

BLACK LINE *Mechanical Diaphragm Pumps*

Series MD

Key Features

- Liquid End Materials – GFPP, 316SS & PVDF.
- Rugged double-sided PTFE faced, long life diaphragm.
- Oil Lubricated Ball Bearings in anodized aluminum housing.
- Oil sight glass for quick and easy oil level check.
- Large, easy to access oil drain port.
- Manual micrometer style stroke adjustment; 10:1 turndown, up to 100:1 with VFD Vector drive.
- Standard NEMA 56C or IEC71 motor frames available.

Optional Features

- Variable Frequency Drive for Automatic Control.
 - ◆ Fully Scalable 4-20mA, 0-10VDC signals.
 - ◆ NEMA 4X Enclosure.
- ATEX Group II, Category 3 – Zone 2/22 for non-flammable liquids with proper motor selection.



CE

Pressure and Flow Rate Capacity

MODEL	MD1A	MD1B	MD1C	MD1D	MD1E	MD2F	MD2J	MD2K	MD3G	
Capacity nominal (max.)	GPH	7	14	22	29	35	59	79	98	132
	LPH	26	53	83	110	132	223	299	371	500
Pressure (max.)	PSIG	150	150	150	150	150	90	90	75	75
	BAR	10	10	10	10	10	6	6	5	5
Strokes/Minute	SPM	84	60	84	116	138	84	118	138	118
Viscosity	CPS	1000			500		1000	500		
Connections:	FNPT	1/2"				3/4"			1"	
	BSPT-F	1/2"				3/4"			1"	

Engineering Data

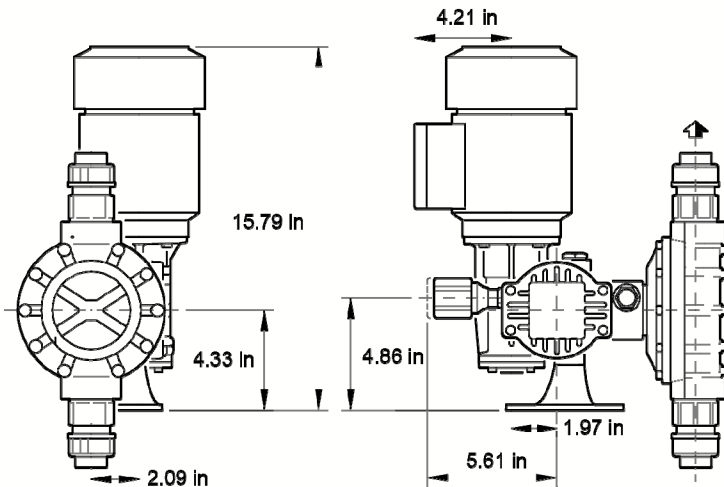
Reproducibility:	+/- 2% at maximum capacity
Viscosity Max CPS:	up to 1000 CPS
Stroke Frequency Max SPM:	60 to 138 Strokes Per Minute max. (Depending on model selection)
Stroke Length Turn-Down Ratio:	10:1
Power Input:	115 VAC/60 Hz/1 ph 230 VAC/50-60 Hz/1 ph or 3 ph
Max Ambient Temperature:	104°F (40°C)
Max Fluid Temperature:	104°F (40°C)
Oil Capacity:	16.9 oz (0.5 L)

