



FP12
FERRA SERIES HEAVY DUTY GEAR PUMP



DESIGNED FOR HEAVY DUTY

The FERRA F12 pump is a rugged two-piece pump available with displacements from 16 to 41 cc/rev and pressures up to 276 bar (4000 psi up to 30 cc/rev). FERRA pumps feature cast iron construction, resulting in a compact unit that is extremely robust across a broad temperature range, while also offering increased power density and good installation characteristics compared with conventional designs.

Both the housing and the front cover are of cast iron, which has made it possible to eliminate the rear cover, integrate the gearing into the housing and make the whole unit more compact.

The bearings are located in the housing and the flange, while two pressure plates ensure high volumetric efficiency at low speeds. The FERRA pump's gear profile is of an advanced design optimized for reduced pulsation and high power density in relation to the unit's relatively small package size.

Extensive testing has demonstrated that the FERRA pump matches or exceeds competitors' products in a smaller package and offers significantly better performance at low speeds. Both bench tests and in-vehicle tests have shown that the design is highly suitable for high-flow implement and steering circuits and fan drive applications.

Ferra Pump Quick Data

Target Markets

- Construction machinery
- Agricultural
- Material Handling Equipment

Displacement Range

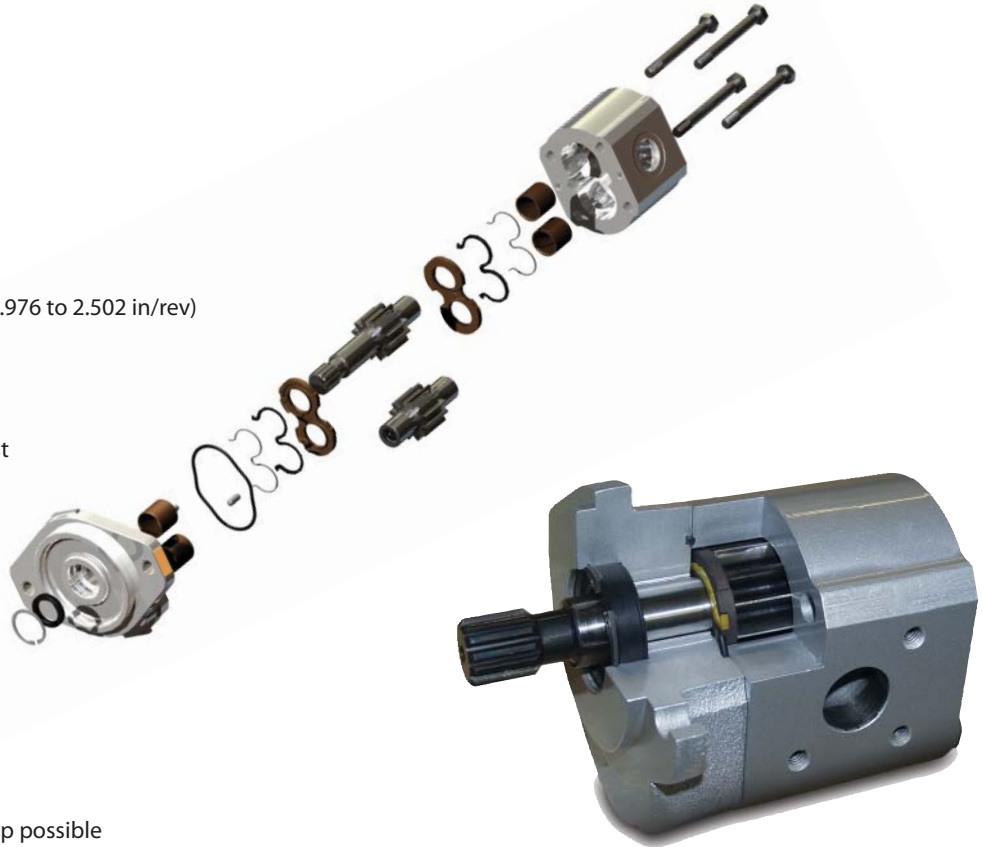
- Displacements from 16 to 41cc/rev (0.976 to 2.502 in³/rev)

Special Design Features

- Compact design with high power density and available at optimum cost
- Cast iron housing
- State-of-the-art gear geometry for reduced pressure pulsation and low noise operation
- Wide operating range
- SAE "A" and SAE "B" interfaces

Design Options

- Multiple section pumps available
- Interframe capability with W900 pump possible
- Double shaft seal
- Integrated valve options

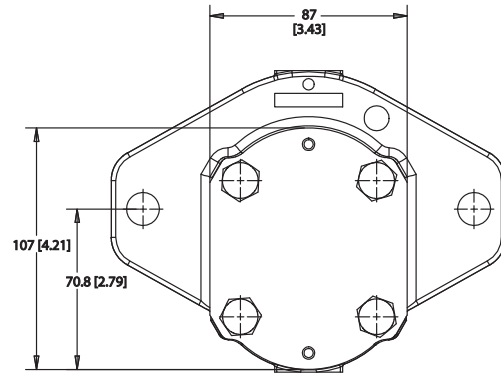
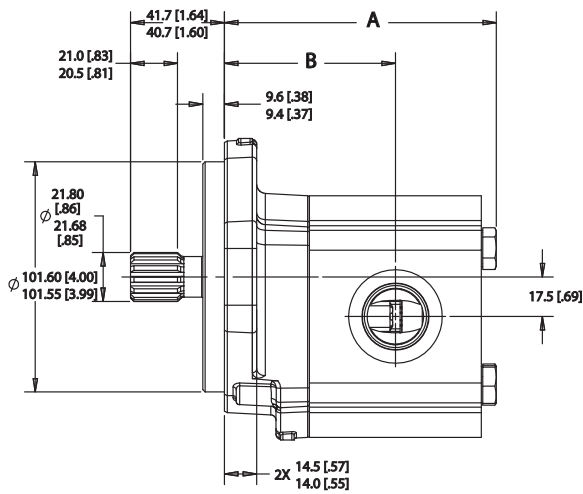
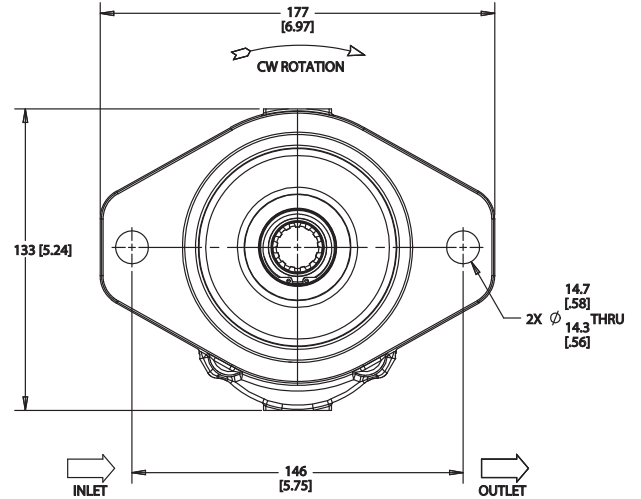
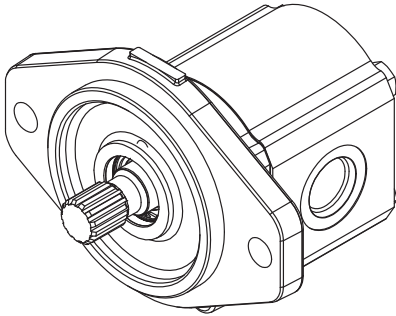


