WARREN MORRISON
UK LTD

ELECTRIC ACTUATORS
FEM SERIES

Warren-Morrison Valves

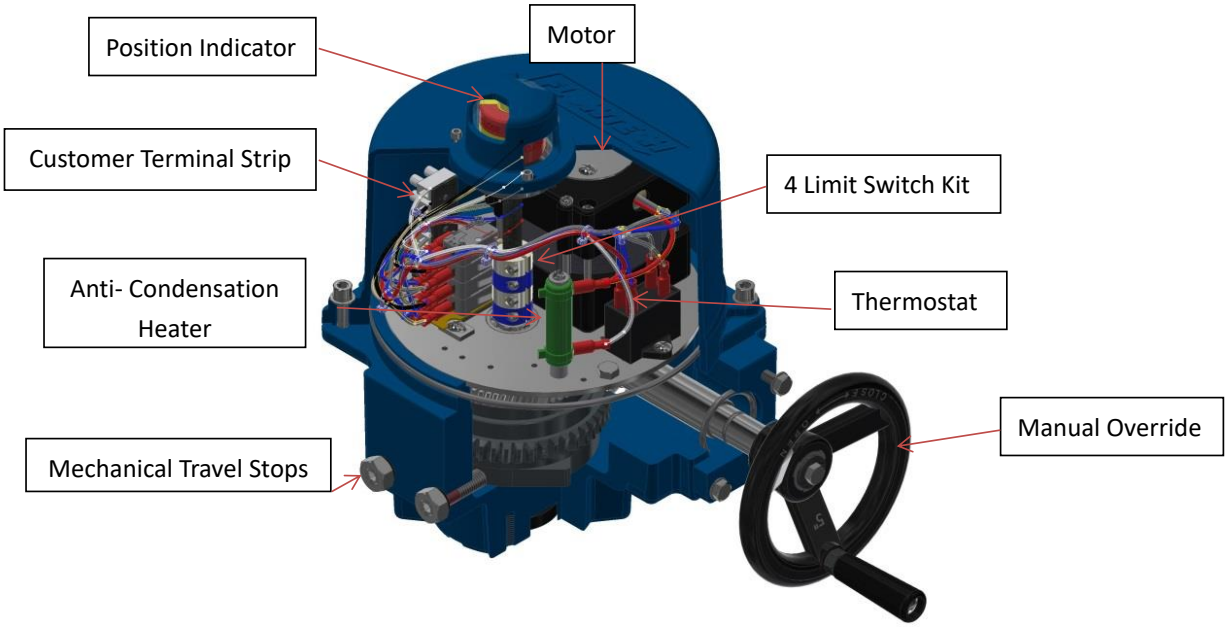
Established in 1949 in the United Kingdom, Warren-Morrison UK Ltd. has been manufacturing its own unique range of industrial valves and actuators for over 70 years. Benefitting from our own internal rubber mould department, machine shop and development and test facilities, we maintain total control over production and quality through continuous 'in process inspection'. Our dedication towards future development has continued to ensure our market position as a select industrial valve and accessories manufacturer and supplier.

Warren-Morrison Electric Actuator

The Warren Morrison FEM series Electric Actuators are suitable for rotary quarter turn valves and linear valves. FEM series actuators come in fail last position as a standard. Designed to cover a wide span of torques including high torque values. FEM series actuators are designed as rugged and reliable for extended use and the actuator body is manufactured in polyester coated aluminium. The FEM actuator bottom mount is designed to suit ISO 5211 to provide international compatibility to most butterfly and ball valves. Linear FEM is designed to actuate diaphragm, globe and gate valves with standard mounting of ISO 5211.

Electric Actuator Features:

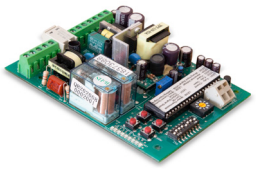
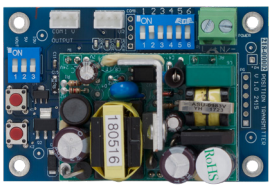
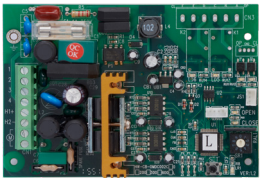
- Rigid anodised body material polyester coated with various colour options.
- Enclosure ratings to IP67 as standard for linear and rotary actuators.
- Clear indicator to show the position of the valve when connected to the actuator.
- Different operating voltages and power supplies to suit most systems.
- Different adaptors can be provided to suit various types and brands of valves.
- Manual override facility is included
- Prevention of valve 'back-drive' in rotary valves as well as linear valves by utilising high integrity self-lubricated and self-locking gears made of alloy steel.



