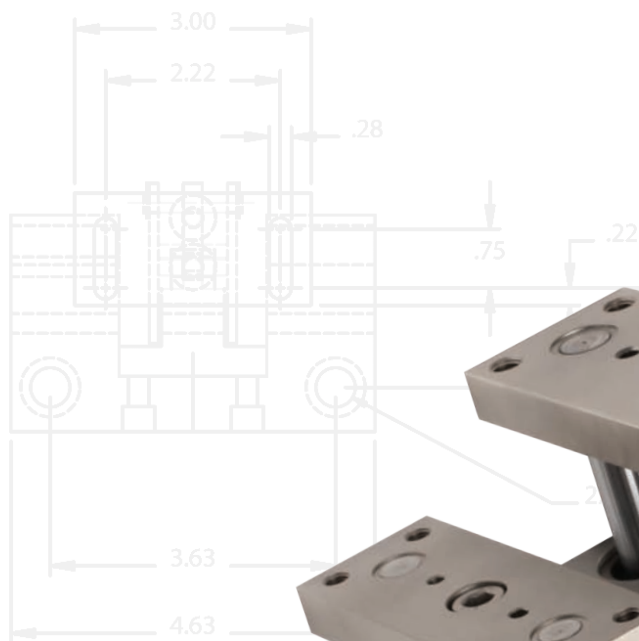
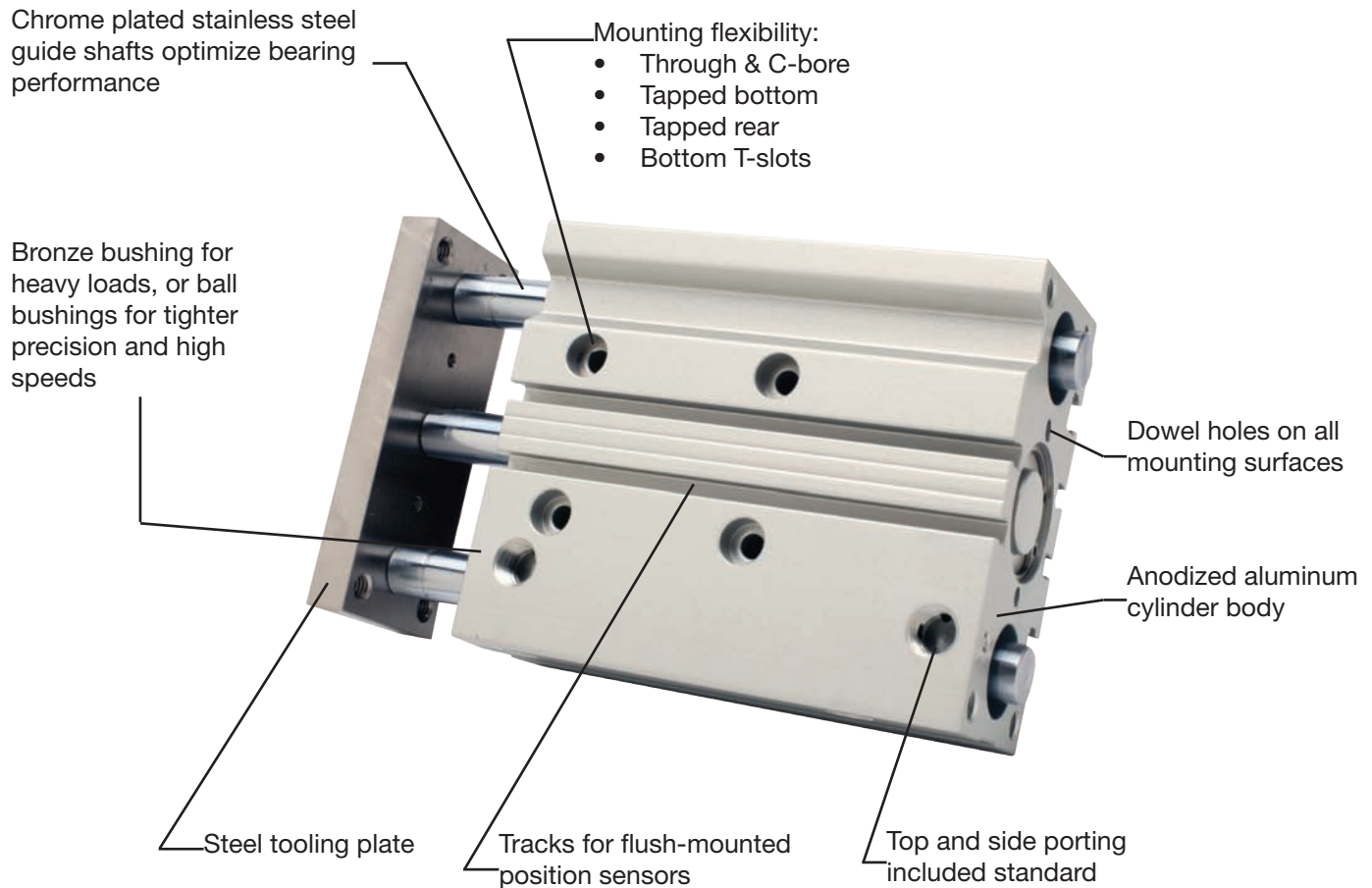