PERFORMANCE SPECIFICATIONS for FP12 FERRA Pumps						
Size Code	Theoretical Displacement Per Revolution	Continuous Rated Pressure P1	Max Rated Speed @ Rated Pressure	Min Rated Speed @ Rated Pressure	Typical Delivery @ Rated Speed And Pressure	Typical Input Power @ Rated Speed And Pressure
#	cc / c.i.r.	bar / psi	rpm	rpm	lpm / gpm	kW / HP
160	16 / 0.976	276 / 4000	3000	500	44.6 / 11.8	22.8 / 30.6
190	19 / 1.159	276 / 4000	3000	500	53.0 / 14.0	27.0 / 36.2
230	23 / 1.404	276 / 4000	3000	500	64.2 / 17.0	32.7 / 43.9
270	27 / 1.648	276 / 4000	3000	500	75.3 / 19.9	38.4 / 51.5
300	30 / 1.831	276 / 4000	3000	500	83.7 / 22.1	42.7 / 57.3
330	33 / 2.014	250 / 3600	2800	500	85.9 / 22.7	39.7 / 53.2
350	35 / 2.136	225 / 3250	2600	500	84.6 / 22.3	35.2 / 47.2
410	41 / 2.502	180 / 2600	2300	500	87.7 / 23.2	29.2 / 39.2

SINGLE PUMP DIMENSIONS

FP12A1

All dimensions are mm [in].

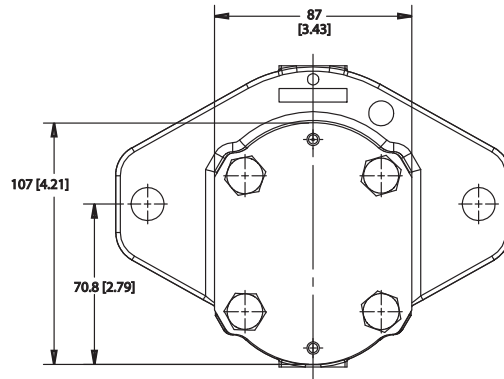
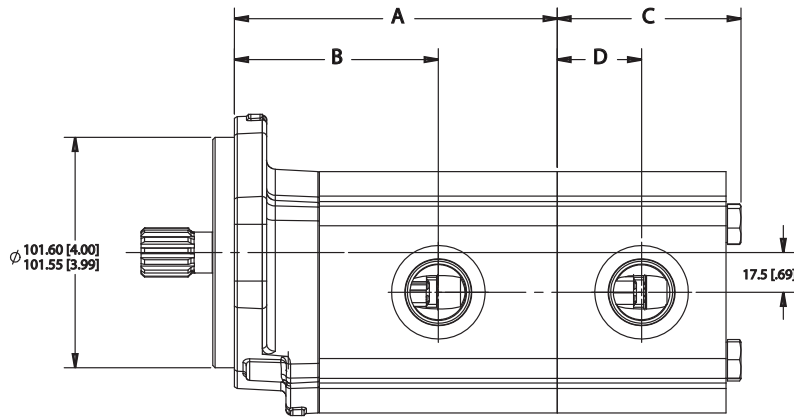
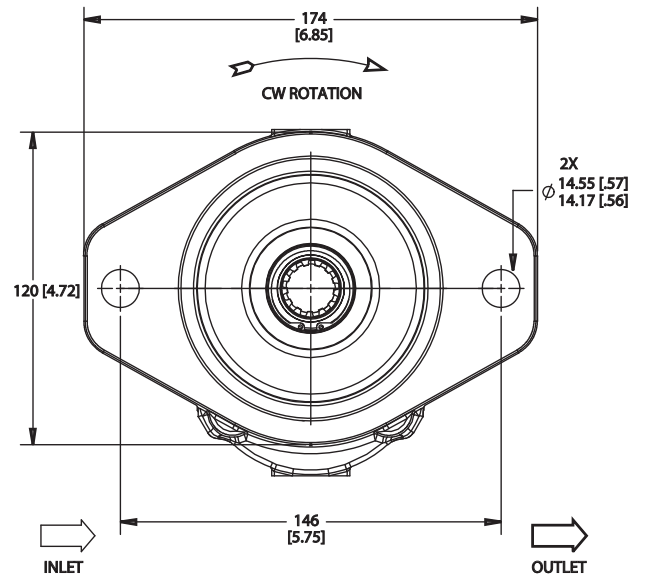
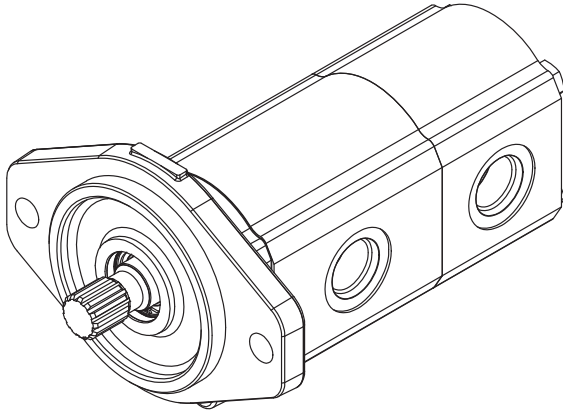