Rotary FEM Standard Configuration

Enclosure	IP67 (NEMA 4, NEMA 4X) waterproof and dustproof, dry powder coated aluminum alloy with 0-ring seal providing F insulation class. Built-in thermal protection (130°C for AC motors and 95°C for DC motors)
Ambient Temperature	-30 °C to +70 °C
Motor	Various voltages 12/24 VDC/VAC, 110/220 VAC/1PH, 220/380/415/440 VAC/3PH. For other voltage options consult with factory
Position Indicator	Continuous mechanical position with clear colour coded Open/ Close Indicator visible through the lid
Manual Override	Upon any power outage, the manual override system can be utilised to operate the actuator
Limit Switches	The end of travel limit-switches are operated by adjustable cams. The cams provide a positive trip action for the switches. As standard the actuators have 2 ‘live’ switches for motor control and 2 extra ‘volt-free’ switches for open & close positions. Those cams are colour coded
Anti-Condensation Heater	A heater inside the actuator prevents moisture or condensation from forming. The heater keeps the actuator internals dry and free from moisture. This option is wired internally for standard heater voltage. Power options include 220/110 VAC. 24 VDC/VAC. For other options consult factory
Customer Conduit Entries	2 x ½” PS as standard with options of M20 or ½”NPT or ¾” NPT entry
Mechanical Travel Stops	Capabilities of adjusting the opening and closing positions for FEM-02 to FEM-13
Thermostat	This is included as a standard to switch the anti-condensation heater off when the temperature inside the actuator reaches 25 °C

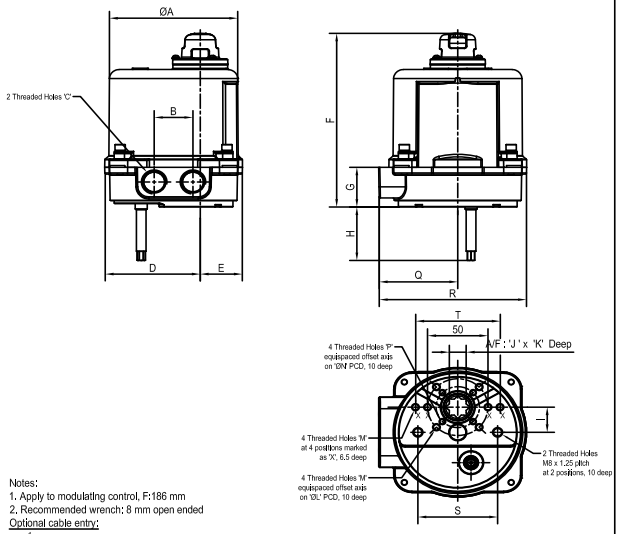
Rotary FEM Optional Configurations:

Modulating Control Card	Allows the user to control the position of the actuator with several input options of 4-20 mA/1-5 VDC/2-10 VDC providing an output signal of 4-20 mA or 2-10 VDC	
Local/Remote (Open/ Close) Control Station	Allows the user to operate the actuator either remotely or locally. The actuator can be opened or closed and indicator lamps show the valve position	
Torque Switches	Protects the actuator in situations of possible over-load conditions. When the torque limit is reached the adjustable cam activated switches will cut power to the actuator and prevent damage to the unit	
Current Position Transmitter	This is an option for the on/off actuator in which the customer can use the current position transmitter to get the following signal back 0-20mA/ 4-20mA/ 0-5VDC/0-10 VDC/1-5 VDC/2-10 VDC	
Potentiometer	Provides feedback signal for remote position indication 4-20mA or 2-10 VDC with 1K Ohm resistor as a standard. For other resistor options please consult factory	
Adjustable Speed Controller	Stroking time can be adjusted to be different than the standard. If specific stroking time is required please consult factory	
Chainwheel	A chain-wheel drive can be supplied as an option, with chain, in case of lack of accessibility and for ease of operation	
Fault relay	A relay can be added to achieve Power failure fault or Motor thermoset trip	
Various colour of painting	Actuators are available with RAL 5005 as a standard. If other colours are required please consult factory	
Junction box	Customer wiring can be done in a separate enclosure eliminating the need to remove the cover to do the wiring	