Blackline Series MD Selection Guide		MD	---	---	---	---	---	---	---	XXX
MODELS:	1A = 7 gph (26 lph) max pres.: 150 PSI (10 BAR) 1B = 14 gph (53 lph) max pres.: 150 PSI (10 BAR) 1C = 22 gph (82 lph) max pres.: 150 PSI (10 BAR) 1D = 29 gph / (111 lph) max pres.: 150 PSI (10 BAR) 1E = 35 gph / (133 lph) max pres.: 150 PSI (10 BAR) 2F = 59 gph / (225 lph) max pres.: 90 PSI (6 BAR) 2J = 79 gph / (298 lph) max pres.: 90 PSI (6 BAR) 2K = 98 gph / (371lph) max pres.: 75 PSI (5 BAR) 3G = 132 gph / (501 lph) max pres.: 75 PSI (5 BAR)									
LIQUID END	KTP = PVDF Head / PTFE Valve Seat / Pyrex Valve Check Ball PPP = Glass Filled Polypropylene Head / PVC Valve Seat / Pyrex Valve Check Ball AAS = 316SS Head / 316SS Valve Seat / 316SS Valve Check Ball KMM** = PVDF Head / Incoloy 825 Valve Seat / Hastelloy C-276 Valve Check Ball									
Size 1A-E										
Size 2F-K	KTP = PVDF Head / PTFE Valve Seat / Pyrex Valve Check Ball PPP = Glass Filled Polypropylene Head / PVC Valve Seat / Pyrex Valve Check Ball AAS = 316SS Head / 316SS Valve Seat / 316SS Valve Check Ball KMM** = PVDF Head / Incoloy 825 Valve Seat / Hastelloy C-276 Valve Check Ball									
Size 3G	KTP = PVDF Head / PTFE Valve Seat / Pyrex Valve Check Ball PPP = Glass Filled Polypropylene Head / PVC Valve Seat / Pyrex Valve Check Ball AAS = 316SS Head / 316SS Valve Seat / 316SS Valve Check Ball KMM** = PVDF Head / Incoloy 825 Valve Seat / Hastelloy C-276 Valve Check Ball									
VALVE CONNECTION:	N = NPT Connection B = BSPT Connection									
MOTOR SELECTION:	1 = TEFC - NEMA 56C, 1P, 115/230V, 60Hz, 1/2 Hp 2 = TEFC - NEMA 56C, 3P, 230/460V, 50/60Hz, 1/2 Hp (VFD 10:1) 3 = Ex.Proof - NEMA 56C, 1P, 115/230V, 60Hz, 1/2 Hp 4 = Ex. Proof - NEMA 56C, 3P, 230/460V, 60Hz, 1/2 Hp 6 = TEFC - IEC 71, 3P, 220/380/460V, 50/60Hz, .37kW (VFD 10:1, Required for CE Approved VFD) X = No Motor - NEMA 56C Frame Ready Y = No Motor - IEC 71 Frame Ready									
VFD OPTIONS	A = No VFD C = VFD, 115/230V, NEMA 4X, IP65 Enclosure, 1 Phase, Motor 2 & 6 Only									
OPTIONS	XXX = No Options									

A completed model number should look like 'MD1BKTPN1A-XXX'

** For use with high concentration of Sulfuric acid and poly-alum-chloride.

Dimensions



Series MD Dimensions (inches)		
Model	Weight Plastic (lbs)	Weight Stainless Steel (lbs)
MD1A (NO MOTOR)	21.5	26.0
MD1B (NO MOTOR)	21.5	26.0
MD1C (NO MOTOR)	21.5	26.0
MD1D (NO MOTOR)	21.5	26.0
MD1E (NO MOTOR)	21.5	26.0
MD2F (NO MOTOR)	26.0	37.0
MD2J (NO MOTOR)	26.0	37.0
MD2K (NO MOTOR)	26.0	37.0
MD3G (NO MOTOR)	29.0	46.0
MD1A W/VFD & MOTOR	67.0	71.5
MD1B W/VFD & MOTOR	67.0	71.5
MD1C W/VFD & MOTOR	67.0	71.5
MD1D W/VFD & MOTOR	67.0	71.5
MD1E W/VFD & MOTOR	67.0	71.5
MD2F W/VFD & MOTOR	71.5	82.5
MD2J W/VFD & MOTOR	72.5	83.5
MD2K W/VFD & MOTOR	73.5	84.5
MD3G W/VFD & MOTOR	74.5	91.5