Extruded Thrusters



MFD Extruded Thrusters



The same superior value you have come to expect in MFD Air Preparation and Valve products is now available in an actuator series. The MTCM/MTCL Extruded Thrusters are compact, rugged actuators, designed to give you a long-lasting, cost-effective solution in space-constrained applications. Highlights of the offering include:

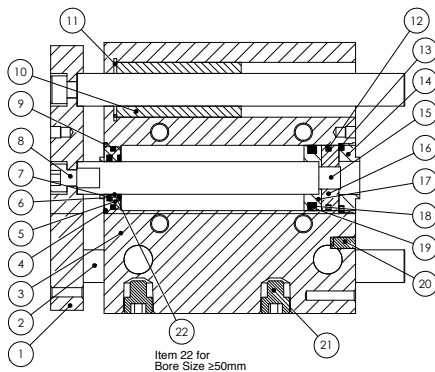
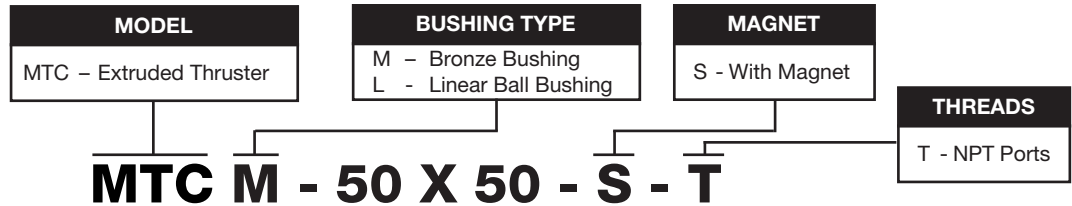
- Clean, compact extruded Aluminum body for maximum mounting efficiency
- Available with bronze bearings (heavy side-loading) or ball bushings (precision, high-speed)
- Magnetic piston for position-sensing included on all models
- Multiple port locations included for plumbing flexibility
- Eight bore sizes (12mm, 16mm, 20mm, 25mm, 32mm, 40mm, 50mm, 63mm) available in strokes up to 250mm
- Interchangeable with popular international brands
- Supported by 5,000+ unit inventory in Chicago, IL

MFD Extruded Thrusters

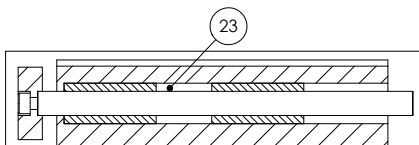


The MFD Extruded Thruster is a rugged, guided actuator with a cylinder integral to the thruster block. The sleek body incorporates switch mounting, for a clean, space-efficient package.