Other options are available, please contact factory

Rotary FEM Actuator Dimensions, Weight & Part Numbers

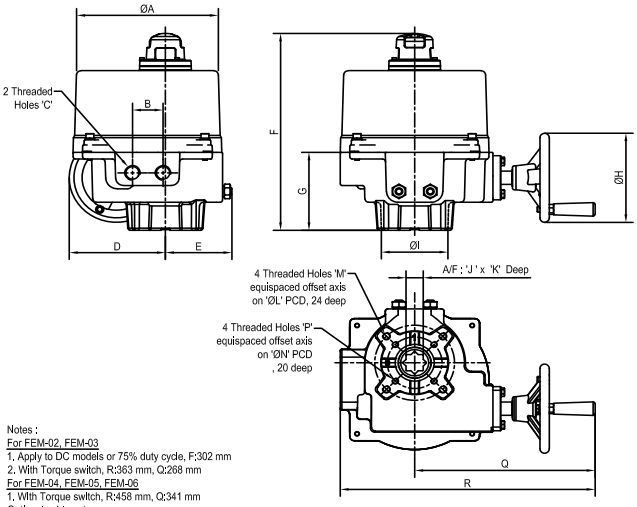
FEM-01



Notes:
1. Apply to modulating control, F:186 mm
2. Recommended wrench: 8 mm open ended

Optional cable entry:
2 x ¾" NPT, 2 x M20

FEM-02, FEM-03, FEM-04, FEM-05, FEM-06

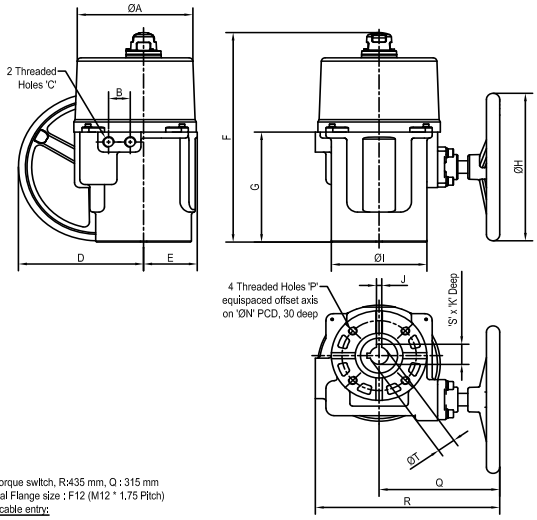


Notes :
For FEM-02, FEM-03
1. Apply to DC models or 75% duty cycle, F:302 mm
2. With Torque switch, R:363 mm, Q:268 mm

For FEM-04, FEM-05, FEM-06
1. With Torque switch, R:458 mm, Q:341 mm

Optional cable entry:
2 x ¾" NPT, 2 x M20

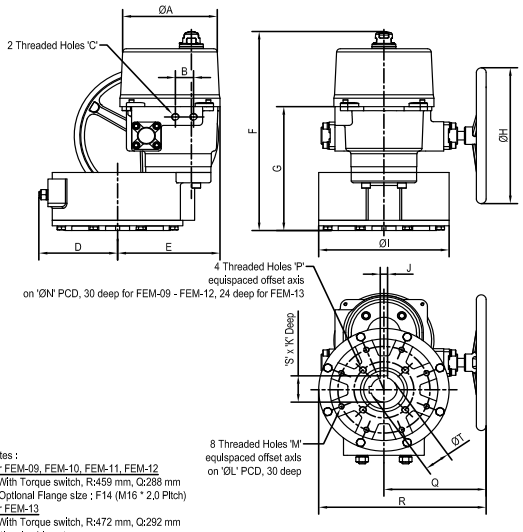
FEM-07, FEM-08



Note :
1. With Torque switch, R:435 mm, Q : 315 mm
2. Optional Flange size : F12 (M12 * 1.75 Pitch)

Optional cable entry:
2 x ¾" NPT, 2 x M20

FEM-09, FEM-10, FEM-11, FEM-12, FEM-13



Notes :
For FEM-09, FEM-10, FEM-11, FEM-12
1. With Torque switch, R:459 mm, Q:288 mm
2. Optional Flange size : F14 (M16 * 2.0 Pitch)

For FEM-13
1. With Torque switch, R:472 mm, Q:292 mm

Optional cable entry:
2 x ¾" NPT, 2 x M20

ACTUATOR	DIMENSIONS (mm)																			
MODEL	ΦA	B	C	D	E	F	G	ΦH	ΦI	J	K	ΦL	M	ΦN	P	Q	R	S	ΦT	Weight (Kg)
FEM-01	106	32	1/2" PS	79	35	153	35	47	22	14	17	50	M6X1.0	36	M5X0.8	65	122	66	70	2
FEM-02, FEM-03	181	39	1/2" PS	123	85	268	106	121	85	22	30	102	M10X1.5	70	M8X1.25	231	326	-	-	11
FEM-04, FEM-05, FEM-06	217	40	1/2" PS	184	110	330	130	191	110	36	40	125	M12X1.75	102	M10X1.5	275	392	-	-	20
FEM-07, FEM-08	217	41	1/2" PS	235	101	419	220	295	180	10	60	-	-	140	M16X2	227	347	40.3	35	32
FEM-09, FEM-10, FEM-11, FEM-12	261	50	1/2" PS	184	218	566	346	398	220	12	100	-	-	165	M20X2.5	278	449	80.3	75	72
FEM-13	261	50	1/2" PS	217	283	584	363	398	360	20	100	254	M16X2.0	165	M20X2.5	282	462	76.9	72	106