FP12A1 Single Pump						
Size Code	Displacement		A	B	with SAE "B" Flange '05'	with SAE "A" Flange '03'
	cc/rev	c.i.r.			kg [lb]	kg [lb]
160	16	0.976	112.3 [4.4]	70.2 [2.8]	6.7 [14.8]	6.1 [13.4]
190	19	1.159	116.1 [4.6]	72.1 [2.8]	6.9 [15.2]	6.3 [13.9]
230	23	1.404	121.2 [4.8]	74.7 [2.9]	7.1 [15.7]	6.5 [14.3]
270	27	1.648	126.3 [5.0]	77.2 [3.0]	7.3 [16.1]	6.7 [14.8]
300	30	1.831	130.2 [5.1]	79.2 [3.1]	7.4 [16.3]	6.8 [15.0]
330	33	2.014	134.0 [5.3]	81.1 [3.2]	7.6 [16.8]	7.0 [15.4]
350	35	2.136	136.6 [5.4]	82.4 [3.2]	7.7 [17.0]	7.1 [15.7]
410	41	2.502	144.2 [5.7]	86.2 [3.4]	8.0 [17.6]	7.4 [16.3]

TANDEM PUMP DIMENSIONS

FP12A2

All dimensions are mm [in].



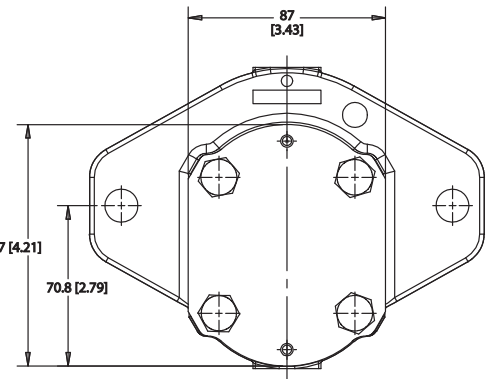
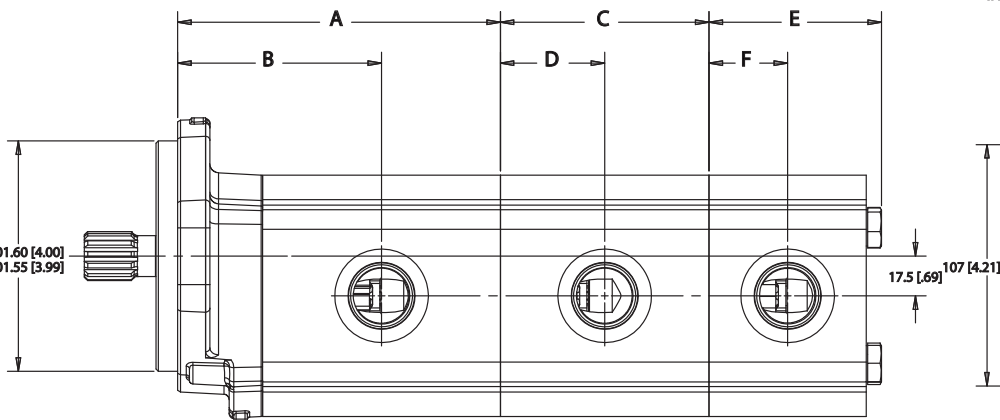
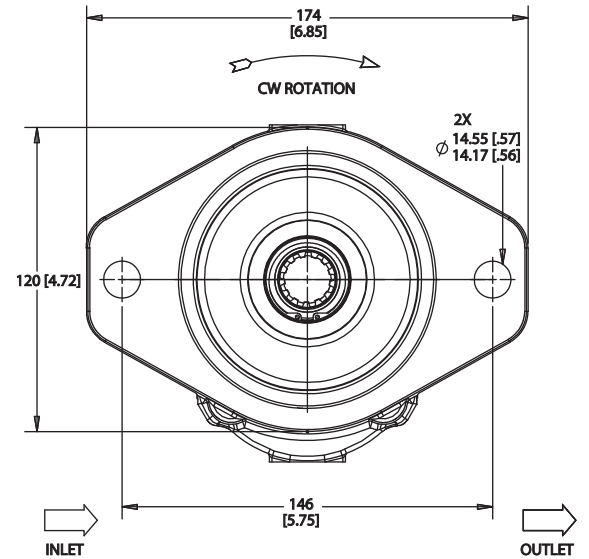
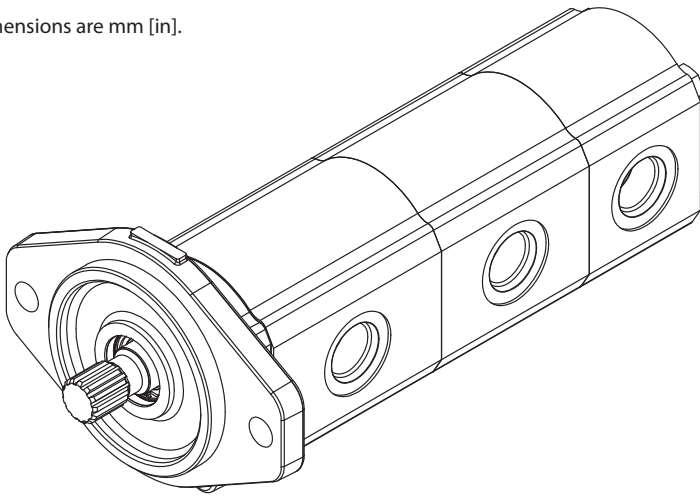
FP12A2 Tandem Pump

