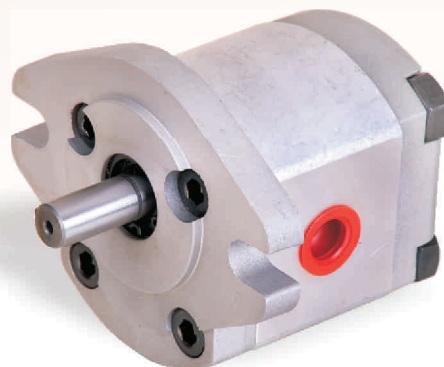
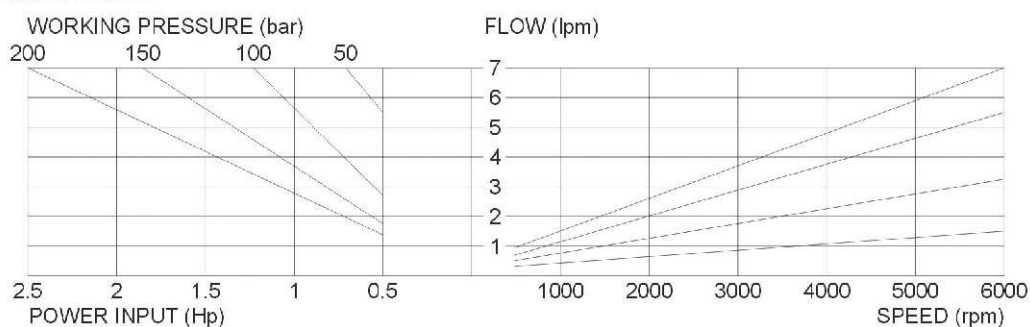


Gear Pumps





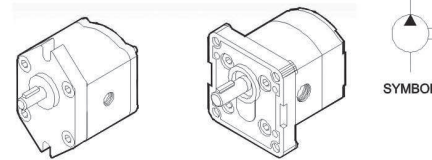
Series	Dimension A mm	Dimension B mm(inch)	C - Inlet	D - Outlet
HGP-1A-F1*	77(3.03)	38.5(1.51)	3/8" PT(Rc)	3/8" PT(Rc)
HGP-1A-F2*	80.5(3.16)	40.25(1.58)	3/8" PT(Rc)	3/8" PT(Rc)
HGP-1A-F3*	86(3.38)	43(1.69)	3/8" PT(Rc)	3/8" PT(Rc)
HGP-1A-F4*	88(3.46)	44(1.73)	3/8" PT(Rc)	3/8" PT(Rc)
HGP-1A-F5*	92(3.62)	46(1.81)	3/8" PT(Rc)	3/8" PT(Rc)
HGP-1A-F6*	96(3.77)	48(1.88)	3/8" PT(Rc)	3/8" PT(Rc)
HGP-1A-F8*	102(4.01)	51(2.00)	1/2" PT(Rc)	3/8" PT(Rc)

DIMENSIONS

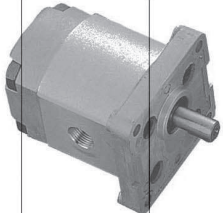
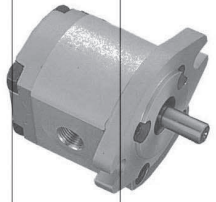
MILLIMETERS(INCHES)

HGP-1A Series Single Gear Pumps

Pmax : 250 bar (3500 psi)
 Qmax : 1 cc/rev ~ 7.8 cc/rev
 Mounting Type : SAE 2-bolt European & DIN 4-bolt
 Fluid : ISO VG32 or VG46
 Viscosity & Temp : 12~800 cSt & -15 °C to 80 °C
 Filtration : 260 Microns Absolute or Finer
 Alignment and installation of pumps : under 0.05 TIR



Ordering Code

HGP	1A	F	08	R	X	2B	10
 							
Design No.							
Type of Flange Mounting 2B: SAE 2-bolt 4BD: DIN 4-bolt 4DE: European 4-bolt							
Shaft Type X: Straight Shaft Y: Spline Shaft							
Rotation (Viewed from shaft end) R: Clockwise L: Counter-clockwise							
Geometric Displacement 1: 1 cc/rev 2: 2 cc/rev 3: 3 cc/rev 4: 4 cc/rev 5: 5 cc/rev 6: 6 cc/rev 8: 7.8 cc/rev							
Mounting Form F: Flange Mounting L: Foot Mounting							
Frame Size							
Series No.							

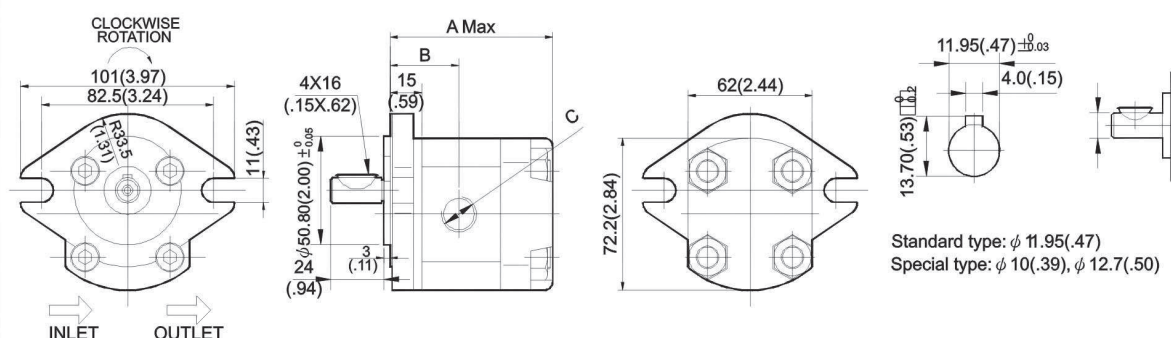
Ratings

Series	Geometric Displacement cc/rev	Pressure bar (psi)		Speed rpm			Weight Kg(lb)
		Work	Max.	Rate	Max.	Min.	
HGP-1A-F1*	1	210 (3000)	250 (3500)	1800	4500	1000	1.00(2.22)
HGP-1A-F2*	2				4500	600	1.05(2.33)
HGP-1A-F3*	3				4500	600	1.15(2.55)
HGP-1A-F4*	4				4000	600	1.18(2.62)
HGP-1A-F5*	5				3200	600	1.20(2.66)
HGP-1A-F6*	6				3200	600	1.30(2.88)
HGP-1A-F8*	7.8				3200	600	1.30(2.88)

DIMENSIONS

MILLIMETER(INCHES)

HGP-1A-F*-**-2B-10 (SAE 2-bolt)

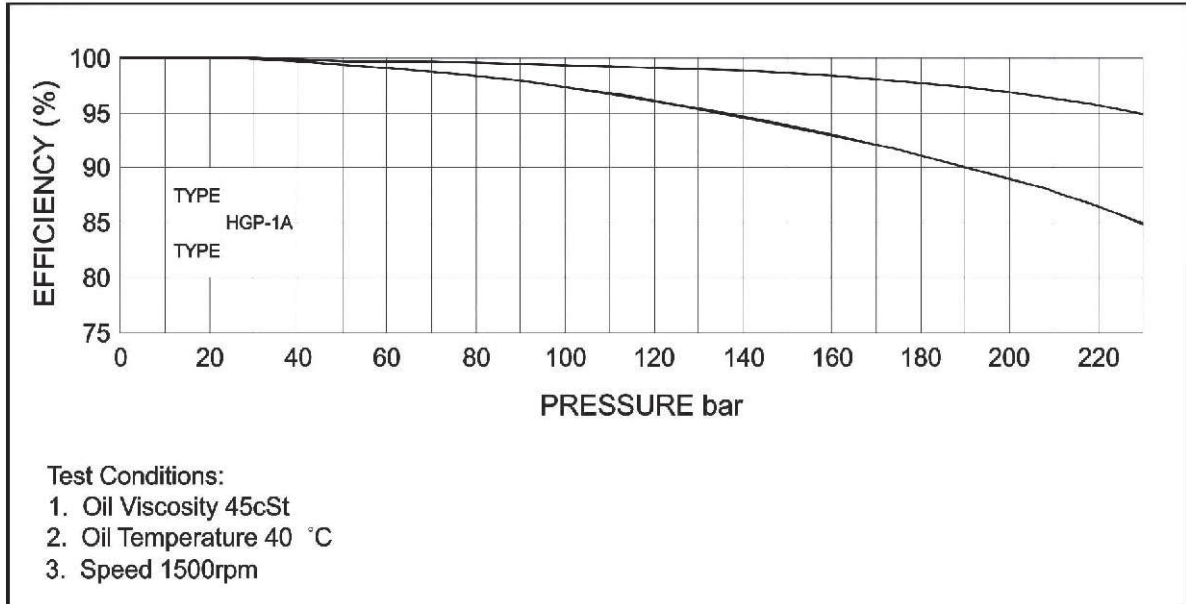


DIMENSIONS

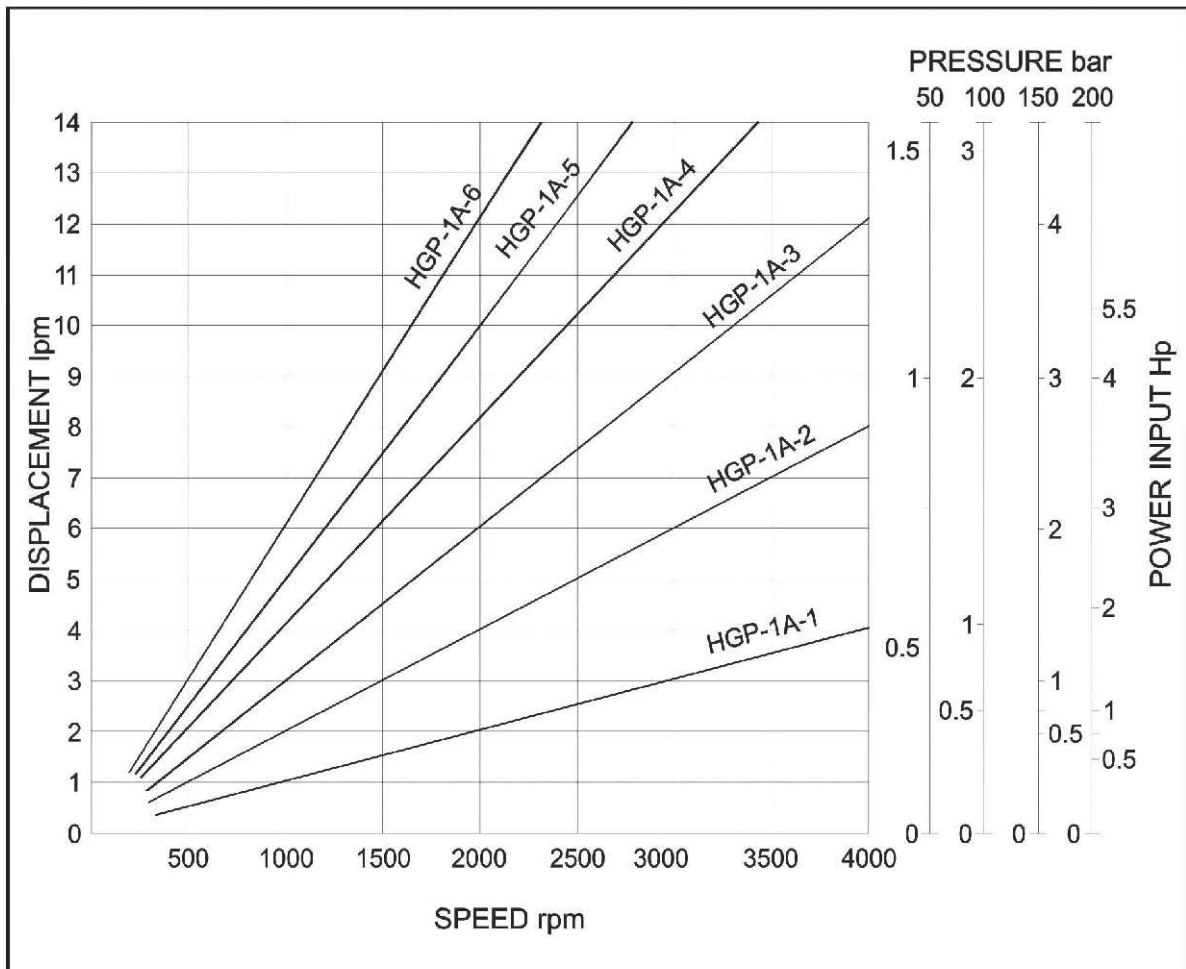
MILLIMETERS(INCHES)

Performance Curves

Pressure / Volumetric Efficiency

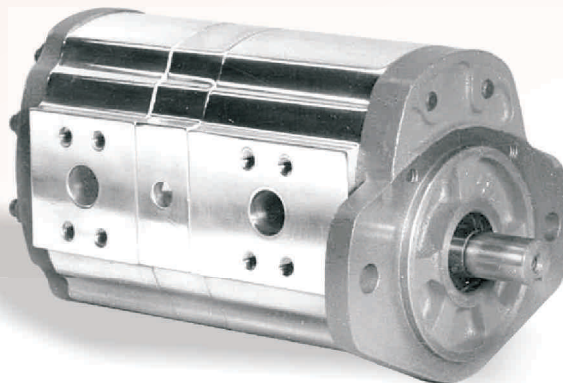


Displacement / Power Input / Speed



A1

Gear Pumps

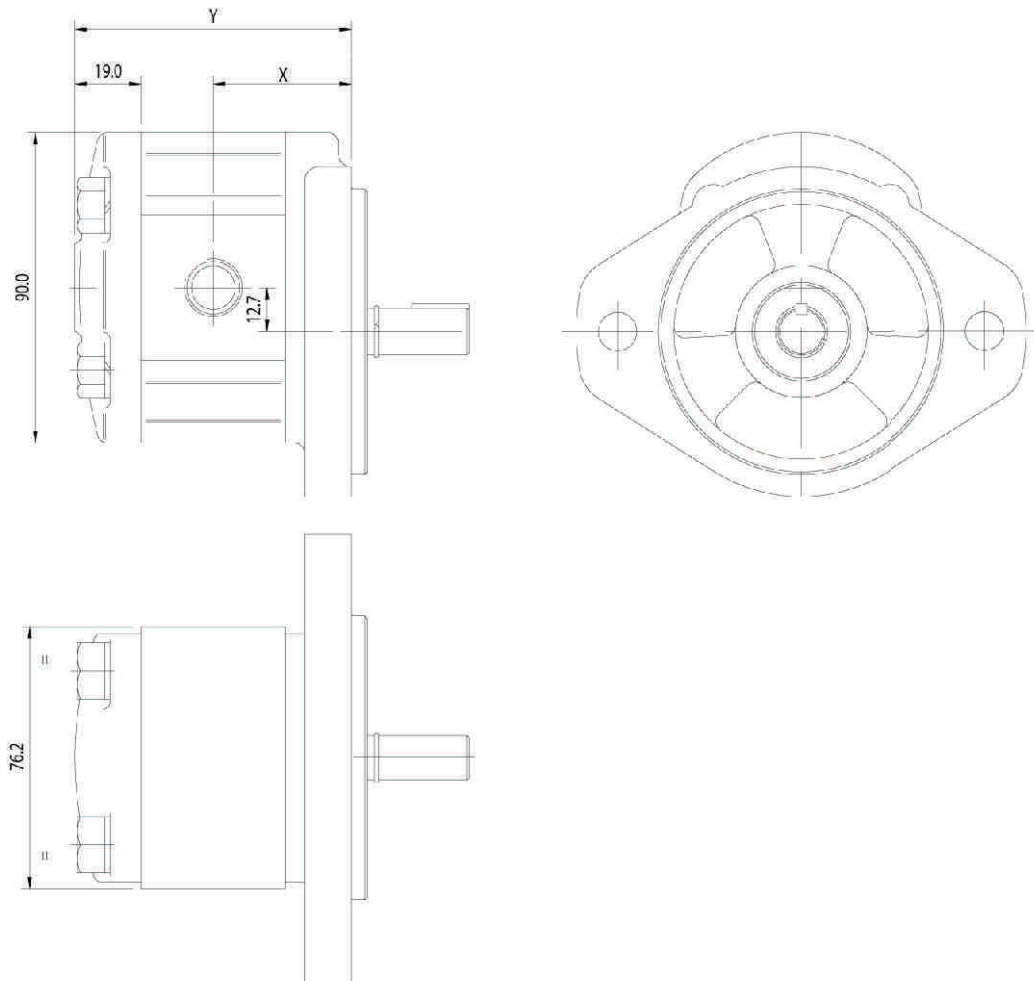




OP SERIES

A2

INSTALLATION DIMENSIONS



OP-3015	42.2	84.5
OP-3013	41.5	83.1
OP-3011	40.8	81.7
OP-3008	39.9	79.7
OP-3006	39.1	78.2
OP-3004	38.6	77.1
OP-3003	38.1	76.3
PUMP TYPE.	DIM-X	DIM-Y

ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.



