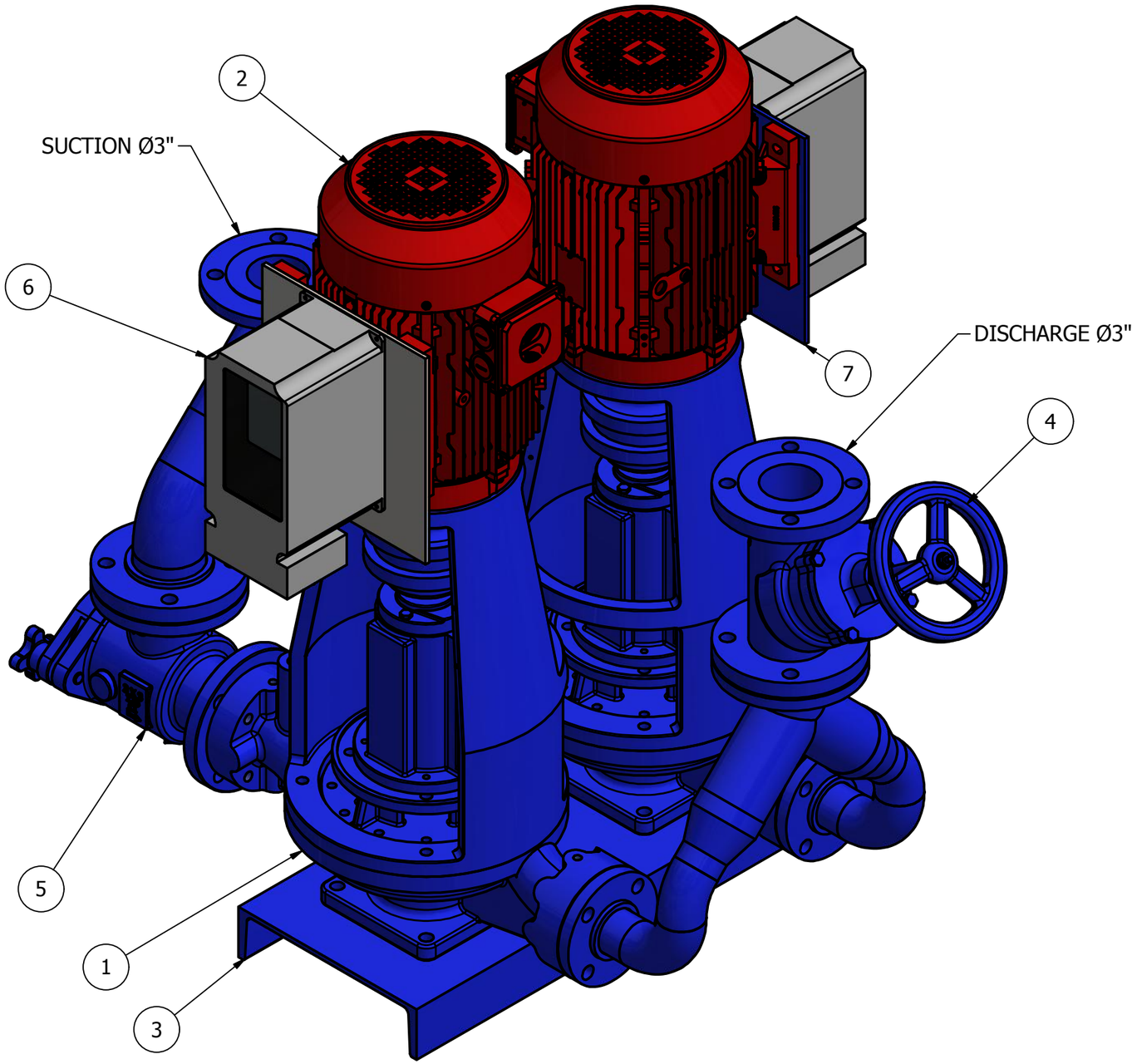
PARTS LIST		
ITEM	QTY	DESCRIPTION
1	2	INLINE PUMP MODEL 880RI-2X2-8
2	2	MOTOR 10HP/3500RPM/3PH/215TC
3	1	PUMPS BASE
4	1	MULTI-FUNCTION VALVE 3"
5	2	SUCTION DIFFUSER 3" X 3"
6	2	VFD - IQP1000-4A0018FAANEMA1
7	2	VFD PLATE



DRAWING %	
FABRICATION	
100%	
90%	
75%	
50%	
PRELIMINARY	X

REVISION HISTORY		
REV	DESCRIPTION	DATE
1	PRELIMINARY DRAWINGS	05/31/2016

THIS DRAWING MUST BE SENT WITH PURCHASE ORDER

DESIGNER: G. BOLDUC
DATE: 2016-05-31
TITLE / TITRE: TWIN PUMPS MODEL 880RI-2X2-8
PROJECT / PROJET: FT. DETRICK BOILER DECENTRALIZATION REV
CUSTOMER / CLIENT: MORIN LLC
QUOTE: 108860
TAG: HWP-568-1
DWG NO.: 108860_HWP-568-1
REV: 1
SCALE / ECHELLE: 1/6
JOB NO.:
SHEET 1 OF 3

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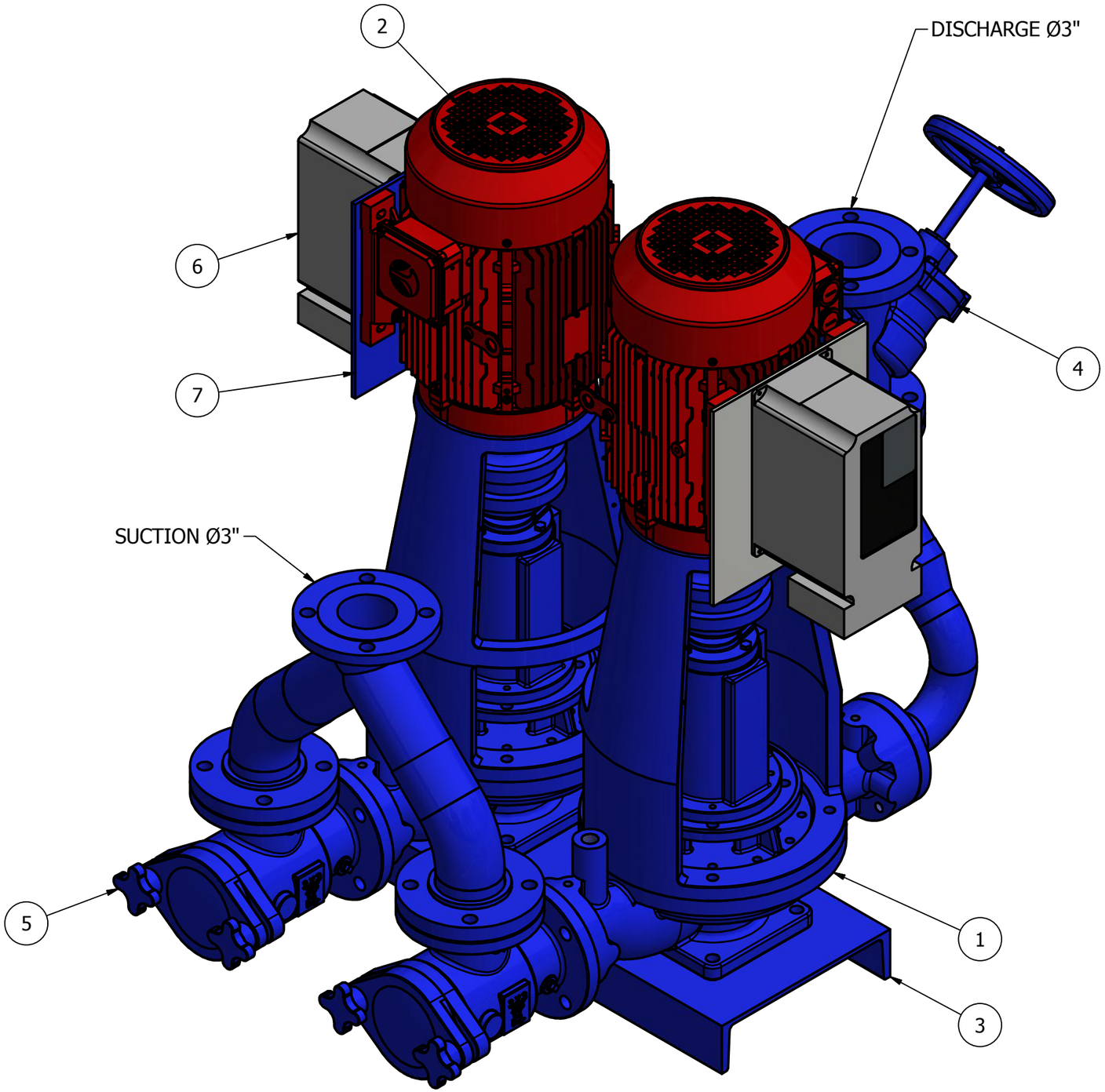

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DESIGNER: G. BOLDUC	DATE: 2016-05-31
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PROJECT / PROJET: FT. DETRICK BOILER DECENTRALIZATION REV	
CUSTOMER / CLIENT: MORIN LLC	
QUOTE: 108860	TAG: HWP-568-1
DWG NO.: 108860_TWINS PUMPS 880RI-2X2-8	REV: 1
SCALE / ECHELLE: 1/6	JOB NO.

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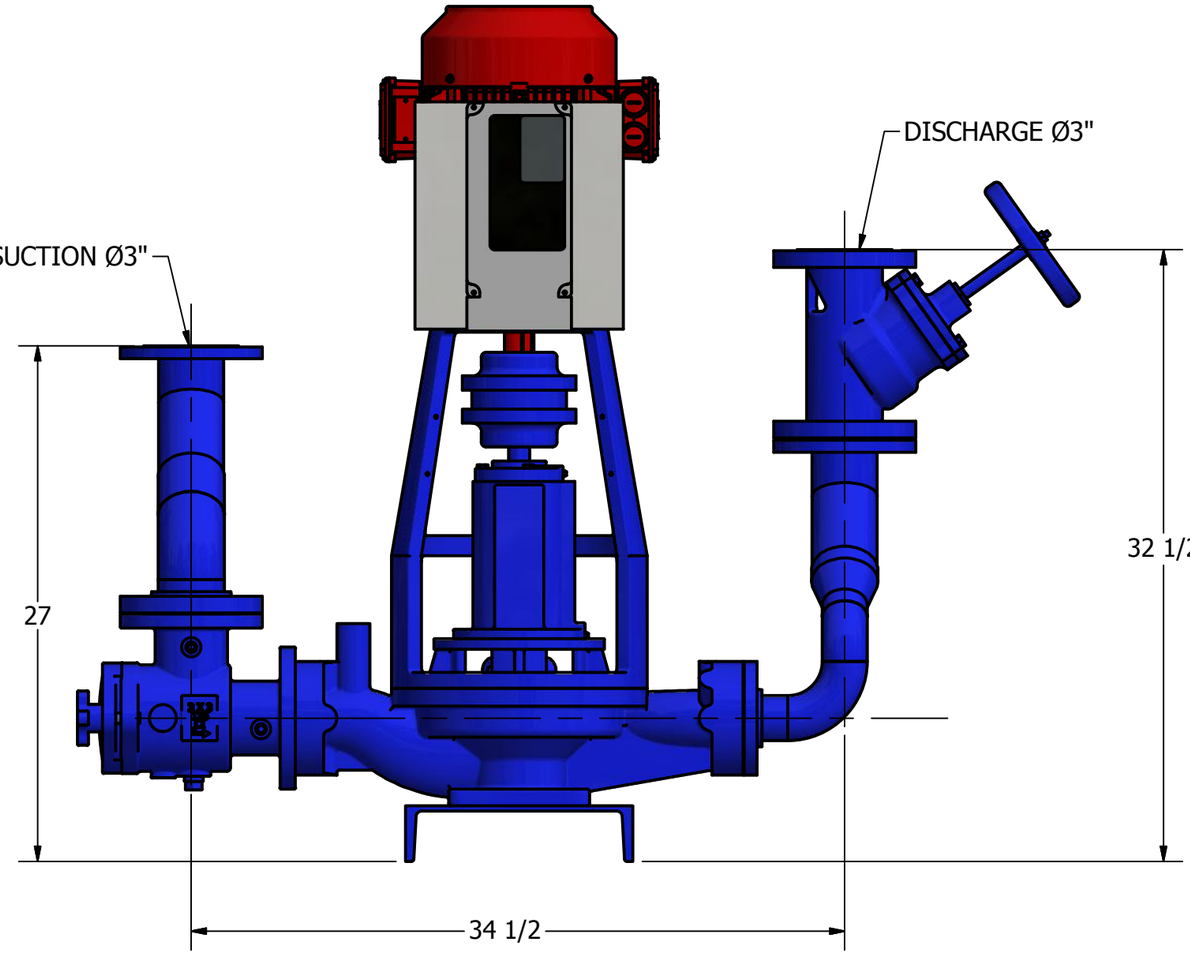