Size Code	Displacement		SECTION 1				SECTION 2		
			A	B	with SAE "B" Flange '05'	with SAE "A" Flange '03'	C	D	
#	cc/rev	c.i.r.	mm [in]	mm [in]	kg [lb]	kg [lb]	mm [in]	mm [in]	kg [lb]
160	16	0.976	120.6 [4.7]	79.1 [3.1]	7.5 [16.5]	6.9 [15.2]	65.4 [2.6]	32.7 [1.3]	4.1 [9.0]
190	19	1.159	124.4 [4.9]	81.0 [3.2]	7.7 [17.0]	7.1 [15.7]	69.2 [2.7]	34.6 [1.4]	4.3 [9.5]
230	23	1.404	129.5 [5.1]	83.5 [3.3]	7.9 [17.4]	7.3 [16.1]	74.3 [2.9]	37.2 [1.5]	4.5 [9.9]
270	27	1.648	134.6 [5.3]	86.1 [3.4]	8.1 [17.9]	7.5 [16.5]	79.4 [3.1]	39.7 [1.6]	4.7 [10.4]
300	30	1.831	138.5 [5.5]	88.0 [3.5]	8.2 [18.1]	7.6 [16.8]	83.3 [3.3]	41.7 [1.6]	4.8 [10.6]
330	33	2.014	142.3 [5.6]	89.9 [3.5]	8.4 [18.5]	7.8 [17.2]	87.1 [3.4]	43.6 [1.7]	5.0 [11.0]
350	35	2.136	144.9 [5.7]	91.2 [3.6]	8.5 [18.7]	7.9 [17.4]	89.7 [3.5]	44.9 [1.8]	5.1 [11.2]
410	41	2.502	152.5 [6.0]	95.0 [3.7]	8.8 [19.4]	8.2 [18.1]	97.3 [3.8]	48.7 [1.9]	5.4 [11.9]

TRIPLE PUMP DIMENSIONS

FP12A3

All dimensions are mm [in].



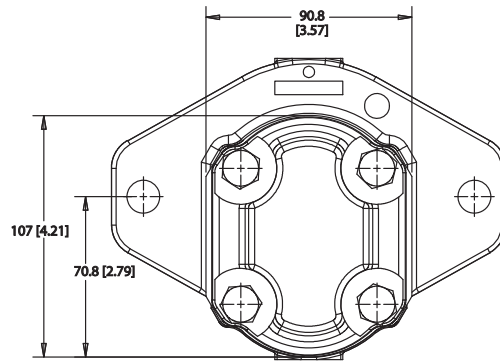
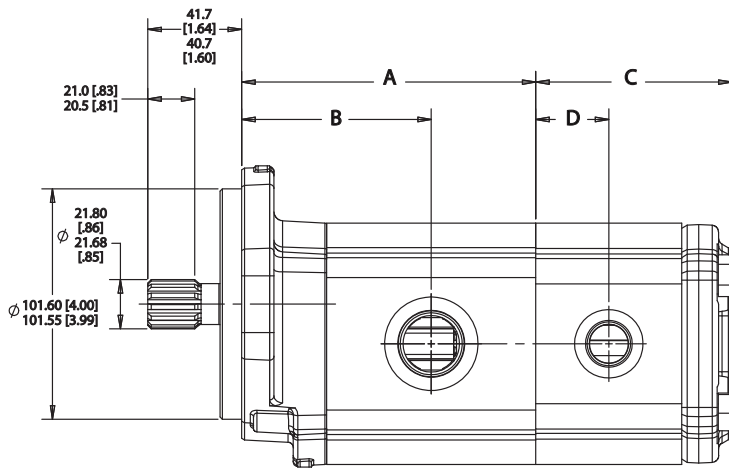
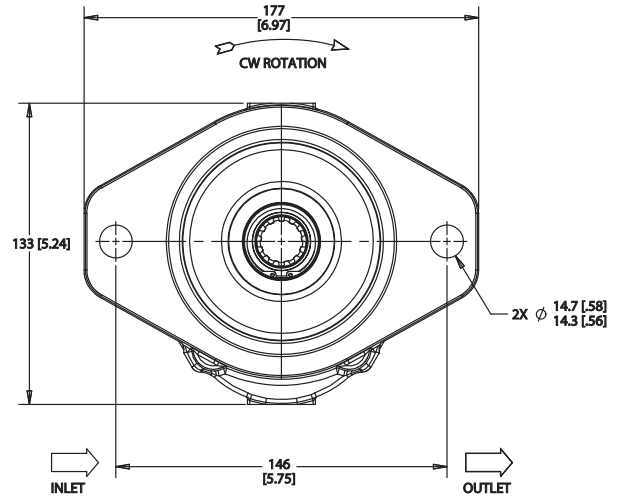
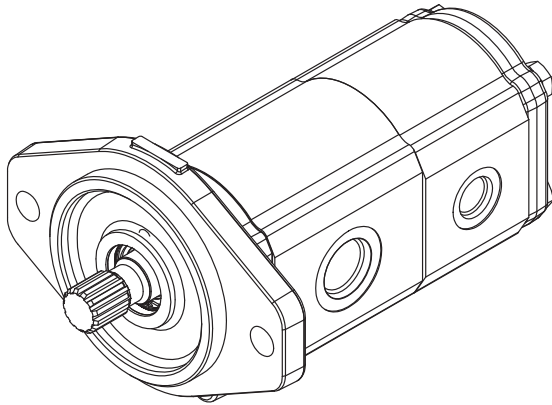
FP12A3 Triple Pump