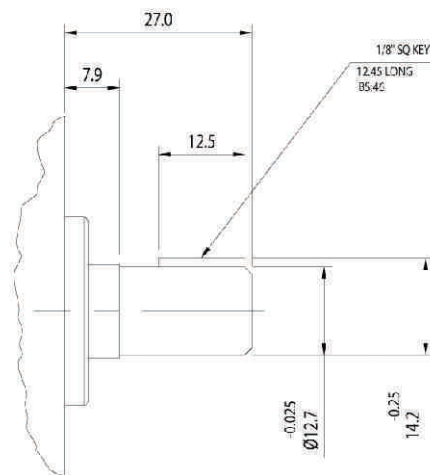
Bell
HYDROMATICS

OP SERIES

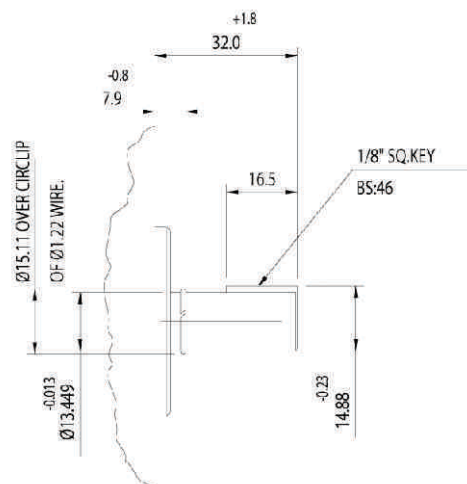
A2

DRIVE SHAFT

SHAFT CODE - L



SHAFT CODE - P



ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

GROUP OP – P3000 SERIES

PERFORMANCE DATA

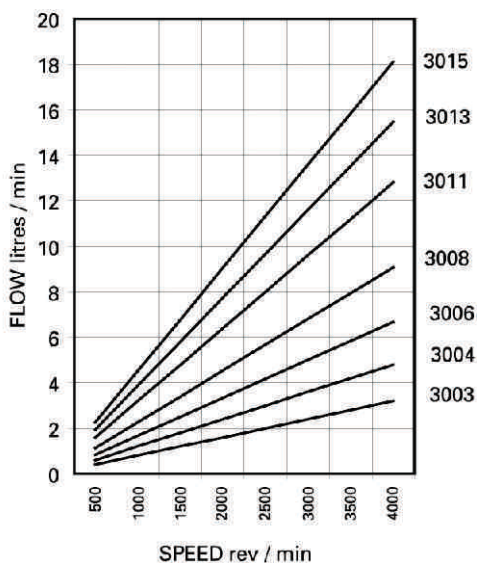
Pressures quoted are relief valve maximum by-pass
Performance with SAE 20W oil at 50° C

PUMP TYPE	Nominal Displacement	Nominal Delivery @ 1500 rpm & Pressure P	Maximum Continuous Pressure P		Speed at Maximum Continuous Pressure P	
			psi	bar	Max	min
3003	0.80	1.20	3000	207	4000	500
3004	1.20	1.80	3000	207	4000	500
3006	1.67	2.50	3000	207	4000	500
3008	2.27	3.40	3000	207	4000	500
3011	3.20	4.80	3000	207	4000	500
3013	3.87	5.80	3000	207	4000	500
3015	4.53	6.80	3000	207	4000	600

TYPICAL PERFORMANCE

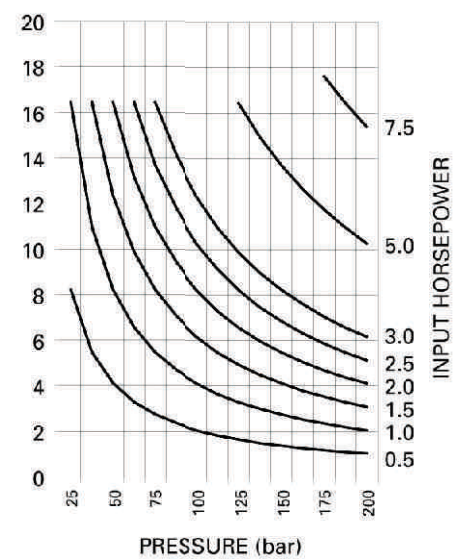
TYPICAL PUMP DELIVERY

Flow at Max. Pressure.



TYPICAL INPUT HORSEPOWER

Fluid SAE 20W
Fluid Temperature 50° C



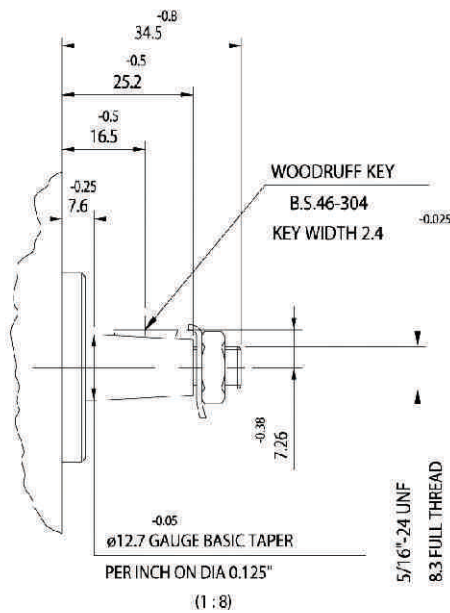


OP SERIES

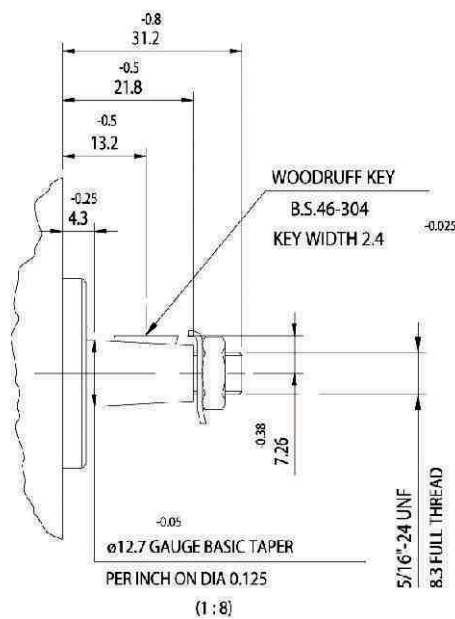
A2

DRIVE SHAFT

SHAFT CODE - T
FOR FLANGE CODE - D



SHAFT CODE - T
FOR FLANGE CODE - S



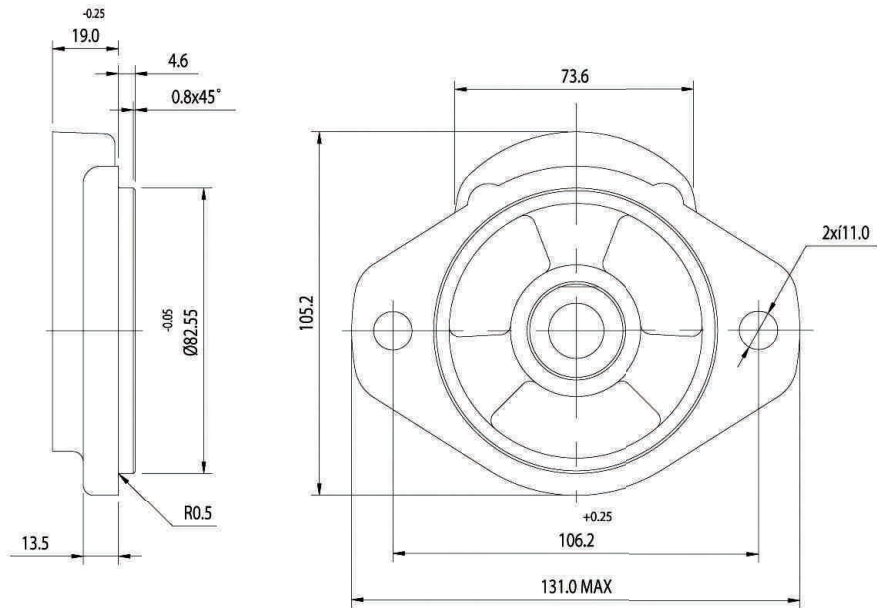
ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

OP SERIES

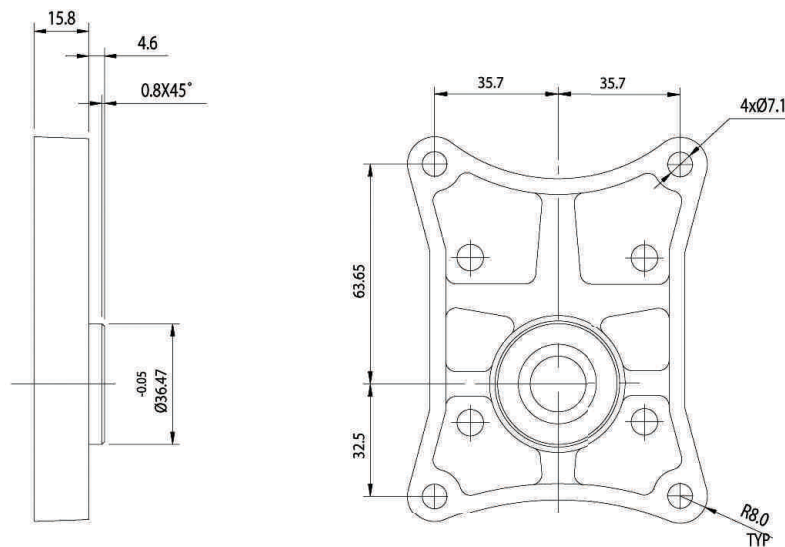
A2

MOUNTING FLANGE

CODE - S



CODE - D



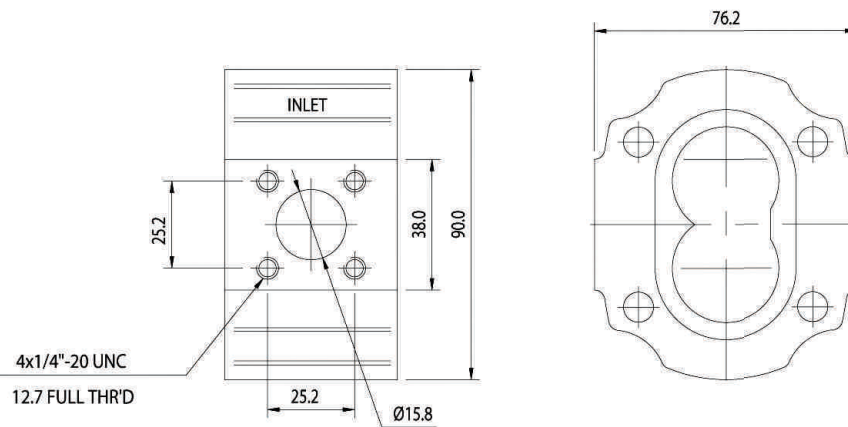
ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

OP SERIES

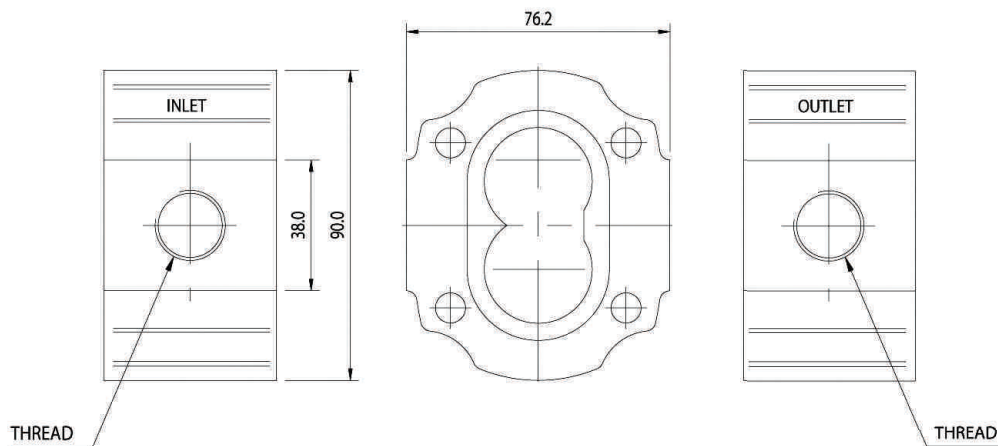
A2

BODY

CODE - F



CODE - T



INLET AND OUTLET PORTS

3/8"-BSP FOR PUMP TYPES OP3003 TO 3011

1/2"-BSP FOR PUMP TYPES OP3013 TO 3015

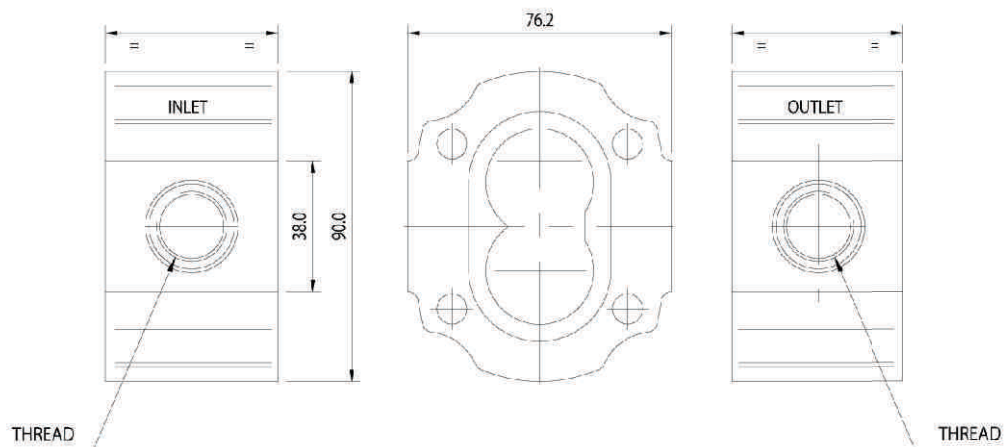
ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

OP SERIES

A2

BODY PORT

CODE - J



INLET AND OUTLET PORTS

7/8"-14 UN FOR PUMP TYPES 3015 INLET OUTLET 3/4-16UN

3/4"-16 UN FOR PUMP TYPES OP3003 TO OP3013

ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

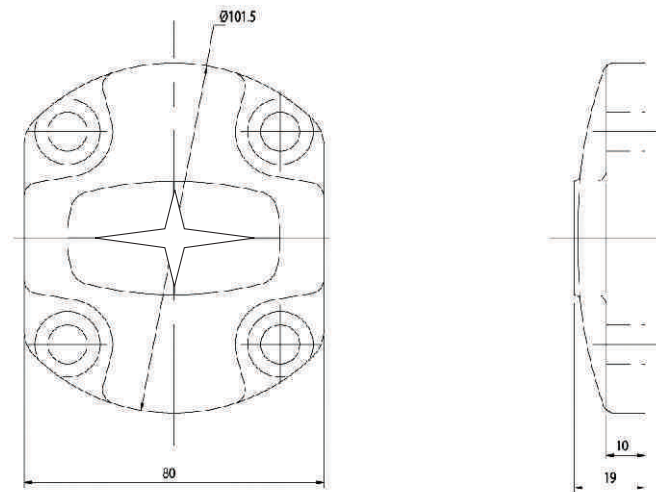


OP SERIES

A2

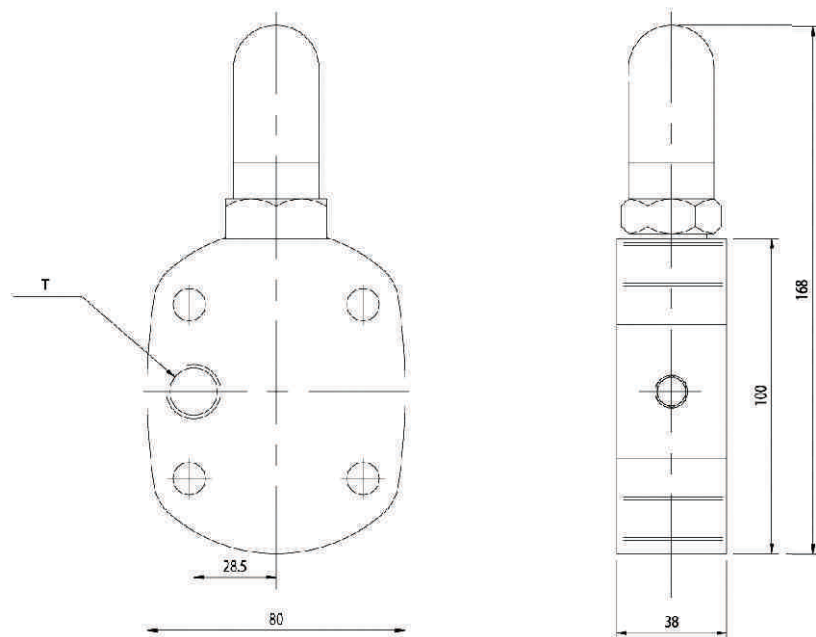
END COVER

CODE - B



CODE - R

RELIEF VALVE SUITABLE FOR GROUP OP
MOUNTED IN PLACE OF END COVER



ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

GROUP 1P – P3000 SERIES

PERFORMANCE DATA

Pressures quoted are relief valve maximum by-pass
Performance with SAE 20W oil at 50° C