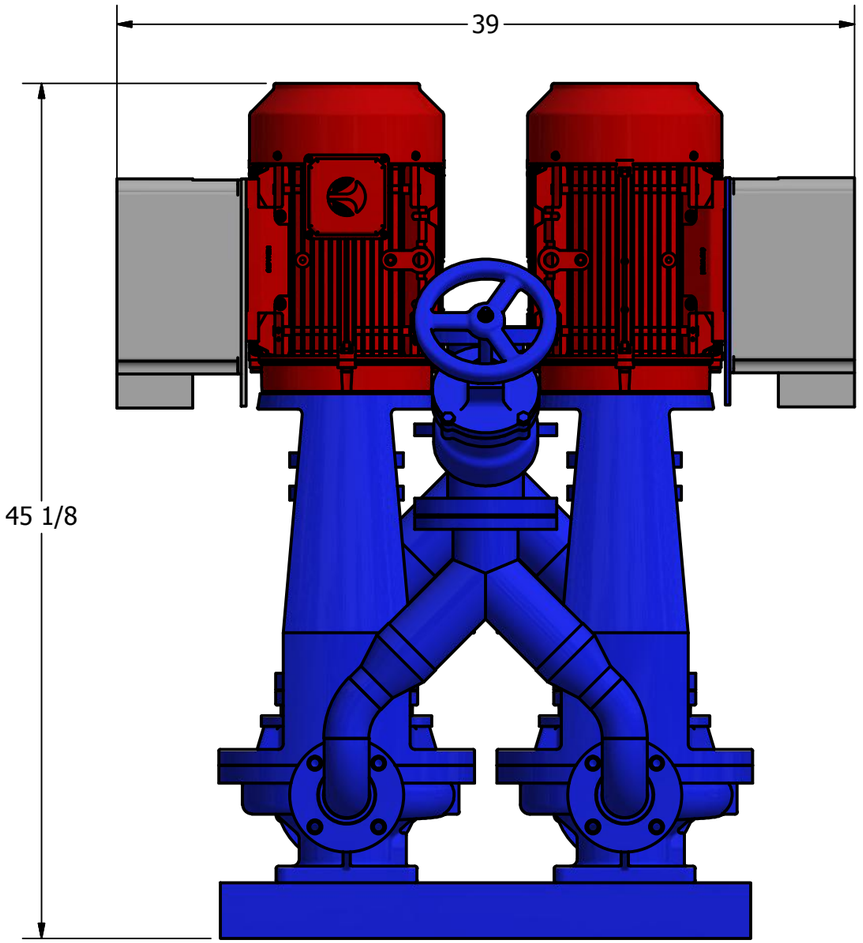

THIS DRAWING MUST BE SENT WITH PURCHASE ORDER

DESIGNER: G. BOLDUC	DATE: 2016-05-31
TITLE / TITRE: TWIN PUMPS MODEL 880RI-2X2-8	
PROJECT / PROJET: FT. DETRICK BOILER DECENTRALIZATION REV	
CUSTOMER / CLIENT: MORIN LLC	
QUOTE: 108860	TAG: HWP-568-1
DWG NO.: 108860_TWINS PUMPS 880RI-2X2-8	REV: 1
SCALE / ECHELLE: 1/8	JOB NO.:
SHEET 3 OF 3	

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FLO FAB

Pump data sheet

MODEL	TYPE	US GPM	HEAD	IMP. DIA.	BHP	NOL	NPSHR	EFF
880RI-2X2-8	880,880RI,840SC,XRI, In-line Pumps	180.00	80.00	5.24 "	5.96 hp	6.66 hp	17.62 ft	61.06 %

Pump:

(All dimensions are in inches. For certified dimensions, you must contact factory.)

Weight	Suct	Disc	B1	B2	B3	B4	d1	H1	H2	L
273 lbs	2	2	6.70	6.70	6.00	7.50	0.69	4.60	24.50	23.70

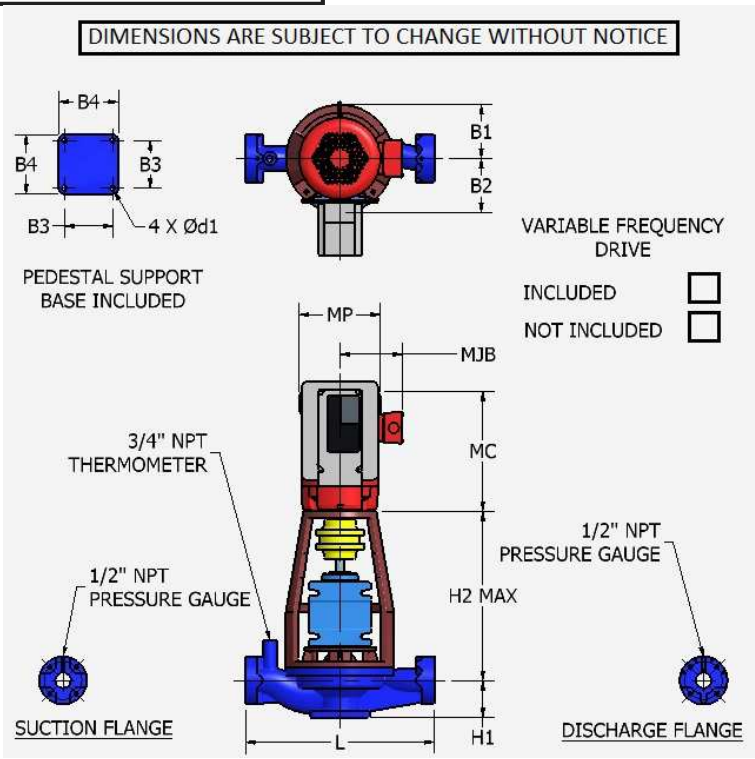
Premium Efficiency Motor: (Volt/PH/Hz)440-460-480/3/60 NOL - TEFC

(All dimensions are in inches. For certified dimensions, you must contact factory.)

hp	rpm	frame	weight	MC	MP	MBA	MJB	MD	Md1	MA/BA	MB/BB	BH	MF/BF	ME/BE	MR/BR
10	3450	215T	155 lbs	20	22.8	3.5	8.125	5.25	0.406	12	31	3	29	9	1

Total weight: 428 lbs

Flange type	150 LB.
Construction	Bronze Fitted
Max. casing PSI	175 PSIG / 1206 KPa



JOB	Ft. Detrick Boiler Decentralization REV
CLIENT	
ENGINEER	
TAG	HWP-568-1
DATE	2016-05-31

☐ Black & White

Click on the picture to view autocad (1:1 scale)

Best viewed with AutoCAD200X ©

Download free viewer

Pump data sheet (zoom)

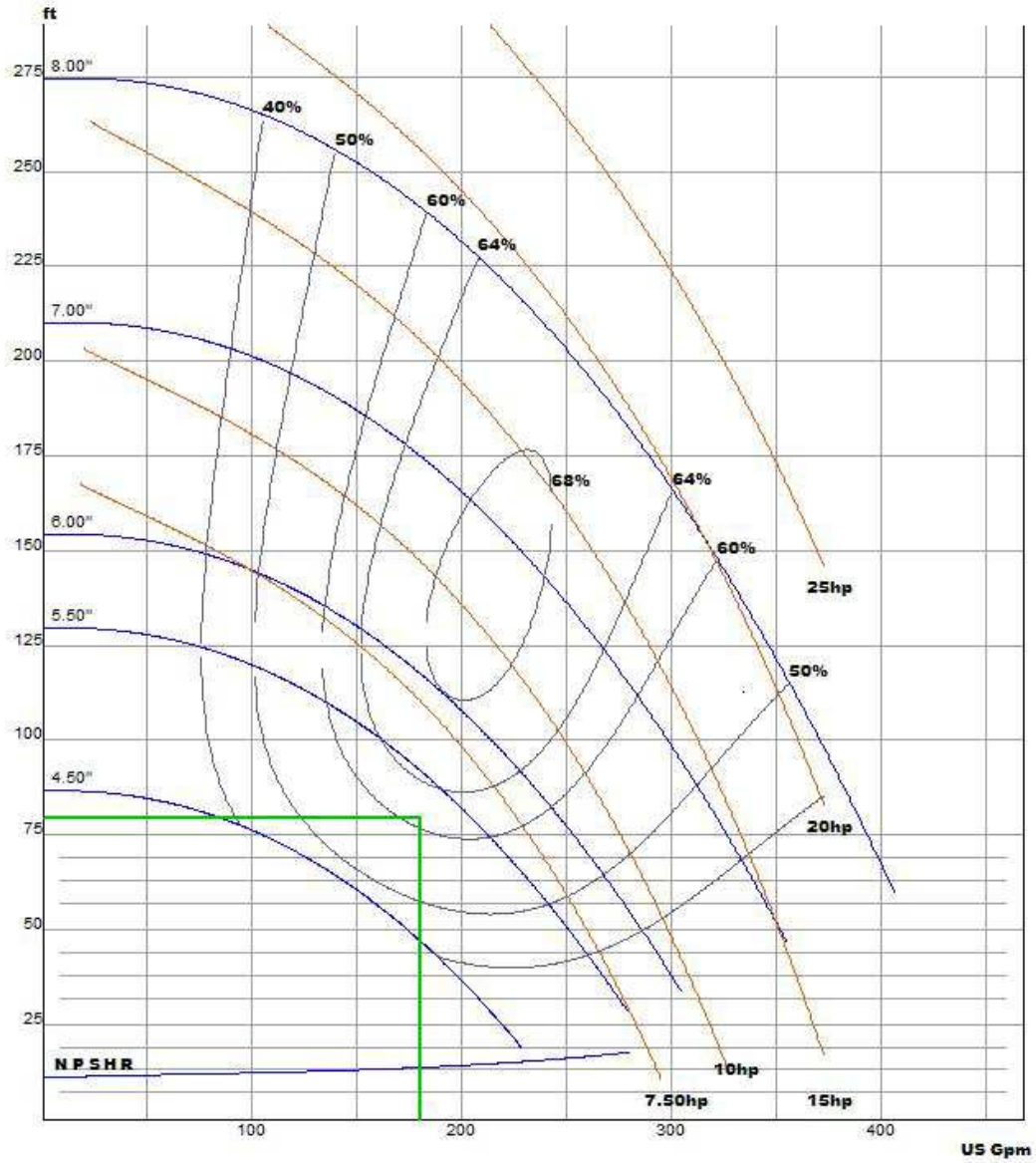
MODEL: 880RI-2X2-8 **TYPE:** 880,880RI,840SC,XRI, In-line Pumps

0 % Glycol concent. at 140 °F

NOL - TEFC 3450 RPM

MODEL	US GPM	HEAD	IMP. DIA.	BHP	NOL	NPSHR	EFF	RPM: 3450 ok
880RI-2X2-8	180.00	80.00 ft	5.24 "	5.96 hp	6.66 hp	17.62 ft	61.06 %	Vary: ○ Diam ◉ ft ○ gpm

Performance curves



JOB:	Ft. Detrick Boiler Decentralization REV	TAG:	HWP-568-1
CLIENT:		DATE:	2016-05-31
ENGINEER:			

Curves based on shop test using clear cold water on a closed loop system at a temperature of not over 85°F at specific gravity 1.0
Performance guaranteed at operating point indicated only.

