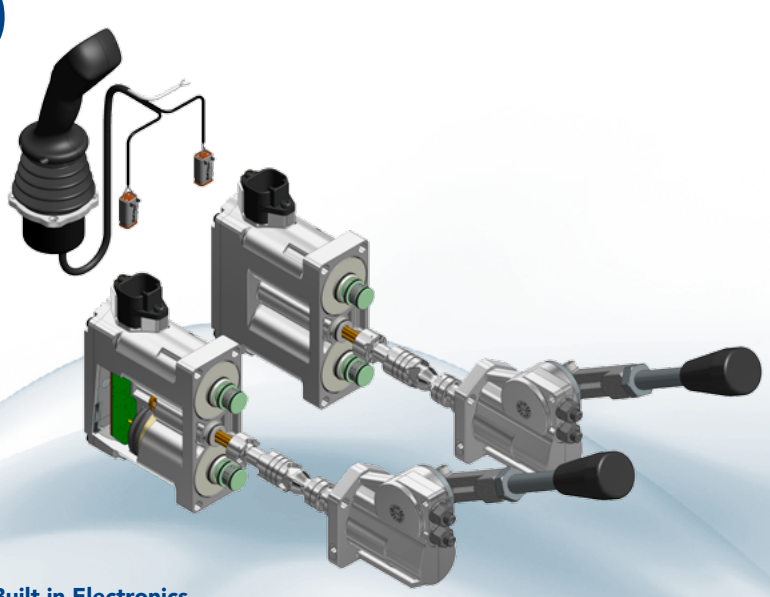
a Delta Power Company

TECNORD

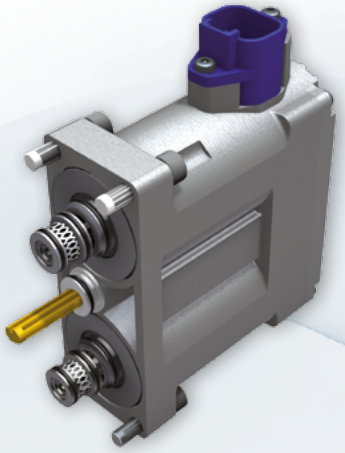
SERVOCOMANDI E REGOLAZIONE



Multidrom MLT FD-5

PRINCIPLE OF OPERATION

The **MLT-FD5/D** electro-hydraulic proportional actuator has been designed to shift a directional control valve spool either directly **(FL version)** or by means of a servo-piston mechanically connected to it **(SP version)**. The internal closed loop position control configuration of the **MLT-FD5/D** makes the valve spool achieve the desired position with accuracy levels approaching the performance of a servo-valve, by continuously comparing the set-point of a remote control device **(Potentiometer, Joystick, Machine Management System)** with the feed-back signal generated by a high-precision hall effect position transducer.



FEATURES

Two Independent Proportional Valves

Control Configuration: bidirectional with MOTOR SPOOL center position for fail-safe return to neutral in case of power loss.

Flow Rate: 0.2 to 0.5 lt/min. max. flow requirement under normal conditions.

Work Pressure: 12 to 35 bar.

Hall Effect/Contactless Spool Position Sensor

- Excellent linear control on 100% of spool travel.
- 8 mm standard control stroke from each side of NEUTRAL/13 mm for FLOAT position in one direction only.
- No "Cross Talking" between adjacent work sections.

Built-in Electronics

MLT-FD5-D (digital): microprocessor-based actuator.