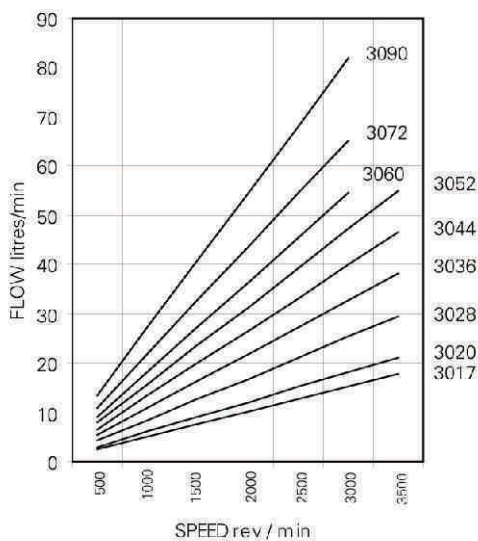
A2

PUMP TYPE	Nominal Displacement	Nominal Delivery @ 1500 rpm & Pressure P	Maximum Continuous Pressure P		Speed at Maximum Continuous Pressure P	
			psi	bar	max	min
3017	5.13	7.70	3000	207	3500	500
3020	6.07	9.10	3000	207	3500	500
3028	8.47	12.70	3000	207	3500	500
3036	10.93	16.40	3000	207	3500	600
3044	13.33	20.00	3000	207	3500	500
3052	15.73	23.60	3000	207	3500	600
3060	18.20	27.30	3000	207	3500	650
3072	21.80	32.70	2525	174	3000	650
3090	27.27	40.90	2000	138	2400	650

TYPICAL PERFORMANCE

TYPICAL PUMP DELIVERY

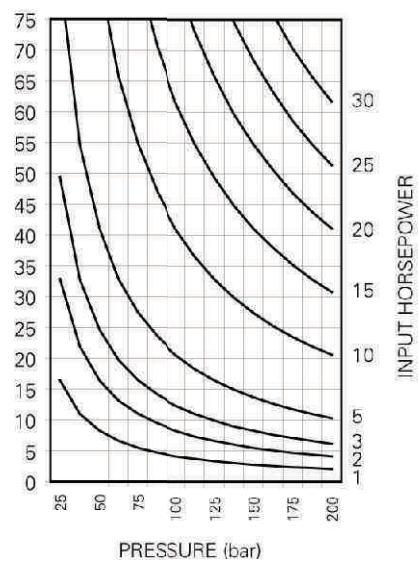
Flow at Max. Pressure.



TYPICAL INPUT HORSEPOWER

Fluid SAE 20W

Fluid Temperature 50° C

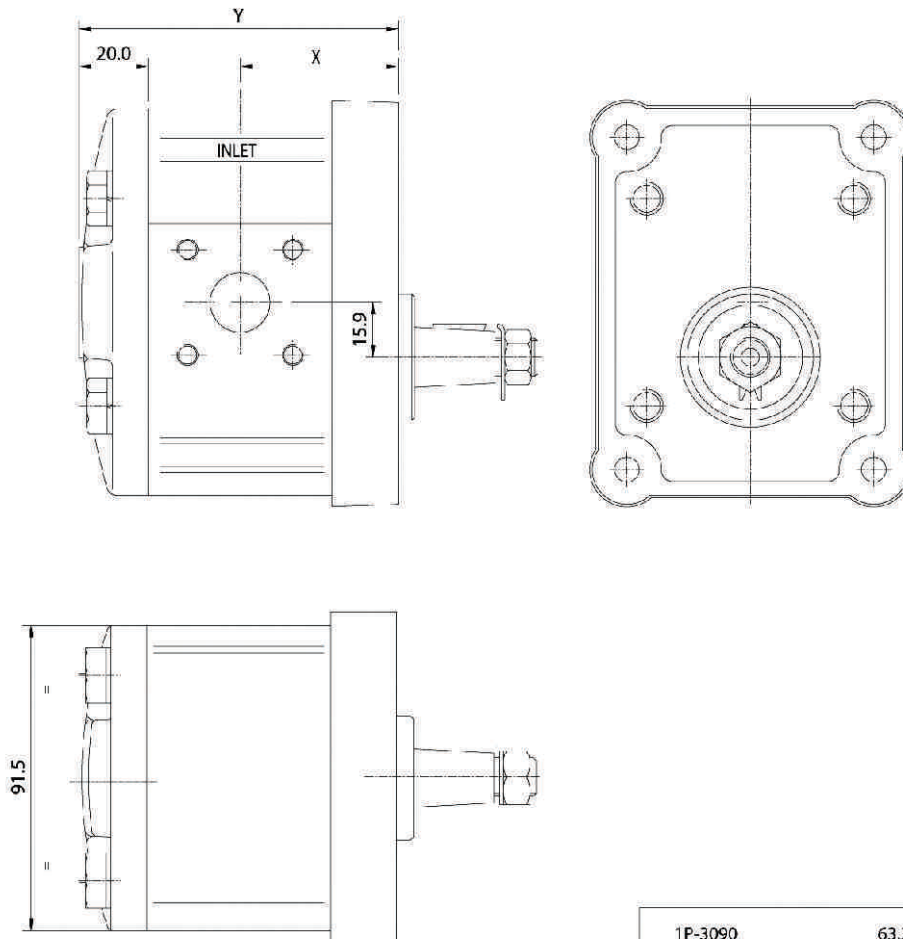




1P SERIES

A2

INSTALLATION DIMENSIONS

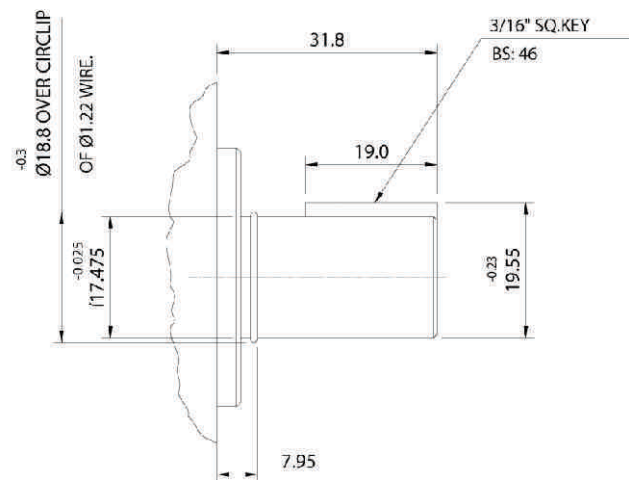


1P-3090	63.3	127.7
1P-3072	60.0	121.0
1P-3060	57.7	116.4
1P-3052	56.2	113.3
1P-3044	54.6	110.3
1P-3036	45.6	92.2
1P-3028	44.1	89.1
1P-3020	42.5	86.1
1P-3018	41.9	84.8
1P-3017	41.8	84.5
1P-3013	41.2	83.5
PUMP TYPE	DIM-X	DIM-Y

ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

A2

CODE - U



ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

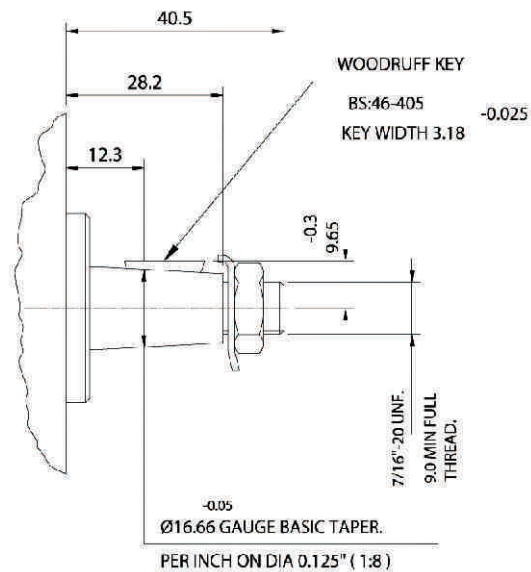


1P SERIES

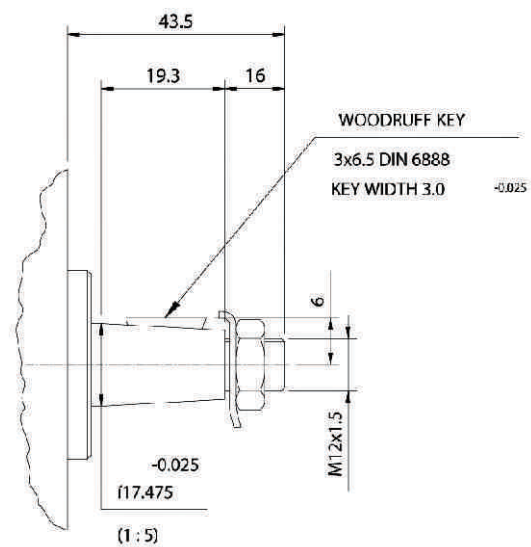
A2

DRIVE SHAFT

CODE - T



CODE - K



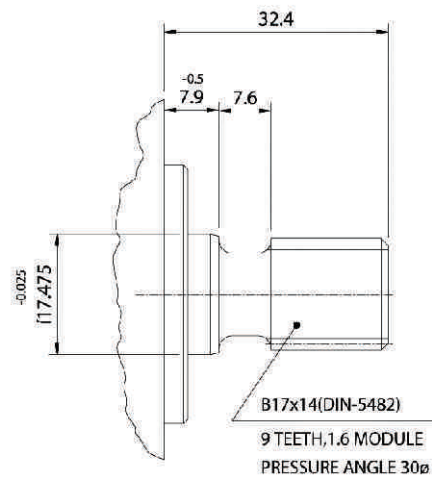
ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