Model Number:	GRA0102D-TC
MFG PN:	TXA215T10U2B
Page:	1 of 6

NEMA

TEFC - Green Line Aluminum NEMA Premium Efficiency

Product Data Package
GRA0102D-TC

HP:	10
RPM:	3520
Voltage:	230/460
Phase:	3
Hz:	60
Frame:	215TC
Mount:	Rigid/C-Flange
Enclosure:	TEFC

INDEX

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1 (678) 436-5540
info@techtopind.com

TECHTOP®

Data sheet for three-phase squirrel-cage motor

Model Number:	GRA0102D-TC
MFG PN:	TXA215T10U2B
Page:	2 of 6

NEMA

TEFC - Green Line Aluminum NEMA Premium Efficiency

Electrical Data		
Rated Motor Output Power	10	HP
	-	kW
Rated Motor Speed	3520	r/min 60Hz
	2910	r/min 50Hz
Rated Motor Voltage (+/-10%)	230/460	V/60Hz
	190/380	V/50Hz
Rated Motor Current	22.6/11.3	A (I_n) @ 60Hz
	26.6/13.3	A (I_n) @ 50Hz
Phase	3	Ø
Locked Rotor Current	9.4	(I_l/I_n)
FL Current @ 208V	25.8	A (I_n) @ 60Hz
Service Factor	1.25	@ 60Hz
	1	@ 50Hz
KVA Code	L	60Hz
	H	50Hz
Nominal Efficiency	90.2	% @ 60Hz
Nominal Power Factor	0.92	cosθ @ 60Hz
Number of Leads	9	-
Connection	YY/Y	-
Coil Resistance	-	Ω
Start Capacitor	-	µF/V
Run Capacitor	-	µF/V
Load*	**Efficiency %**	**P.F.**
50%	90.5	0.85
75%	90.2	0.90
100%	90.2	0.92

General Data		
Frame Size	215TC	
Enclosure	TEFC	
Mounting	Rigid/C-Flange	
Approximate Weight	115	lb
Casing Material	Aluminum	
NEMA Design	B	
Ingress Protection	IP	55
Insulation Class / Temp Rise (60Hz)	F	B
Tropicalization	YES	
Duty	Cont. / S1	
Cable Entry	1-NPT 1”	
Feet Removable	YES	
Double Drilled	NO	
Paintwork	RAL	7024
	Graphite Gray	
Mechanical Data		
Bearing DE Side	6308ZZ	
Bearing NDE Side	6208ZZ	
Compensation Ring (wavey washer)	NDE	
Moment of Inertia	-	lb-ft^2
Noise Level	85	dB (A)
Torque Values*	**Torque lb-ft**	**% FLT**
Locked Rotor Torque	37.8	250
Pull-Up Torque	21.1	140
Breakdown Torque	52.9	350
Full Load	15.1	100

Full Load Temperature Rise*		
Full Load Temperature Rise	50	°C @ 60Hz
	73	°C @ 50Hz

Site Conditions	
Ambient Temperature	-20°C to +40°C
Altitude Above Sea Level	1000m

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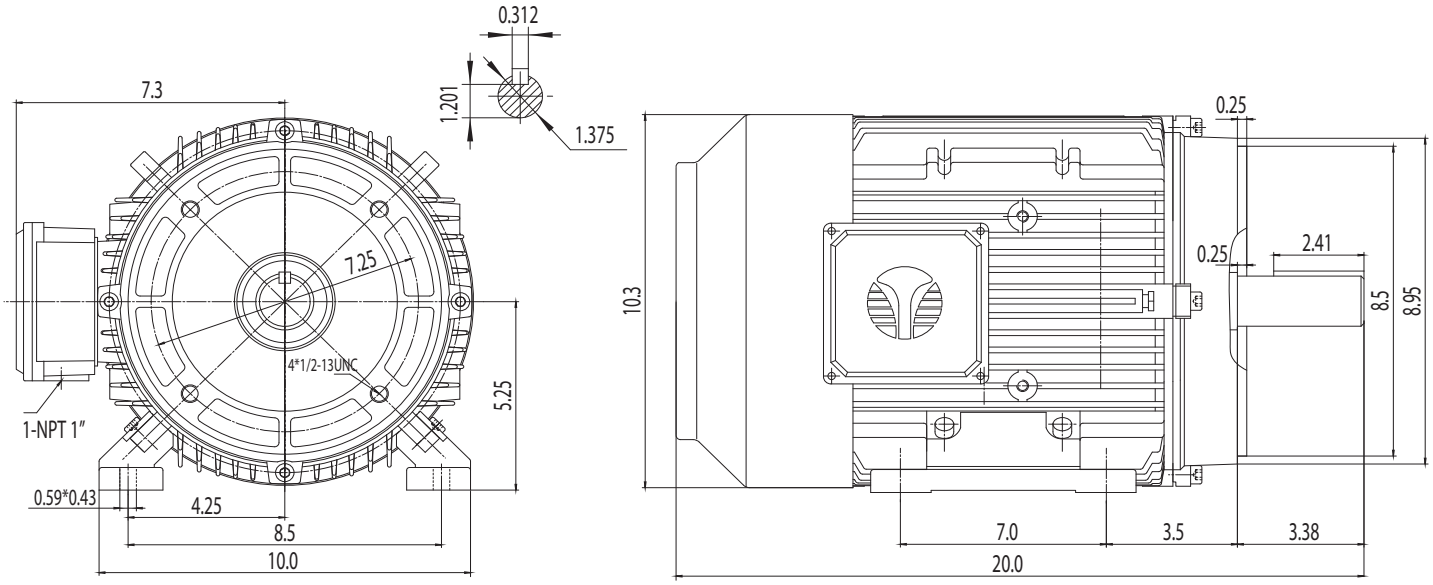
TECHTOP®

Data sheet for three-phase squirrel-cage motor

Model Number:	GRA0102D-TC
MFG PN:	TXA215T10U2B
Page:	3 of 6

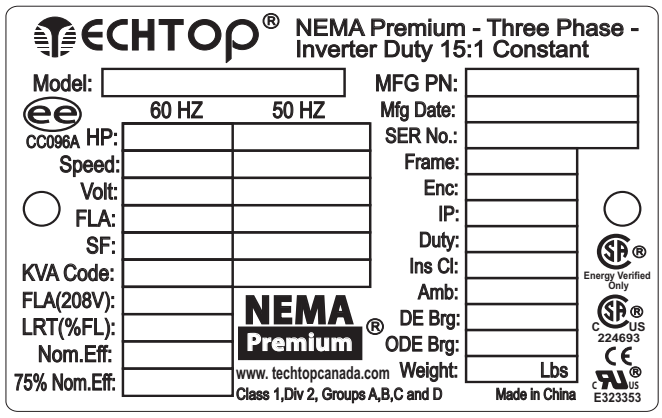
NEMA

TEFC - Green Line Aluminum NEMA Premium Efficiency



Nameplate Data	60Hz	50Hz
Horse Power	10	10
RPM	3520	2910
Voltage	230/460	190/380
Full Load Amps	22.6/11.3	26.6/13.3
Service Factor	1.25	1
KVA Code	L	H
Full Load Amps (208V)	25.8	-
Locked Rotor Torque (%FL)	250	-
Nominal Full Load Eff.	90.2	-
Nominal 3/4 Load Eff.	90.2	-
Nameplate Data Continued		
Frame	215TC	
Enclosure Type	TEFC	
IP Rating	55	
Duty	Cont. / S1	
Insulation Class	F	
Ambient Rating	40°C	
Drive End Bearing	6308ZZ	
Opposite Drive End Bearing	6208ZZ	
Weight (lb)	115	

Nameplate Layout



VFD Duty (S.F. 1.0)	Ratio	Hz*
Variable Torque	30:1	2 - 60
Constant Torque	15:1	4 - 60

*For max speed please contact Techtop

Hazardous Locations	CSA Certified	
Class / Division	I	II
Groups	A, B, C and D	

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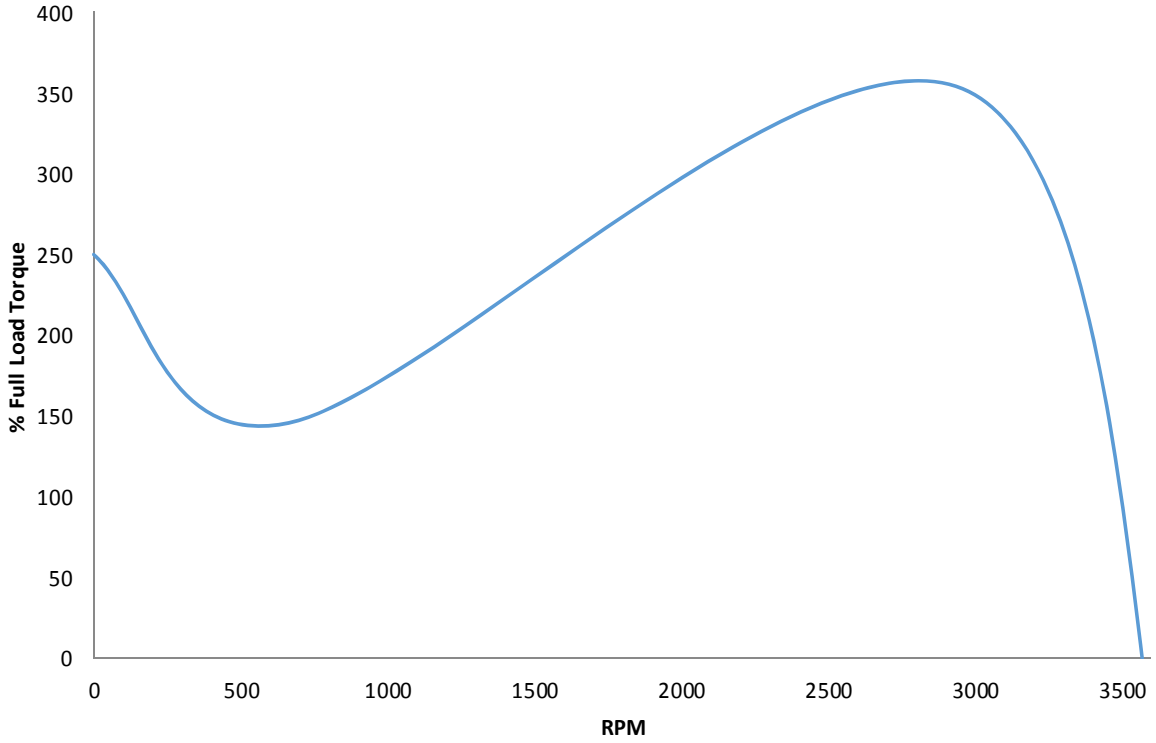
Model Number:	GRA0102D-TC
MFG PN:	TXA215T10U2B
Page:	4 of 6

NEMA

TEFC - Green Line Aluminum NEMA Premium Efficiency

Torque Speed (T-n) Curve



Performance Load Values, High Voltage, 60Hz

Typical performance - not guaranteed values

Torque Values	Torque (lb-ft)	Torque (% Full Load)	Performace Values	
Locked Rotor Torque	37.8	250	Start Configuration	DOL
Pull-Up Torque	21.1	140	Starting Current (A)	106.4
Breakdown Torque	52.9	350	No-Load Current (A)	3.0
Full Load Torque	15.1	100	No-Load Power Factor	0.12

% of Rated Load	25	50	75	100	125	S.F. 1.25
Power Factor (cosθ)	0.69	0.85	0.90	0.92	0.93	0.93
Efficiency (%)	85.8	90.5	90.2	90.2	90.4	90.4
Speed (r/min)	3576.8	3564	3548.5	3529.9	3508	3508
Line Amperes (A)	4	6.1	8.6	11.30	14.1	14.1
Input Power (kW)	2.2	4.1	6.2	8.2	10.4	10.4

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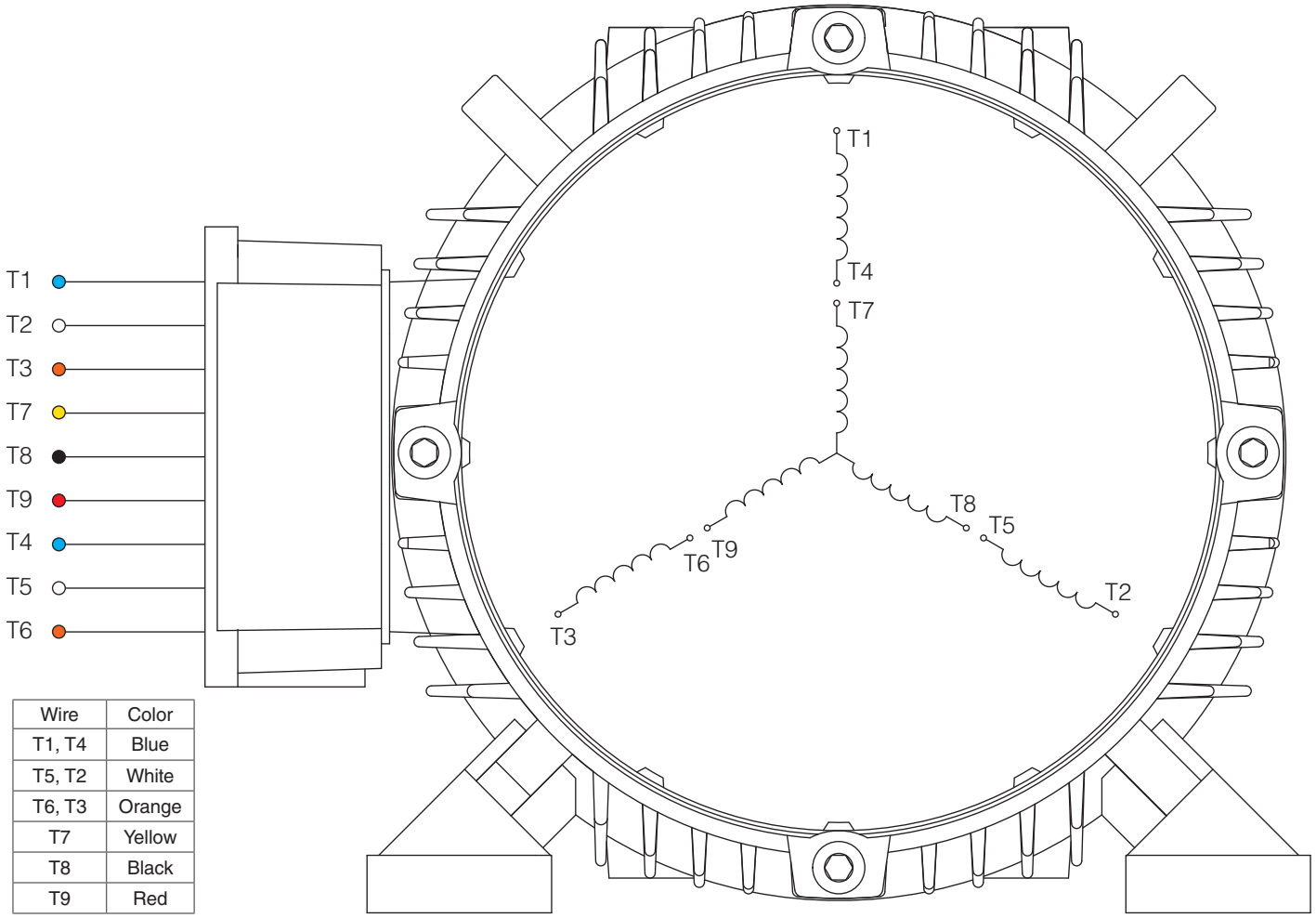
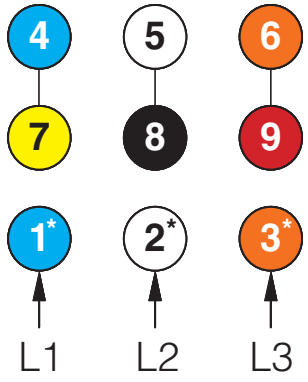
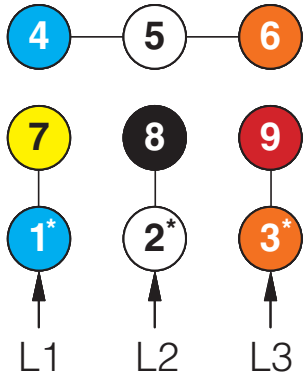