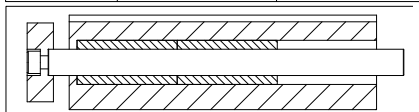
How to Order



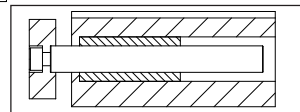
NO.	Item	Material	NO.	Item	Material
1.	Tooling Plate	Free-machining steel	12.	O-ring	NBR
2.	Guide Shaft	SAE440/SUS440C Steel; Chrome Plated	13.	O-ring	NBR
3.	Body	Aluminum; 6463-T5; Anodized	14.	Rear Cap	Brass; Ni Plated
4.	Retaining Ring	Spring steel	15.	Piston rod	Carbon steel; Chrome plated
5.	Rod Guide	Brass; Ni Plated	16.	Piston	Brass; Ni Plated
6.	Bumper	Urethane	17.	Magnet seat	Brass; Ni Plated
7.	Rod Seal	NBR	18.	Magnet washer	NBR
8.	Screw	Stainless steel	19.	Magnet	Sintered Metal (Neodymium)
9.	O-ring	NBR	20.	Screw	Carbon Steel; Zinc Plated
10.	Bearing	(see diagram)	21.	Screw	Carbon Steel; Zinc Plated
11.	Retaining Ring	Spring steel	22.	Bearing	Bronze (50mm and 63mm only)
			23.	Spacer	Aluminum alloy



Type	Bore Size	Stroke
MTCL	Ø 12 ~ Ø 63	>100mm
MTCM	Ø 12 ~ Ø 63	>100mm



Type	Bore Size	Stroke
MTCL	Ø 12 ~ Ø 16	30<Stroke≤100mm
	Ø 20 ~ Ø 63	50<Stroke≤100mm
MTCM	Ø 12 ~ Ø 63	50<Stroke≤100mm



Type	Bore Size	Stroke
MTCL	Ø 12 ~ Ø 16	≤30mm
	Ø 20 ~ Ø 63	≤50mm
MTCM	Ø 12 ~ Ø 63	≤50mm

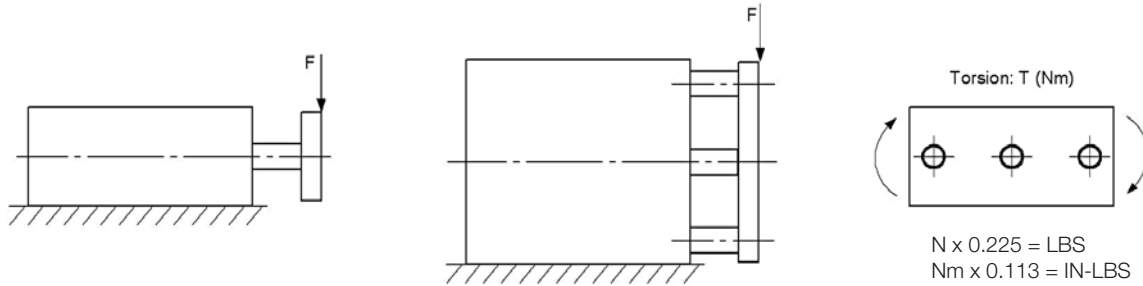
BORE (mm)	12	16	20	25	32	40	50	63
STROKE (mm)								
10	X	X						
20	X	X	X	X				
25	X	X	X	X	X	X	X	X
30	X	X	X	X	X	X	X	X
40	X	X	X	X	X	X	X	X
50	X	X	X	X	X	X	X	X
60	X	X	X	X	X	X	X	X
70	X	X	X	X	X	X	X	X
75	X	X	X	X	X	X	X	X
80	X	X	X	X	X	X	X	X
90	X	X	X	X	X	X	X	X
100	X	X	X	X	X	X	X	X
125	X	X	X	X	X	X	X	X
150	X	X	X	X	X	X	X	X
175		X	X	X	X	X	X	X
200		X	X	X	X	X	X	X
225			X	X	X	X	X	X
250			X	X	X	X	X	X

