

IOM FOR DYNATORQUE™ SANDWICH DECLUTCHING MANUAL OVERRIDE (SD TYPE)**Scope:**

It is the purpose of this document to provide general installation, operation, storage, and maintenance instructions for DYNATORQUE™ manual declutching override worm gear operators.

NOTE: DYNATORQUE SD automated valve manual overrides may be used with electric, hydraulic or pneumatic double acting or spring return valve actuators. For purposes of convention, the term “pneumatic actuator” will be used to refer to torque-generating driving device (actuator). The term “operator” will refer to the DYNATORQUE manual override.

Installation Tips:

All Cameron DYNATORQUE operators & accessories have been designed to transmit the rated output torque of the operator. When designing mounting kits, torque transmission devices, or specifying mounting hardware the operator rating should be considered. Cameron recommends using grade 5 and higher bolts with lock washers for mounting DYNATORQUE devices to valve actuators, valve mounting flanges and/or valve adaptation kits. DYNATORQUE components should not be installed in areas where those components will be subjected to high temperatures, corrosive atmospheres, or high pressures without prior knowledge by Cameron or unless originally designed for that purpose. Doing so may affect the product warranty.

Installation:

The Cameron DYNATORQUE model SD manual override operators offer safe and easy positioning of valves when manually overriding a double acting or spring return pneumatic actuator. Each SD operator comes complete with a handwheel and machined or blank drive adapter which can be easily removed for machining to match the pneumatic actuator and valve stem requirements. Before assembly is begun please ensure that the driver has been machined correctly.

The following steps should be taken to install the DYNATORQUE SD override. Cameron recommends operator mounting while on the test stand with the valve in the closed position.

Cameron recommends a watertight seal be established at time of installation between the bottom of the SD and the valve, as well as the top of the SD and the actuator mounting pad. Apply a liberal amount of a liquid gasket material (Cameron recommends using DOW Corning RTV #732 multi-purpose sealant) on both surfaces prior to SD installation. Make sure to surround the mounting holes with sealant to assure a complete seal.

1. Check to ensure that the valve, the override, and the pneumatic actuator, are in the same position. If the positions do not correspond, rotate the override handwheel either clockwise or counterclockwise until the correct position is achieved.
2. With the drive adapter removed from the override, place the SD on the valve assembly and loosely bolt into place. **Note: Mounting holes on some SD overrides break into the housing cavity creating a grease leak path. The use of Teflon tape is recommended for all valve side bolt installations.**
3. Before reinstalling the driver, liberally grease the outside of the driver and the override bore. This may reduce the possibility of corrosion between the two components.
4. Reinstall the drive adapter making sure the end of the driver configured to fit the valve stem is aligned correctly.
5. Tighten the valve to the SD override with mounting bolts.

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6. The opposite end of the driver should be configured to match the pneumatic operator output drive. Align the pneumatic actuator drive with the override driver and lower the pneumatic actuator into place on the top flange of the override.
7. Bolt the pneumatic actuator into place.
8. Check the stop adjustment screws on the SD operator to ensure that they do not interfere with the valve or pneumatic actuator stops if they exist. To set the override stops, loosen the lock nut on each of the SD stop bolts and back them out several turns. (DT12SD through DT140SD only) Adjust the valve to the desired position. Turn the stop bolt clockwise on the appropriate side until it comes into contact with the override gear quadrant. Once contact has been made, reverse rotation and back out the bolt ½ to 1 turn. Tighten the lock nut against the housing. Rotate the override to the opposite end and repeat the process.
9. Before operating the pneumatic actuator, make sure that the SD override is in the normal declutched position.

IMPORTANT NOTE: The actuator stops (NOT the SD stops) must be set to establish the full clockwise and counterclockwise travel of the actuator. The SD stops should be set so that they are not subject to the rotational force generated by the actuator.

**Normal Position – Disengaged:**

The picture (left) shows the DT21SD in the “normal position, disengaged” for standard pneumatic operation. As shown, the handle arrangement is pinned in the down position. The handwheel should rotate freely in both the clockwise and counter-clockwise directions, without causing valve or actuator movement.

Override Position – Engaged:

The picture (left) shows the DT21SD in the “override position, engaged” for override operation. As shown, the handle arrangement is pinned in the up position for manual

override. Assuming a “failure to close clockwise” (as viewed from above) application: Rotation of the handwheel clockwise will rotate the actuator clockwise (generally the closed direction); rotation of the handwheel counter-clockwise will rotate actuator counter-clockwise (generally the open direction).