Wire	Color
T1, T4	Blue
T5, T2	White
T6, T3	Orange
T7	Yellow
T8	Black
T9	Red



HIGH VOLTAGE CONNECTIONS
(Y)



LOW VOLTAGE CONNECTIONS
(YY)

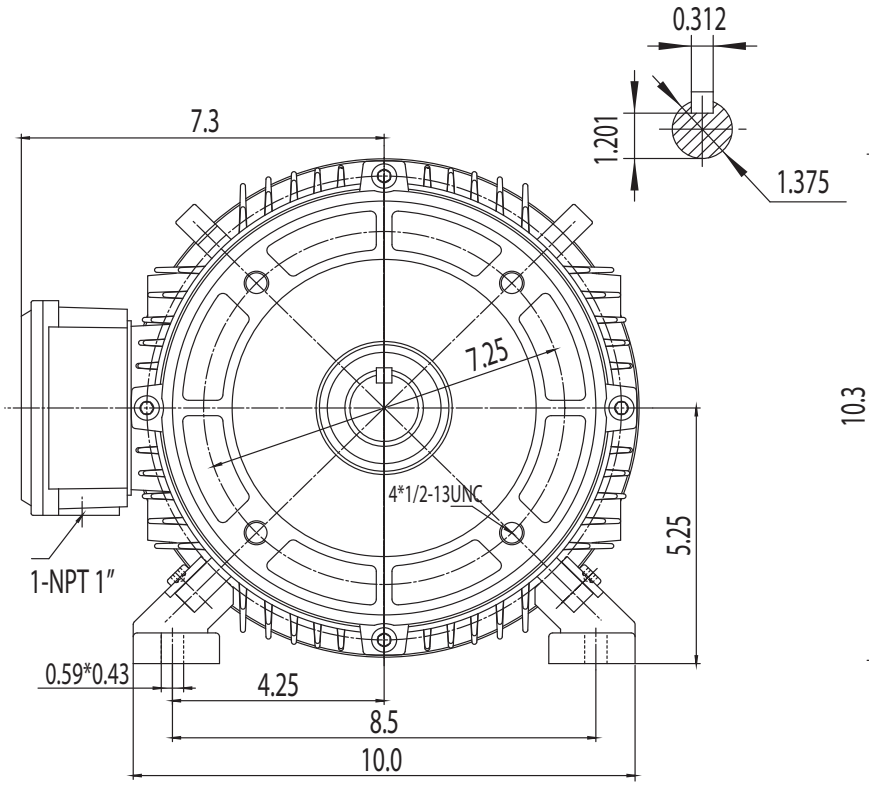
NOTES:

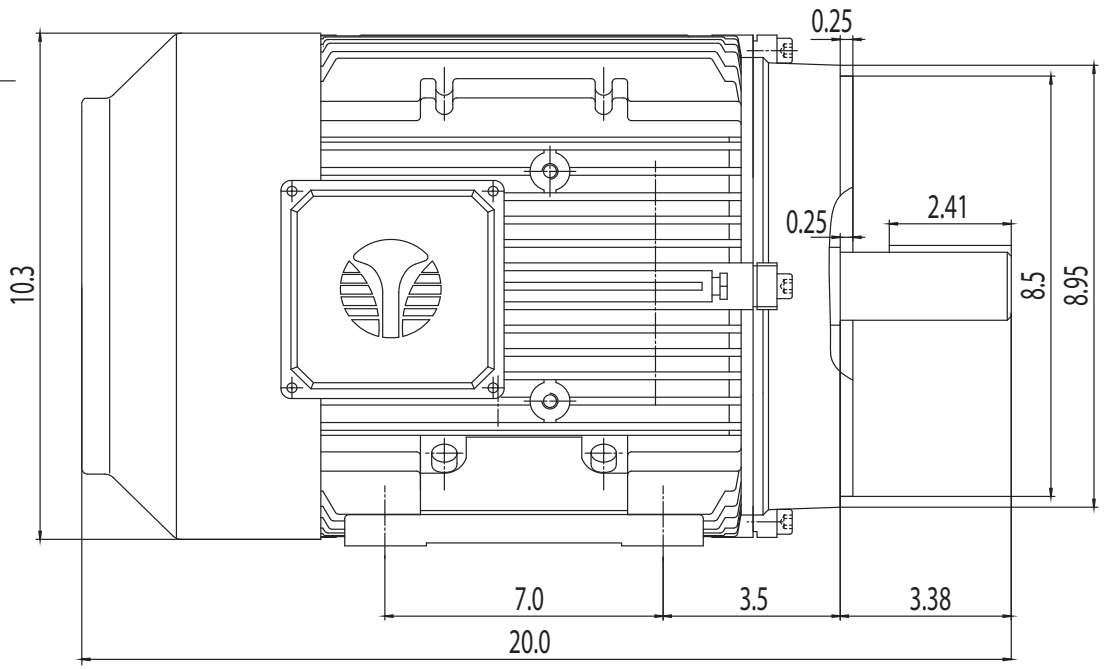
1. CCW ROTATION FACING ODE FOR CONNECTIONS SHOWN
2. TO REVERSE ROTATION, SWAP ANY TWO INPUT LINES
3. WHEN MOTOR IS IN F1 POSITION, LEADS INDICATED WITH "*" EXIT THE CASING BELOW THE CENTER LINE OF THE MOTOR, THE REMAINING LEADS EXIT ABOVE THE CENTER LINE
4. LEADS MUST BE NUMBERED AND COLORED AS SHOWN
5. DIAGRAMS FOR REFERENCE ONLY

TECHTOP®

NEMA 3Ø YY/Y 9-Lead Dual Voltage Connection Diagram

Drawing Number:	NEMA-3-9-YY/Y	Issued Date:	6/09/15
Connection:	YY/Y		
Number of Leads:	9	TEFC - Green Line Aluminum NEMA Premium Efficiency	
Thermal Protection:	Optional		





TECHTOP®

NEMA TEFC 215TC

Drawing Number:	GR3-AL-TF-215TC	Issued Date:	6/09/15
Dimensions:	Inches		
Mounting:	Rigid/C-Flange	TEFC - Green Line Aluminum NEMA Premium Efficiency	
Casing Material:	Aluminum		

Model Number Designation

CIMR-PW 2 A 0004 F A A

- AC Drive
- iQpump1000 Series
- Design Revision

No.	Voltage Class
2A	3-phase, 240V
4A	3-phase, 480V
4T	6-phase, 12-pulse, 480V
5A	3-phase, 600V

No.	Environmental Specification
A	Standard

No.	Enclosure Type
A	IP00
F	NEMA Type1
U	Flange (Type 12 backside)

No.	Output Current Code (A)
See chart on next page.	

Drive Ratings - 240V

240V, 3-Phase Input			
Rated Output Amps	Nominal HP	Model Number CIMR-PW	Variant F = NEMA 1 A = Protected Chassis (IP00) U = Flange (NEMA 12 Backside)
3.5	3/4	2A0004_AA	F, U
6	1	2A0006_AA	F, U
8	2	2A0008_AA	F, U
9.6	3	2A0010_AA	F, U
12	3	2A0012_AA	F, U
17.5	5	2A0018_AA	F, U
21	7.5	2A0021_AA	F, U
30	10	2A0030_AA	F, U
40	15	2A0040_AA	F, U
56	20	2A0056_AA	F, U
69	25	2A0069_AA	F, U
81	30	2A0081_AA	F, U
110	40	2A0110_AA	F, U
138	50	2A0138_AA	F, U
169	60	2A0169_AA	F, U
211	75	2A0211_AA	F, U
250	100	2A0250_AA	A, U
312	125	2A0312_AA	A, U
360	150	2A0360_AA	A, U
415	175	2A0415_AA	A, U

240V, 1-Phase Input 208-230V Three-Phase Output							
Single Phase Input - Size Method A(A) (continuous full power)				Single Phase Input - Sizing Method B(B) (86% max power of connected motor size)		Model Number CIMR-PW	Variant F = NEMA 1 A = Protected Chassis (IP00) U = Flange (NEMA 12 Backside)
Without Additional Reactor		With Additional Reactor					
Motor Amps	Motor Size (HP)	Motor Amps	Motor Size (HP)	Motor Amps	Motor Size (HP)		
1.5	1/3	2.4	1/2	2.4	1/2	2A0004_AA	F, U
2.4	1/2	3.5	3/4	4.6	1	2A0006_AA	F, U
3.5	3/4	4.6	1	4.6	1	2A0008_AA	F, U
3.5	3/4	4.6	1	6.6	1.5	2A0010_AA	F, U
4.6	1	7.5	2	7.5	2	2A0012_AA	F, U
7.5	2	10.6	3	10.6	3	2A0018_AA	F, U
7.5	2	10.6	3	10.6	3	2A0021_AA	F, U
7.5	2	10.6	3	17	5	2A0030_AA	F, U
10.6	3	17	5	17	5	2A0040_AA	F, U
17	5	24	7.5	24	7.5	2A0056_AA	F, U
17	5	31	10	31	10	2A0069_AA	F, U
31	10	46	15	46	15	2A0081_AA	F, U
31	10	31	10	46	15	2A0110_AA	F, U
46	15	46	15	59	20	2A0138_AA	F, U
59	20	59	20	75	25	2A0169_AA	F, U
59	20	59	20	88	30	2A0211_AA	F, U
75	25	75	25	114	40	2A0250_AA	A, U
88	30	88	30	143	50	2A0312_AA	A, U
114	40	114	40	169	60	2A0360_AA	A, U
143	50	143	50	211	75	2A0415_AA	A, U

(A) Use single phase sizing method A for applications requiring more than 87% motor power (more than 95% speed for variable torque) for any length of time.

(B) Use single phase sizing method B for applications requiring no more than 87% motor power (no more than 95% speed for variable torque).