Engineering Specifications

Bore size (mm)	12	16	20	25	32	40	50	63
Action	Double acting							
Fluid	Air (Clean/Dry)							
Temperature Range	23 to 158 degrees F (-5 to 70°C)							
Pressure Range	18-142 psi (1.2-10 bar)							
Proof Pressure	213 psi (15 bar)							
Lubrication	Not required							
Cushion Type	Bumper							
Non-rotate tolerance	Linear Bushing	± 0.08°	± 0.07°	± 0.06°	± 0.05°			
	Brass bushing	± 0.10°	± 0.09°	± 0.08°	± 0.06°			
Port Size	M5 x 0.8		1/8-NPT			1/4-NPT		

MFD Extruded Thrusters

Maximum Recommended Loads

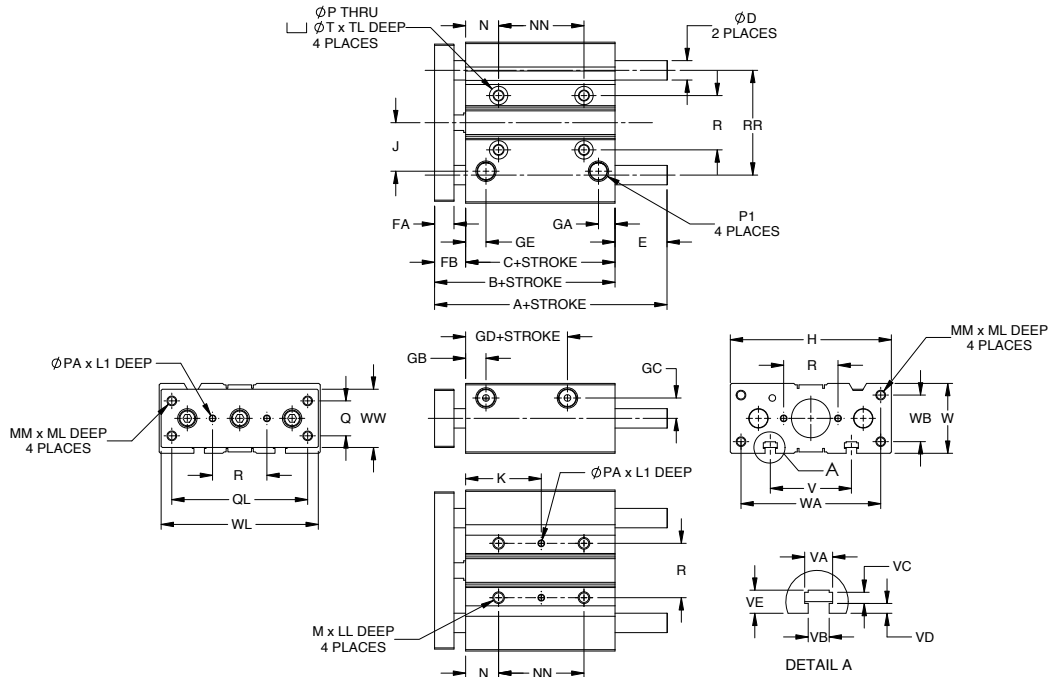


Bore Size	Type	Maximum Side Load (N)																	
		Stroke (mm)																	
		10	20	25	30	40	50	60	70	75	80	90	100	125	150	175	200	225	250
12	MTCM	44	33	29	26	41	36	30	28	26	25	24	22	19	17	-	-	-	-
	MTCL	37	27	25	22	35	30	27	24	23	21	19	18	15	12	-	-	-	-
16	MTCM	67	51	42	37	63	58	49	41	37	35	33	32	27	24	22	20	-	-
	MTCL	54	40	37	32	54	47	42	38	35	32	30	28	23	20	17	15	-	-
20	MTCM	-	78	61	57	123	112	99	91	87	84	79	75	66	59	54	49	45	42
	MTCL	-	58	52	48	101	90	83	74	70	69	63	58	62	54	48	43	39	35
25	MTCM	-	93	89	76	142	131	119	107	101	97	90	85	88	79	71	65	61	55
	MTCL	-	82	79	68	132	118	109	99	93	88	81	77	80	70	62	55	50	45
32	MTCM	-	-	203	190	179	164	221	197	182	172	163	157	142	127	116	106	98	91
	MTCL	-	-	191	182	166	157	207	178	164	156	150	144	203	186	171	158	146	137
40	MTCM	-	-	203	190	179	164	221	197	182	172	163	159	142	127	116	106	97	91
	MTCL	-	-	190	182	166	157	210	179	163	156	150	144	203	185	171	158	146	137
50	MTCM	-	-	296	283	268	245	303	288	273	266	253	241	216	195	179	164	155	142
	MTCL	-	-	208	196	185	173	259	232	223	212	207	199	264	242	224	207	195	181
63	MTCM	-	-	296	283	268	245	303	288	273	266	253	241	216	195	179	164	153	142
	MTCL	-	-	206	196	180	171	259	232	221	212	205	196	262	240	221	205	191	178