Dimensions and weight indicated are for electrical actuators without a control unit. Weight might vary slightly based on the options selected for the actuator

Base
FEM

Torque (N-m)	
1	35
2	90
3	150
4	400
5	500
6	650
7	1000
8	1500
9	2000
10	2500
11	3000
12	3500
13	4500

Duty	
OO	On - Off
OC	On-Off / Relay
MC	Modulating Control

Voltage	
11	110-120 VAC/1Ph
21	220-240 VAC/1Ph
23	220 VAC / 3Ph
33	380 VAC / 3 Ph
43	440 VAC / 3 Ph
51	12 VAC
52	12 VDC
61	24 VAC
62	24 VDC
XX	Special

Accessories	
C	Current Position Transmitter
H	Heater
I	Integral Control Panel
J	Junction Box
L	Limit Switch
M	Manual Override
P	Potentiometer
S	Speed Control
T	Torque Switches
W	Chain Wheel

Rotary FEM Actuator Electrical Data & Speed

ON / OFF		FEM-01 to FEM-08, 1PH, 75% duty cycle FEM-09 to FEM-13 50% duty cycle			FEM-01 to FEM-13 30% duty cycle					
		24 VAC/DC			110-120 VAC 1PH			220-240 VAC 1PH		
Model	Motor Power	Running Current DC / 60 / 50 Hz	Running Time DC / 60 / 50 Hz	Start Current DC / 60 / 50 Hz	Running Current 60 / 50 Hz	Running Time 60 / 50 Hz	Start Current 60 / 50 Hz	Running Current 60 / 50 Hz	Running Time 60 / 50 Hz	Start Current 60 / 50 Hz
	Watt	Amp	Sec / 90˚	Amp	Amp	Sec / 90˚	Amp	Amp	Sec / 90˚	Amp
FEM-01	10	1.4 / 1.6 / 1.6	18 / 18 / 18	2.0 / 8.0 / 8.0	0.7 / 0.8	12 / 17	2.0 / 2.0	0.4 / 0.4	15 / 17	3.0 / 2.0
FEM-02	40	2.8 / 3.4 / 3.4	18 / 18 / 17	10.0 / 11.0 / 12.0	1.2 / 1.7	17 / 20	3.0 / 4.0	0.6 / 0.8	17 / 21	2.0 / 2.0
FEM-03	40	2.6 / 3.1 / 3.1	27 / 26 / 26	10.0 / 11.0 / 12.0	1.2 / 1.7	26 / 31	3.0 / 4.0	0.6 / 0.8	26 / 31	2.0 / 2.0
FEM-04	80	7.7 / 9.4 / 9.4	21 / 20 / 20	20.0 / 30.0 / 30.0	2.1 / 2.4	19 / 23	7.0 / 7.0	1.1 / 1.3	20 / 23	4.0 / 4.0
FEM-05	80	7.4 / 8.9 / 9.0	28 / 26 / 26	20.0 / 30.0/ 30.0	2.0 / 2.4	26 / 31	7.0 / 7.0	1.0 / 1.3	26 / 31	4.0 / 4.0
FEM-06	80	9.0 / 11.1 / 11.6	37 / 37 / 39	20.0 / 30.0 / 30.0	2.4 / 2.5	34 / 41	7.0 / 7.0	1.1 / 1.3	34 / 40	4.0 / 4.0
FEM-07	120	6.1 / 8.2 / 8.1	52 / 44 / 47	23.0 / 32.0 / 28.0	4.2 / 6.6	50 / 61	14.0 / 15.0	2.0 / 3.3	50 / 61	8.0 / 8.0
FEM-08	120	9.0 / 11.1 / 11.6	58 / 55 / 58	20.0 / 30.0 / 31.0	4.2 / 6.6	51 / 62	15.0 / 13.0	2.0 / 3.3	51 / 62	8.0 / 8.0
FEM-09	180	9.0 / 12.3 / 11.8	77 / 66 / 71	17.0 / 31.0 / 29.0	3.0 / 3.1	62 / 76	12.0 / 12.0	2.5 / 1.8	62 / 76	7.0 / 7.0
FEM-10	180	11.5 / 14.6 / 14.6	84 / 76 / 86	17.0 / 31.0 / 29.0	3.2 / 3.2	62 / 76	12.0 / 12.0	2.6 / 1.9	62 / 76	7.0 / 7.0
FEM-11	180	14.9 / 16.8 / 17.2	66 / 68 / 65	39.0 / 48.0 / 52.0	3.6 / 3.3	62 / 76	12.0 / 12.0	2.7 / 2.0	62 / 76	7.0 / 7.0
FEM-12	220	16.7 / 19.0 / 19.1	67 / 70 / 68	39.0 / 48.0 / 52.0	3.8 / 3.9	62 / 76	15.0 / 16.0	2.5 / 2.0	62 / 76	8.0 / 9.0
FEM-13	220	15.5 / 17.3 / 17.8	99 / 102 / 102	50.0 / 55.0 / 58.0	3.7 / 3.7	88 / 104	15.0 / 16.0	2.5 / 2.0	89 / 104	8.0 / 9.0