Drive Ratings - 480V

480V, 3-Phase Input			
Rated Output Amps	Nominal HP	Model Number CIMR-PW	Variant F = NEMA 1 A = Protected Chassis (IP00) U = Flange (NEMA 12 Backside)
2.1	1	4A0002_AA	F, U
4.1	2	4A0004_AA	F, U
5.4	3	4A0005_AA	F, U
6.9	4	4A0007_AA	F, U
8.8	5	4A0009_AA	F, U
11.1	7.5	4A0011_AA	F, U
17.5	10	4A0018_AA	F, U
23	15	4A0023_AA	F, U
31	20	4A0031_AA	F, U
38	25	4A0038_AA	F, U
44	30	4A0044_AA	F, U
58	40	4A0058_AA	F, U
72	50	4A0072_AA	F, U
88	60	4A0088_AA	F, U
103	75	4A0103_AA	F, U
139	100	4A0139_AA	F, U
165	125	4A0165_AA	F, U
208	150	4A0208_AA	A,U
250	200	4A0250_AA	A,U
296	250	4A0296_AA	A,U
362	300	4A0362_AA	A,U
414	350	4A0414_AA	A,U
515	400	4A0515_AA	A,U
675	500 - 550	4A0675_AA	A,U

480V, 1-Phase Input 460V Three-Phase Output							
Single Phase Input - Size Method A[A] (continuous full power)				Single Phase Input - Sizing Method B[B] (86% max power of connected motor size)		Model Number CIMR-PW	Variant F = NEMA 1 A = Protected Chassis (IP00) U = Flange (NEMA 12 Backside)
Without Additional Reactor		With Additional Reactor					
Motor Amps	Motor Size (HP)	Motor Amps	Motor Size (HP)	Motor Amps	Motor Size (HP)		
0.8	1/3	1.1	1/2	0.8	1/3	4A0002_AA	F, U
1.6	3/4	2.1	1	2.1	1	4A0004_AA	F, U
2.1	1	3	1.5	3	1.5	4A0005_AA	F, U
2.1	1	3.4	2	3.4	2	4A0007_AA	F, U
3.4	2	4.8	3	4.8	3	4A0009_AA	F, U
3.4	2	4.8	3	4.8	3	4A0011_AA	F, U
3.4	2	4.8	3	7.6	5	4A0018_AA	F, U
4.8	3	7.6	5	7.6	5	4A0023_AA	F, U
7.6	5	11	7.5	14	10	4A0031_AA	F, U
11	7.5	14	10	14	10	4A0038_AA	F, U
11	7.5	14	10	21	15	4A0044_AA	F, U
14	10	21	15	27	20	4A0058_AA	F, U
21	15	21	15	34	25	4A0072_AA	F, U
21	15	21	15	34	25	4A0088_AA	F, U
21	15	27	20	34	25	4A0103_AA	F, U
40	30	40	30	65	50	4A0139_AA	F, U
40	30	40	30	65	50	4A0165_AA	F, U
65	50	65	50	77	60	4A0208_AA	A,U
77	60	77	60	96	75	4A0250_AA	A,U
77	60	96	75	124	100	4A0296_AA	A,U
96	75	124	100	156	125	4A0362_AA	A,U
124	100	156	125	180	150	4A0414_AA	A,U
124	100	124	100	180	150	4A0515_AA	A,U
156	125	156	125	240	200	4A0675_AA	A,U

(A) Use single phase sizing method A for applications requiring more than 87% motor power (more than 95% speed for variable torque) for any length of time.

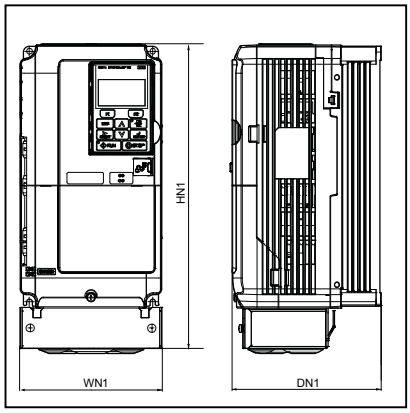
(B) Use single phase sizing method B for applications requiring no more than 87% motor power (no more than 95% speed for variable torque).

480V, 12-Pulse			
Rated Output Amps	Nominal HP	Model Number CIMR-PW	Variant U = Flange (NEMA 12 Backside)
58	40	4T0058_AA	U
72	50	4T0072_AA	U
88	60	4T0088_AA	U
103	75	4T0103_AA	U
139	100	4T0139_AA	U
165	125	4T0165_AA	U
208	150	4T0208_AA	U
250	200	4T0250_AA	U
296	250	4T0296_AA	U
362	300	4T0362_AA	U
414	350	4T0414_AA	U
515	400	4T0515_AA	U
675	500 - 550	4T0675_AA	U

Mechanical Installation Planning

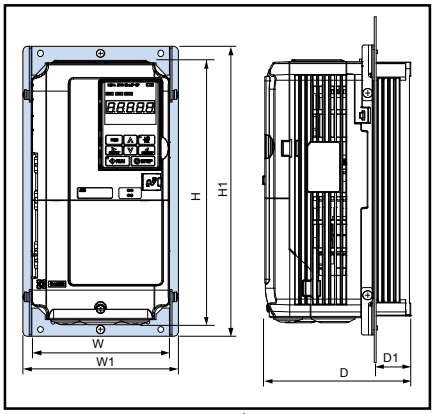
Drive Dimensions

NEMA Type 1 [IP20] Diagram



iQpump1000 with NEMA Type 1 Kit Installed

Protected Chassis/External Heatsink Diagram



iQpump1000 Protected Chassis / External Heatsink Configuration

Notes:

1. The diagrams shown are simplified dimensional diagrams designed to display key outer dimensions of the drive. They are meant for planning purposes only. For more detailed dimensional/mounting data, please refer to the iQpump1000 dimensional drawings on www.yaskawa.com
2. Drives with NEMA Type 1 Enclosures can be converted to protected chassis by removing the top and bottom covers.
3. When mounting standard drives with heatsink external (NEMA 1 backside), the following models require a separately sold bracket kit: CIMR-PW2A0004Fxx to 0081Fxx, CIMR-PW4A0002Fxx to 0044Fxx, and CIMR-PW5A0003Fxx to 0032Fxx.

   Larger standard drives include brackets that must be detached from the back and reattached at the midpoint.

240V Class

Model CIMR-PW2A □□□□	Frame Size	Max. Applicable Motor Capacity (HP)	Dimensions (in.)									Weight (lb)	
			WN1	W	W1	HN1	H	H1	DN1	D	D1	NEMA 1	Protected Chassis
0004	1	0.75	5.51	5.51	7.64	12.06	10.24	11.81	5.79	5.79	1.34	7.3	--
0006		1.5	5.51	5.51	7.64	12.06	10.24	11.81	5.79	5.79	1.34	7.3	--
0008		2	5.51	5.51	7.64	12.06	10.24	11.81	5.79	5.79	1.34	7.5	--
0010		3	5.51	5.51	7.64	12.06	10.24	11.81	5.79	5.79	1.34	7.5	--
0012		3	5.51	5.51	7.64	12.06	10.24	11.81	5.79	5.79	1.34	7.5	--
0018	2	5	5.51	5.51	7.64	12.06	10.24	11.81	6.46	6.46	2.06	8.2	--
0021		7.5	5.51	5.51	7.64	12.06	10.24	11.81	6.46	6.46	2.06	8.2	--
0030	3	10	5.51	5.51	7.64	12.06	10.24	11.81	6.57	6.57	2.07	9.3	--
0040		15	5.51	5.51	7.64	12.06	10.24	11.81	6.57	6.57	2.07	9.3	--
0056	5	20	7.09	7.09	9.21	13.38	11.81	13.39	7.36	7.36	2.83	13.0	--
0069	6	25	8.66	8.66	11.65	15.47	13.78	16.54	7.76	7.76	2.91	20.1	--
0081		30	8.66	8.66	11.65	15.47	13.78	16.54	7.76	7.76	2.91	22.0	--
0110	7A	40	10.00	10.00	12.13	21.37	15.75	16.3	10.16	10.16	3.82	50.7	46.2
0138	8A	50	10.98	10.98	12.99	24.52	17.72	18.11	10.16	10.16	3.81	61.7	55.0
0169	10	60	12.95	12.95	15.2	30.08	21.65	22.13	11.14	11.14	4.21	90.2	81.4
0211		75	12.95	12.95	15.2	30.08	21.65	22.13	11.14	11.14	4.21	92.4	83.6
0250	11	100	17.95	17.72	22.05	37.80	27.76	28.54	12.99	12.99	5	191.8	167.6
0312		125	17.95	17.72	22.05	37.80	27.76	28.54	12.99	12.99	5	191.8	176.4
0360	12	150	19.84	19.69	23.62	45.98	31.50	32.28	13.78	13.78	5	233.7	216.1
0415		175	19.84	19.69	23.62	45.98	31.50	32.28	13.78	13.78	5	233.7	218.3

Mechanical Installation Planning

480V Class

Model CIMR-PW4A□□□□	Frame Size	Max. Applicable Motor Capacity (HP)	Dimensions (in.)									Weight (lb)	
			WN1	W	W1	HN1	H	H1	DN1	D	D1	NEMA 1	Protected Chassis
0002	1	1	5.51	5.51	7.64	12.06	10.24	11.81	5.79	5.79	1.34	7.3	--
0004		2	5.51	5.51	7.64	12.06	10.24	11.81	5.79	5.79	1.34	7.3	--
0005		3	5.51	5.51	7.64	12.06	10.24	11.81	5.79	5.79	1.34	7.3	--
0007	2	3	5.51	5.51	7.64	12.06	10.24	11.81	6.46	6.46	2.06	8.2	--
0009		5	5.51	5.51	7.64	12.06	10.24	11.81	6.46	6.46	2.06	8.2	--
0011		7.5	5.51	5.51	7.64	12.06	10.24	11.81	6.46	6.46	2.06	8.2	--
0018	3	10	5.51	5.51	7.64	12.06	10.24	11.81	6.57	6.57	2.07	9.3	--
0023		15	5.51	5.51	7.64	12.06	10.24	11.81	6.57	6.57	2.07	9.3	--
0031	4	20	7.09	7.09	9.21	13.38	11.81	13.39	6.88	6.88	2.04	12.5	--
0038	5	25	7.09	7.09	9.21	13.38	11.81	13.39	7.36	7.36	2.83	13.0	--
0044	6	30	8.66	8.66	11.65	15.47	13.78	16.54	7.76	7.76	2.91	20.1	--
0058	7B	40	10.37	10.37	12.13	18.65	15.75	16.3	10.16	10.16	3.82	50.6	50.6
0072	8B	50	11.35	11.35	12.99	20.62	17.72	18.11	10.16	10.16	3.81	59.4	59.4
0088	9	60	13.32	13.16	15.35	25.16	20.06	21.34	10.27	10.27	3.97	85.8	79.2
0103		75	13.32	13.16	15.35	25.16	20.06	21.34	10.27	10.27	3.97	85.8	79.2
0139	10	100	12.95	12.95	15.2	30.08	21.65	22.13	11.14	11.14	4.21	99.0	90.2
0165		125	12.95	12.95	15.2	30.08	21.65	22.13	11.14	11.14	4.21	101	92.4
0208	11	150	17.95	17.72	22.05	37.80	27.76	28.54	12.99	12.99	5	191	174
0250	12	200	19.84	19.69	23.62	45.98	31.50	32.28	13.78	13.78	5	233	211
0296		250	19.84	19.69	23.62	45.98	31.50	32.28	13.78	13.78	5	246	224
0362		300	19.84	19.69	23.62	45.98	31.50	32.28	13.78	13.78	5	257	235
0414	13	350	20.29	20.29	25.39	48.3	37.4	40.55	14.68	14.68	5.19	292	275
0515	14	450	26.86	26.86	31.97	61.3	44.88	46.38	14.72	14.72	7.71	504	475
0675		600	26.86	26.86	31.97	61.3	44.88	46.38	14.72	14.72	7.71	515	486
0930	15	800	50.2	49.61	--	80.4	54.33	--	14.73	14.91	--	1394	1195
1200		1000	50.2	49.61	--	80.4	54.33	--	14.73	14.91	--	1420	1221

600V Class

Model CIMR-PW5A□□□	Frame Size	Max. Applicable Motor Capacity (HP)	Dimensions (in.)									Weight (lb)	
			WN1	W	W1	HN1	H	H1	DN1	D	D1	NEMA 1	Protected Chassis
0003	1	2	5.51	5.51	7.64	12.06	10.24	11.81	5.79	5.79	1.34	7.3	--
0004		3	5.51	5.51	7.64	12.06	10.24	11.81	5.79	5.79	1.34	7.3	--
0006	2	5	5.51	5.51	7.64	12.06	10.24	11.81	6.46	6.46	2.06	8.2	--
0009		7.5	5.51	5.51	7.64	12.06	10.24	11.81	6.46	6.46	2.06	8.2	--
0011	3	10	5.51	5.51	7.64	12.06	10.24	11.81	6.57	6.57	2.07	9.3	--
0017	5	15	7.09	7.09	9.21	13.38	11.81	13.39	7.36	7.36	2.83	13.0	--
0022		20	7.09	7.09	9.21	13.38	11.81	13.39	7.36	7.36	2.83	13.0	--
0027	6	25	8.66	8.66	11.65	15.47	13.78	16.54	7.76	7.76	2.91	20.1	--
0032		30	8.66	8.66	11.65	15.47	13.78	16.54	7.76	7.76	2.91	20.1	--
0041	8B	40	11.35	11.35	12.99	20.62	17.72	18.11	10.16	10.16	3.81	59.4	59.4
0052		50	11.35	11.35	12.99	20.62	17.72	18.11	10.16	10.16	3.81	59.4	59.4
0062	10	60	12.95	12.95	15.2	30.08	21.65	22.13	11.14	11.14	4.21	99.0	90.2
0077		75	12.95	12.95	15.2	30.08	21.65	22.13	11.14	11.14	4.21	99.0	90.2
0099		100	12.95	12.95	15.2	30.08	21.65	22.13	11.14	11.14	4.21	99.0	90.2
0125	11	125	17.95	17.72	22.05	37.80	27.76	28.54	12.99	12.99	5	191	174
0145		150	17.95	17.72	22.05	37.80	27.76	28.54	12.99	12.99	5	191	174
0192	12	200	19.84	19.69	23.62	45.98	31.50	32.28	13.78	13.78	5	233	235
0242		250	19.84	19.69	23.62	45.98	31.50	32.28	13.78	13.78	5	257	235