Bore Size	Type	Maximum Torque (N-m)																	
		Stroke (mm)																	
		10	20	25	30	40	50	60	70	75	80	90	100	125	150	175	200	225	250
12	MTCM	0.90	0.79	0.71	0.65	0.77	0.72	0.65	0.53	0.50	0.47	0.41	0.36	0.31	0.27	-	-	-	-
	MTCL	0.61	0.45	0.40	0.35	0.58	0.50	0.44	0.39	0.37	0.35	0.32	0.29	0.24	0.20	-	-	-	-
16	MTCM	1.21	1.04	0.94	.088	1.23	1.11	0.99	0.72	0.69	0.65	0.61	.058	0.50	0.44	0.40	0.36	-	-
	MTCL	0.99	0.74	0.66	0.59	0.99	0.86	0.77	0.69	0.65	0.61	0.57	0.52	0.43	0.37	0.32	0.28	-	-
20	MTCM	-	1.57	1.42	1.31	2.39	2.15	1.97	1.90	1.88	1.86	1.72	1.63	1.44	1.28	1.16	1.06	1.01	0.90
	MTCL	-	1.26	1.14	1.03	2.17	1.94	1.79	1.59	1.52	1.46	1.33	1.25	1.34	1.17	1.03	0.93	0.88	0.76
25	MTCM	-	2.40	2.22	2.01	3.66	3.35	3.17	3.06	2.96	2.91	2.77	2.57	2.26	2.02	1.83	1.67	1.57	1.42
	MTCL	-	2.11	1.96	1.75	3.37	3.02	2.71	2.42	2.38	2.33	2.19	1.97	2.05	1.78	1.58	1.41	1.22	1.16
32	MTCM	-	-	6.35	6.00	5.73	5.13	5.98	5.74	5.69	5.62	5.11	4.97	4.42	3.98	3.61	3.31	2.97	2.84
	MTCL	-	-	5.95	5.73	5.44	4.89	5.43	5.15	5.11	5.02	4.70	4.51	6.34	5.79	5.33	4.93	4.33	4.29
40	MTCM	-	-	7.00	6.60	6.11	5.66	6.66	6.31	6.27	6.23	5.86	5.48	4.87	4.38	3.98	3.65	3.34	3.13
	MTCL	-	-	6.55	6.21	5.77	5.39	6.17	5.67	5.62	5.58	5.33	4.96	6.98	6.38	5.87	5.43	5.00	4.72
50	MTCM	-	-	13.0	12.6	11.0	10.8	13.7	12.7	12.0	11.6	11.1	10.6	9.50	8.60	7.86	7.24	6.80	6.24
	MTCL	-	-	9.17	8.75	8.30	7.62	10.3	9.94	9.83	9.77	8.82	8.74	11.6	10.7	9.83	9.12	8.95	7.95
63	MTCM	-	-	14.7	13.6	12.9	12.1	19.4	16.2	13.5	12.7	12.1	11.9	10.7	9.69	8.86	8.16	7.52	7.04
	MTCL	-	-	10.2	9.74	9.20	8.48	17.5	14.0	11.0	10.6	10.2	9.74	13.0	11.9	11.0	10.2	9.63	8.84

