

80-8801-10
Rev. 1
SUPPLEMENT TO MANUAL:
• 80-8801-00

BECK[®]

MODEL 88-109 DB9 SERIAL COMMAND COMMUNICATION INTERFACE



ELECTRIC ACTUATORS FOR INDUSTRIAL PROCESS CONTROL

SERIAL COMMUNICATION

COMMUNICATIONS

Local configuration of the Beck actuator can be accomplished using Serial commands through the DCM Serial port and J16/J17 jumpers.



CAUTION

Changes made to the actuator through Serial communications may not necessarily be reflected in asset management systems. Be sure to verify any changes made Serially and make manual corrections to the asset management system if necessary.

The Beck Digital Control Module (DCM) is equipped with a Serial interface which allows for direct communication with a computer (see next page for location). Using a standard DB9 to USB cable, connect the DCM to the computer using the DCM's DB9 connector (see below for location) and one of the computer's USB ports. Note: If your computer is equipped with an active COM port, a DB9 to DB9 cable may be utilized. See below for part numbers of cables available from Beck. Also, J16 & J17 jumpers (see image below) must be set to RS232/TXD & RS232/RXD, respectively.

Once connected, communication can be established between the DCM and the computer using a terminal emulation program, such as HyperTerminal®. This method of communication will allow for configuration, calibration and verification of actuator DCM settings without the use of custom software applications.



DB9
Connector

J16 & J17
Jumpers

HyperTerminal® SOFTWARE

HyperTerminal is the standard ASCII terminal emulation software provided with Microsoft® Windows®. If using HyperTerminal®, the following instructions will assist in setup. Note that some variation to these instructions may be necessary depending on the version of HyperTerminal® being used.

After connecting the DCM to the (Windows®-based) computer, access HyperTerminal® by clicking first on "Start", then "Programs", then "Accessories", then "Communications", then "HyperTerminal". Double-click on the "Hypertrm.exe" icon to start the program. Once HyperTerminal® is running, it is necessary to set up a file with the proper settings to communicate with the DCM. Proceed as follows:

1. If prompted to install a modem, answer "no". Proceed to enter a name (e.g., "DCM") and select an icon (any will suffice) in the "Connection Description" box. Click the "OK" button.
2. The "Connect to" box should open next. At the bottom of the box, set the "Connect using" selection to the appropriate USB (or COM) port that has been connected to the DCM. Click the "OK" button.
3. The port properties box should open next; this is where the communication settings are established. The correct settings are:
 - a. Bits per second = "19200"
 - b. Data bits = "8"
 - c. Parity = "none"
 - d. Stop bits = "1"
 - e. Flow control = "none"
4. With the appropriate settings entered from Step 3, above, click "OK". Communications should now be enabled.
5. Press the "Enter" key twice. "OK" should be displayed indicating that HyperTerminal® is communicating with the DCM.

Beck Serial Communications Cables



DB9 to USB-A
P/N 20-0511-60



DB9 to DB9
P/N 20-0511-14

*Note cables may differ in appearance from depiction.



Digital Control Module (DCM)
Electronics Compartment

Serial Connection
and Jumpers

SERIAL COMMANDS

COMMANDS AND ARGUMENTS

Commands can be used for a variety of functions including changing the operating configuration of the actuator, verifying operation settings, calibration and accessing diagnostic information. There are essentially four different types of commands:

1. Dual-purpose commands. These commands can be used to either modify actuator configuration settings or display the settings already set in the actuator. In order to set or make a change to the settings, the command requires an argument (*n*). If the command is used for display purposes only, the argument is omitted. Examples of these commands include "temperature" and "demlos".
2. Display only commands. These commands are used to display diagnostic or operating information such as present signal values. No arguments are required. Examples include the "stat" command and the "signals" command.
3. Set only commands. These commands serve only to make a parameter change. Typically, they apply to the actuator calibration. This type of command requires an argument, but unlike dual-purpose commands, they return an error message when entered without an argument. Examples include the "charset" and "trimfdbk4mA" command.
4. Execute action commands. These commands serve to reset, enable or disable features. Entering these commands produces an immediate action. Examples include the "reset" and "restoremodes" command.