1P SERIES

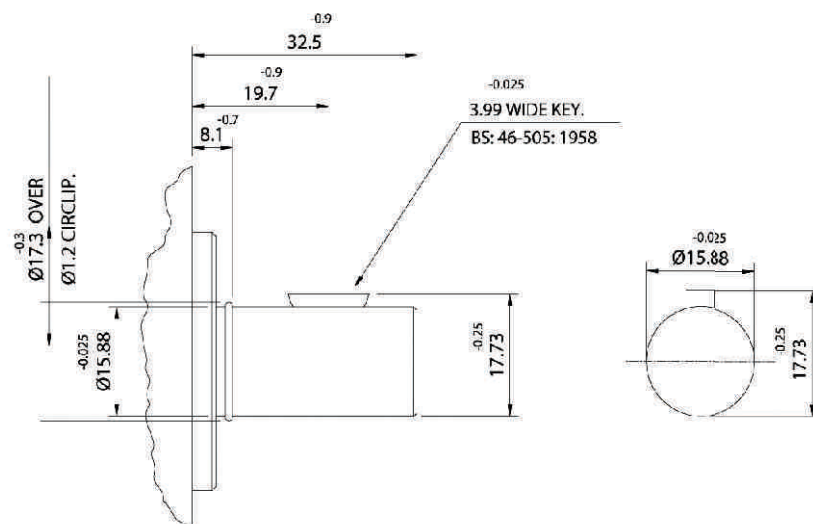
A2

DRIVE SHAFT

CODE - D



CODE - L SAE - A



ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

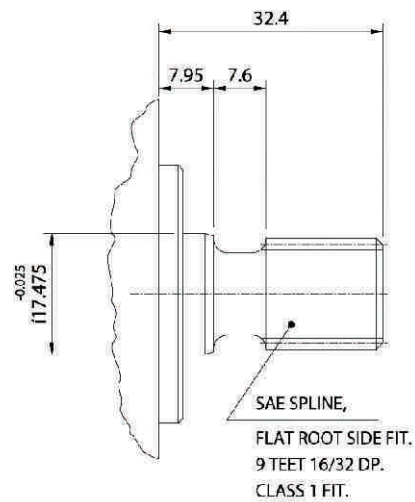


1P SERIES

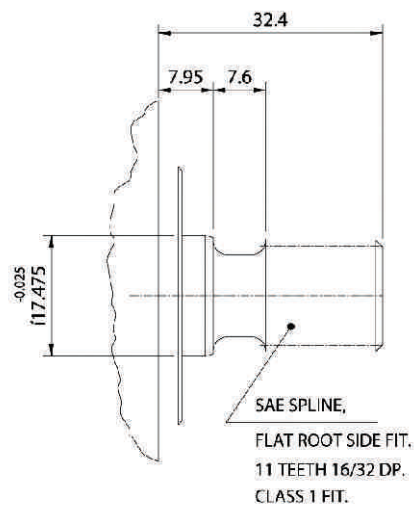
A2

DRIVE SHAFT

CODE - S



CODE - G



ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

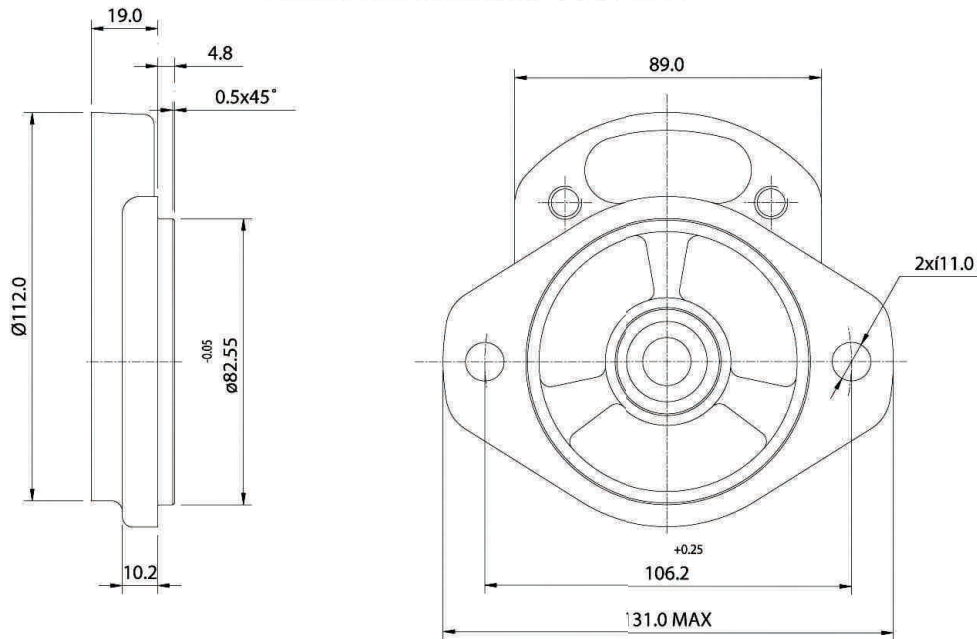
1P SERIES

A2

MOUNTING FLANGE

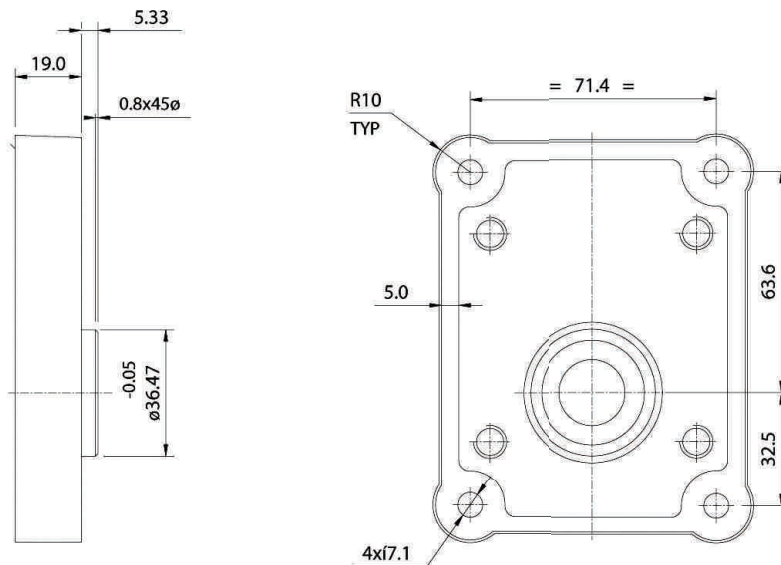
2-BOLT SAE CODE - S

Available with shaft code P,T,K,G and S



4-BOLT CODE - D

Available with shaft code P,T,K,G and S



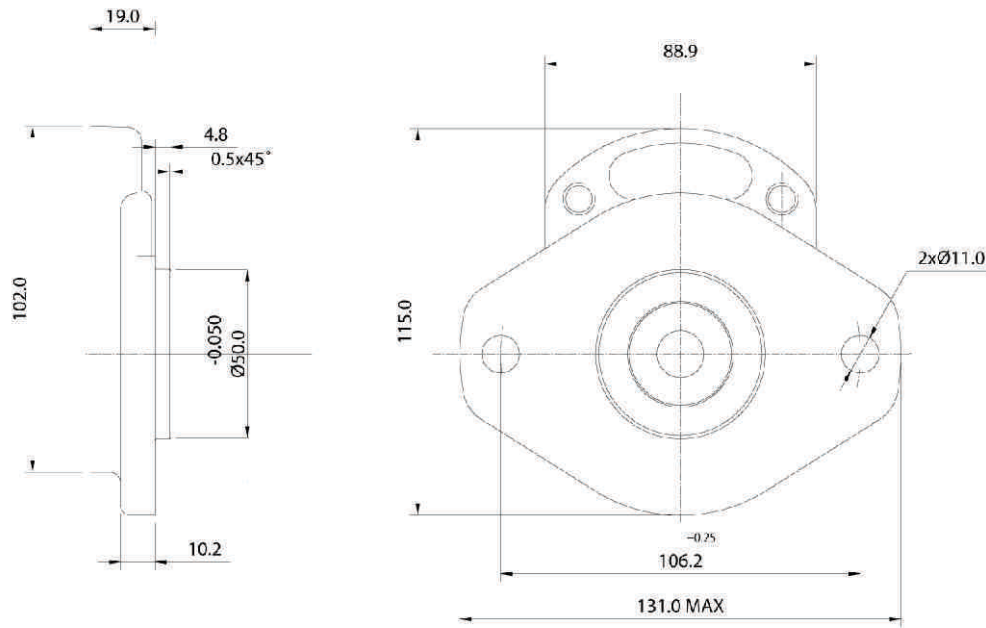
ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

1P SERIES

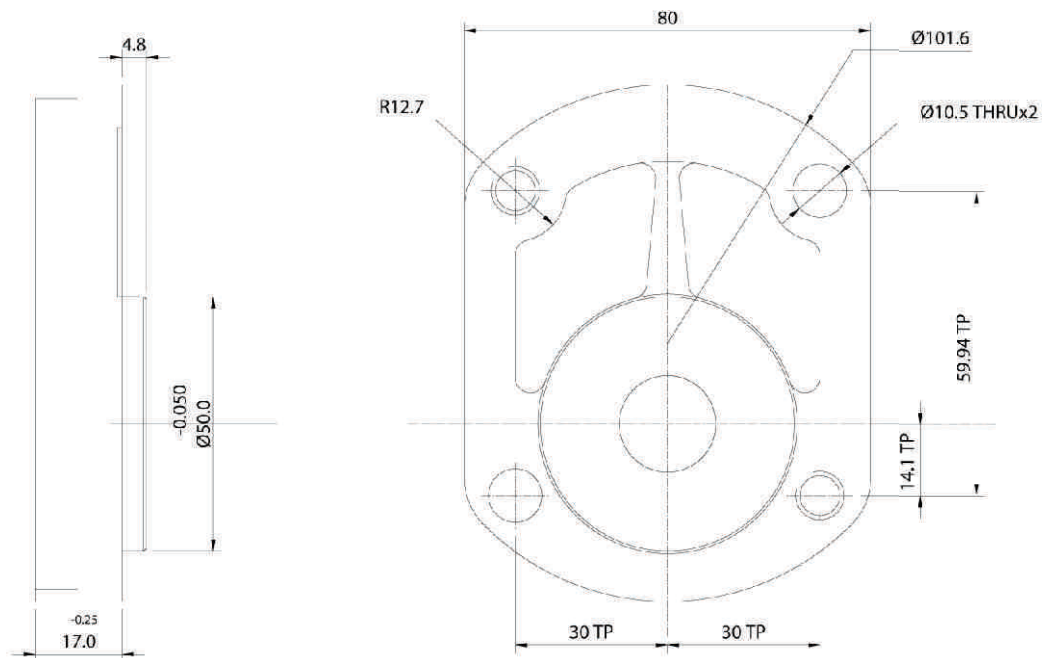
A2

MOUNTING FLANGE

2 BOLT SAE-AA CODE - A



CODE - K



ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.



Bell
HYDROMATICS

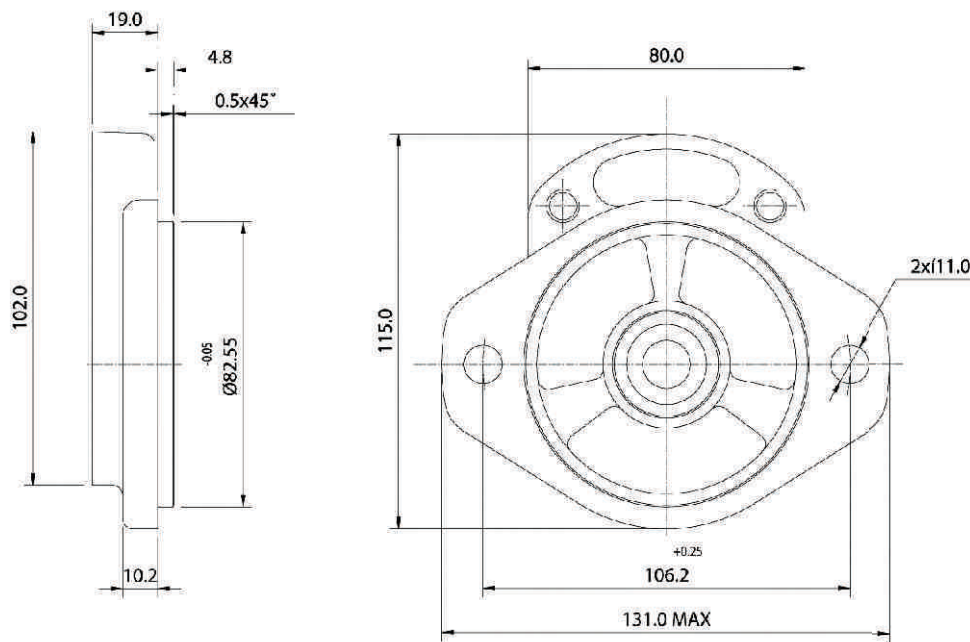
1P SERIES

MOUNTING FLANGE

A2

2-BOLT SAE CODE - S

Available with shaft code P,T,K,G and S



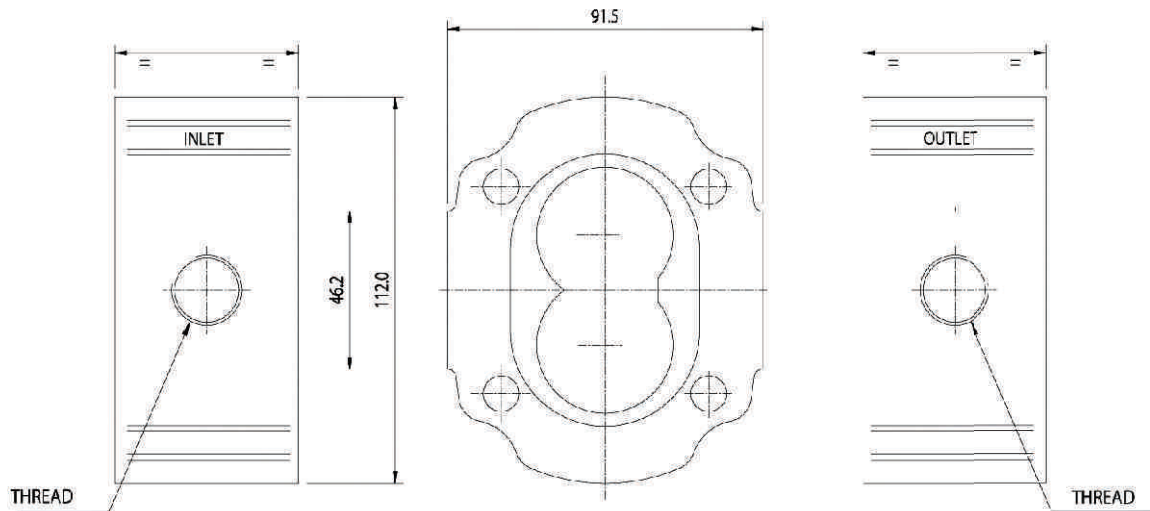
ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

1P SERIES

A2

BODY PORT

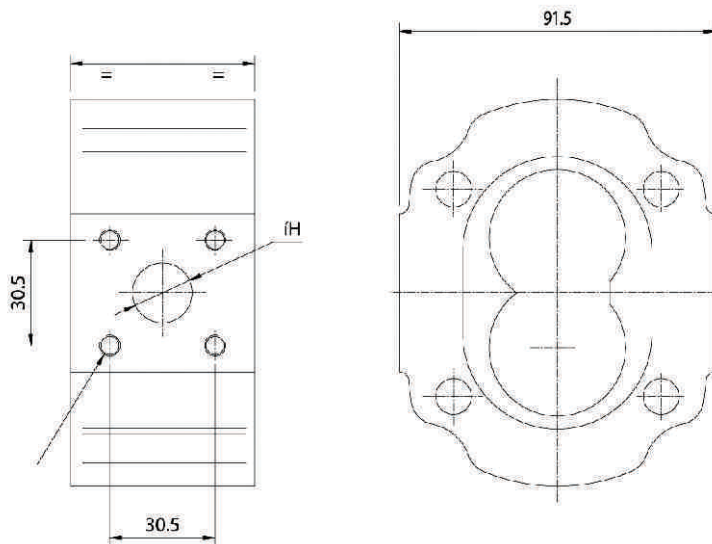
CODE - T



1/2"-BSP FOR PUMP TYPES 1P3017 TO 3028
3/4"-BSP FOR PUMP TYPES 1P3036 TO 3090

1/2"-BSP FOR PUMP TYPES 1P3017 TO 3036
3/4"-BSP FOR PUMP TYPES 1P3044 TO 3090

CODE - F



INLET & OUTLET PORTS ARE IDENTICAL.

Ø H=17.3 PUMP TYPES 1P3017 TO 3036
Ø H=20.3 PUMP TYPES 1P3044 TO 3090

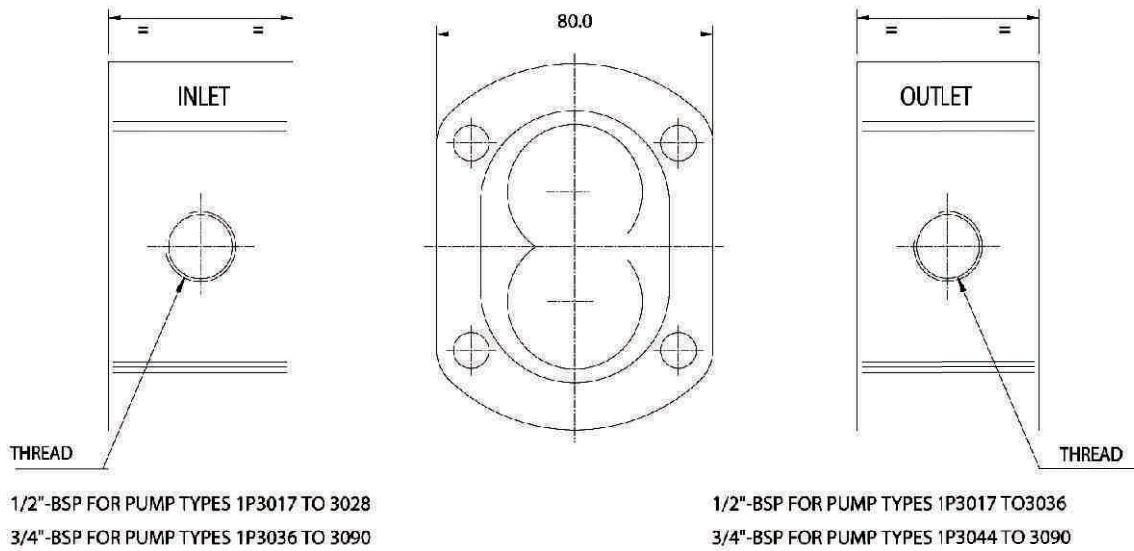
ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