MFD Extruded Thrusters

Dimensions - MTCM/MTCL



Item	A								E								NN				K			
	MTCL				MTCM				MTCL				MTCM											
Stroke	≤ 30	31-100	101-200	> 200	≤ 50	51-100	101-200	> 200	≤ 30	31-100	101-200	> 200	≤ 50	51-100	101-200	> 200	≤ 30	31-100	101-200	> 200	≤ 30	31-100	101-200	> 200
12	42	55	85	-	42	55	85	-	-4	13	43	-	0	13	43	-	20	40	110	-	15	25	60	-
16	46	65	95	-	46	65	95	-	-3	19	49	-	0	19	49	-	24	44	110	-	17	27	60	-
20	53	80	104	122	53	80	104	122	-2	27	51	69	0	27	51	69	24	44	120	200	29	39	77	117
25	53.5	82	104.5	122	53.5	82	104.5	122	-1.5	28.5	51	68.5	0	28.5	51	68.5	24	44	120	200	29	39	77	117

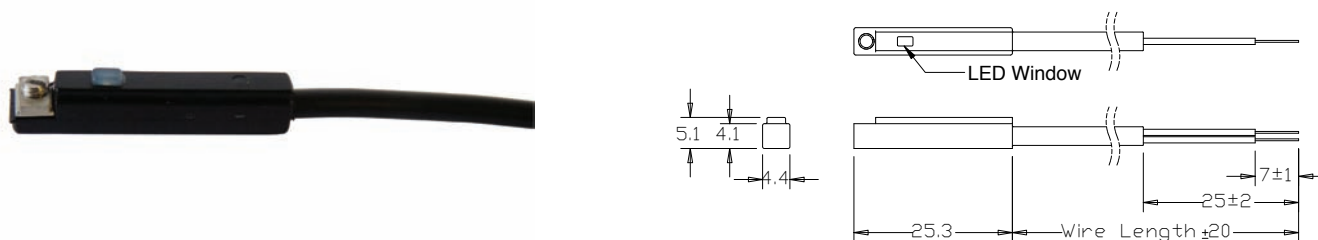
Item	A								E								NN				K			
	MTCL				MTCM				MTCL				MTCM											
Stroke	≤ 50	51-100	101-200	> 200	≤ 50	51-100	101-200	> 200	≤ 50	51-100	101-200	> 200	≤ 50	51-100	101-200	> 200	≤ 40	41-100	101-200	> 200	≤ 40	41-100	101-200	> 200
32	65	102	118	140	65	102	118	140	5.5	42.5	58.5	80.5	5.5	42.5	58.5	80.5	24	48	124	200	33	45	83	121
40	66	102	118	140	66	102	118	140	-1	36	52	74	0	36	52	74	24	48	124	200	34	46	84	122
50	76	118	134	161	76	118	134	161	4	46	62	89	4	46	62	89	24	48	124	200	36	48	86	124
63	77	118	134	161	77	118	134	161	-1	41	57	84	0	41	57	84	28	52	128	200	38	50	88	124

Bore Size\Item	B	C	D (MTCL)	D (MTCM)	FA	FB	GA	GB	GC	GD	GE	H	J	LL	L1	L2	M	ML	MM	N	P	PA	PP
12	42	29	6	8	8	13	7.5	11	8	13	11	58	18	10	6	3	M5 x 0.8	10	M4 x 0.7	5	4.3	3	3.5
16	46	33	8	10	8	13	8	11	10	15	11	64	19	10	6	3	M5 x 0.8	12	M5 x 0.8	5	4.3	3	3.5
20	53	37	10	12	10	16	9	10.5	10.5	12.5	10.5	83	25	12	6	3	M6 x 1.0	13	M5 x 0.8	17	5.6	3	3.5
25	53.5	37.5	12	16	10	16	9	11.5	13.5	12.5	11.5	93	28.5	12	6	3	M6 x 1.0	15	M6 x 1.0	17	5.6	4	4.5
32	59.5	37.5	16	20	12	22	9	12.5	15	7	12.5	112	34	16	6	3	M8 x 1.25	20	M8 x 1.25	21	6.6	4	4.5
40	66	44	16	20	12	22	10	14	18	13	14	120	38	16	6	3	M8 x 1.25	20	M8 x 1.25	22	6.6	4	4.5
50	72	44	20	20	16	28	11	12	21.5	9	14	148	47	20	8	4	M10 x 1.5	22	M10 x 1.5	24	8.6	5	6
63	77	49	20	20	16	28	13.5	16.5	28	14	16.5	162	55	20	8	4	M10 x 1.5	22	M10 x 1.5	24	8.6	5	6