BLACKLINE Mechanical Diaphragm Pumps

Common Pump Accessories			
Component	Size	Material	Part No.
Drip Cover, Motor	56C	Steel, Baldor	NP999119
Pressure Relief Valves	1/2"	PVC/TFE	NA100001-PVC
	1/2"	PVDF/TFE	NA100001-PVD
	1/2"	SS/TFE	NA100001-316
	1"	PVC/TFE	NA100002-PVC
	1"	PVDF/TFE	NA100002-PVD
	1"	SS/TFE	NA100002-316
	1.5"	PVC/TFE	NA100003-PVC
	1.5"	PVDF/TFE	NA100003-PVD
Back Pressure Valves	1/2"	PVC/TFE	NA200001-PVC
	1/2"	PVDF/TFE	NA200001-PVD
	1/2"	SS/TFE	NA200001-316
	1"	PVC/TFE	NA200002-PVC
	1"	PVDF/TFE	NA200002-PVD
	1"	SS/TFE	NA200002-316
	1.5"	PVC/TFE	NA200003-PVC
	1.5"	PVDF/TFE	NA200003-PVD
Gauge Isolator w/ 200PSI Gauge	1/4"	PVC/TFE	NA500001-PVC
	1/4"	PVDF/TFE	NA500001-PVD
	1/4"	316SS/TFE	NA500001-316
Calibration Column	1/2"	PVC 100mL	NA300001-PVC
	1/2"	PVC 200mL	NA300002-PVC
	3/4"	PVC 500mL	NA300003-PVC
	3/4"	PVC 1000mL	NA300004-PVC
	1"	PVC 2000mL	NA300005-PVC
	1"	PVC 4000mL	NA300006-PVC
	2"	PVC 10,000mL	NA300007-PVC
	2"	PVC 20,000mL	NA300008-PVC
	1/2"	Glass/PVD 100mL	NA300009-PVD
	1/2"	Glass/PVD 200mL	NA300010-PVD
	3/4"	Glass/PVD 500mL	NA300011-PVD
	3/4"	Glass/PVD 1000mL	NA300012-PVD
	1"	Glass/PVD 2000mL	NA300013-PVD
	1"	Glass/PVD 4000mL	NA300014-PVD
	1/2"	Glass/SS 100mL	NA300015-316
	1/2"	Glass/SS 200mL	NA300016-316
	3/4"	Glass/SS 500mL	NA300017-316
	3/4"	Glass/SS 1000mL	NA300018-316
	1"	Glass/SS 2000mL	NA300019-316
	1"	Glass/SS 4000mL	NA300020-316
Y Strainer	1/2"	PVC	40085
	1/2"	CPVC	NA400001-CPVC
	1/2"	PVD	NA400001-PVD
	1"	PVC	NA400002-PVC
	1"	CPVC	NA400002-CPVC
	1"	PVD	NA400002-PVD

BLACKLINE KOPkit		
Pump Size	Wetted Material	KOPkit Number
Size 1A - 1E	PVDF	K1AE-KTP
	PP	K1AE-PPP
	Stainless	K1AE-AAS
	PVDF/Alloy C	K1AE-KMM
Size 2F	PVDF	K2F-KTP
	PP	K2F-PPP
	Stainless	K2F-AAS
	PVDF/Alloy C	K2F-KMM
Size 2H	PVDF	K2GH-KTP
	PP	K2GH-PPP
	Stainless	K2GH-AAS
	PVDF/Alloy C	K2GH-KMM
Size 3G	PVDF	K3G-KTP
	PP	K3G-PPP
	Stainless	K3G-AAS
	PVDF/Alloy C	K3G-KMM