Available commands are listed on the next several pages. The command description explains the use(s) of the command, while the argument column describes any applicable arguments. Arguments are denoted as *n*. Note that the commands described as "sets and/or displays" signify dual-purpose commands that can be used with or without an argument for setting or verifying configuration settings.

The following is a categorized list of Serial commands available through the DB9 interface. These commands are described in detail on the pages that follow.

Output Shaft Position Command	
travel	

General Configuration Commands	
drvdir	stalltime
limitalarm	drvtiming
opmode	relayconfig
restoremodes	set0pct
sernum	set100pct
stallprot	rpm
poscal 1	

Torque Sensing Commands	
ovtstop	torqalarm
ovtstoplevel	torqconst
torq	torqenable
torq0k	torqprof

Communications Configuration Commands	
network	modconfig
polladdr	modendian
modpolladdr	modscaling
modbaud	modstat
modparity	wifipw

Diagnostic and Information Commands	
demsorce	stat
help	temperature
ledtest	unstall
reset	runtime
signals	ver

Demand Signal Commands	
dem0pctma	hold
dem100pctma	trimdem4ma
demlos	trimdem20ma
demlosgtp	

Demand Characterizer Commands	
charclear	charset
charlist	demfunc

Feedback Signal Commands	
fdbk0pctma	trimfdbk4ma
fdbk100pctma	trimfdbk20ma
fdbkfunc	iomode
fixfdbk	ledconfig

Output Shaft Position Sensing Commands

Command	Description	Argument <i>n</i> and Information
travel <i>n</i>	Configures the number of turns for the actuator. Number selected will represent 100% travel with 0 turns representing 0% travel. Note that the takeoff gear (see manual 80-8801-00) is set by the factory based on the travel range selected by the user. Travel changes may require takeoff gear adjustment.	<i>n</i> = "4" to "4000"

General Configuration Commands

Command	Description	Argument <i>n</i> and Information
drvdir <i>n</i>	Sets/displays the actuator output shaft rotation direction resulting from an increasing Demand signal.	<i>n</i> = "0": CW rotation <i>n</i> = "1": CCW rotation
limitalarm <i>n</i>	Sets/displays alarm action if tactuator travels outside electronic limits and contacts an over-travel limit switch.	<i>n</i> = "0": mute (no alarm) <i>n</i> = "1": always
opmode <i>n</i>	Sets/displays the mode that controls the Demand signal source. This mode selects analog or digital control.	<i>n</i> = "0": analog Demand <i>n</i> = "1": digital Demand <i>n</i> = "2": run CW <i>n</i> = "3": run CCW <i>n</i> = "4": stay <i>n</i> = "5": stop
restoremodes <i>n</i>	Returns DCM settings to original factory configuration.	<i>n</i> = "1": executes command
sernum <i>n</i>	Sets/displays the actuator Serial number.	<i>n</i> = Serial number
stallprot <i>n</i>	Sets/displays stall protection state.	<i>n</i> = "0": disabled <i>n</i> = "1": enabled
stalltime	If the motor tries to run in one direction for more than the DCM-calculated stall time (drvtiming + 5%), power will be removed from the motor.	No argument.
drvtiming <i>n</i>	Not user configurable. Use RPM.	
relayconfig <i>n1 n2 n3</i>	Configure a programmable output relay. Only one relay can be configured in a single command. Relays can be configured as either alarm relays or soft auxiliaries (see page 11).	<i>n1</i> = relay number: "1" selects first programmable relay and "2" selects second programmable relay. <i>n2</i> = relay mode: greater-than (">") or less-than ("<") characters select Soft Auxiliary Switch Mode. "0" or "1" selects alarm relay mode. <i>n3</i> = operating value: For Soft Auxiliary Switch Mode <i>n3</i> is the position % of travel relay trip point. <i>Note: See page 11 for polarity.</i>
set0pct	Sets the 0% position. Same as pushing 0%+Calibrate buttons (Pushbutton method).	No argument.
set100pct	Sets the 100% position. Same as pushing 100%+Calibrate buttons (Pushbutton method).	No argument.
rpm	Set the output shaft revolutions per minute	<i>n</i> = "6" to "60"
poscal 1	Activates the position calibration wizard. When both the 0% and 100% positions have been set, the wizard sets actuator direction (CW or CCW) and travel (number of turns) automatically.	Use Handswitch (CW or CCW) to move to desired 0% position. Enter command "set0pct". Use Handswitch (CW or CCW) to move to desired 100% position. Enter command "set100pct".