Size Code	Displacement		SECTION 1				SECTION 2			SECTION 2		
			A	B	with SAE "B" Flange '05'	with SAE "A" Flange '03'	C	D	E	F		
#	cc/rev	c.i.r.	mm [in]	mm [in]	kg [lb]	kg [lb]	mm [in]	mm [in]	kg [lb]	mm [in]	mm [in]	kg [lb]
160	16	0.976	120.6 [4.7]	79.1 [3.1]	7.5 [16.5]	6.9 [15.2]	83.1 [3.3]	41.6 [1.6]	4.9 [10.8]	65.4 [2.6]	32.7 [1.3]	4.1 [9.0]
190	19	1.159	124.4 [4.9]	81.0 [3.2]	7.7 [17.0]	7.1 [15.7]	86.9 [3.4]	43.5 [1.7]	5.1 [11.0]	69.2 [2.7]	34.6 [1.4]	4.3 [9.5]
230	23	1.404	129.5 [5.1]	83.5 [3.3]	7.9 [17.4]	7.3 [16.1]	92.0 [3.6]	46.0 [1.8]	5.3 [11.7]	74.3 [2.9]	37.2 [1.5]	4.5 [9.9]
270	27	1.648	134.6 [5.3]	86.1 [3.4]	8.1 [17.9]	7.5 [16.5]	97.1 [3.8]	48.6 [1.9]	5.5 [12.1]	79.4 [3.1]	39.7 [1.6]	4.7 [10.4]
300	30	1.831	138.5 [5.5]	88.0 [3.5]	8.2 [18.1]	7.6 [16.8]	101.0 [4.0]	50.5 [2.0]	5.6 [12.3]	83.3 [3.3]	41.7 [1.6]	4.8 [10.6]
330	33	2.014	142.3 [5.6]	89.9 [3.5]	8.4 [18.5]	7.8 [17.2]	104.8 [4.1]	52.4 [2.1]	5.8 [12.8]	87.1 [3.4]	43.6 [1.7]	5.0 [11.0]
350	35	2.136	144.9 [5.7]	91.2 [3.6]	8.5 [18.7]	7.9 [17.4]	107.4 [4.2]	53.7 [2.1]	5.9 [13.0]	89.7 [3.5]	44.9 [1.8]	5.1 [11.2]
410	41	2.502	152.5 [6.0]	95.0 [3.7]	8.8 [19.4]	8.2 [18.1]	115.0 [4.5]	57.5 [2.3]	6.2 [13.7]	97.3 [3.8]	48.7 [1.9]	5.4 [11.9]

MULTIPLE PUMP DIMENSIONS (Interframe)

FT12A1/WP09A1

All dimensions are mm [in].



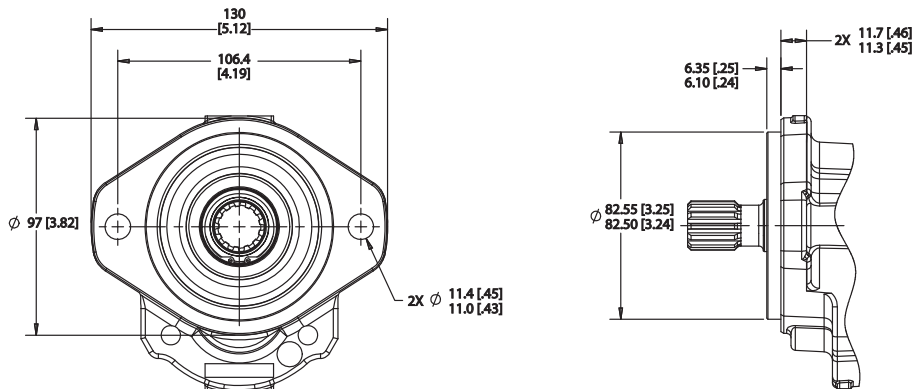
FT12A1			SECTION 1			
Size Code	Displacement		A	B	with SAE "B" Flange '05'	with SAE "A" Flange '03'
	#	c.i.r.			kg	kg
160	16	0.976	99.0 [3.9]	68.3 [2.7]	6.5 [14.3]	5.9 [13.0]
190	19	1.159	102.8 [4.0]	70.2 [2.8]	6.6 [14.6]	6.0 [13.2]
230	23	1.404	107.9 [4.2]	72.7 [2.9]	6.8 [15.0]	6.2 [13.7]
270	27	1.648	113.0 [4.4]	75.3 [3.0]	7.0 [15.4]	6.4 [14.1]
300	30	1.831	116.9 [4.6]	77.2 [3.0]	7.2 [15.9]	6.6 [14.6]
330	33	2.014	120.7 [4.8]	79.1 [3.1]	7.3 [16.1]	6.7 [14.8]
350	35	2.136	123.3 [4.9]	80.4 [3.2]	7.4 [16.3]	6.8 [15.0]
410	41	2.502	130.9 [5.2]	84.2 [3.3]	7.7 [17.0]	7.1 [15.7]

WP09A1			SECTION 2		
Size Code	Displacement		C	D	kg
	#	c.i.r.			
005	5	0.305	74.6 [2.9]	24.8 [1.0]	2.0 [4.4]
008	8	0.488	79.1 [3.1]	27.1 [1.1]	2.1 [4.6]
011	11	0.674	83.5 [3.3]	29.3 [1.2]	2.2 [4.9]
016	16	0.976	90.9 [3.6]	33.0 [1.3]	2.4 [5.3]
019	19	1.159	95.4 [3.8]	35.2 [1.4]	2.6 [5.7]
023	23	1.404	101.3 [4.0]	38.2 [1.5]	2.7 [6.0]
027	27	1.648	107.2 [4.2]	41.1 [1.6]	2.9 [6.4]
030	30	1.831	111.7 [4.4]	43.4 [1.7]	3.0 [6.6]