FLO FAB
SINCE 1981

Multi-Function

MFV

www.flofab.com

Go to www.flofab.com in Our Products Section to see the Master Spec - http://www.arcomnet.com/masterspec/

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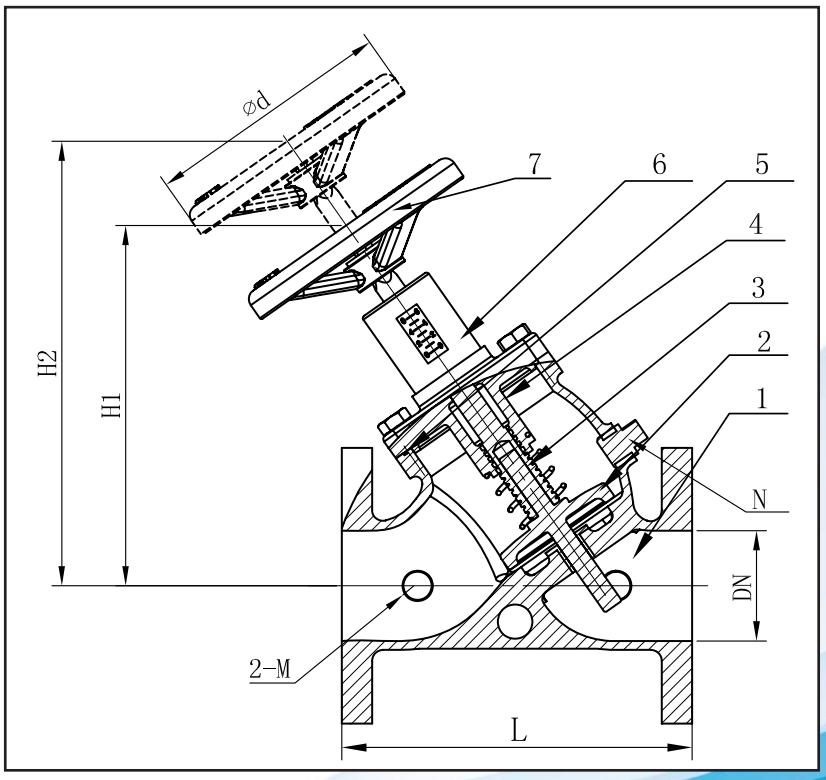
Product Specifications

Calibrated Balancing Valve - Shut Off Valve - Non Slam Check



No.	Name	Material
1	Body	CI
2	Disc	DI+EPDM
3	Stem	SS410
4	Cover	CI
5	Gasket	EPDM
6	Scale Plate	Plastic
7	Handwheel	Carbon Steel

Technical

Pressure:
Class125
Working Temp:
-20°C -120°C
-4°F -184°F
Flange to:
ANSI B16.1

Dimensions (mm/in)									
√									
MFV	**0200-150F**	**0250-150F**	**0300-150F**	**0400-150F**	**0500-150F**	**0600-150F**	**0800-150F**	**1000-150F**	**1200-150F**
NPS	**2**	**2 1/2**	**3**	**4**	**5**	**6**	**8**	**10**	**12**
DN	50 1.97	65 2.56	80 3.15	100 3.94	125 4.92	150 5.90	200 7.88	250 9.84	300 11.81
L	213 8.39	250 9.84	254 10	368 14.49	407 16.02	457 17.99	546 21.50	648 25.51	762 30.00
H1	226 8.90	240 9.45	257 10.12	295 11.61	330 12.99	352 13.85	530 20.87	584 22.99	609 23.98
H2	251 9.88	265 10.43	282 11.10	320 12.60	363 14.29	380 14.96	579 22.80	663 26.10	711 27.99
Ød	180 7.09			250 9.84			350 13.78		450 17.72
M	6.35 - 1/4" NPT								

MODELS	MFV1400-150F	MFV1600-150F	MFV1800-150F
√			
Sizes	14" 350 mm	16" 400 mm	18" 450 mm
DIM "L"	35"	26 3/4"	28 3/8"
DIM "H"	41"	41"	41"

*All dimensions are NOT certified.
*Do not use for construction.
*Design, dimensions and material are subject to change without notice.

• Features

Low Pressure Drop

The multi-function valve streamlined design results in low pressure drop making it extremely energy efficient.

Control

Greater range of control allows precise flow control versus On-Off throttling valves.

Positive Shut-Off

Without valve chattering. These valves are positive shut-off valves, when using MFV valves, other types of valves are not required

Calibrated Nameplate

The multi-function valve allows you to return to the balance position after shutting it off.

Durability

Bronze seat and disc with stainless steel stem construction ensure long life and reliability.

Design

The multi-function valve is a double regulating, control and shut-off valve with a built in pressure drop measuring in-line flow. Balancing problems are quite evident in a system, like central air conditioning plants and in process heat exchangers. The MFV valve is a combination of a shut-off valve (gate / plug / ball / butterfly valve) plus a flow regulating (globe style valve), a flow measuring station. It is not merely a valve but a system control valve in itself. It provides a scientific basis for flow balancing in a system with database. The valves are used HVAC systems and other process applications wherever balancing is required. Balancing is done to improve the peiformanceof a closed circuit, forced circulation water in the system for heating and cooling. Balancing makes the building provide the desired indoor climate under all operating conditions at minimum energy cost. Balancing is a matter of adjusting pressure drops to get the precise required flow of water in a circuit. Balancing reduces energy costs by almost 10% to 40% by reducing average temperature in a heating system and increasing average temperature in a cooling system with less energy for pumping. Replacing three valves with one MFV-F (flange) or MFV-G (grooved) valves can dramatically reduce your up-front material and labor costs

Spring Loaded Clapper

Allows the Multi-function valve to be installed horizontally or vertically upward. In-line

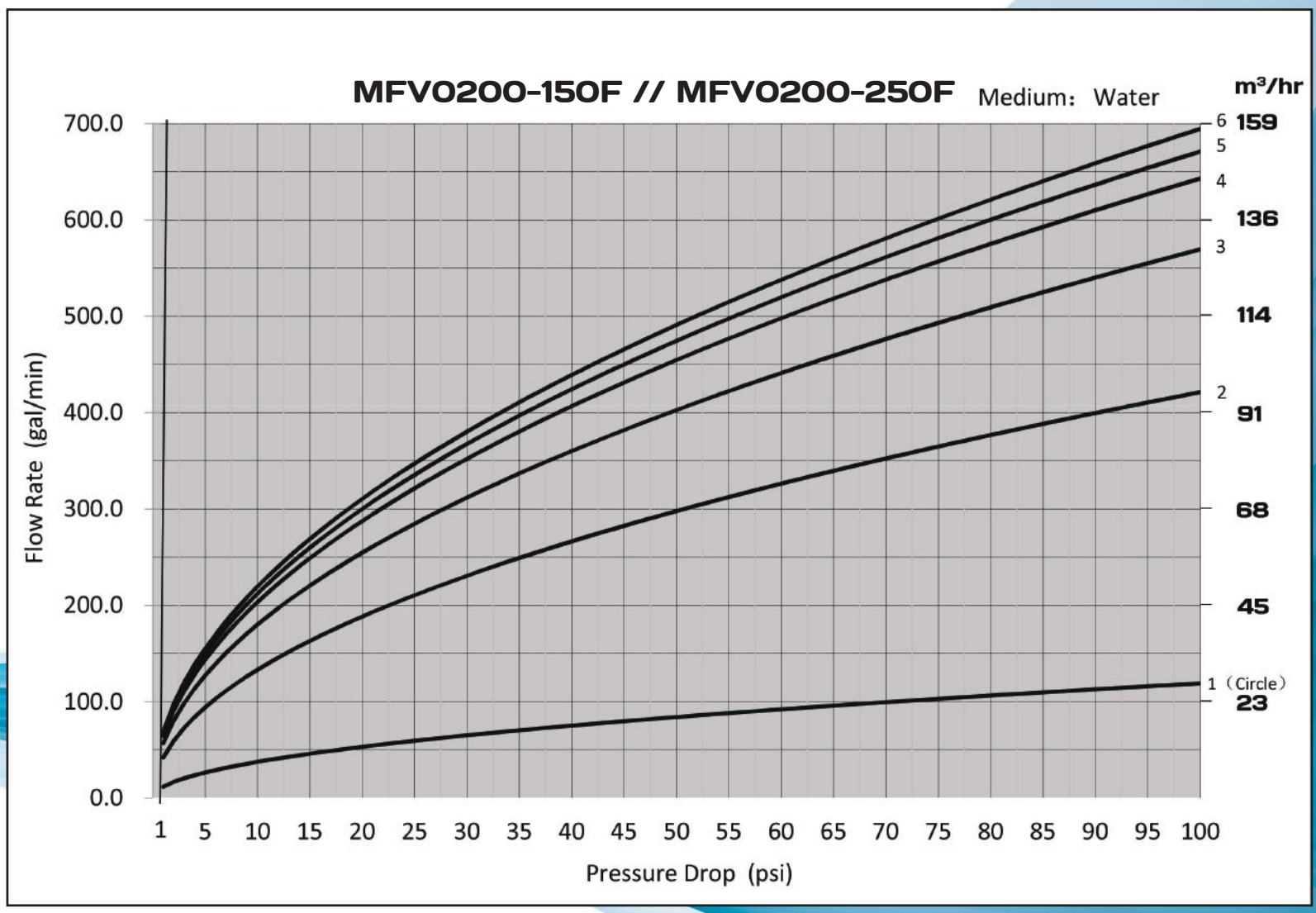
Serviceability

Allows easy maintenance and replacement without disturbing the piping.

Benefits

1) Using a multifunction valve avoid user's complaints with unbalanced heating or cooling systems in different parts of the building.
2) Easy correction of system design and installation errors
3) Better accuracy of flow measurement
4) Economic; system components like boilers/chillers don't have to be oversized for possible errors and varying conditions. A balanced system only needs the actually required flows which is usually less than system when not balanced.

Performance Curves

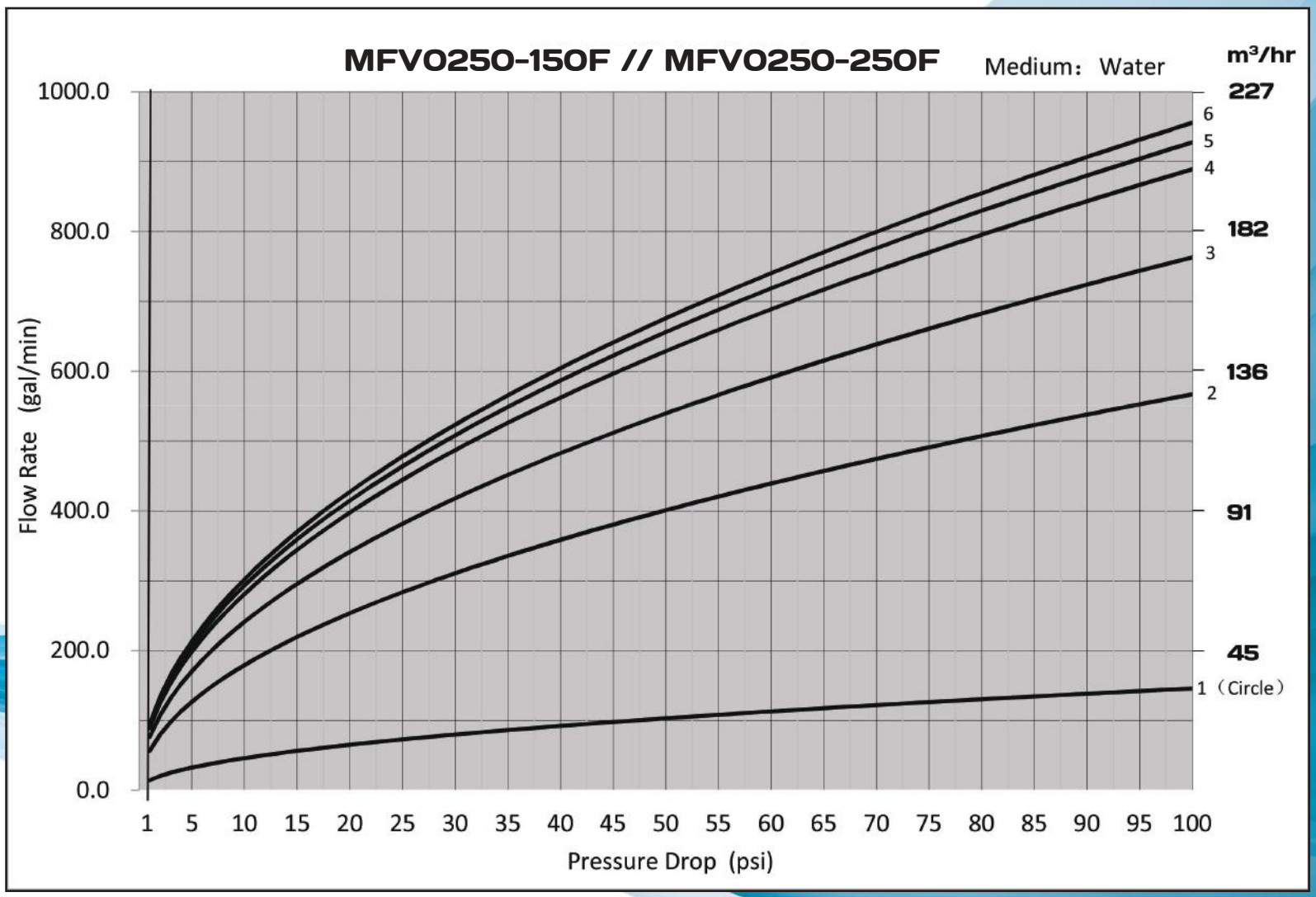


Graph of signal. Head Loss against Flow Rate indicating pressure drop attributable to the valve installed in a circuit.