SERIAL COMMANDS

Torque Sensing Commands

Command	Description	Argument <i>n</i> and Information
ovtstop <i>n</i>	Sets/displays whether motor power will be removed during severe overtorque conditions. Torque sensing must be enabled.	<i>n</i> = "0": disabled <i>n</i> = "1": enabled
ovtstoplevel <i>n</i>	Sets/displays the torque magnitude associated with severe output shaft torque conditions.	<i>n</i> = allowable torque magnitude (without stopping motor) in percent of actuator rating. May be set from 25% to 115% (factory set to 115%).
torq	Displays the torque on the output shaft measurement as a percentage of actuator rating. Also displays related values such as torq0k and torqconst.	No argument.
torq0k <i>n</i>	Sets/displays the value of DCM internal measurement corresponding to 0% torque on the output shaft.	<i>n</i> = the zero torque value in counts (noted on label inside DCM cover).
torqalarm <i>n</i>	Sets and/or displays the torque magnitude associated with the first level of alarm.	<i>n</i> = allowable torque magnitude without alarm, in percent of actuator rating.
torqconst <i>n</i>	Sets/displays the value of DCM internal measurement corresponding to the torque span (the measurement at 100% minus the measurement at 0%).	<i>n</i> = the torque span value in counts (noted on label inside DCM cover).
torqenable <i>n</i>	Sets/displays the status of torque sensing.	<i>n</i> = "0": disabled; <i>n</i> = "1": enabled
torqprof	Displays a three table column: 1. Maximum travel divided into 10 segments 2. peak torque measured in each segment with motor running CW 3. peak torque measured in each segment with motor running CCW	No argument.

Communications Configuration Commands

Command	Description	Argument <i>n</i> and Information
network <i>n</i>	Sets/displays the network to be utilized. Use of HART is not recommended.	<i>n</i> = "0": HART/Analog <i>n</i> = "4": Modbus
polladdr <i>n</i>	Use of HART is not recommended.	<i>n</i> = the polling address (a number between "0" and "15"). Unless multiple HART devices are connected in parallel on a single bus, the polling address should be set to "0".
modbaud <i>n</i>	Sets/displays the Modbus data rate.	<i>n</i> = "0": 300; <i>n</i> = "1": 600; <i>n</i> = "2": 1200; <i>n</i> = "3": 2400; <i>n</i> = "4": 4800; <i>n</i> = "5": 9600; <i>n</i> = "6": 19200; <i>n</i> = "7": 38400
modpolladdr <i>n</i>	Sets/displays the Modbus interface polling address.	<i>n</i> = a value between "1" and "247"
modparity <i>n</i>	Sets/displays the means of error checking individual Modbus characters. The actuator must be set to the same parity format as the control system.	<i>n</i> = "0": Even parity/One Stop Bit <i>n</i> = "1": Odd parity/One Stop Bit <i>n</i> = "2": NO parity/Two Stop Bits <i>n</i> = "3": NO parity/One Stop Bit
modconfig <i>n1 n2</i>	Controls the behavior of the Modbus interface for broadcast messages and floating point demand status.	<i>n1</i> = Broadcast Override: "0": Ignore / "1": Accept <i>n2</i> = Demand Status: "0": Ignore / "1": Active
modendian <i>n</i>	Sets the endianness of the communication. Determines the method of handling floating point byte order.	<i>n</i> = "0": Big Endian <i>n</i> = "1": Middle-Little Endian <i>n</i> = "2": Little Endian <i>n</i> = "3": PDP Endian

Communications Configuration Commands (cont'd)

Command	Description	Argument <i>n</i> and Information
modscaling <i>n</i>	Sets the scaling factors for scaled integer types. All range counts represent 0–100%.	<i>n</i> = "0": 0–10000 counts <i>n</i> = "1": 0–1000 counts <i>n</i> = "2": 0–100 counts <i>n</i> = "3": 0–255 counts <i>n</i> = "4": 0–4095 counts <i>n</i> = "1": 0–65535 counts
modstat	Provides a snapshot of what will be sent for position and what is received for Demand. Also includes information on the Modbus interface configuration.	No argument.
wifipw <i>n</i>	Allows user to set a customized password for Wi-Fi consisting of 8 to 18 alphanumeric characters.	<i>n</i> = password