1P SERIES

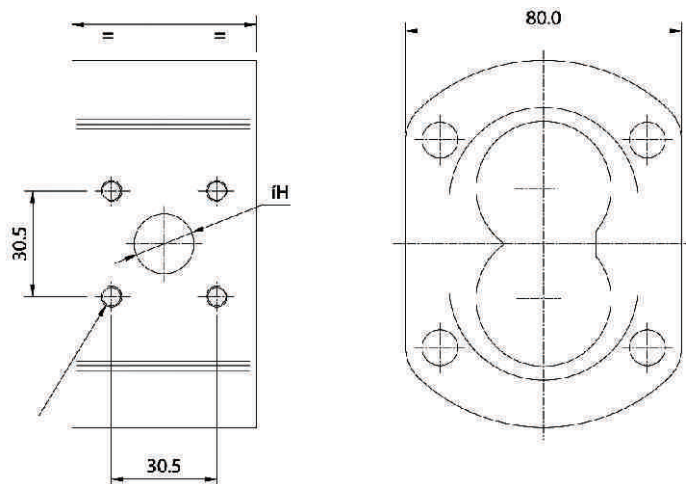
A2

BODY PORT

CODE - A



CODE - B



INLET & OUTLET PORTS ARE IDENTICAL

Ø H=17.3 PUMP TYPES 1P3017 TO 3036
Ø H=20.3 PUMP TYPES 1P3044 TO 3090

ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

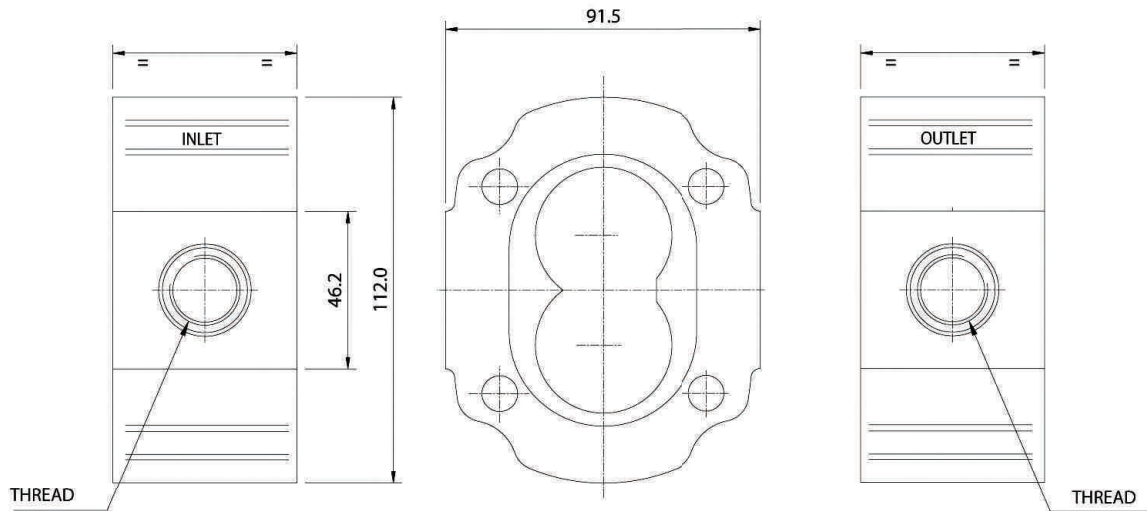
1P SERIES

A2

BODY PORT

CODE - J

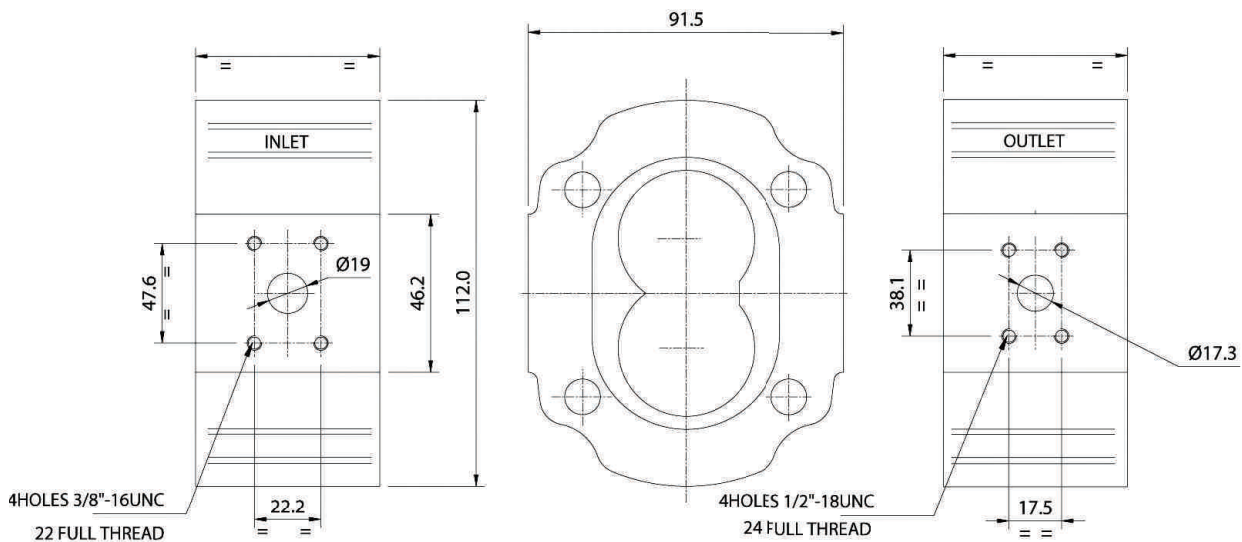
SAE O-RING THREADED PORTS.



1-1/16"-12 UN FOR PUMP TYPES 1P3017 TO 3036
1-5/16"-12 UN FOR PUMP TYPES 1P3044 TO 3090

7/8"-14 UN FOR PUMP TYPES 1P3017 TO 3036
1-1/16"-12 UN FOR PUMP TYPES 1P3044 TO 3090

CODE - S



ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

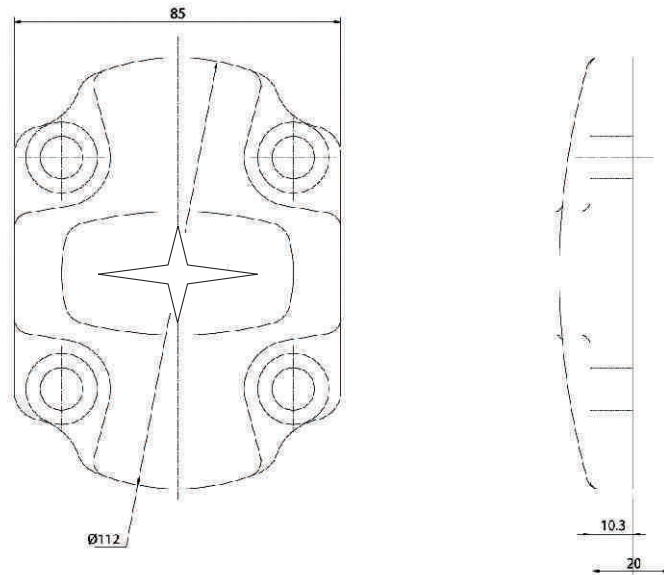


1P SERIES

A2

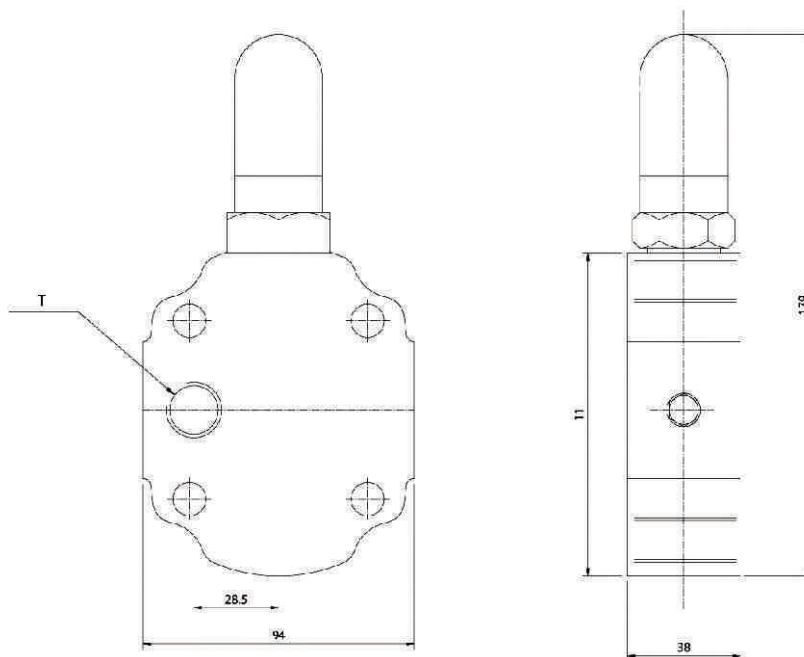
END COVER

CODE - B



RELIEF VALVE CODE-R

MOUNTED INPLACE OF END COVER



ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

GROUP 2P – P3000 SERIES

PERFORMANCE DATA

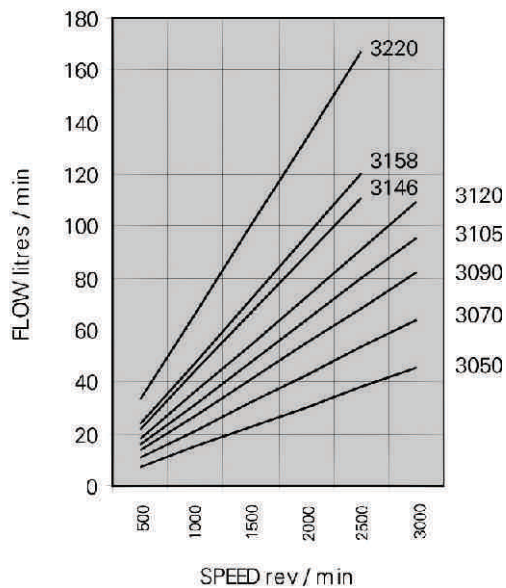
Pressures quoted are relief valve maximum by-pass
Performance with SAE 20W oil at 50° C

PUMP TYPE	Nominal Displacement	Nominal Delivery @ 1500 rpm & Pressure P	Maximum Continuous Pressure P		Speed at Maximum Continuous Pressure P	
			psi	bar	max	min
3050	15.13	22.70	3000	207	3000	550
3070	21.33	32.00	3000	207	3000	550
3090	27.33	41.00	3000	207	3000	650
3105	31.80	47.70	3000	207	3000	600
3120	36.33	54.50	3000	207	3000	650
3146	44.33	66.50	2525	174	2500	650
3158	47.87	71.80	2525	174	2500	650
3220	66.67	100.00	2000	138	2500	650

TYPICAL PERFORMANCE

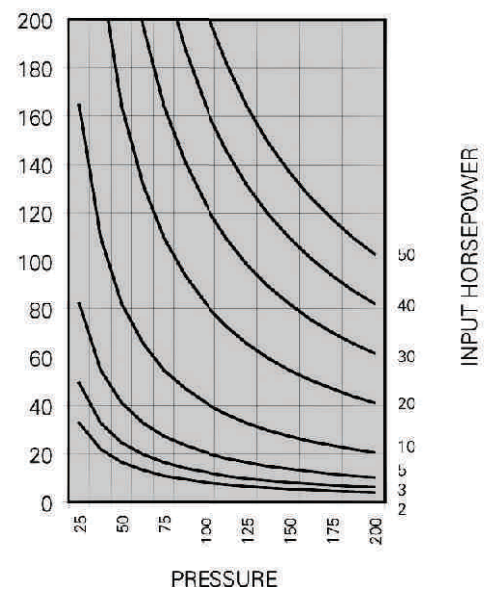
TYPICAL PUMP DELIVERY

Flow at Max. Pressure.



TYPICAL INPUT HORSEPOWER

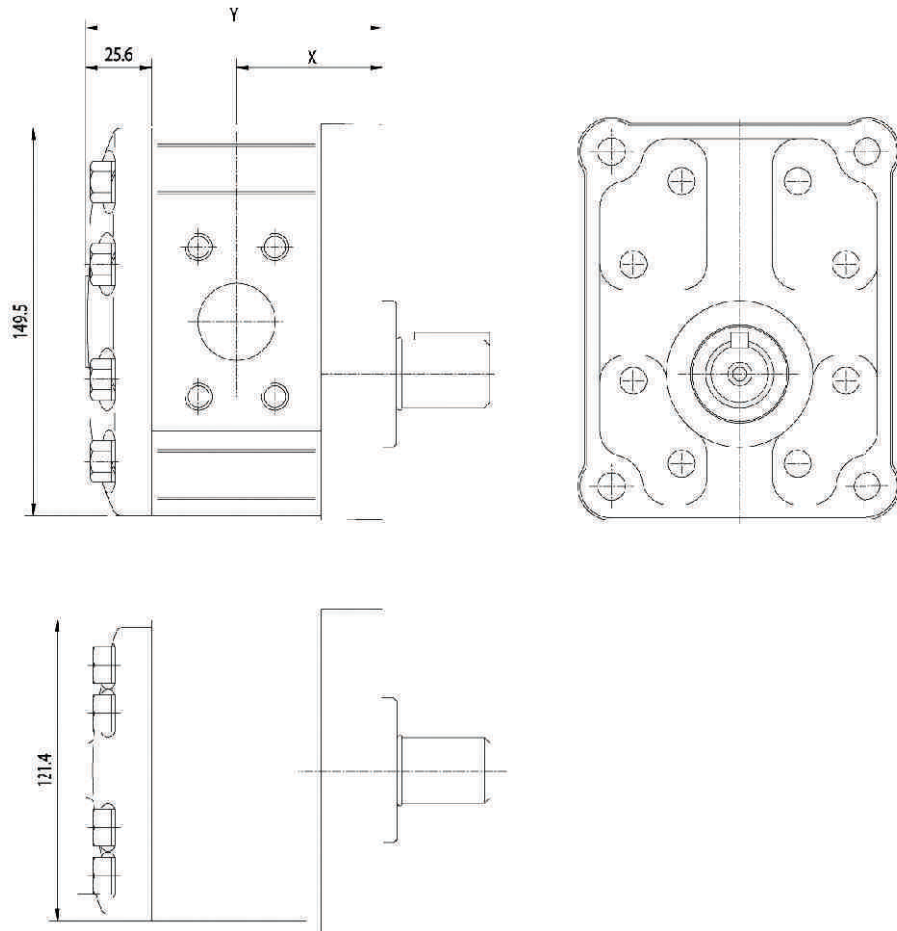
Fluid SAE 20W
Fluid Temperature 50° C



2P SERIES

A2

INSTALLATION DIMENSIONS



2P-3220	81.7	167.8
2P-3200	72.8	150.0
2P-3180	69.7	143.8
2P-3158	74.3	153.0
2P-3146	72.8	150.0
2P-3120	69.7	143.8
2P-3105	67.9	140.0
2P-3090	59.1	122.6
2P-3070	56.7	117.7
2P-3050	54.3	113.0
PUMP TYPE.	DIM-X	DIM-Y

ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.



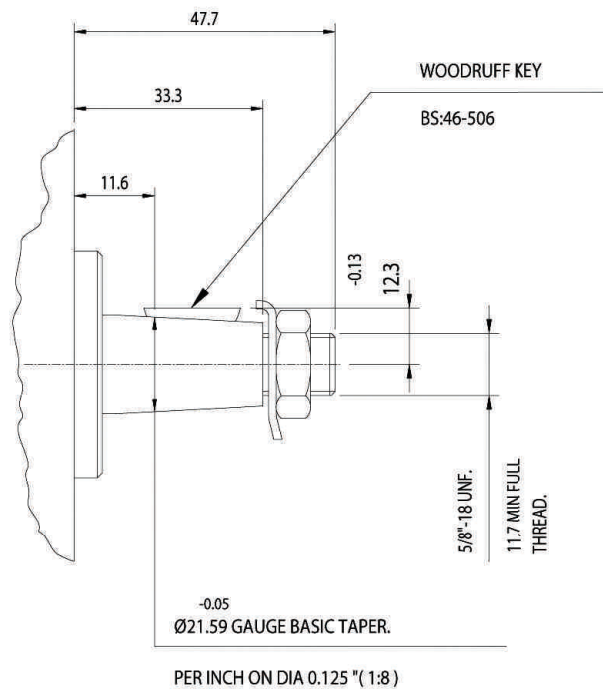
Bell
HYDROMATICS

2P SERIES

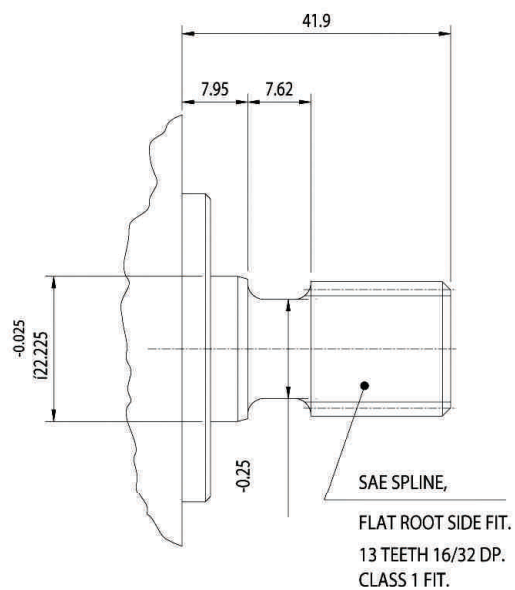
A2

DRIVE SHAFT

CODE - T



CODE - S



ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.