Velocity based on average inside diameter of Schedule 40 pipe.

NOTE: MULTI-FUNCTION VALVES PROVIDES REGULATION AND FLOW MEASUREMENT WITHIN ACCURACY OF 25 %

Performance Curves



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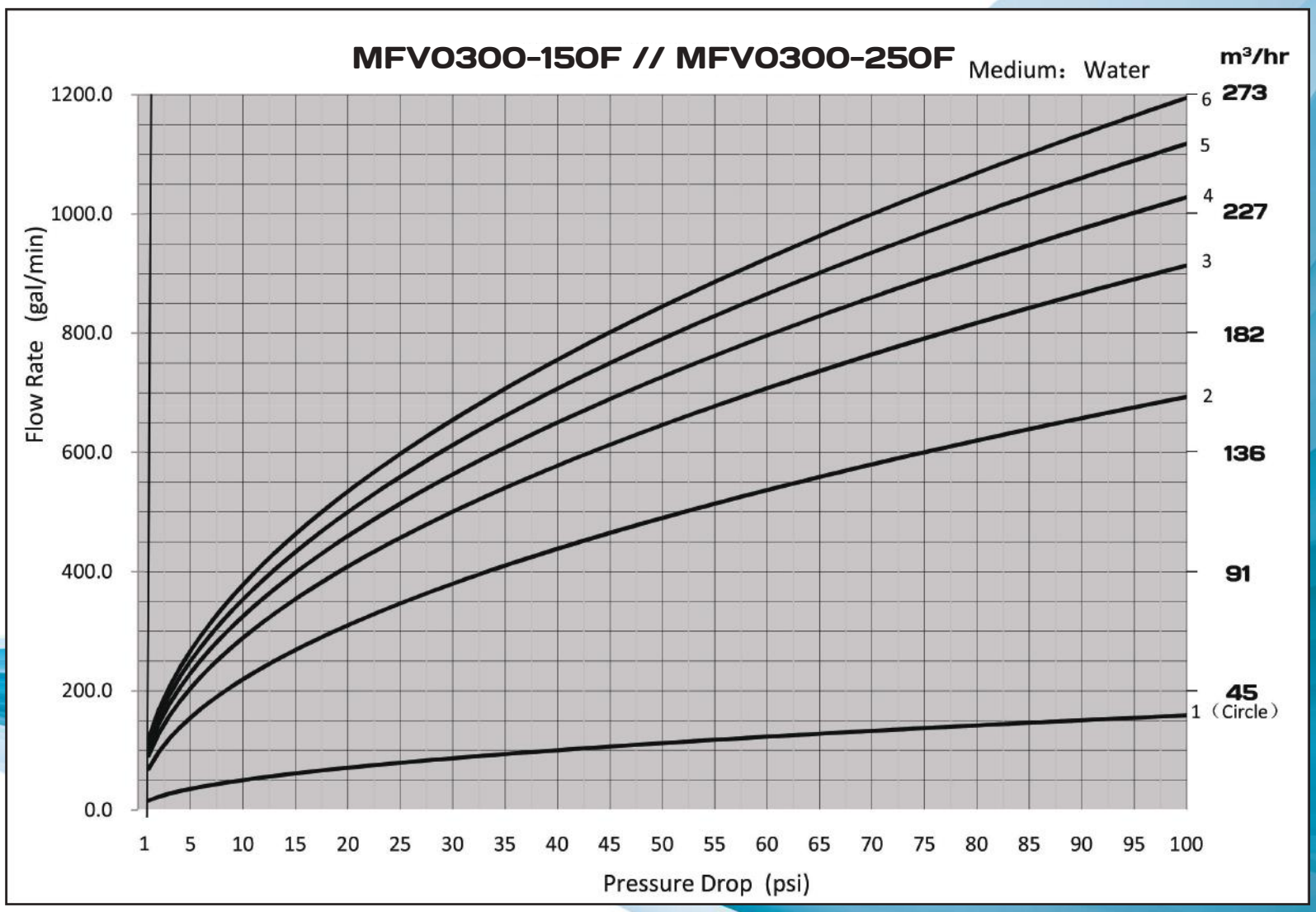
Performance Curves



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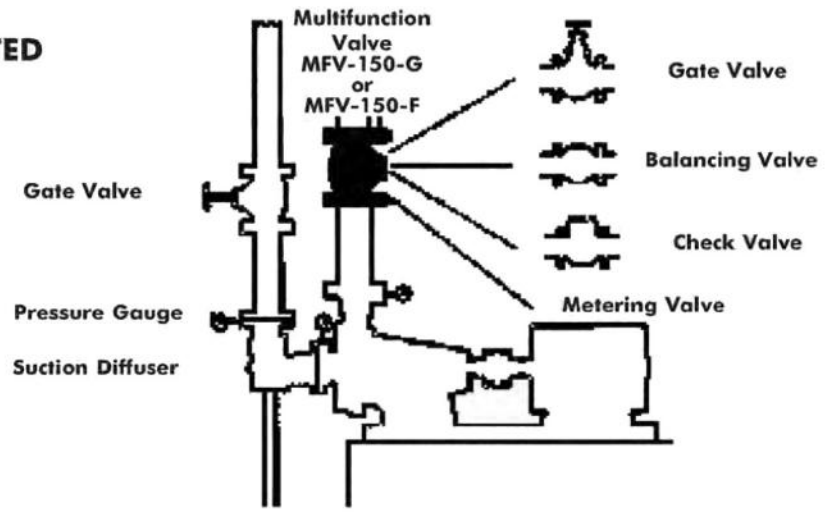
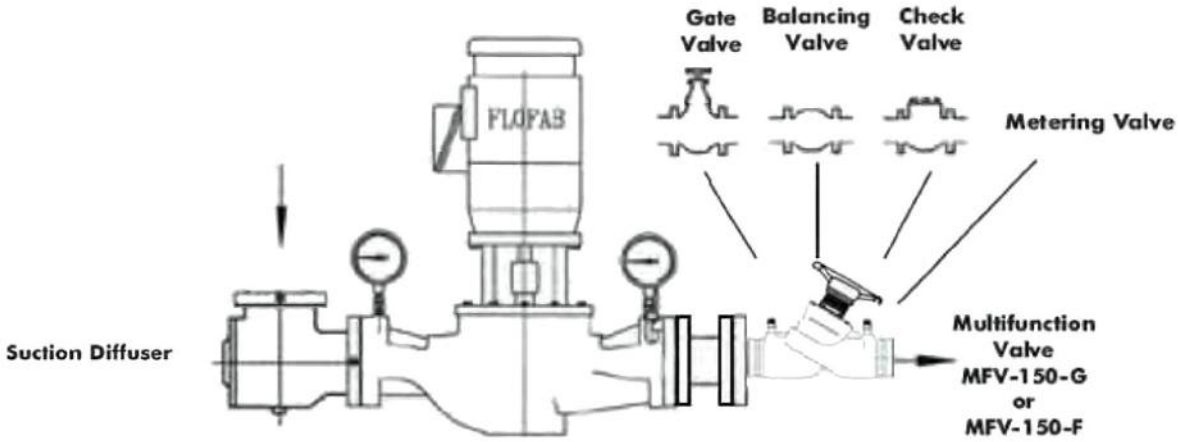
Typical Pipings Details Series MFV-F & MFV-G

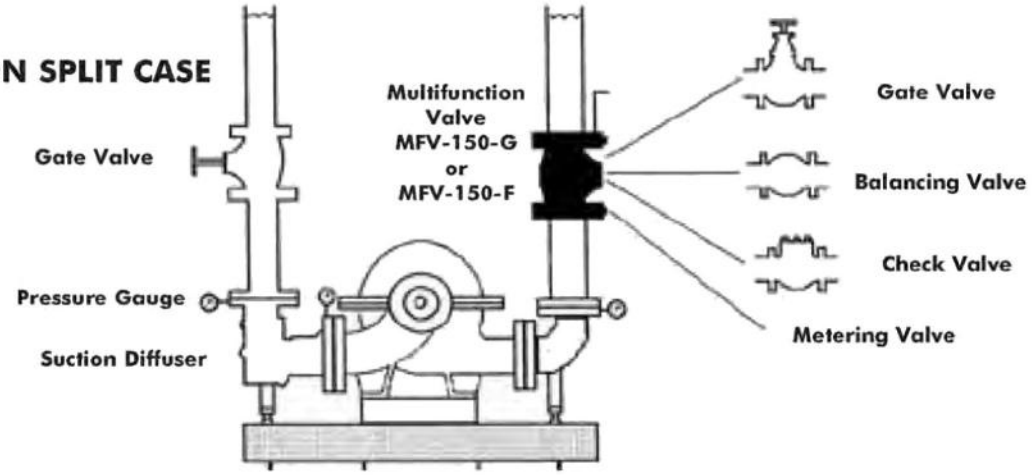
FRAME MOUNTED



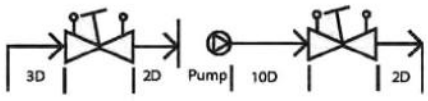
IN-LINE



DOUBLE SUCTION SPLIT CASE



RECOMMENDED PIPING LENGHT FOR INSTALLATION



Suction Diffuser

ASDFF

www.flofab.com

001-cat-2016-asdff

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Suction Diffusers Series ASDFF

«Cast Iron Construction»

Features

The FLO FAB suction diffusers are designed to reduce space and installation cost by replacing a long radius elbow, Y strainer and extended entry pipe on the suction side of the pump. The flow stabilizing vane reduces turbulence and prevents stress and vibration.

In addition, the suction diffuser strainer removes foreign particles which may be hazardous for the pump and other system equipment. FLO FAB suction diffusers are available in a variety of materials recommendation based on the flow media.