Diagnostic and Information Commands

Command	Description	Argument <i>n</i> and Information
demsources	Provides a readout of information regarding the Demand on the actuator including the source of the Demand signal (Handswitch, demlos or Analog I/P), mode (follow, hold, CW, CCW, Stay or Stop), currently applied Demand signal as a %, the Demand function (linear, square root, square, or special), and the Demand out as a % (dem out shows the signal adjusted when using a non-linear Demand function (demfunc command)).	No Argument
help <i>n</i>	Displays help text for a specific command or lists all available Serial commands.	<i>n</i> = command name <i>n</i> = "all"
ledtest <i>n</i>	Tests the functionality of the DCM LEDs individually or as a group. If "all" is selected, the command will consecutively cycle through each LED twice. If an individual LED is selected, it will flash 12 times.	<i>n</i> = "1": DEM <i>n</i> = "2": POS <i>n</i> = "3": TORQ <i>n</i> = "4": STALL <i>n</i> = "5": TEMPF <i>n</i> = "6": FB OPEN <i>n</i> = "7": UVOLT <i>n</i> = "8": ACKNOWLEDGE <i>n</i> = "100": FWD <i>n</i> = "101": REV <i>n</i> = "102": STAT <i>n</i> = "All"
reset <i>n</i>	Performs the same reset sequence as when power is removed and reapplied.	<i>n</i> = "1": must equal "1" for command to execute.
signals	Displays the present DCM readings of four signals: Position signal Demand Feedback Torque	No argument = signal readings are displayed. <i>n</i> = "all": an extended set of data is displayed.
stat	Displays information on the status of the actuator, including: Time / Date, Demand, Position, Error (Demand minus Position), Step size, Dead band, Motor Status, Motor Run Time, Line Frequency, Motor Starts, Motor Reversals/Stalls, Number of Overtorque conditions, Positive & Negative Peak Torque (%), CW and CCW Inhibitor Status, Alarms	No argument

SERIAL COMMANDS

Diagnostic and Information Commands (cont'd)

Command	Description	Argument <i>n</i> and Information
temperature <i>n</i>	Displays three values describing the ambient temperature in the actuator. Low extreme, present, high extreme. Can also change the temperature units.	No argument = temperatures are displayed. <i>n</i> = "F": changes units to Fahrenheit <i>n</i> = "C": changes units to Celsius
unstall	Resets the Stall Protection alarm to restore power to the motor. If the motor is still physically stalled, the Stall Protection alarm will recur.	No argument.
runtime	Displays the number of line cycles for which current has been flowing through the motor. The count is reset to zero whenever the DCM requests the motor to stop. The count is only advanced if motor current is flowing.	No argument.
ver	Displays the firmware version.	No argument.

Demand Signal Commands

Command	Description	Argument <i>n</i> and Information
dem0pctma <i>n</i>	Sets/displays the Demand signal value that corresponds to 0% actuator position.	<i>n</i> = Demand signal as a decimal in mA. Minimum value is 0.50; maximum value is 100% Demand less 4.00 mA (e.g., if 100% Demand is 20.00 mA, the 0% value must be set for 16.00 mA or less).
dem100pctma <i>n</i>	Sets/displays the Demand signal value that corresponds to 100% actuator position.	<i>n</i> = Demand signal as a decimal in mA. Minimum value is 0% Demand plus 4.00 mA (e.g., if 0% Demand is 4.00 mA, the 100% value must be set for 8.00 mA or greater). Maximum value is 21.00 mA.
demlos <i>n</i>	Sets/displays the Demand signal threshold, below which the DCM recognizes the signal has been lost. The threshold is entered as a value in mA. This command also sets/displays the action initiated by the actuator during LOS (Loss Of Signal). LOS action options are "sip" (stay in place) or "gtp" (go to position). Demlos always reports both settings, but only sets one argument at a time. Demlos must be used twice to set both the threshold and action.	<i>n</i> = Demand signal in mA below which LOS occurs (e.g., the typical value for a 4–20 mA system is 3.20). -OR- <i>n</i> = "sip", "gtp" or "pat". The "pat" argument acts the same as "sip", but also suppresses the alarm—used in some pulsed applications.
demlogtp <i>n</i>	Sets/displays the position to which the actuator will run upon loss of the Demand signal (LOS). This command has no effect if the actuator is set to "sip" (stay in place).	<i>n</i> = desired position of actuator expressed as a percentage of actuator travel in decimal form (e.g., 50% = 50.00).
hold <i>n</i>	Overrides the analog Demand signal with entered value. Actuator will move to this value. Invoking this command sets the "opmode" to "hold" (see "opmode" command). To return actuator to automatic control, set "opmode" to analog Demand ("0").	<i>n</i> = Demand as decimal (2 places) in percent.