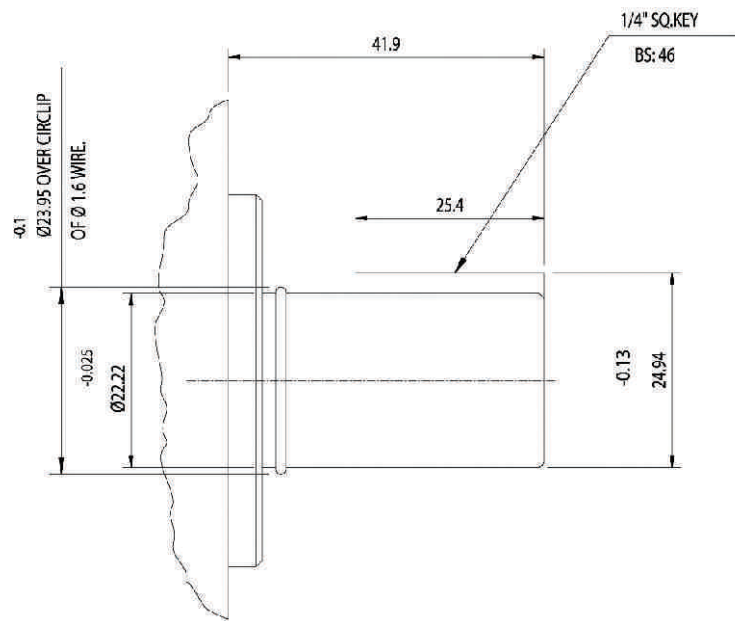
Bell
HYDROMATICS

2P SERIES

A2

DRIVE SHAFT

CODE - P



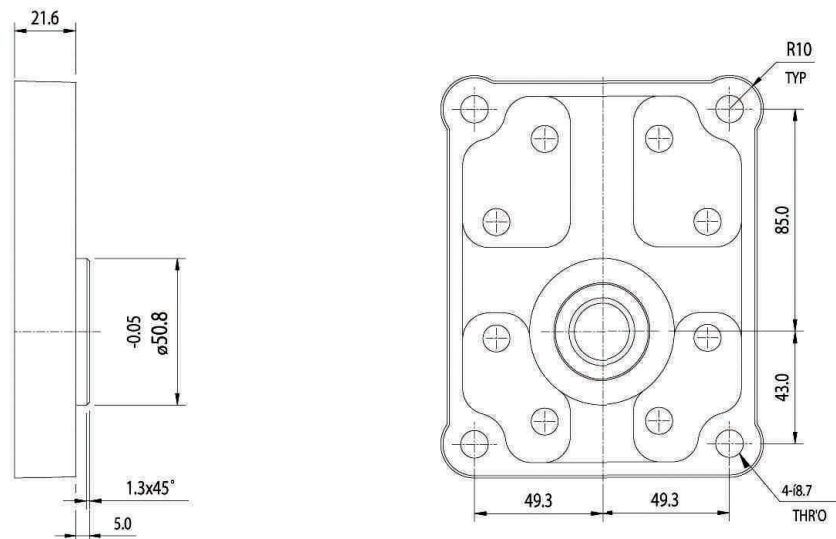
ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

2P SERIES

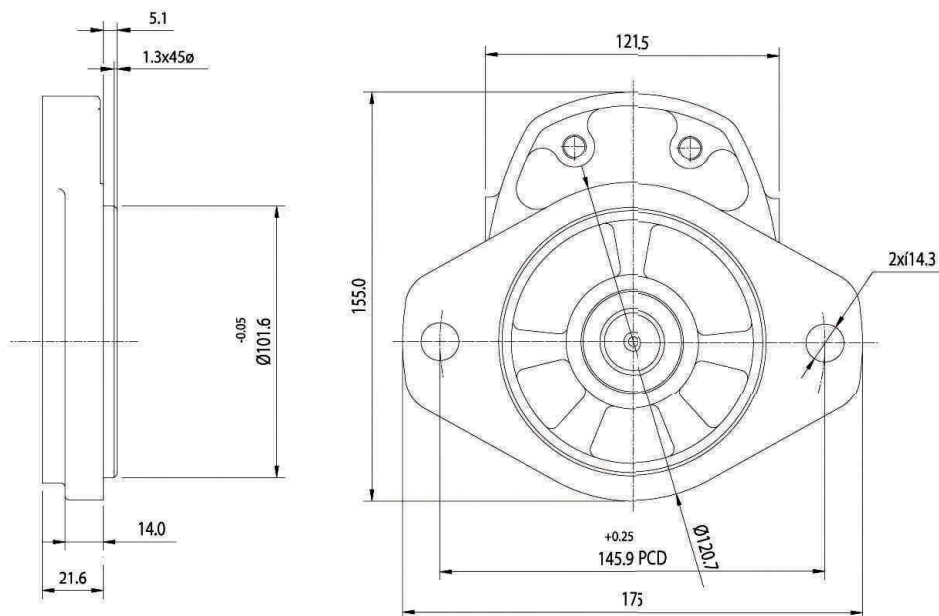
A2

MOUNTING FLANGE

CODE - D



CODE - S



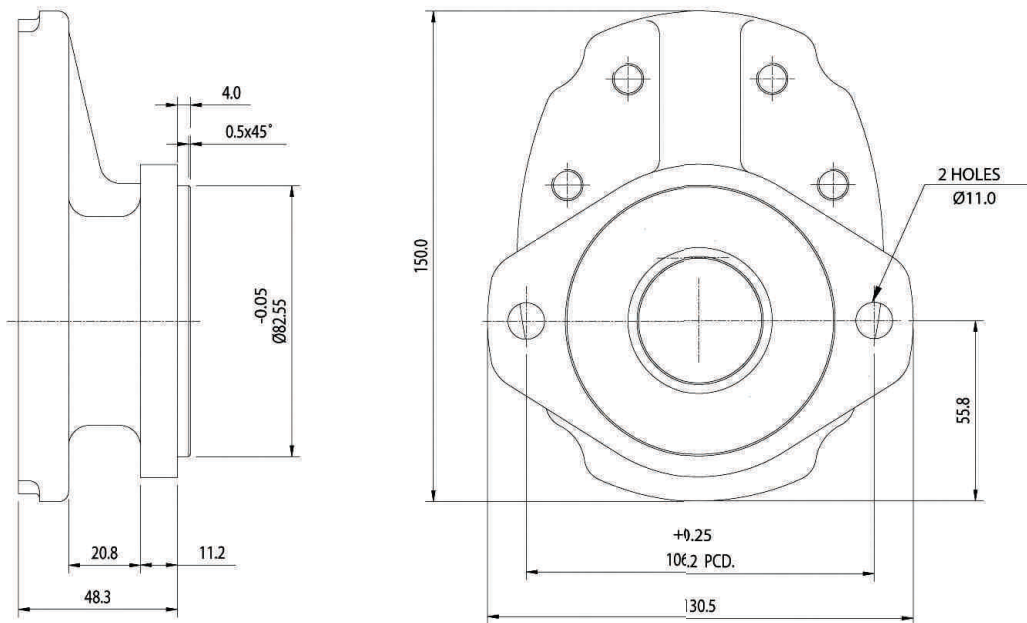
ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

2P SERIES

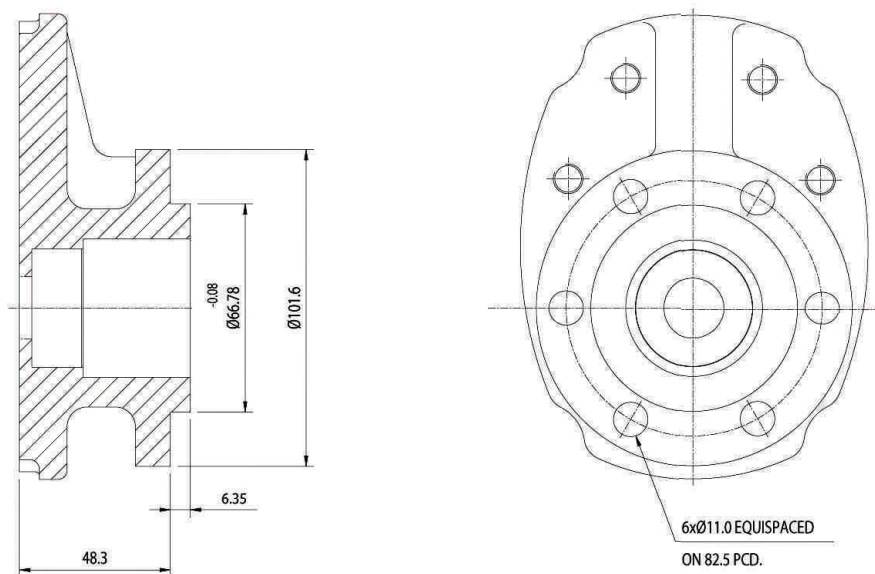
A2

MOUNTING FLANGE

CODE - X



CODE - H



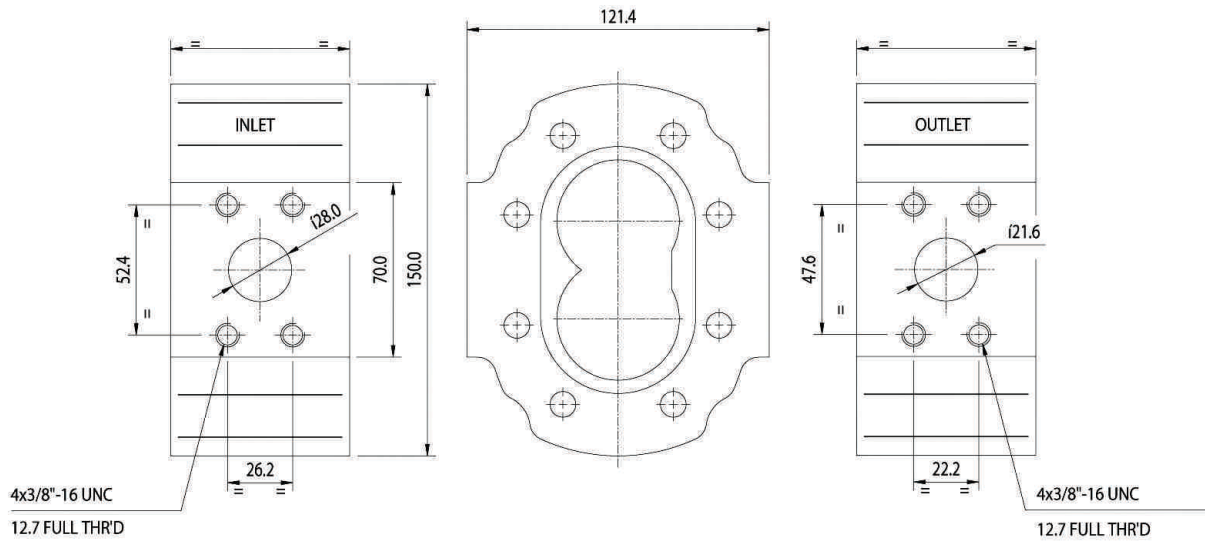
ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

2P SERIES

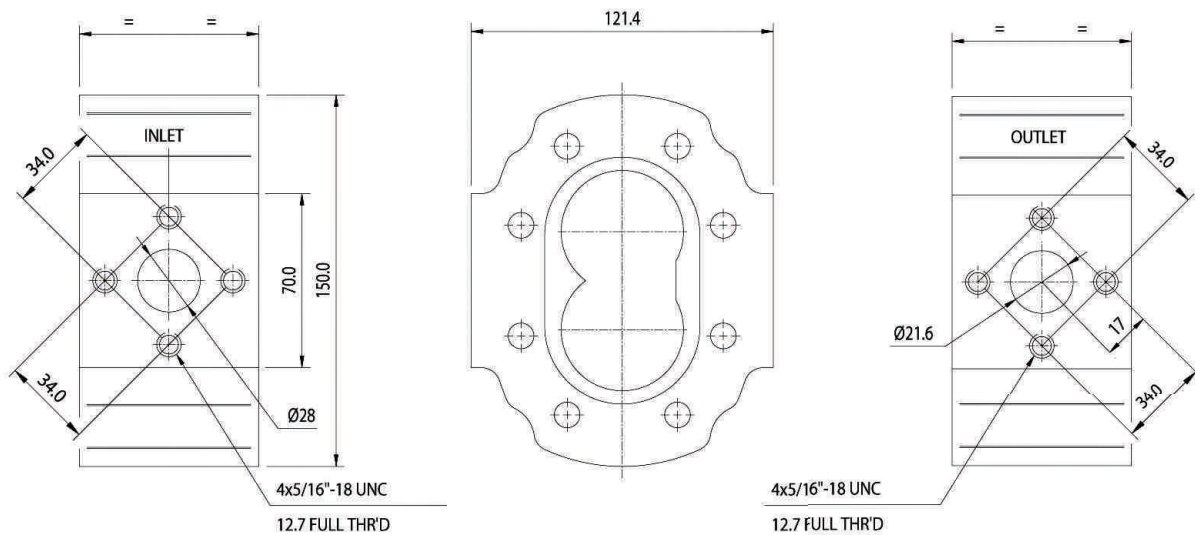
A2

BODY PORT

CODE - S



CODE - F



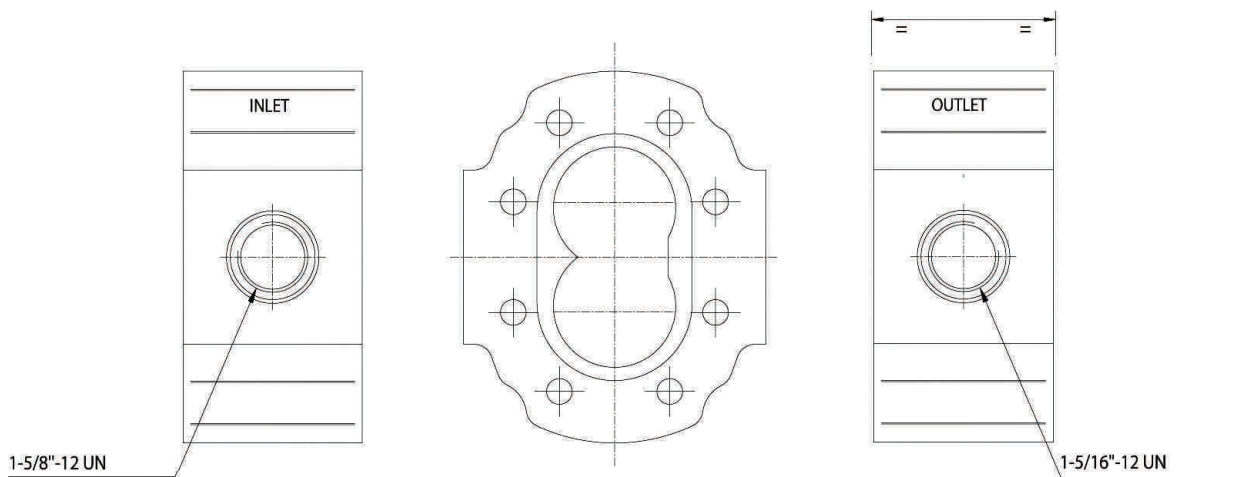
ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

2P SERIES

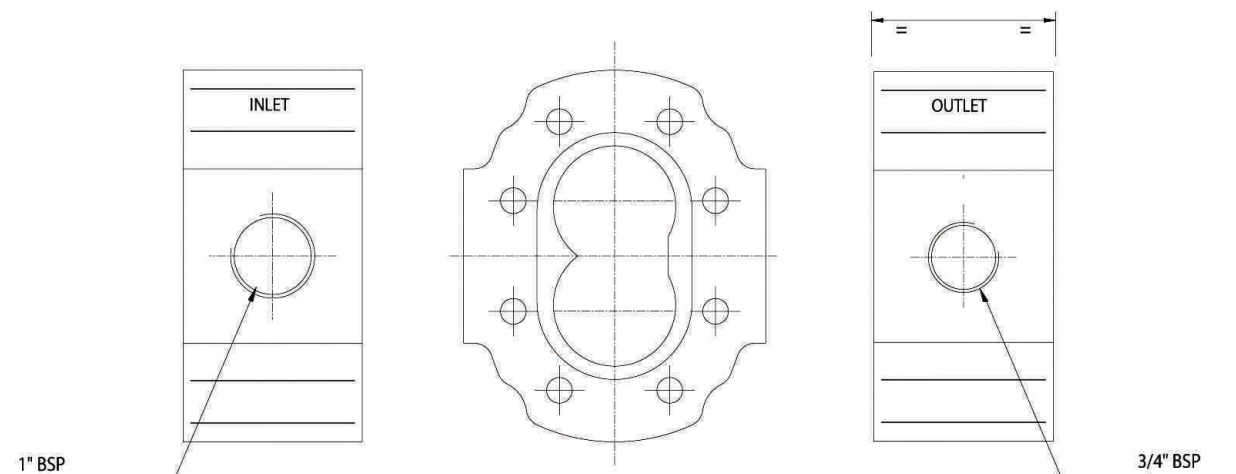
A2

BODY PORT

CODE - J



CODE - T



ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

GROUP 3P – P3000 SERIES

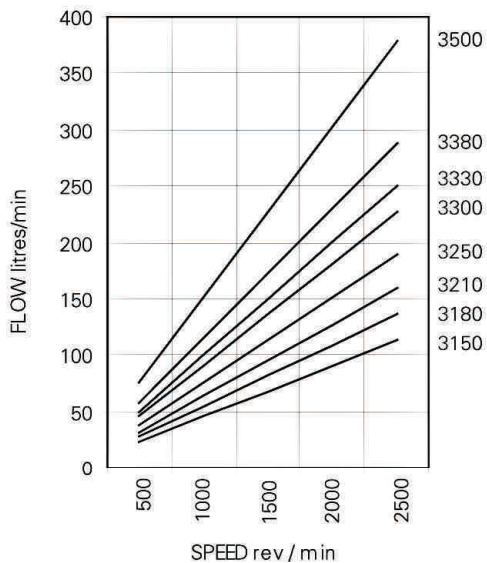
PERFORMANCE DATA

Pressures quoted are relief valve maximum by-pass
Performance with SAE 20W oil at 50° C

PUMP TYPE	Nominal Displacement	Nominal Delivery @ 1500 rpm & Pressure P	Maximum Continuous Pressure P		Speed at Maximum Continuous Pressure P	
			psi	bar	max	min
	cc/rev	lpm				
3150	45.33	68.00	3000	207	2500	550
3180	54.33	81.50	3000	207	2500	600
3210	63.67	95.50	3000	207	2500	700
3250	75.67	113.50	3000	207	2500	700
3300	90.67	136.00	2525	174	2500	700
3330	100.00	150.00	2300	159	2500	700
3380	115.33	173.00	2000	138	2500	700
3500	151.33	227.00	1500	100	2500	700

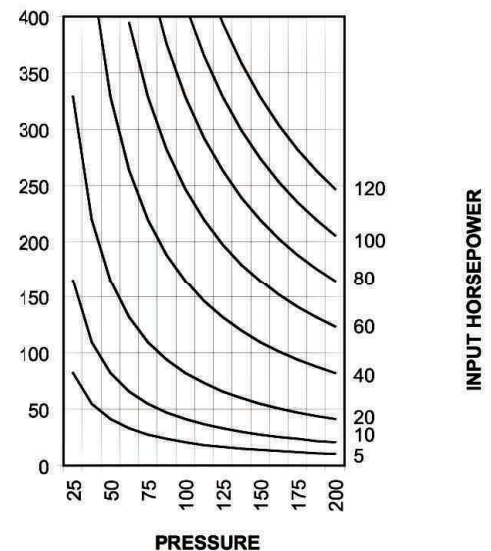
TYPICAL PERFORMANCE

TYPICAL PUMP DELIVERY
Flow at Max. Pressure.