ON / OFF		FEM-01 to FEM-13 30% duty cycle with local control unit						FEM-01 to FEM-13 30% duty cycle with local control unit		
		220-240 VAC 3PH			380-415 VAC 3PH			440-480 VAC 3PH		
Model	Motor Power	Running Current 60 / 50 Hz	Running Time 60 / 50 Hz	Start Current 60 / 50 Hz	Running Current 60 / 50 Hz	Running Time 60 / 50 Hz	Start Current 60 / 50 Hz	Running Current 60 / 50 Hz	Running Time 60 / 50 Hz	Start Current 60 / 50 Hz
	Watt	Amp	Sec / 90˚	Amp	Amp	Sec / 90˚	Amp	Amp	Sec / 90˚	Amp
FEM-01	10	NA	NA	NA	NA	NA	NA	NA	NA	NA
FEM-02	40	0.6 / 0.7	16 / 19	1.5 / 1.6	0.4 / 0.4	16 / 19	1.0 1.1	0.3 / 0.3	16 / 19	0.8 / 0.8
FEM-03	40	0.6 / 0.7	26 / 31	1.5 / 1.6	0.4 / 0.4	26 / 31	1.0 1.1	0.3 / 0.3	26 / 31	0.8 / 0.8
FEM-04	80	1.0 1.1	21 / 24	2.9 / 3.1	0.6 / 0.7	21 / 24	1.7 / 1.9	0.6 / 0.7	21 / 24	1.9 / 2.0
FEM-05	80	0.9 / 1.1	27 / 31	2.9 / 3.1	0.6 / 0.7	27 / 31	1.7 / 1.9	0.6 / 0.7	27 / 31	1.9 / 2.0
FEM-06	80	0.9 / 1.1	34 / 40	2.9 / 3.1	0.5 / 0.7	34 / 40	1.7 / 1.9	0.6 / 0.7	34 / 40	1.9 / 2.0
FEM-07	120	1.3 / 1.7	52 / 61	4.7 / 5.2	0.6 / 0.8	52 / 61	2.8 / 2.9	0.5 / 0.5	52 / 61	1.9 / 2.0
FEM-08	120	1.3 / 1.7	54 / 63	4.7 / 5.2	0.7 / 0.8	54 / 63	2.8 / 2.9	0.5 / 0.6	54 / 63	1.9 / 2.0
FEM-09	180	1.3 / 1.6	64 / 75	6.2 / 6.8	0.7 / 0.9	64 / 75	3.9 / 4.2	0.7 / 0.8	64 / 75	3.8 / 4.0
FEM-10	180	1.3 / 1.6	64 / 75	6.2 / 6.8	0.8 / 0.9	64 / 75	3.9 / 4.2	0.7 / 0.9	64 / 75	3.8 / 4.0
FEM-11	180	1.4 / 1.6	64 / 75	6.2 / 6.8	0.8 / 0.9	64 / 75	3.9 / 4.2	0.7 / 0.9	64 / 75	3.8 / 4.0
FEM-12	220	1.5 / 1.6	64 / 75	6.2 / 6.8	0.9 / 1.0	64 / 75	3.9 / 4.2	0.8 / 0.9	64 / 75	3.8 / 4.0
FEM-13	220	1.4 / 1.6	89 / 103	5.8 / 6.0	0.8 / 0.9	89 / 103	3.7 / 4.0	0.8 / 0.9	89 / 103	3.4 / 3.6