150 PSI Pulsation Dampeners - Chargeable				
Volume	Body	Bladder	Connection	Part Number
10 cubic inches	POLY	EPDM	3/8" FNPT	NA601038-FPPE
		CSPE	3/8" FNPT	NA601038-FPPC
		TFE	3/8" FNPT	NA601038-FPPT
		Viton	3/8" FNPT	NA601038-FPPV
		CSPE	1/2" FNPT	NA601050-FPPC
		TFE	1/2" FNPT	NA601050-FPPT
		Viton	1/2" FNPT	NA601050-FPPV
		CSPE	1/2" FNPT	NA601050-PVCC
	PVC	TFE	1/2" FNPT	NA601050-PVCT
		Viton	1/2" FNPT	NA601050-PVCV
		EPDM	3/8" FNPT	NA601038-PVDE
		CSPE	3/8" FNPT	NA601038-PVDC
		TFE	3/8" FNPT	NA601038-PVDT
		Viton	3/8" FNPT	NA601038-PVDV
		EPDM	3/8" FNPT	NA601038-316E
		CSPE	3/8" FNPT	NA601038-316C
316 SS	TFE	3/8" FNPT	NA601038-316T	
	Viton	3/8" FNPT	NA601038-316V	
	EPDM	3/4" FNPT	NA608575-FPPE	
	CSPE	3/4" FNPT	NA608575-FPPC	
	TFE	3/4" FNPT	NA608575-FPPT	
	Viton	3/4" FNPT	NA608575-FPPV	
	EPDM	3/4" FNPT	NA608575-PVDE	
	CSPE	3/4" FNPT	NA608575-PVDC	
85 cubic inches	POLY	TFE	3/4" FNPT	NA608575-PVDT
		Viton	3/4" FNPT	NA608575-PVDV
		EPDM	3/4" FNPT	NA608575-316E
		CSPE	3/4" FNPT	NA608575-316C
		TFE	3/4" FNPT	NA608575-316T
		Viton	3/4" FNPT	NA608575-316V
		EPDM	2" FNPT	NA637020-FPPE
		CSPE	2" FNPT	NA637020-FPPC
	PVDF	TFE	2" FNPT	NA637020-FPPT
		Viton	2" FNPT	NA637020-FPPV
		EPDM	2" FNPT	NA637020-PVDE
		CSPE	2" FNPT	NA637020-PVDC
		TFE	2" FNPT	NA637020-PVDT
		Viton	2" FNPT	NA637020-PVDV
		EPDM	2" FNPT	NA637020-316E
		CSPE	2" FNPT	NA637020-316C
316 SS	TFE	2" FNPT	NA637020-316T	
	Viton	2" FNPT	NA637020-316V	
	EPDM	3/4" FNPT	NA603675-FPPE	
	CSPE	3/4" FNPT	NA603675-FPPC	
	TFE	3/4" FNPT	NA603675-FPPT	
	Viton	3/4" FNPT	NA603675-FPPV	
	EPDM	3/4" FNPT	NA603675-PVDE	
	CSPE	3/4" FNPT	NA603675-PVDC	
370 cubic inches	POLY	TFE	3/4" FNPT	NA603675-PVDT
		Viton	3/4" FNPT	NA603675-PVDV
		EPDM	2" FNPT	NA617520-FPPE
		CSPE	2" FNPT	NA617520-FPPC
		TFE	2" FNPT	NA617520-FPPT
		Viton	2" FNPT	NA617520-FPPV
		EPDM	2" FNPT	NA617520-PVDE
		CSPE	2" FNPT	NA617520-PVDC
	PVDF	TFE	2" FNPT	NA617520-PVDT
		Viton	2" FNPT	NA617520-PVDV
		EPDM	3/4" FNPT	NA603675-316E
		CSPE	3/4" FNPT	NA603675-316C
		TFE	3/4" FNPT	NA603675-316T
		Viton	3/4" FNPT	NA603675-316V
		EPDM	2" FNPT	NA617520-316E
		CSPE	2" FNPT	NA617520-316C
175 cubic inches	POLY	TFE	2" FNPT	NA617520-316T
		Viton	2" FNPT	NA617520-316V
		EPDM	2" FNPT	NA617520-PVDE
		CSPE	2" FNPT	NA617520-PVDC
	PVDF	TFE	2" FNPT	NA617520-PVDT
		Viton	2" FNPT	NA617520-PVDV
		EPDM	2" FNPT	NA617520-316E
		CSPE	2" FNPT	NA617520-316C