TYPICAL INPUT HORSEPOWER

Fluid SAE 20W
Fluid Temperature 50° C

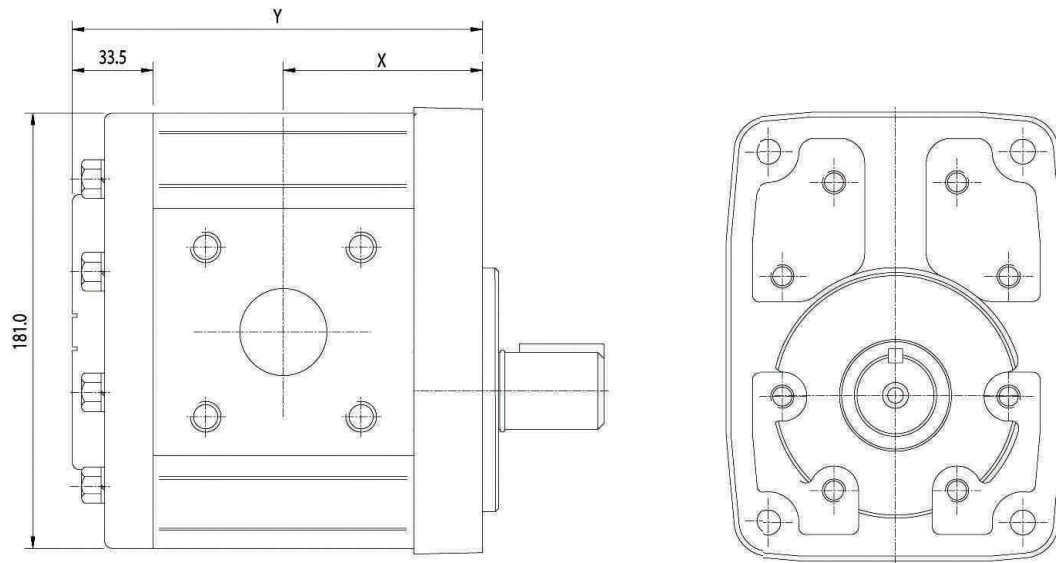




3P SERIES

INSTALLATION DIMENSIONS

A2



PUMP TYPE	DIMENSION-X	DIMENSION-Y
3P 3150	70.1	145.2
3P 3180	72.5	150.0
3P 3210	74.9	154.8
3P 3250	78.1	161.2
3P 3300	82.1	169.1
3P 3330	84.6	174.3
3P 3380	88.6	182.3
3P 3500	98.9	202.8

ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

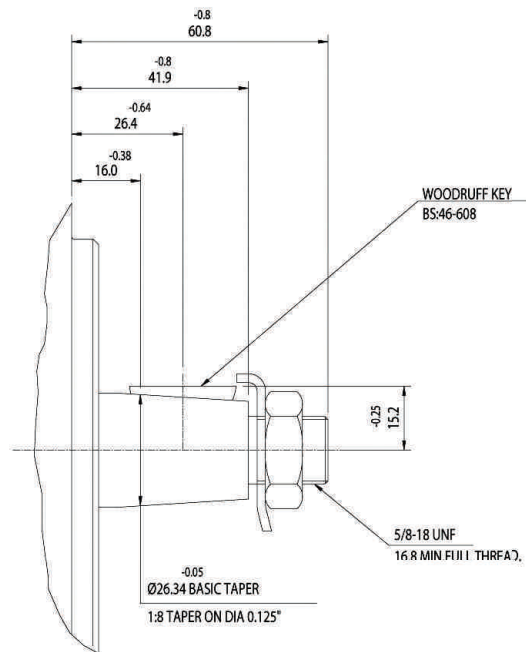


3P SERIES

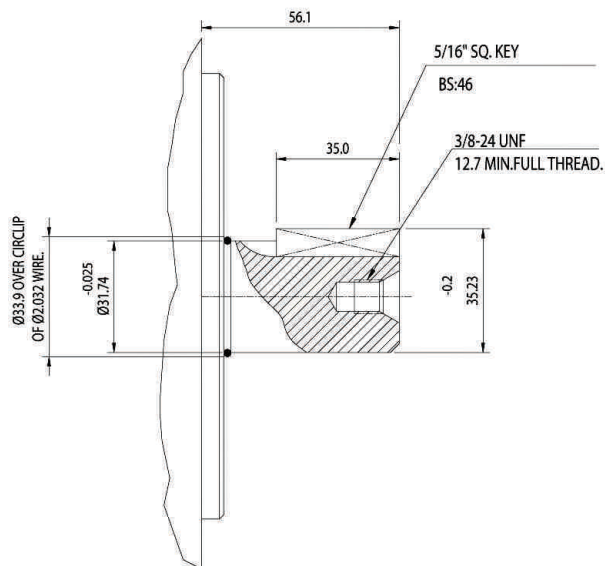
A2

DRIVE SHAFT

CODE - T



CODE - P



ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

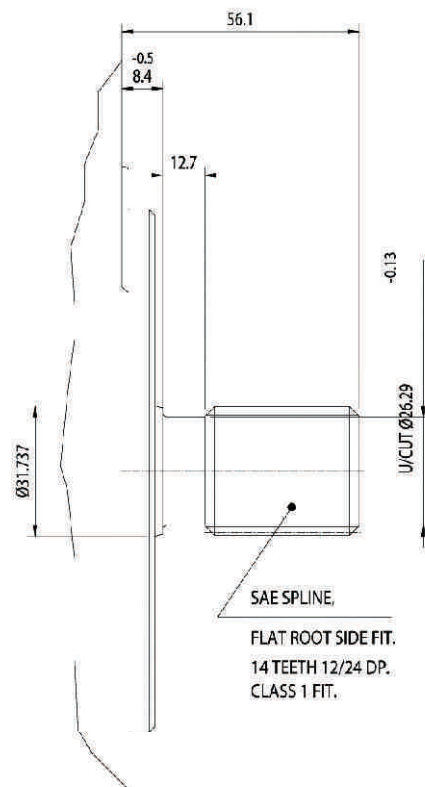


3P SERIES

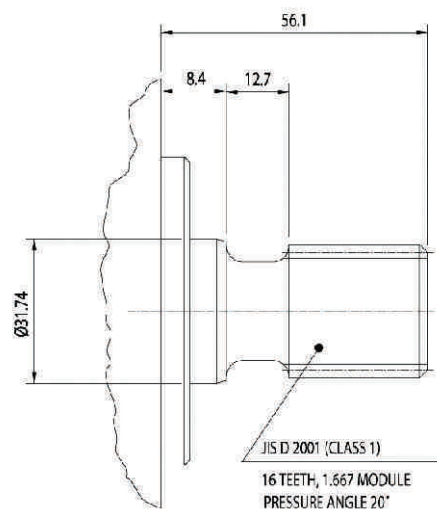
A2

DRIVE SHAFT

CODE - S



CODE - J



ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.



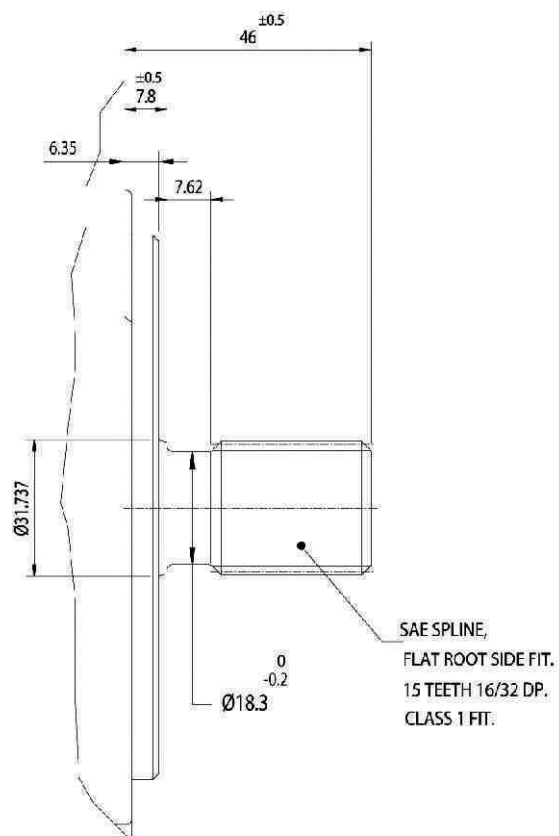
Bell
HYDROMATICS

3P SERIES

A2

DRIVE SHAFT

CODE - B



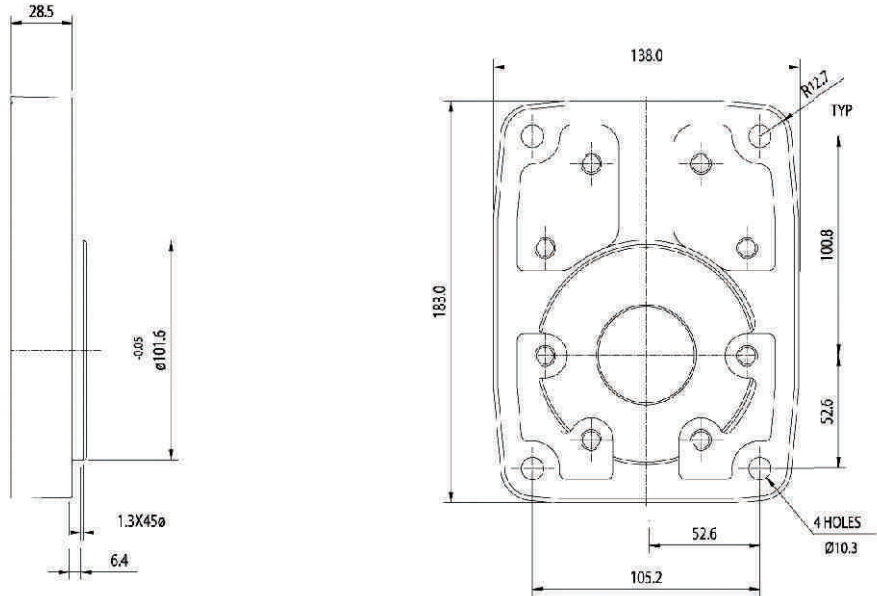
ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

3P SERIES

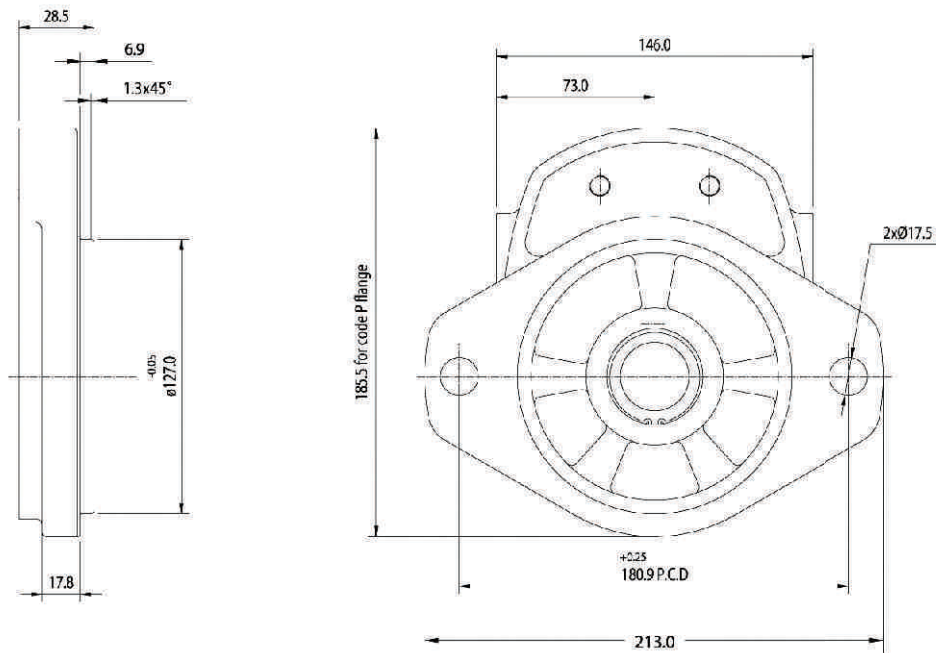
A2

MOUNTING FLANGE

CODE - D



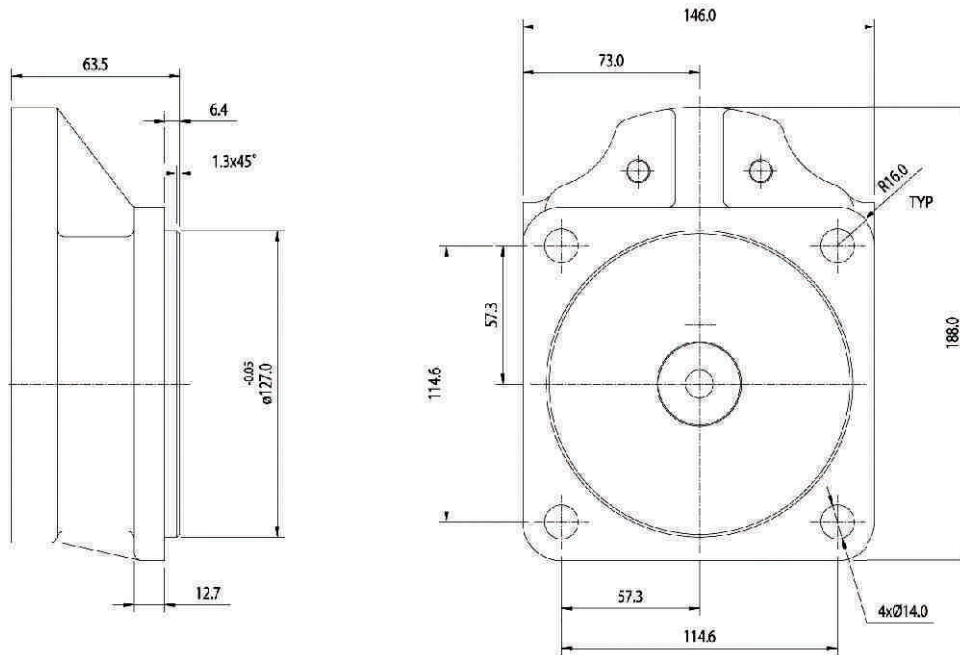
CODE - S



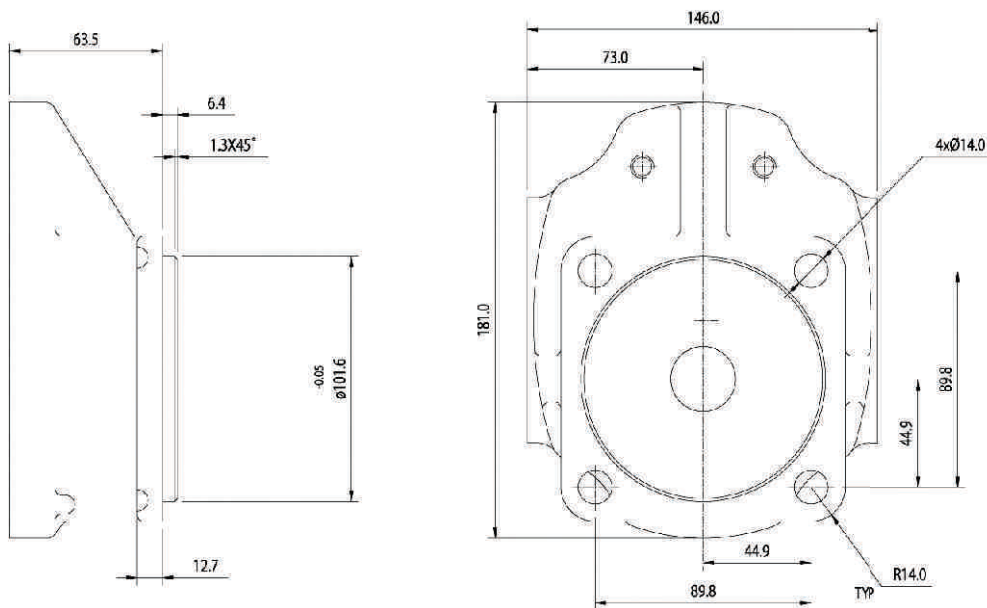
ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