MODULATING		FEM-01 to FEM-8 1PH, 75% duty cycle/ FEM-09 to FEM-13 50% duty cycle			FEM-01, FEM-X1 75% duty cycle/ FEM-02 to FEM-08 30% duty cycle/ FEM-09 to FEM-13 50% duty cycle					
		24 VAC/DC			110-120 VAC 1PH			220-240 VAC 1PH		
Model	Motor Power	Running Current DC / 60 / 50 Hz	Running Time DC / 60 / 50 Hz	Start Current DC / 60 / 50 Hz	Running Current DC / 60 / 50 Hz	Running Time DC / 60 / 50 Hz	Start Current DC / 60 / 50 Hz	Running Current DC / 60 / 50 Hz	Running Time DC / 60 / 50 Hz	Start Current DC / 60 / 50 Hz
	Watt	Amp	Sec / 90˚	Amp	Amp	Sec / 90˚	Amp	Amp	Sec / 90˚	Amp
FEM-01	10	1.3 / 2.8 / 2.8	18 / 18 / 18	2.0 / 8.0 / 8.0	0.6 / 0.6	18 / 17	3.0 / 2.0	0.4 / 0.4	18 / 18	2.0 / 2.0
FEM-02	40	2.8 / 3.4 / 3.4	18 / 18 / 17	10.0 / 11.0 / 12.0	1.2 / 1.7	17 / 20	3.0 / 4.0	0.6 / 0.8	17 / 21	2.0 / 2.0
FEM-03	40	2.6 / 3.1 / 3.1	27 / 26 / 26	10.0 / 11.0 / 12.0	1.2 / 1.7	26 / 31	3.0 / 4.0	0.6 / 0.8	26 / 31	2.0 / 2.0
FEM-04	80	7.7 / 9.4 / 9.4	21 / 20 / 20	20.0 / 30.0 / 30.0	2.1 / 2.4	19 / 23	7.0 / 7.0	1.1 / 1.3	20 / 23	4.0 / 4.0
FEM-05	80	7.4 / 8.9 / 9.0	28 / 26 / 26	20.0 / 30.0 / 30.0	2.0 / 2.4	26 / 31	7.0 / 7.0	1.0 / 1.3	26 / 31	4.0 / 4.0
FEM-06	80	9.0 / 11.1 / 11.6	37 / 37 / 39	20.0 / 30.0 / 30.0	2.4 / 2.5	34 / 41	7.0 / 7.0	1.1 / 1.3	34 / 40	4.0 / 4.0
FEM-07	120	6.1 / 8.2 / 8.1	52 / 44 / 47	23.0 / 32.0 / 28.0	4.2 / 6.6	50 / 61	14.0 / 15.0	2.0 / 3.3	50 / 61	8.0 / 8.0
FEM-08	120	9.0 / 11.1 / 11.6	58 / 55 / 58	20.0 / 30.0 / 31.0	4.2 / 6.6	51 / 62	15.0 / 13.0	2.0 / 3.3	51 / 62	8.0 / 8.0
FEM-09	180	9.0 / 12.3 / 11.8	77 / 66 / 71	17.0 / 31.0 / 29.0	2.7 / 2.9	65 / 75	7.0 / 7.0	1.1 / 1.2	72 / 70	12.0 / 12.0
FEM-10	180	11.5 / 14.6 / 14.6	84 / 76 / 86	17.0 / 31.0 / 29.0	3.0 / 3.3	76 / 83	7.0 / 7.0	1.4 / 1.4	85 / 95	12.0 / 12.0
FEM-11	180	14.9 / 16.8 / 17.2	66 / 68 / 65	39.0 / 48.0 / 52.0	4.3 / 4.4	71 / 75	13.0 / 12.0	2.2 / 2.4	61 / 61	21.0 / 24.0
FEM-12	220	16.7 / 19.0 / 19.1	67 / 70 / 68	39.0 / 48.0 / 52.0	4.5 / 4.8	76 / 77	13.0 / 12.0	2.5 / 2.6	65 / 67	21.0 / 24.0
FEM-13	220	15.5 / 17.3 / 17.8	99 / 102 / 102	50.0 / 55.0 / 58.0	3.6 / 3.8	104 / 104	13.0 / 12.0	2.3 / 2.4	90 / 90	21.0 / 24.0

If any other duty is used other than the standard please consult factory for the electrical details. If 3 PHASE actuator is ordered without local control unit please consult factory for electrcial data. For any other voltage other than listed above please consult factory for electrical data.