Bore Size\Item	P1	Q	QL	R	RR	T	TL	V	VA	VB	VC	VD	VE	W	WA	WB	WL	WW
12	M5 x 0.8	14	48	23	41	8	4.5	37	7.4	4.4	3.7	2	6.2	26	50	18	56	22
16	M5 x 0.8	16	54	24	46	8	4.5	38	7.4	4.4	3.7	2.5	6.7	30	56	22	62	25
20	1/8" NPT	18	70	28	54	9.5	5.5	44	8.4	5.4	4.5	2.8	7.8	36	72	24	81	30
25	1/8" NPT	26	78	34	64	9.5	5.5	50	8.4	5.4	4.5	3	8.2	42	82	30	91	38
32	1/8" NPT	30	96	42	78	11	7.5	63	10.5	6.5	5.5	3.5	9.5	48	98	34	110	44
40	1/8" NPT	30	104	50	86	11	7.5	72	10.5	6.5	5.5	4	11	54	106	40	118	44
50	1/4" NPT	40	130	66	110	14	9	92	13.5	8.5	7.5	4.5	13.5	64	130	46	146	60
63	1/4" NPT	50	130	80	124	14	9	110	17.8	11	10	7	18.5	78	142	58	158	70

MFD Extruded Thrusters

Track-Mounted Switches



How to Order

Two-wire Reed Switches	
Model Number	Description
MCS1-G-050	2-wire reed switch; 5 meter leads
MCS1-G-C08	2-wire reed switch; M8 male quick-connect; 150mm wire length
MCS1-G-C12	2-wire reed switch; M12 male quick-connect; 150mm wire length
Three-wire Solid State Switches	
Model Number	Description
MDS1-GN-050	3-wire solid state switch; 5 meter leads; NPN (sinking)
MDS1-GN-C08	3-wire solid state switch; M8 male quick-connect; 150 mm wire length; NPN (sinking)
MDS1-GN-C12	3-wire solid state switch; M12 male quick-connect; 150 mm wire length; NPN (sinking)
MDS1-GP-050	3-wire solid state switch; 5 meter leads; PNP (sourcing)
MDS1-GP-C08	3-wire solid state switch; M8 male quick-connect; 150 mm wire length; PNP (sourcing)
MDS1-GP-C12	3-wire solid state switch; M12 male quick-connect; 150 mm wire length; PNP (sourcing)

Specifications

Item/Type	MCS1-G	MDS1-GN	MDS1-GP
Switch Logic	SPST Normally Open	Transistor without contact, Normally Open	
Sensor Type	Reed Switch with contact	NPN	PNP
Operating Voltage (V)	5-240V AC/DC	5-30V DC	
Max. Switching Current (mA)	100	200	
Switching Rating (W)	10 Max.	6 Max.	
Current Consumption	N/A	15mA Max. @ 24V	
Voltage Drop	2.5V Max. @ 100mA DC	0.5V Max. @ 200mA DC	
Cable	Ø3.3, 2C, Black oil resistant PVC (Flame Retardant)	Ø3.3, 3C, Black Oil Resistant PVC	
Indicator	Red LED		
Leakage Current	N/A	0.01mA Max.	
Sensitivity (Gauss)	60-75		
Max. Frequency (Hz)	200	1000	
Temperature Range (°C)	-10 to 70		
Enclosure Classification	IP67 (NEMA6)		
Protection Circuit	N/A	Power reverse polarity, surge suppression	