Demand Signal Commands (cont'd)

Command	Description	Argument <i>n</i> and Information
trimdem4ma 4	Trims the Demand analog-to-digital sensing circuit to be accurate at 4 mA. This command should only be used when the Demand signal at the actuator is exactly 4.0 mA. Trim is factory set and should not normally require recalibration.	" 4 " is the only acceptable value; this trim can only be performed at 4 mA.
trimdem20ma 20	Trims the Demand analog-to-digital sensing circuit to be accurate at 20 mA. This command should only be used when the Demand signal at the actuator is exactly 20.0 mA. Trim is factory set and should not normally require recalibration.	" 20 " is the only acceptable value; this trim can only be performed at 20 mA.

Demand Characterizer Commands

Command	Description	Argument <i>n</i> and Information
charclear <i>n</i>	Clears a preconfigured Demand characterizer curve node by setting it to "unused". Any node numerically higher will be set to "unused" also.	<i>n</i> = node number: between 1 and 21.
charlist <i>n</i>	Displays the X-values and Y-values of Demand characterizer curve node(s).	<i>n</i> = node number: between 1 and 21. <i>n</i> = "all": displays all nodes
charset <i>n1, n2, n3</i>	Sets the X-values and Y-values of a specific node of the characterizer curve. The three arguments must be separated by commas.	<i>n1, n2, n3</i> = (<i>n1</i> is node number to modify, <i>n2</i> is X-value as a %, <i>n3</i> is Y-value as a %).
demfunc <i>n</i>	Sets/displays the Demand signal characterization function.	<i>n</i> = "0": linear <i>n</i> = "1": square root <i>n</i> = "4": special curve <i>n</i> = "5": square

Feedback Signal Commands

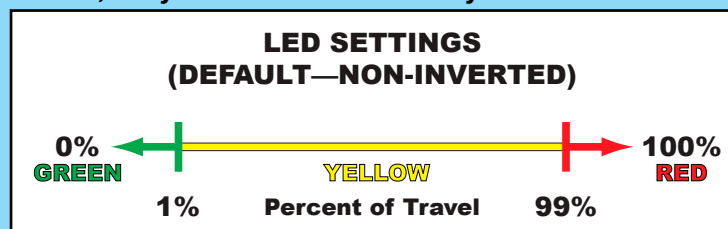
Command	Description	Argument <i>n</i> and Information
fdbk0pctma <i>n</i>	Sets/displays the mA value of the Feedback signal that represents the 0% output shaft position.	<i>n</i> = desired Feedback signal in mA at 0% output shaft position. Min. value is 3.00 mA and the max. must be at least 4.00 mA less than the Feedback signal value for 100% output shaft position.
fdbk100pctma <i>n</i>	Sets/displays the mA value of the Feedback signal that represents the 100% output shaft position.	<i>n</i> = desired Feedback signal in mA at 100% output shaft position. Minimum value must be at least 4.00 mA greater than the Feedback signal value for the 0% output shaft position. Maximum value is 21.00 mA.
fdbkfunc <i>n</i>	Sets/displays the curve used to calculate the Feedback signal.	<i>n</i> = "0": linear <i>n</i> = "1": inverse Demand (curve enabled)
fixfdbk <i>n</i>	Sets the Feedback signal. If set to 0, will revert back to normal operation; i.e., follow actuator position.	<i>n</i> = Feedback signal as decimals in mA (0.000–21.000).