Linear FEM-L Range

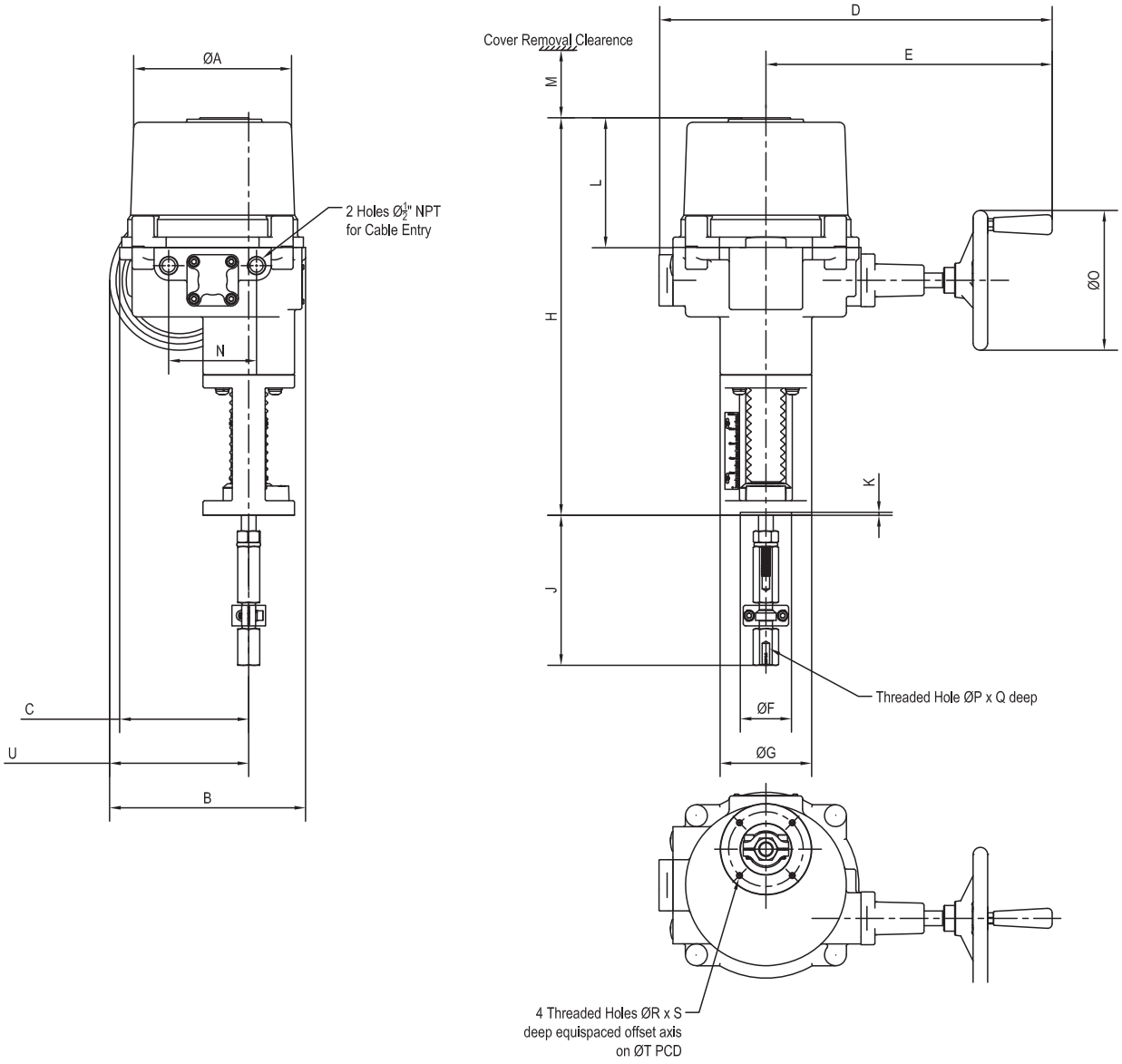
The linear electric actuator FEM-L is of a rigid design with wide range of thrust outputs that range from 2 to 20 KNs for linear valves such as diaphragm, globe and gate.

FEM-L Standard Configuration

Enclosure	IP67 (NEMA 4, NEMA 4X) waterproof and dust-proof, dry powder coated aluminium alloy with 0-ring seal providing F insulation class. Built-in thermal protection (130°C for AC motors and 95°C for DC motors)
Ambient Temperature	-30 °C to +70 °C
Motor	Various voltages 24 VDC/VAC, 110/220 VAC/1PH. For other voltage options consult factory
Position Indicator	External stem position indicator provides accurate valve positioning
Limit Switches	The limit-switches are 2 'live' switches for motor control which provides a positive trip action for the switches when the thrust limits are reached. The electric board can be wired internally to receive the open/ close feedback
Manual Override	Upon any power outage, the manual override system can be utilised to operate the actuator
Anti-Condensation Heater	A heater inside the actuator to prevent moisture or condensation from forming. The heater keeps the actuator internals dry and free from moisture. This option is wired internally for standard heater voltage. Power options include 220/110 VAC. 24 VDC/VAC. For other options consult factory
Customer Conduit Entries	2 x ½" NPT as standard with options of M20 or ¾" NPT entry
Adjustable stroke	Allows the customer to adjust the stroke to match the valve stroke
Thermostat	This is included as a standard to switch the anti-condensation heater off when the temperature inside actuator reaches 25 °C