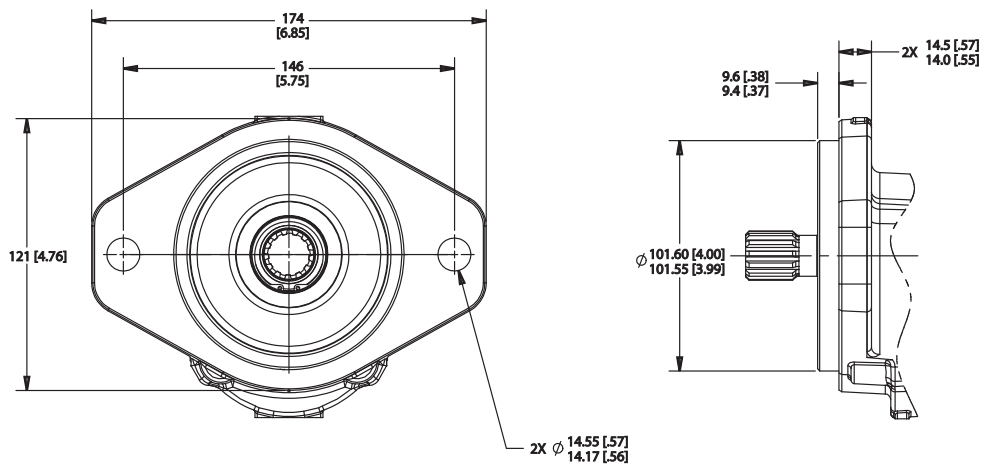
MOUNTING FLANGES

All dimensions are mm [in].

SAE "A" 2-BOLT, Flange Code "03"



SAE "B" 2-BOLT, Flange Code "05"

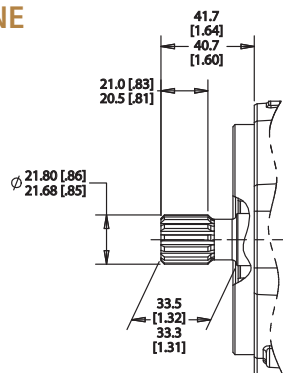


DRIVE SHAFTS

SHAFT CODE "KA"

EXTERNAL INVOLUTE SPLINE SAE-STD.

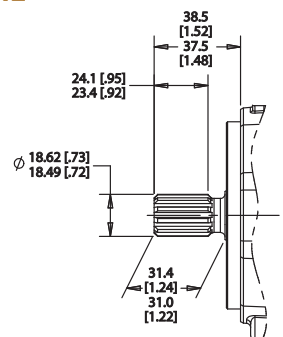
Flat Root - Side Fit
No. of Teeth: 13
Diametral Pitch - 16/32
PRESSURE ANGLE - 30°
Mt max. 270 Nm



SHAFT CODE "GA"

EXTERNAL INVOLUTE SPLINE SAE-STD.

Flat Root - Side Fit
No. of Teeth: 11
Diametral Pitch - 16/32
PRESSURE ANGLE - 30°
Mt max. 170 Nm

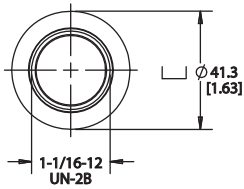


PORTS

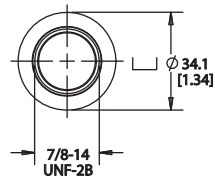
All dimensions are mm [in].

CODE 102 CODE 122

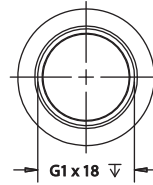
Inlet



Outlet



Inlet

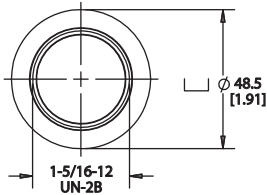


Outlet

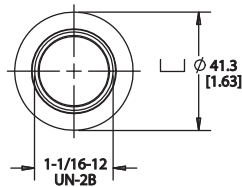


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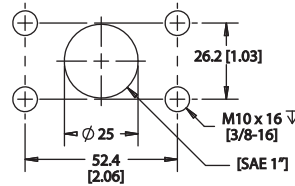
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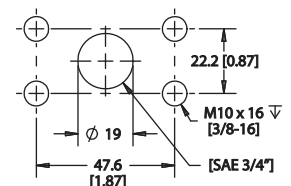
Outlet



Inlet

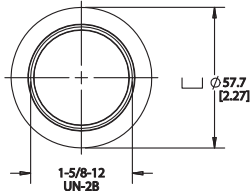


Outlet

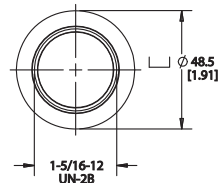


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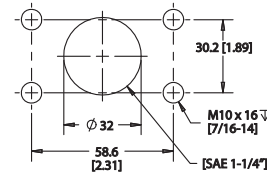
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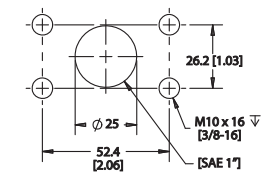
Outlet



Inlet

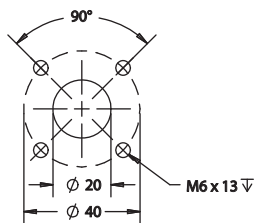


Outlet

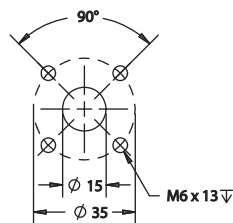


CODE 150 CODE 151

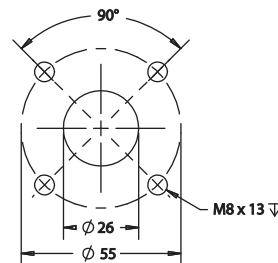
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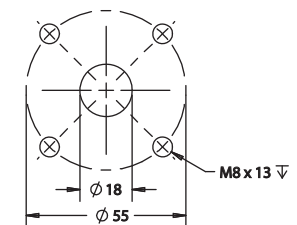
Outlet



Inlet

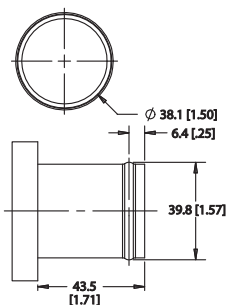


Outlet

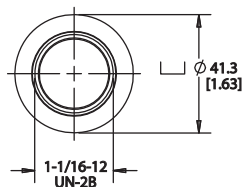


TUBE FITTING * Check availability for small displacements.

