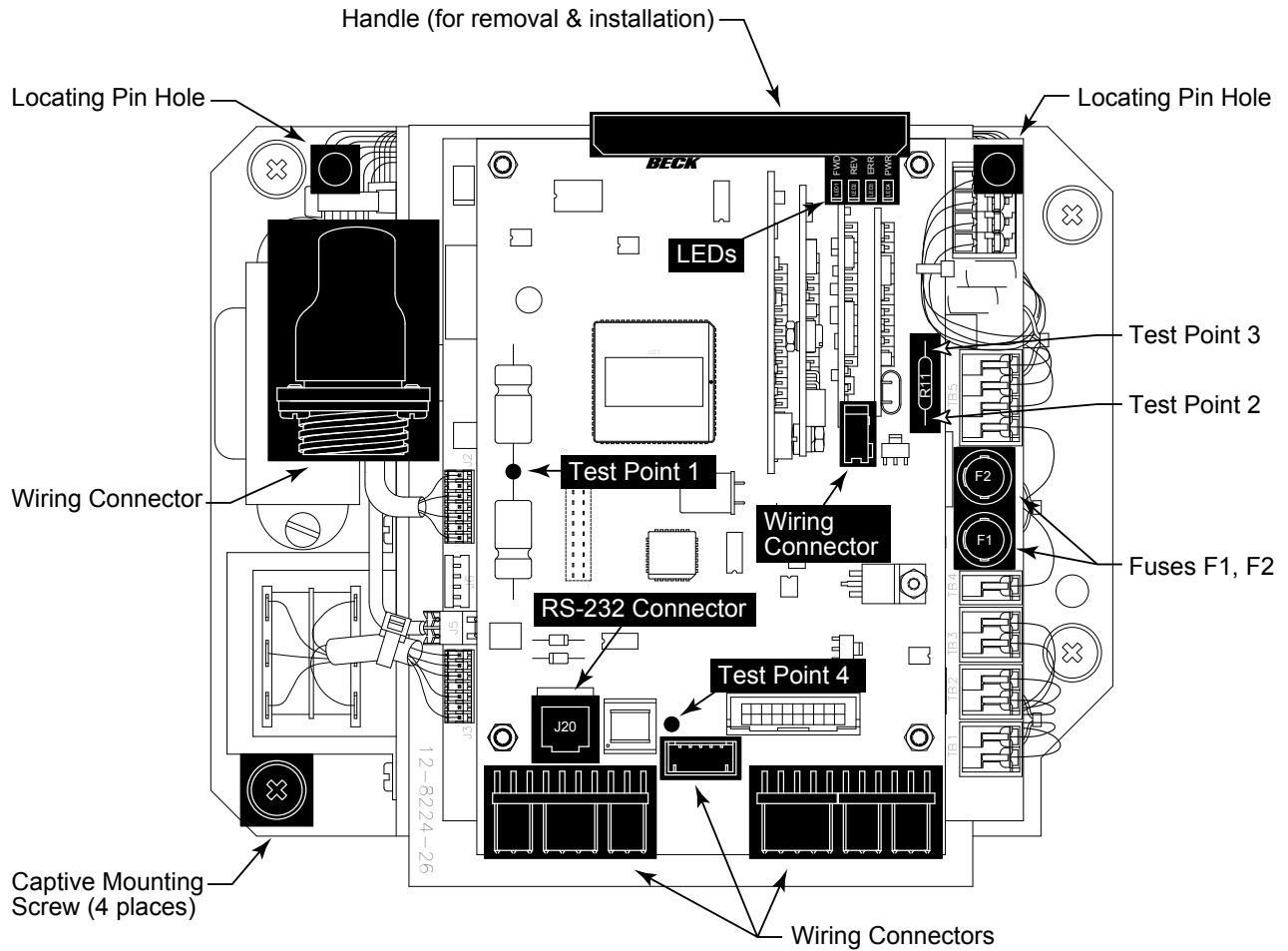
6. Position the new DCM in the Electronics Compartment.
7. Align the locating pin holes in the DCM with the pins in the rear wall of the Electronics Compartment as the DCM is seated.
8. While pushing the DCM back on its mounting surface, tighten the captive mounting screws. Torque to 50 lb-in.
9. Inspect the Electronics Compartment gasket and replace if the gasket shows any wear or damage. If the gasket is in good condition, skip steps 10–12.
10. Clean the mating face of the drive body to remove any remaining gasket material and adhesive. Ensure that the mating surface is free of defects such as dents or gouges.
11. Apply a thin film of Scotch 847™ gasket adhesive or equivalent to the body's mating face.
12. Firmly press the gasket into place and allow time for the adhesive to set before continuing.
13. Reconnect the five wiring connectors.
14. Reconnect power to the drive.
15. Ensure that the DCM is configured properly.
16. Check the state of the LEDs on the DCM. If the FWD or REV LED is lit, the drive will begin to position when the Handswitch is returned to AUTO. If desired, change the Demand signal or reposition the drive using the Handwheel until both the FWD and REV LEDs are out. When both LEDs are out, the Handswitch can be returned to AUTO.

### *Check Drive Calibration:*

Ensure that the drive calibration is correct. If the drive fails to position properly refer to instruction manual 80-4280-02 for drive calibration procedures.

If a DCM-H has been replaced, torque sensor range values should be entered using the model 275 Handheld communicator or the RS-232 connection and the Beck command set. If a DCM-L has been replaced, torque sensor range values should be entered through the RS-232 connection using the Beck command set. Refer to instruction manual 80-4280-02 for procedures.

Replace the electronics compartment cover and torque the four captive 5/16-18 hex mounting screws to 10 lb-ft torque.



12-8224-26 DCM-H (SHOWN)

Figure 2

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