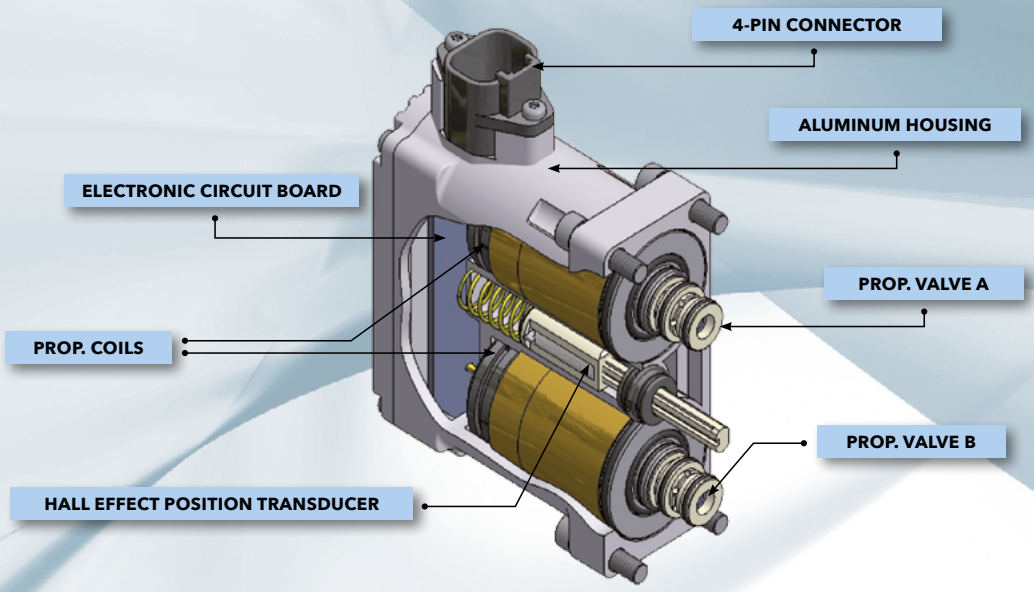
Choice between different types of control:

- Analog control (0 – 5V), with following auxiliary signals available:
  - ✓ spool position feedback.
  - ✓ 5V for external potentiometer or joystick.
- CANbus control (J1939 or CANopen protocols).

MLT-FD5-0 (on-off): 12 or 24V version.

APPLICATIONS

- High performance proportional control of stackable or monoblock directional control valves.
- Proportional control of variable displacement pumps and motors.
- Engine governor RPM controls.



CONTROL CHARACTERISTIC OF MLT-FD5 PROPORTIONAL ACTUATOR
(Analog Operating Mode)

SPOOL STROKE A

When the input voltage signal fed to the MLT-FD5 actuator is maintained within 2.25 and 2.75V, the directional valve spool is at rest (Neutral Dead Band). When Vin = 2.75V, the spool steps up from NEUTRAL to MINIMUM FLOW control position. A linear ramp from MIN. to MAX. spool stroke will follow by increasing Vin from 2.75 to 4.1V. At Vin = 4.50V, the spool is brought into its FLOAT POSITION, if present. By decreasing the input voltage from 4.1 to 2.75V, the spool stroke is linearly reduced and after the oil flow is fully shut-off, a step-down from MINIMUM FLOW to NEUTRAL position takes place.

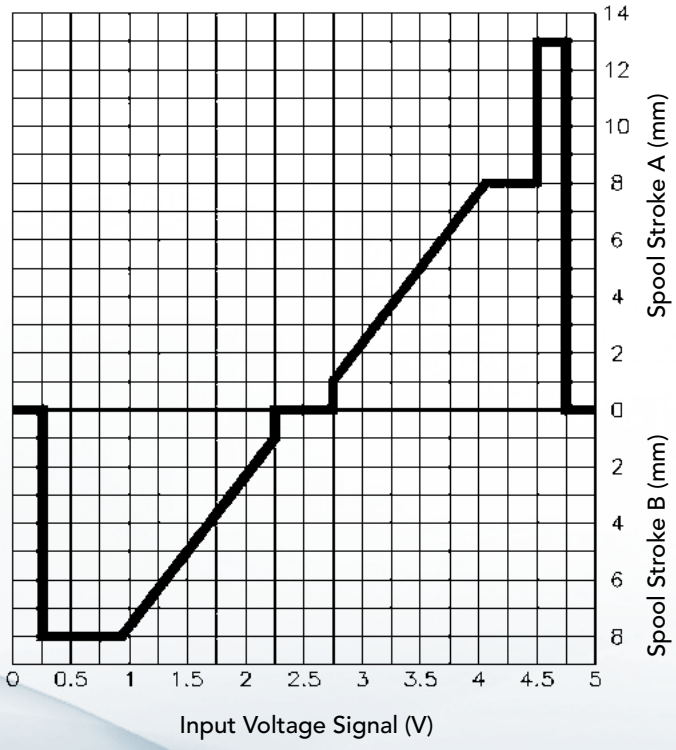
SPOOL STROKE B

Same as for STROKE A, by varying Vin from 2.25 to 0.9V, the spool will go from NEUTRAL to MAX. STROKE in the opposite direction.