Inlet



Outlet



Model Code for FP12 Ferra Series Pumps

TYPE	SERIES	DESIGN	# OF SECTIONS	SEAL MATERIAL	DISPLACEMENT 1	DISPLACEMENT 2	DISPLACEMENT 3	DISPLACEMENT 4	ROTATION	MOUNTING FLANGE	DRIVE SHAFT	PORTS 1	PORTS 2	PORTS 3	PORTS 4	VALVE OPTIONS	SPECIALS
FP	12	A	4	B	270	160	160	160	R	05	KA	151	151	151	151	N	E
1	2	3	4	5	6.1	6.2	6.3	6.4	7	8	9	10.1	10.2	10.3	10.4	11	12

Example (Single Pump): FP-12-A-1-B-270-R-05-KA-151-N-E

Example (Double Pump): FP-12-A-2-B-270-160-R-05-KA-151-151-N-E

Example (Triple Pump): FP-12-A-3-B-270-160-160-R-05-KA-151-151-151-N-E

Example (Quadruple Pump): FP-12-A-4-B-270-160-160-160-R-05-KA-151-151-151-151-N-E

1. Type	
Order Code	Description
FP12	Ferra Pump
2. Series	
Order Code	Description
12	Series 12 = 1200
3. Design	
Order Code	Description
A	Ferra Design
4. No. of Sections	
Order Code	Description
1	Single
2	Double
3	Triple
4	Quadruple
5. Seal Material	
Order Code	Description
B	Buna
V	Viton
C	Combined
6. Displacements	
Order Code	Description
016	16 cm ³ / 0.976 in ³
019	19 cm ³ / 1.159 in ³
023	23 cm ³ / 1.404 in ³
027	27 cm ³ / 1.648 in ³
030	30 cm ³ / 1.831 in ³
033	33 cm ³ / 2.014 in ³
035	35 cm ³ / 2.136 in ³
041	41 cm ³ / 2.502 in ³

7. Rotation			
Order Code	Description		
R	CW - Clockwise		
L	CCW - Counter Clockwise		
8. Front Cover			
Order Code	Description		
03	SAE "A" 2-Bolt Mount - Pilot Ø 82.5		
05	SAE "B" 2-Bolt Mount - Pilot Ø 101.55		
9. Drive Shaft			
Order Code	Description		
KA	SAE "B" 13-Tooth Spline, Flat Root-Side Fit		
GA	SAE "A" 11-Tooth Spline, Flat Root-Side Fit		
10. Ports			
Order Code	Description		Type
	Low (Inlet)	High (Outlet)	
102	1-1/16-12	7/8-14	SAE
103	1-5/16-12	1-1/16-12	SAE
104	1-5/8-12	1-5/16-12	SAE
122	G1x18 mm	G3/4x16 mm	BSPP
[141] 146*	[1"] 25 mm	[3/4"] 19 mm	[SAE] Metric Split Flange
[142] 147*	[1-1/4"] 32 mm	[1"] 25 mm	[SAE] Metric Split Flange
150	20 mm	15 mm	Euro 4-Bolt Split Flange
151	26 mm	18 mm	Euro 4-Bolt Split Flange
861	1-1/2"	1-1/16"	Special Beaded Hose Fitting/SAE
* Check availability for small displacements.			
11. Valve Options			
Order Code	Description		
N	None		
12. Specials			
Order Code	Description		
Exxxx	"E" + Special No.		
-	None		

Model Code for FT12A1/WP09A1 Ferra Series Interframe Pumps

TYPE	SERIES	DESIGN	# OF SECTIONS	SEAL MATERIAL	DISPLACEMENT	ROTATION	MOUNTING FLANGE	DRIVE SHAFT	PORTINGS	VALVE OPTIONS	SPECIALS	TYPE	SERIES	DESIGN	# OF SECTIONS	SEAL MATERIAL	DISPLACEMENT	ROTATION	MOUNTING FLANGE	DRIVE SHAFT	PORTINGS	VALVE OPTIONS	SPECIALS
FT	12	A	1	B	270	R	05	KA	151	N	E	WP	09	A	1	B	016	R	99	ZZ	151	N	E
1	2	3	4	5	6.1	7	8	9	10.1	11	12	1	2	3	4	5	6.2	7	8	9	10.2	11	12

Example (F12 Thru-Drive Pump / W900 Pump Interframe Combination):
 FT-12-A-1-B-270-R-05-KA-151-N-E / WP-09-A-1-B-016-R-99-ZZ-N-E

Below shows options for the FT12 Thru-Drive Pump section only. See W900 pump catalog for W900 pump options referenced above.

1. Type	
Order Code	Description
FT	Ferra Thru-Drive Pump
2. Series	
Order Code	Description
12	Series 12 = 1200
3. Design	
Order Code	Description
A	Ferra Design
4. No. of Sections	
Order Code	Description
1	Single
5. Seal Material	
Order Code	Description
B	Buna
V	Viton
C	Combined
6. Displacement (FT12 only - see W900 Catalog for WP9)	
Order Code	Description
016	16 cm ³ / 0.976 in ³
019	19 cm ³ / 1.159 in ³
023	23 cm ³ / 1.404 in ³
027	27 cm ³ / 1.648 in ³
030	30 cm ³ / 1.831 in ³
033	33 cm ³ / 2.014 in ³
035	35 cm ³ / 2.136 in ³
041	41 cm ³ / 2.502 in ³