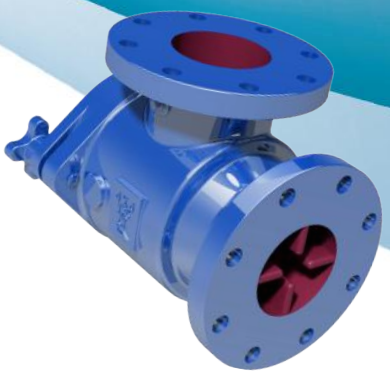
- Directly mounted in horizontal position.
- Flanges are class 175 ANSI (ASA) flat faced (Class 250 also available)
- Integrally cast stabilizing vanes.
- Separate fine mesh start-up screen surround the perforated screen
- Cast on pads for convenient mounting of standard I.D. support foot.
- Pressure taps available on all sizes

Sizes: From 2'' to 20'' (50 mm to 500 mm)
Body: Cast iron /Fabricated Steel Also Available
Connections: Flange x Flange
Flange Ratings:
Class 150
175 PSI (120658 kPa) at 250°F (121 .1°C)
Class 250:
400 PSI (2757.90 kPa) at 150°F (65.56°C)

Pressure: Class125
Working Pressure: 200 PSI
Working Temp: NBR -12°C~+82°C
-53.6°F~+179.6°F

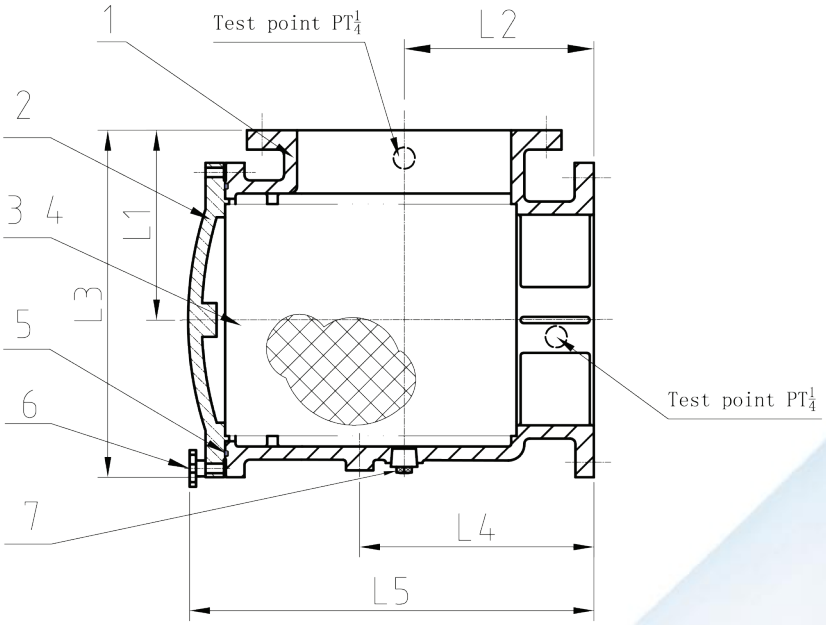
EPDM -35°C~+135°C
-95°F~+275°F

Medium: W. O. G.
Shell Test: 2.07 Mpa
Flange: ASME/ANSI, B16.1, C125



• Suction Diffusers Series ASDFF

«Cast Iron Construction»



1	Body	150CI/250DI
2	Cover	150CI/250DI
3	Perforated Screen	SS304
4	Wire Woven Screen	SS304
5	O-Ring	NBR/EPDM
6	Knob, Bolt	WCB
7	Plug	WCB

√	Size	Dimensions (in/mm)										
		L1 (in)	L1 (mm)	L2 (in)	L2 (mm)	L3 (in)	L3 (mm)	L4 (in)	L4 (mm)	L5 (in)	L5 (mm)	NPT
	2x2	4.5	114.3	4.5	114.3	6.65	169	5.94	151	9.96	253	19.05mm 0.75"
	2.5x2	5	127	5	127	7.52	191	6.57	167	10.63	270	
	2.5x2.5											
	3x2	5.5	139.7	4.5	114.3	7.68	195	6.04	153.6	9.92	252	
	3x2.5			5.5	139.7	8.50	216	7.04	179	11.18	284	
✓	3x3											
	4x3	6.5	165	6.5	165	10.35	263	8.77	223	13.15	334	25.4mm 1"
	4x4					10.24	260	8.27	210	12.91	328	
	5x4	7.5	190.5	7.5	190.5	13.07	332	10	254	15.51	394	
	5x5											
	6x4	7.99	203	6.50	165	12.95	329	8.78	223	13.58	345	
	6x5			7.99	203	14.45	367	10.70	272	16.65	423	
	6x6											
	8x5	7.56	192	9	228.6	13.11	333	12.95	329	19.17	487	
	8x6	9	228.6	8	203.2	15.47	393	11.69	297	17.91	455	
	8x8			9	228.6	17.24	438	11.61	295	21.34	542	31.75mm 1.25"
	10x8	11	279.4			19.21	488			21.22	539	
	10x10			11	279.4	20.75	527	14.17	360	26.69	678	
	12x8	11.2	280	11.2	280	19.21	488	13.62	346	21.69	551	
	12x10	12	304.8	11	279.4	21.78	553	14.17	360	26.69	678	
	12x12			12	304.8			15.35	390			

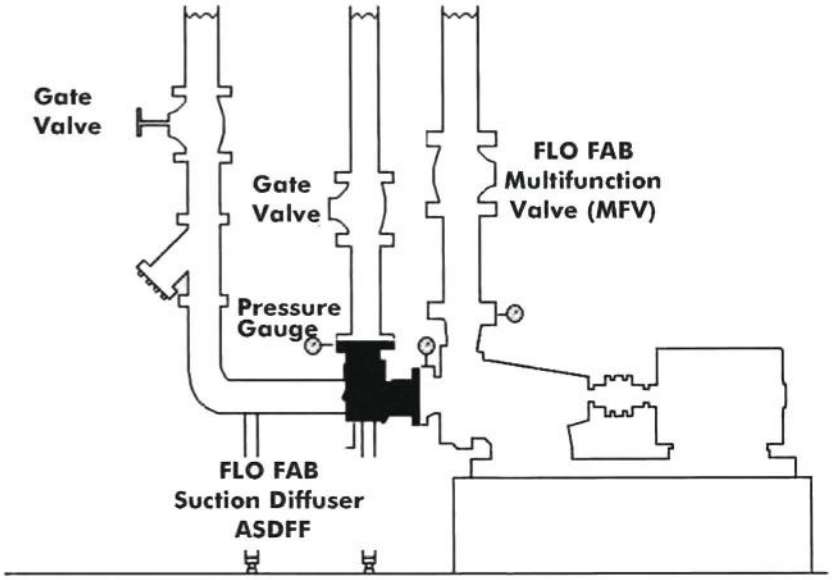
NOTE: LARGER SIZE UP TO 20" AVAILABLE

• Suction Diffusers Series ASDFF

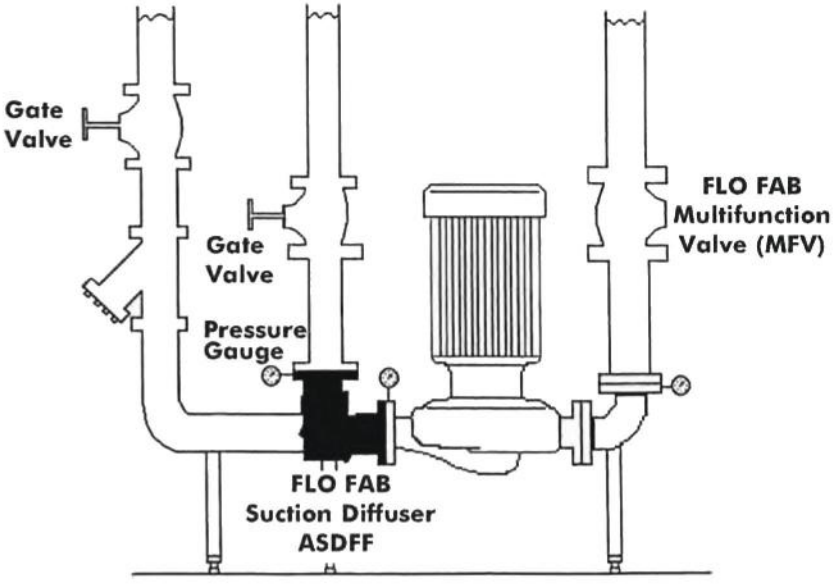
Piping Details

TYPICAL INSTALLATION

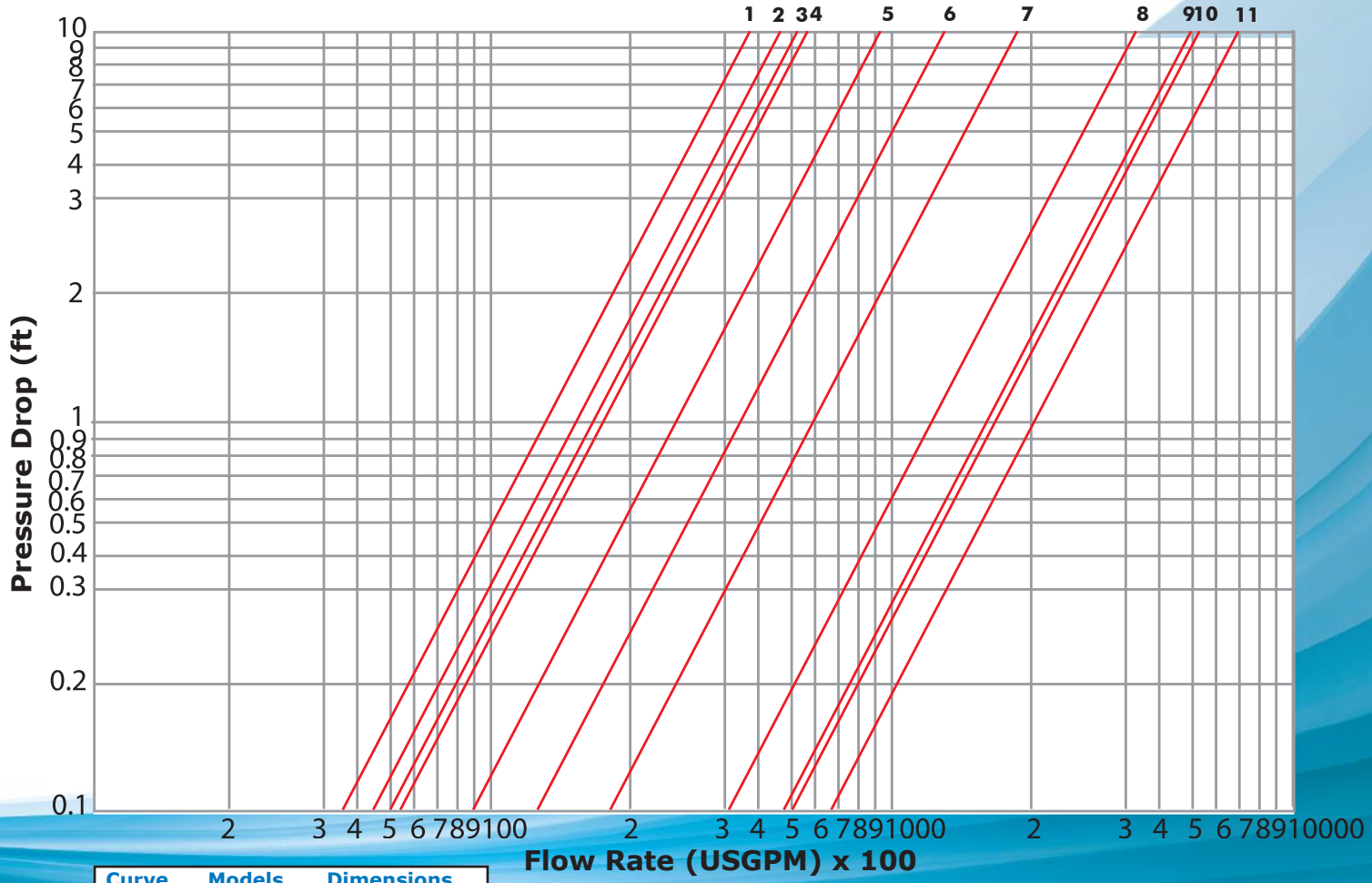
FRAME MOUNTED



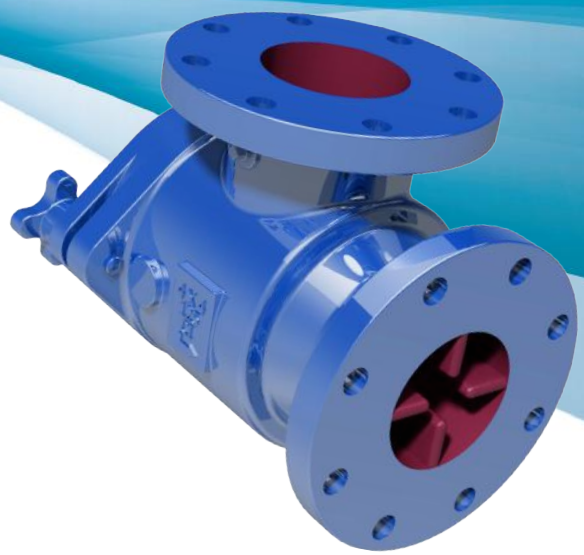
IN-LINE



Pressure Drop VS Flow Rate



Curve	Models	Dimensions
1	ASDFF0202	2 x 2
	ASDFF0325	3 x 2.5
2	ASDFF2502	2.5 x 2
3	ASDFF0302	3 x 2
	ASDFF0303	3 x 3
	ASDFF0403	4 x 3
4	ASDFF2525	2.5 x 2.5
5	ASDFF0404	4 x 4
	ASDFF0504	5 x 4
	ASDFF0604	6 x 4
6	ASDFF0505	5 x 5
	ASDFF0605	6 x 5
7	ASDFF0606	6 x 6
	ASDFF0806	8 x 6
8	ASDFF0808	8 x 8
	ASDFF1008	10 x 8
9	ASDFF1010	10 x 10
10	ASDFF1210	12 x 10
11	ASDFF1212	12 x 12



• Pressure Drop VS Flow Rate

Water Service, Clean Basket, 1/32" - 1/4" Perforated Screen