SERIAL COMMANDS

Feedback Signal Commands (cont'd)

Command	Description	Argument <i>n</i> and Information
trimfdbk4mA <i>n</i>	Trims the Feedback signal at 4 mA. Calibrated at the factory, should not normally require calibration.	<i>n</i> = present Feedback signal from the DCM in mA.
trimfdbk20mA <i>n</i>	Trims the Feedback signal at 20 mA. Calibrated at the factory, should not normally require calibration.	<i>n</i> = present Feedback signal from the DCM in mA.
iomode <i>n</i>	Sets/displays the function of a DCM connector pin. May be enabled for Feedback or potentiometer.	<i>n</i> = "0": none <i>n</i> = "1": Feedback enabled <i>n</i> = "2": potentiometer power enabled.
ledconfig <i>n1 n2</i> *	Changes the point within the position of travel that causes the red or green LEDs to light. May be used to turn the yellow LED on or off, swap the LED end point assignments or to individually turn off each LED. May also be used to turn off all of the LEDs at once.	<p><i>n1</i> = "red": sets the red LED to the <i>n2</i> argument.</p> <p><i>n1</i> = "green": sets the green LED to the <i>n2</i> argument.</p> <p><i>n2</i> = argument defining position of travel at which the selected LED (<i>n1</i>) will light. Accepts any number representing a valid percentage of travel position. <u>or</u></p> <p><i>n2</i> = "off": turns off the LED defined in <i>n1</i>.</p> <p>-----</p> <p><i>n1</i> = "yellow": sets the yellow LED to the <i>n2</i> argument.</p> <p><i>n2</i> = "off" or "on": turns off or on the yellow LED.</p> <p>-----</p> <p><i>n1</i> = "noninverted": Position <green turns on green; position >red turns on red.</p> <p>-----</p> <p><i>n1</i> = "inverted": Position <red turns on red; position >green turns on green.</p> <p>-----</p> <p><i>n1</i> = "defaults": Loads the default LED configuration, which is "noninverted" mode (green = 1%, red = 99%).</p> <p>-----</p> <p><i>n1</i> = "disable": all LEDs (red, green, yellow) are turned off.</p> <p>-----</p>

***NOTE:** In the event of a red/green position overlap, the red LED will be turned on. Error checking in the Serial command was added to help eliminate this possibility. In the case that only a single red or green position is defined, the yellow LED automatically remains off.



RELAY CONFIGURATION

CONFIGURING PROGRAMMABLE OUTPUT RELAYS

There are three configurable solid state relays in the 88-109. Default settings for the relays are shown in the table below, but they may be custom-configured using Serial commands (Wi-Fi and Modbus may also be used for configuration - see separate instructions).

The three status output relays are also capable of a Soft Auxiliary Switch Mode, which configures the selected relay to turn on when the actuator output shaft position is outside of a specified percentage of full travel.

The following table summarizes the relay capabilities:

TERMINAL CONNECTION	RELAY NAME	RELAY CAPABILITIES
Terminals 20 & 21	Relay 1 (SSR3) (120 Vac/dc max., 80 mA max.)	Defaults to a status alarm that annunciates all status conditions. The default polarity is normally closed (open on alarm).
Terminals 22, 23 & 24	Relay 2 (SSR1) (240 Vac/30 Vdc max., 10A max.)	Defaults to an alarm at the CW limit. Customer determines polarity by wiring to the NC (Normally Closed) or NO (Normally Open) side of the switch.
Terminals 25, 26 & 27	Relay 3 (SSR2) (240 Vac/30 Vdc max., 10A max.)	Defaults to an alarm at the CCW limit. Customer determines polarity by wiring to the NC (Normally Closed) or NO (Normally Open) side of the switch.

ALARM MASK AND POLARITY SETUP

The alarm polarity controls the Normally Open (NO) vs. Normally Closed (NC) behavior of the activated relay and is configurable as follows:

- “0” sets the relay contact action to (NC).
- “1” sets the relay contact action to (NO).

The alarm mask is a bit array that selects which conditions activate the relay. A mask value of zero means that the specific alarm source is ignored. A mask value of one means that the relay will activate if the associated alarm is active.

The alarm mask for each relay is set using Serial commands (Wi-Fi or Modbus may also be used).

