

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 makes the valve spool achieve the desired position with an 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 the internal 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 or ratiometric control signal, with following auxiliary signals available:

 \checkmark 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.

HYDRAULIC SPECI	FICATIONS
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	-20/+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/sectio
Operating temperature	40/+125°C
Analog input impedance	.>40 kOhm
Typical ctrl pot. resistance	.1-10 kOhm
Degree of protection	.IP 68



CONNECTOR PINOUT (FRONT VIEW)

D/RO

1. +V Power Supply

3. Control Signal

0/12 - 0/24

2. Sensor Feedback Output

4. -V Power Supply (GND)

1. +Power Supply coil A

3. +Power Supply coil B

2. -Power Supply (GND) coil A

4. -Power Supply (GND) coil B

D/C0

- 1. +Power Supply
- 2. CANL
- 3. CANH4. -Power Supply (GND)

D/A0

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

D/A5

- 1. +Power Supply
- +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)

ACTUATORS SELECTION GUIDE MLT/FD5 Х Х Х ACTUATOR FAMILY **ELECTRONIC CIRCUIT** TYPE OF CONTROL SIGNAL **AUXILIARY FUNCTION** C= CANbus D= Digital (microprocessor) 0= None A= Analog Voltage 0= On/Off 5= 5V aux supply **R= Ratiometric** F= Feedback 12= 12V On/Off 24= 24V On/Off

bn

AVAILABLE CONFIGURATIONS AND MODEL DESIGNATION

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

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/RO Proportional actuator Digital electronics Ratiometric control signal (% of supply voltage)



Digital Actuator Black connector

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

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

INSTALLATION OPTIONS





TDV100LT

BUCHER HDS34



On/Off Actuator (without hall effect sensor)

> Blue connector: 12V Green connector: 24V

ADAPTER PLATE MOUNTING STYLE



ADAPTER PLATE WITH BUILT-IN D/A SERVO PISTON



BOSCH-REXROTH MOD. SX14



TECNORD COMPREHENSIVE RANGE OF REMOTE CONTROL ELECTRONICS



EC-PWM-A1-MPC1 Microprocessor - based PWM electronic drivers



FINGERTIP PROPORTIONAL LEVERS Potentiometric and hall effect single-axis control levers and roller switches



ERGONOMIC GRIPS Multi-function ergonomic grips with on-off and proportional switches



HEAVY DUTY JOYSTICKS Potentiometric and hall effect multi-axes control joysticks



MACHINE MANAGEMENT SYSTEMS Microprocessor-based MMS for the integrated control of electro-hydraulic and safety functions



ECOMATIC CPS ground-speed oriented salt spreader control systems



4/6 FUNCTIONS SHW RADIO Combined on-off and proportional radio control system with single hand wander



4/6 FUNCTIONS PTM RADIO Multi-function proportional radio control with shoulder-strap transmitter and CANbus receiver



ARM-REST CONTROLLER Arm-rest control unit for hedge cutter

SEPTEMBER 2022

TECNORD

Via Malavolti, 36 · 41122 Modena · ITALY · Phone +39 (059) 254895 · Fax +39 (059) 253512 · mail: tecnord@tecnord.com · www.tecnord.com