7. Rotation			
Order Code	Description		
R	CW - Clockwise		
L	CCW - Counter Clockwise		
8. Front Cover			
Order Code	Description		
03	SAE "A" 2-Bolt Mount - Pilot Ø 82.5		
05	SAE "B" 2-Bolt Mount - Pilot Ø 101.55		
9. Drive Shaft			
Order Code	Description		
KA	SAE "B" 13-Tooth Spline, Flat Root-Side Fit		
GA	SAE "A" 11-Tooth Spline, Flat Root-Side Fit		
10. Ports (FT12 Ports - see W900 Catalog for WP9 Ports)			
Order Code	Description		
	Low	High	
102	1-1/16-12	7/8-14	SAE
103	1-5/16-12	1-1/16-12	SAE
104	1-5/8-12	1-5/16-12	SAE
122	G1x18 mm	G3/4x16 mm	BSPP
[141] 146*	[1"] 25 mm	[3/4"] 19 mm	[SAE] Metric Split Flange
[142] 147*	[1-1/4"] 32 mm	[1"] 25 mm	[SAE] Metric Split Flange
150	20 mm	15 mm	Euro 4-Bolt Split Flange
151	26 mm	18 mm	Euro 4-Bolt Split Flange
861	1-1/2"	1-1/16"	Special Beaded Hose Fitting/SAE
* Check availability for small displacements.			
11. Valve Options			
Order Code	Description		
N	None		
12. Specials			
Order Code	Description		
Exxxx	"E" + Special No.		
-	None		

PUMPS & MOTORS

Cast Iron Pumps Heavy Duty



GC Series Pumps

Displacements
0.065 to 0.711 cu. In. (1.06 to 11.65 cc)

GC Series High/Low Pumps

High Pressure Displacements
0.065 to 0.258 cu. In. (1.06 to 4.22 cc)

Low Pressure Displacements
0.258 to 0.776 cu. In. (4.22 to 12.71 cc)

Maximum Pressure
4,000 psi (276 bar)

Maximum Speed
4,000 rpm



F12 & F15 Ferra Series Pumps

F12 Displacements
0.976 to 2.502 cu. In. (16 – 41 cc)

F15 Displacements
1.159 to 3.051 cu. In. (19 to 50 cc)

Maximum Pressure
4,000 psi (276 bar)

Maximum Speed
3,600 rpm



F20/F30 Pumps & F20-LS/F30-LS Load Sense Ferra Series Pumps

Displacements
1.41 to 9.82 cu. In. (23 to 161 cc)

Maximum Pressure
4,000 psi (276 bar)

Maximum Speed
3,600 rpm



D Series Pumps

Displacements
0.232 to 1.395 cu. In. (3.80 to 22.85 cc)

D Series High/Low Pumps

High Pressure Displacements
0.465 cu. In. (7.62 cc)

Low Pressure Displacements
0.930 to 1.395 cu. In. (15.24 to 22.86 cc)

Maximum Pressure
3,000 – 4,000 psi (207 – 276 bar)

Maximum Speed
3,600 – 4,000 rpm

Aluminum Pumps Medium/Light Duty



W-Series Pumps

W100 Displacements
0.031 to 0.122 cu. In. (0.50 to 2.00 cc)

W300 Displacements
0.049 to 0.347 cu. In. (0.80 to 5.70 cc)

W600 Displacements
0.244 to 0.732 cu. In. (4 to 12 cc)

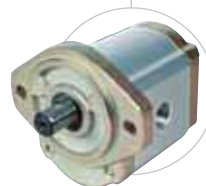
W900 Displacements
0.305 to 1.891 cu. In. (5 to 31 cc)

W1200 Displacements
1.526 to 2.014 cu. In. (25 to 33 cc)

W1500 Displacements
1.159 to 3.051 cu. In. (19 to 50 cc)

Maximum Pressure
4,000 psi (276 bar)

Maximum Speed
500 to 4,000 rpm



WK900 CALMA Pumps

Displacements
0.305 to 1.648 cu. In. (5 to 27 cc)

Maximum Pressure
3,336 psi (230 bar)

Maximum Speed
4,000 rpm

Fluid Motors



Cast Iron

Displacements
0.065 to 9.82 cu. In. (1.06 to 161 cc)

Speed
Up to 10,000 rpm

Aluminum

Displacements
0.244 to 3.050 cu. In. (4 to 50 cc)

Speed
Up to 4,000 rpm

Flow Dividers



GC & D Series

GC Displacements
0.097 to 0.517 cu. In. (1.58 to 8.47 cc)

D Displacements
0.232 to 0.813 cu. in. (3.8 to 13.32 cc)

Maximum Pressure
4,500 psi (310 bar)

Maximum Input Flow Per Section
14 gpm (53 lpm)



Call us for more information

For application assistance or detailed literature on any Concentric product line, call us toll-free: **1-800-572-7867**.

Visit our web site: <http://www.concentricAB.com>

E-mail us: info.hydraulics.us@concentricAB.com

PRODUCT RANGE
HE Powerpacks

12/24/48 VDC 0.3 – 4.5 kW and
0.75 – 3 kW AC modular power packs

HE Box Powerpacks

12/24/48 VDC modular powerpacks
in weatherproof boxes

Pressure Switches

5 - 350 bar, connecting/disconnecting

W100 Hydraulic pumps

0,5 - 2,0 cc 227 bar

W300 Hydraulic pumps

0,8 – 5,7 cc 230 bar

W600 Hydraulic pumps / motors

3 – 12 cc 276 bar

W900 Hydraulic pumps / motors

5 – 31 cc/section 276 bar

Calma The new quiet pumps

6,2 - 23,7 cc/section 250 bar

WQ900 The quiet pumps

5 - 23 cc/section 230 bar

WP900X Hydraulic pumps

16 - 31 cc/section 276 bar

W1500 Hydraulic pumps / motors

19 - 50 cc/section 276 bar

F12 FERRA Heavy duty pumps

16 - 41 cc/section 276 bar

F15 FERRA Heavy duty pumps

19 - 50 cc/section 276 bar

F20/F30 (LS) Hydraulic pumps / motors

23 – 161 cc/section 276 bar

GPA Internal Gear pumps

1,7 – 63 cc/section 100 bar

GC Hydraulic pumps / motors

1,06 – 11,65 cc/section 276 bar

D Hydraulic pumps

3,8 – 22,9 cc/section 207 bar

H Hydraulic pumps

9,8 – 39,4 cc/section 207 bar

II-Stage Hydraulic pumps

4,2 – 22,8 cc/section 276 bar

Rotary Flow Dividers

3,8 – 13,3 cc/section 300 bar

Transmission pumps

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