The alarm mask selection values are shown on page 12.

SERVICES

PRODUCT DEMONSTRATIONS

Each of Beck's Sales Engineers has access to a complete set of actuator models so that he can demonstrate virtually any of their features at your location. In order to arrange to see a Beck actuator in your plant or office, contact Beck's Sales Department.

SITE SURVEYS

Beck Sales Engineers are available to discuss your process control requirements. Often a visit to your location is the best way to gain a thorough understanding of your needs, in order to meet them most accurately and completely.

Mounting hardware, torque requirements, linkage, control signal information, and optional equipment can be analyzed most effectively at the work site. Beck's analysis at the job site can help ensure that specifications are accurate, especially in the case of complex applications.

APPLICATION REVIEWS

By sharing your needs with a Beck Sales Engineer you can take advantage of the best application advice for the type of control you need.

This review will yield a better understanding of the versatility of Beck actuators for your installations, as well as complete details on options and accessories to make the process as effective as possible.

SPECIFICATION WRITING

Beck provides specification writing assistance in order to help you specify and order the right actuators for your applications. Beck Sales Engineers will work with you to make it easier for you to obtain the proper equipment and give you confidence that no details are overlooked.

HOW TO OBTAIN SERVICE

Factory repair of actuators or subassemblies is available for both normal and emergency service. To assure prompt processing, contact the factory to receive a Returned Material Authorization (RMA) number. If a repair estimation is desired, please send the name and phone number of your contact for service authorization. It is helpful to include a description of the work desired with the shipment or, in the event of a problem, the malfunction being experienced.

THREE YEAR LIMITED EQUIPMENT WARRANTY

Beck warrants to Buyer that: (i) for a period of 3 years from the date of shipment, the Equipment manufactured by Beck shall materially conform to Beck's published standard specifications in effect as of the date of shipment; and (ii) the Beck Equipment will be free from defects in materials and workmanship. This warranty does not apply to normal wear and tear, or where Beck Equipment failure is a result of improper installation, improper storage, misuse or improper maintenance, or water ingress related to Buyer or its agents failing to apply the stated torque requirements to fasteners when attaching covers or failing to replace temporary conduit plugs as stated in the installation instructions, or entry through conduits.

During the Limited Warranty Period, Buyer shall notify Beck of any alleged warranty claim within 30 days from the date Buyer discovers, or upon reasonable inspection should have discovered, such alleged claim (but in any event prior to the end of the Limited Warranty Period), and Buyer shall return the Beck Equipment in question, at Buyer's expense, to Beck for evaluation, in compliance with the terms stated in the "Return of Equipment" article in the Sales Contract. If Beck determines that the Beck Equipment fails to conform to the limited warranty, then, at Beck's sole discretion and its expense (subject to Buyer's conformity with the warranty), Beck will either: (i) repair or replace the Beck Equipment, without charge, at Beck's factory, or (ii) refund the purchase price of such Beck Equipment, less any applicable discounts, rebates, or credits. In no event will Beck's liability exceed the contract price actually paid for such Beck Equipment subject to a warranty claim. Beck makes no warranty, express or implied, with respect to any Buyout Item. This limited warranty is not transferable or assignable to any transferees of the Beck Equipment.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER EXPRESS OR IMPLIED WARRANTY, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND ALL OTHER OBLIGATIONS OR LIABILITIES OF BECK. BUYER ACKNOWLEDGES THAT: (i) BECK HAS MADE NO INDEPENDENT INVESTIGATION OF THE SUITABILITY OF THE EQUIPMENT FOR BUYER'S INTENDED USE OR EXISTING SYSTEMS; AND (ii) BUYER HAS NOT RELIED UPON ANY REPRESENTATION OR WARRANTY MADE BY BECK OR ANY OTHER PERSON ON BECK'S BEHALF, EXCEPT AS SPECIFICALLY PROVIDED IN THE SALES CONTRACT. THIS SECTION SETS FORTH BUYER'S SOLE AND EXCLUSIVE REMEDY FOR ANY BREACH OF THE LIMITED WARRANTY SET FORTH IN THIS SECTION.

A 100% EMPLOYEE OWNED COMPANY

BECK

~ founded 1936 ~

SINCE 2021



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