Linear FEM-L Optional Configuration:

Modulating Control Card	Allows the user to control the position of the actuator with several input options of 4-20 mA/1-5 VDC/2-10 VDC. The card providing an output signal of 4-20 mA or 2-10 VDC	
Potentiometer	Provides feedback signal for remote position indication 4-20mA or 2-10 VDC as floating control with 1K Ohm resistor as a standard. For other resistor options please consult factory	
Various colour of painting	Actuators are available with RAL 5005 as a standard. If other colours are required please consult with factory	



ACTUATOR	DIMENSIONS (mm)																			
MODEL	ΦA	B	C	D	E	ΦF	ΦG	H	J	K	L	M	N	ΦO	ΦP	Q	ΦR	S	ΦT	U	Weight (Kg)
FEM-L-02, FEM-L-05	155	176.50	119	383.50	285.50	55	89	340	124	4	121	125	90	98	M12X1.75	25	M8X1.25	12	70	111	10
FEM-L-10, FEM-L-20	216	265	176	537	391	70	125	543	205	4	177	180	120	191	M20X2.5	35	M10X1.5	15	102	190	32

Linear FEM-L Output Thrust, Electrical Data, Speed & Model Numbers

ON / OFF		FEM-L-02 to FEM-L-20, 75% duty cycle			ON / OFF		FEM-L-02 to FEM-L-20, 75% duty cycle					
		24 VAC/DC					110-120 VAC 1PH			220-240 VAC 1PH		
Model	Motor Power	Running Current DC 60/50 Hz	Running Speed DC 60/50 Hz	Lock Current DC 60/50 Hz	Model	Motor Power	Running Current 60 / 50 Hz	Running Speed 60 / 50 Hz	Lock Current 60 / 50 Hz	Running Current 60 / 50 Hz	Running Speed 60 / 50 Hz	Lock Current 60 / 50 Hz
	Watt	Amp	mm / sec	Amp		Watt	Amp	mm / sec	Amp	Amp	mm / sec	Amp
FEM-L-02	15	0.3/0.7/0.6	0.6	2.4	FEM-L-02	15	0.3	0.6	0.8	0.2	0.6	0.5
FEM-L-05	15	0.4/0.8/0.7	0.6	2.4	FEM-L-05	15	0.7	0.6	0.8	0.3	0.6	0.5
FEM-L-10	25	0.6/0.9/0.9	0.5	13.4	FEM-L-10	25	0.7	0.5	0.7	0.3	0.5	1.5
FEM-L-20	35	0.6/0.9/0.9	0.5	15.7	FEM-L-20	35	1.0	0.5	0.7	0.5	0.5	1.5

MODULATING		FEM-L-02 to FEM-L-20, 75% duty cycle			MODULATING		FEM-L-02 to FEM-L-20, 75% duty cycle					
		24 VAC/DC					110-120 VAC 1PH			220-240 VAC 1PH		
Model	Motor Power	Running Current DC 60/50 Hz	Running Speed DC 60/50 Hz	Lock Current DC 60/50 Hz	Model	Motor Power	Running Current 60 / 50 Hz	Running Speed 60 / 50 Hz	Lock Current 60 / 50 Hz	Running Current 60 / 50 Hz	Running Speed 60 / 50 Hz	Lock Current 60 / 50 Hz
	Watt	Amp	mm / sec	Amp		Watt	Amp	mm / sec	Amp	Amp	mm / sec	Amp
FEM-L-02	15	0.3/0.7/0.6	0.6	2.4	FEM-L-02	15	0.3	0.6	0.8	0.2	0.6	0.5
FEM-L-05	15	0.4/0.8/0.7	0.6	2.4	FEM-L-05	15	0.7	0.6	0.8	0.4	0.6	0.5
FEM-L-10	25	0.6/0.9 /0.9	0.5	13.4	FEM-L-10	25	0.7	0.5	0.7	0.4	0.5	1.5
FEM-L-20	35	0.6/0.9/0.9	0.5	15.7	FEM-L-20	35	1.0	0.5	0.7	0.7	0.5	1.5

Base	-	Thrust (KN)		-	Duty		-	Voltage		-	Accessories	
FEM-L	-	02	2	-	OO	ON-OFF	-	11	110 VAC/1PH	-	H	Heater
		05	5		MC	Modulating Control		21	220 VAC/1PH		M	Manual Override
		10	10					61	24 VAC		P	Potentiometer
		20	20					62	24 VDC			

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