Note: Air pressure in the pneumatic actuator must be vented to atmosphere and/or air connections to pneumatic actuator must be disconnected prior to override.

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The use of handwheels larger than recommended by the factory, cheater bars, etc. will void the override warranty and may cause damage to the operator, valve stem, drive shafts, or other torque transmitting devices as well as being dangerous to the user. Additionally, the use of chainwheels on operators that are not recommended for those applications will result in voiding operator warranty.

Important Safety Note: For SD Override / Spring Return Actuator Combinations:

When using declutchable manual overrides in combination with spring return actuators, it is very important not to attempt to disengage the manual override when the actuators spring is compressed. Doing so will allow the spring to move the assembly to its failed position very quickly, potentially causing damage to the assembly as well as possible injury to the human operator.

Operation:

In the event the pneumatic actuator's power supply fails, a double acting pneumatic actuator will remain in its last position, and a spring return actuator will move to its failed position. Make sure that the pneumatic actuator's cylinders have been vented to atmosphere.

To manually override the actuator:

1. Grasp the override engagement handle, squeezing the bottom handle and top handle together.
2. With the handles still squeezed together, rotate the handle from its declutched position counterclockwise toward the pneumatic actuator mounting flange until the handle locking tabs are in line with their locking positions.
 - a. In some cases the override gear teeth will not mesh correctly when rotating the handle upward. If this occurs, rotate the override handwheel slightly to mesh the gears and then rotate the declutch handle counterclockwise.
3. Once the override handle is in its locked position, the override is ready to be used.
4. Clockwise rotation of the override handwheel will produce clockwise rotation (as viewed from above) of the override output, valve, etc.
5. Conversely, counterclockwise rotation of the handwheel will produce counterclockwise rotation of the override output, valve, etc.
6. **Note:** When pneumatic actuator air has been restored, the manual override must be returned to its declutched position. Reversing the procedure above will return the override to the declutched position.
7. Assure the handle locking tabs are inserted into their locking position on the override housing.
8. Leaving the declutching handle engaged will prohibit the pneumatic actuator from cycling the valve and may cause damage to the override as well as drivers' linkages, etc. and void the override warranty.

Maintenance:

- A. **Storage:** For best results, DYNATORQUE operators should be stored in a clean, dry area in their original factory shipping containers. If operators are stored in high humidity areas, steps should be taken to reduce the amount of moisture the units will be exposed to. Operator input shafts are plated or stainless steel to prevent corrosion. If operators are being stored for a long period of time, operator mounting surfaces should be lightly greased to prevent corrosion.

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- B. Maintenance: DYNATORQUE manual operators do not require periodic maintenance. They are, for most applications, lubricated for life, with all components designed to have a life equal to or exceeding the wear life of the operator gearing.
- C. Lubrication: If for any reason, lubrication replacement is necessary, Cameron recommends replacement of that lubrication with:

DYNATORQUE Standard Grease Specification:- Alpha Green 2000

NLGI Grade: Grade 2 EP
Grease Base: Calcium Sulfonate
Color: Green
Anti-Wear EP Additives: Yes
Dropping Point: ASM D566 572Deg F(300Deg C)
4 Ball Wear KG Load ASTM 2596: 500
Timken OK Load Lbs. ASTM 2509: 65
Oil Separation, ASTM D1742-24Hous@77 deg F (25 Deg C)
Base Oil Viscosity SUS @100 Deg F 600
Base Oil Viscosity SUS @210 Deg F 70
Pour Point +5 Deg F

- D. Spare Parts: Cameron warrants work performed by the factory or by factory trained personnel only. Please consult the factory or your local DYNATORQUE representative to arrange assistance. Cameron modifies a great percentage of its DYNATORQUE operators to meet specific customer requirements. Please refer to the operator part list number as supplied on the shipping document, acknowledgement, or invoice, when ordering spare parts.
- E. Spare Parts: For your records, please enter the operator part number from your shipping documents, acknowledgement, or invoice here:

Part Number: _____

Date Stamp: _____ (Located on the bottom of the operator housing.)

Purchase / Sales Order Number: _____

Please Note:

When assembling Cameron DYNATORQUE products to a valve or to an automated valve package, standard engineering practices must be utilized to assure proper mounting orientation, configuration, and distribution of weights and forces. Failure to do so could cause product damage and/or malfunction, **and void warranty consideration**. If there are any questions please contact the factory at info-dyt@c-a-m.com.