ALARM / FAIL - SAFE MODE

An input voltage variation beyond the calibration range (<0.25V or >4.75V) will bring the system into an ALARM mode, urging the spool to return to its NEUTRAL position until Vin is brought back to its nominal control range.

Spool Stroke (mm) vs. Input Voltage Signal (Volt DC)



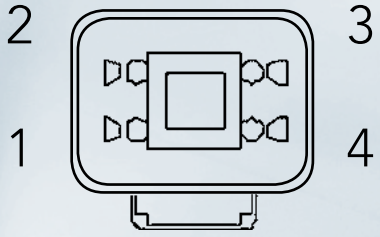
HYDRAULIC SPECIFICATIONS

Max. supply pressure	35 bar
Min. supply pressure	12 bar
Max. back pressure	1.5 bar
Pilot flow requirement	0.2 lt/section
Oil temperature range	-30/+95°C
Oil viscosity range	3-650 cSt
Filtration	18/15/10 (ISO 4406)

ELECTRICAL SPECIFICATIONS

Operating voltage	8-30 VDC
Max. current consumption	750mA/section
Operating temperature	-30/+105°C
Analog input impedance	>40 kOhm
Typical ctrl pot. resistance	1-10 kOhm
Analog input signal	0-5V
Degree of protection	IP 68

CONNECTOR PINOUT (FRONT VIEW)



D/A0
1. + Power Supply
2. Do not Connect
3. Control Signal
4. - Power Supply (GND)

D/A5
1. + Power Supply
2. + 5V Aux. Supply voltage
3. Control Signal
4. - Power Supply (GND)

D/AF
1. + Power Supply
2. Sensor Feedback Output
3. Control Signal
4. - Power Supply (GND)

D/C0
1. + Power Supply
2. CANL
3. CANH
4. - Power Supply (GND)

0/12 - 0/24
1. + Power Supply coil A
2. - Power Supply (GND) coil A
3. + Power Supply coil B
4. - Power Supply (GND) coil B

ACTUATORS SELECTION GUIDE

MLT/FD5	-	X	/	X	X
Actuator family		Electronic circuit		Type of control signal	Auxiliary function

D= Digital (microprocessor)
0= On/Off

A= Analog Voltage
C= CANbus
12=12V On/Off
24=24V On/Off

0= None
5= 5V aux supply
F= Feedback

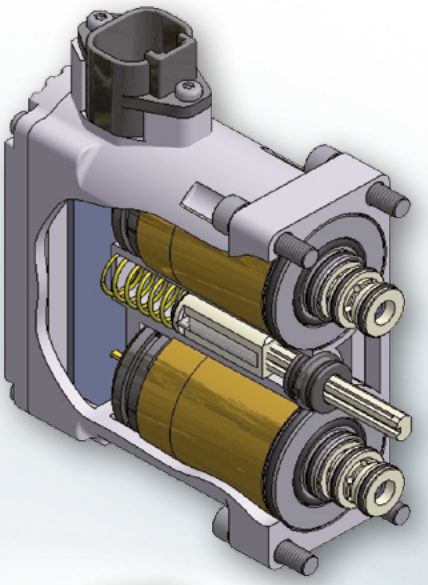
AVAILABLE CONFIGURATIONS AND MODEL DESIGNATION

MLT/FD5-D/A0
Proportional actuator
Digital electronics
Analog control signal (e.g. Potentiometer)

MLT/FD5-D/A5
Proportional actuator
Digital electronics
Analog control signal (e.g. Potentiometer)
+5V auxiliary power supply for the control potentiometer

MLT/FD5-D/AF
Proportional actuator
Digital electronics
Analog control signal (e.g. Potentiometer)
Feedback output (spool position): 0–5V

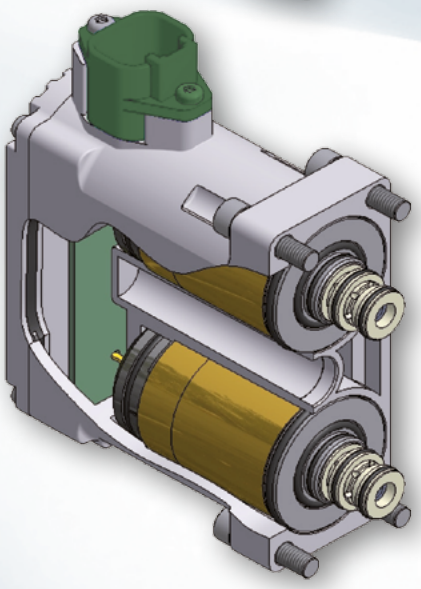
MLT/FD5-D/C0
Proportional actuator
Digital electronics
CANbus control (J1939)



Digital Actuator
Black connector

MLT/FD5-0-12
On/Off actuator, 12V coils

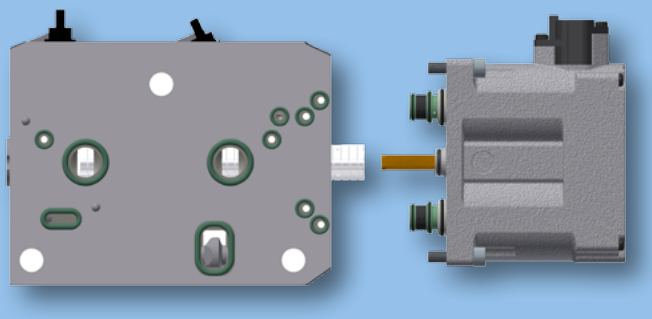
MLT/FD5-0-24
On/Off actuator, 24V coils



On/Off Actuator
(without hall effect sensor)
Blue connector: 12V
Green connector: 24V

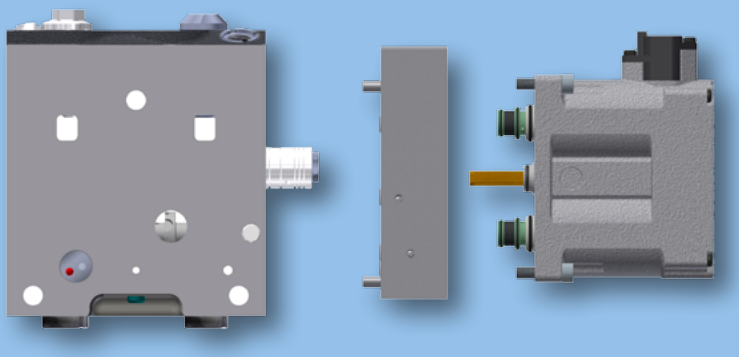
INSTALLATION OPTIONS

DIRECT FLANGED MOUNTING STYLE



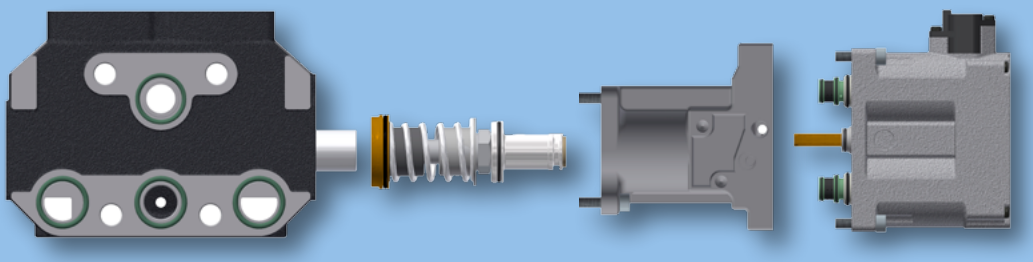
TDV 100

ADAPTER PLATE MOUNTING STYLE



BUCHER HDS34

ADAPTER PLATE WITH BUILT-IN D/A SERVO PISTON



BOSCH-REXROTH
MOD. SX14

TECNORD

Via Malavolti, 36 - 41122 Modena - Italy - Tel. +39 (059) 254895 - Fax +39 (059) 253512
tecnord@tecnord.com - www.tecnord.com