MOUNTING FLANGE

4-Bolt SAE C Mounting Flange CODE - C



4-Bolt SAE-B Mounting Flange CODE - B



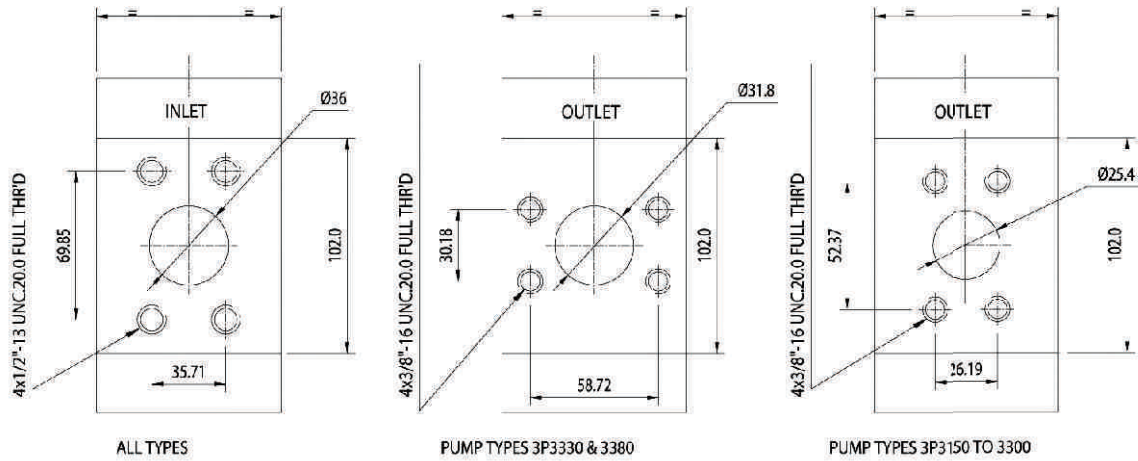
ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

3P SERIES

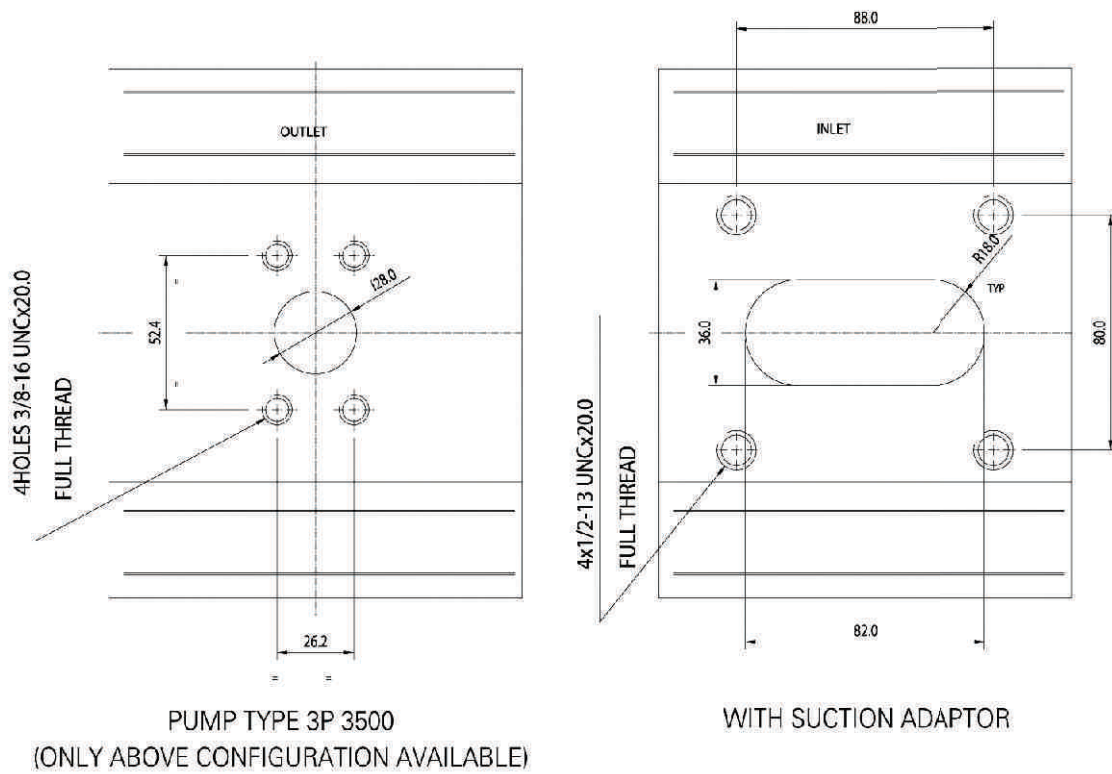
A2

BODY PORTS

CODE - S



CODE - S



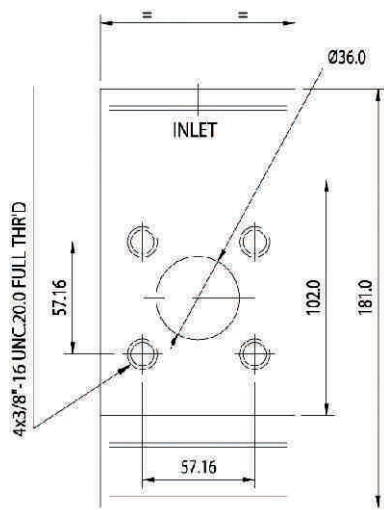
ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

3P SERIES

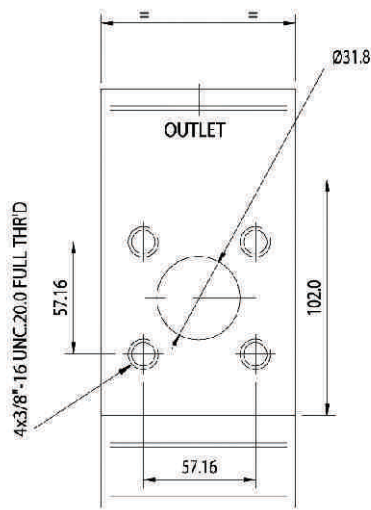
A2

BODY PORT

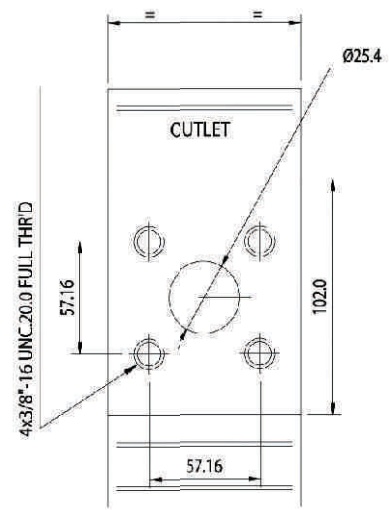
CODE - F



ALL TYPES



PUMP TYPES 3P3150 TO 3300



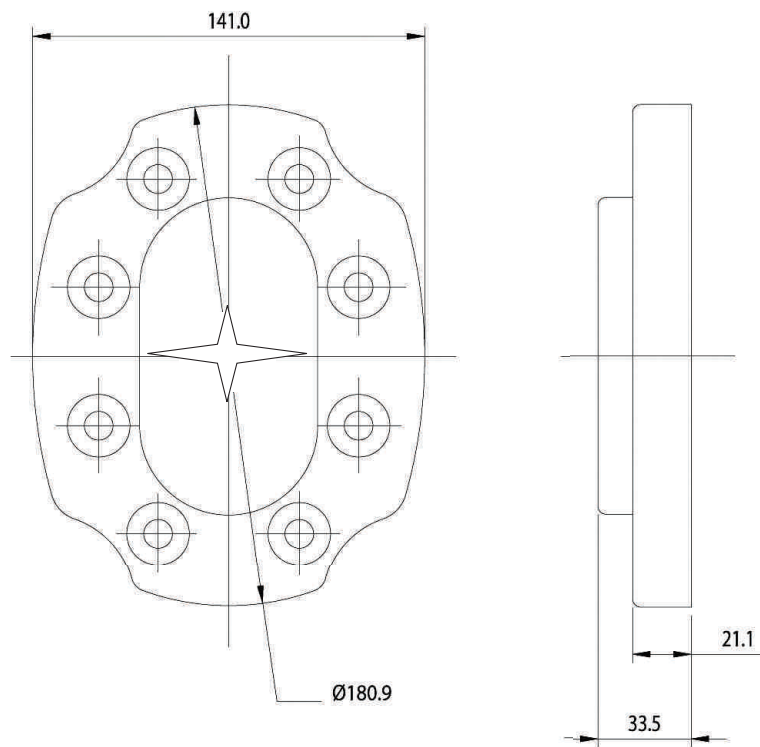
PUMP TYPES 3P3330 & 3380

ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

3P SERIES

A2

COVER



ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

PUMP CODIFICATION CHART - TANDEM PUMPS

0P	OP	3003	3003	C	P	S	T	T	B	N
Frame Size - Front Pump	Frame Size - Rear Pump	Displacement - Front Pump	Displacement - Rear Pump	Direction of Rotation	Shaft	Mounting Flange	Inlet & Outlet Ports - Front Pump	Inlet & Outlet Ports - Rear Pump	End Cover	Seals

EXAMPLE OF ORDERING CODE

0P	OP	3015	3008	C	P	S	T	T	B	N
Frame Size - Front Pump	Frame Size - Rear Pump	Displacement - Front Pump	Displacement - Rear Pump	Direction of Rotation	Shaft	Mounting Flange	Inlet & Outlet Ports - Front Pump	Inlet & Outlet Ports - Rear Pump	End Cover	Seals

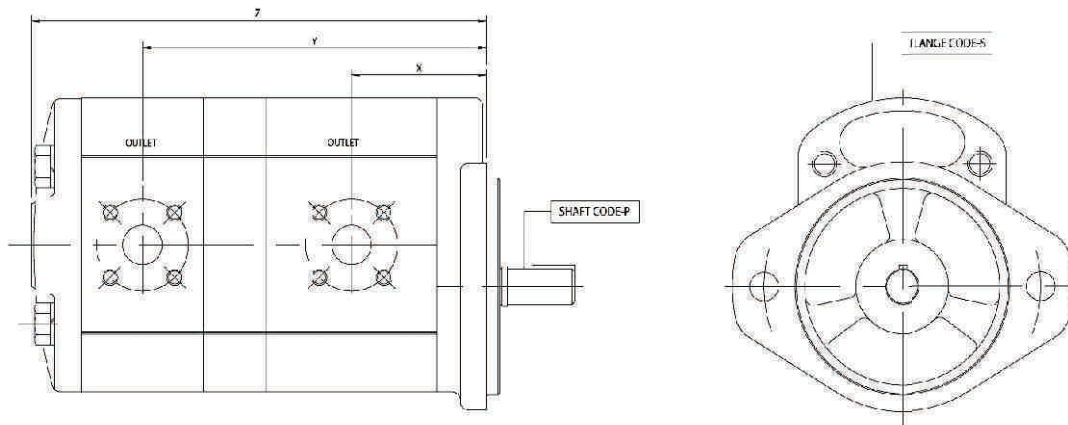
This order code specifies a Tandem pump of

- 0P Frame Size
- P3000 Series
- 4.53 cc/rev front pump capacity
- 2.27 cc/rev rear pump capacity
- Clockwise Rotation
- Parallel Shaft
- SAE Mounting Flange
- BSP Ported Body - Front Pump
- BSP Ported Body - Rear Pump
- Standard End Cover
- Nitrile Seals

TANDEM OP - OP

INSTALLATION DIMENSIONS

A2



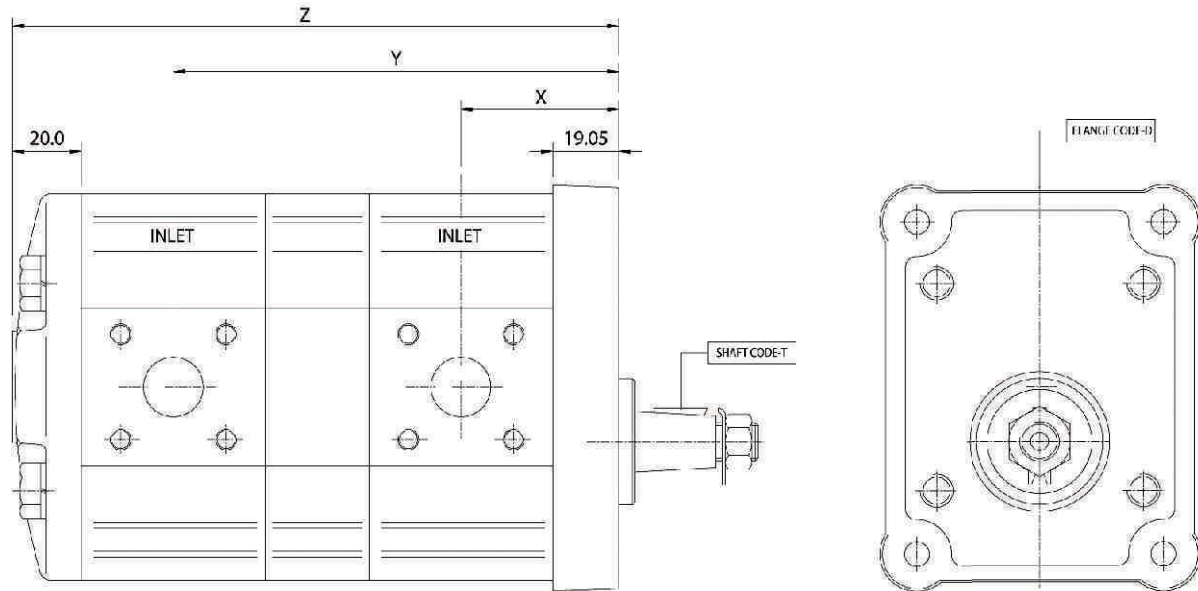
PUMP TYPE OP - OP	DIMENSIONS		
	X	Y	Z
3015-3015	42.3	113.8	156.0
-3013	40	113.1	154.6
-3011	40	112.4	153.2
-3008	40	111.4	151.2
-3006	40	110.6	149.8
-3004	40	110.1	148.7
-3003	40	109.7	147.8
3013-3013	41.6	111.7	153.2
-3011	40	111.0	152.0
-3008	40	110.0	150.0
-3006	40	109.2	148.3
-3004	40	108.7	147.2
-3003	40	108.2	146.4
3011-3011	40.9	109.6	150.5
-3008	40	108.6	148.5
-3006	40	107.9	147.0
-3004	40	107.3	146.0
-3003	40	106.9	145.0
3008-3008	39.9	106.6	146.5
-3006	40	105.9	145.0
-3004	40	105.3	144.0
-3003	40	104.9	143.0
3006-3006	39.2	104.4	143.5
-3004	40	103.8	142.4
-3003	40	103.4	141.5
3004-3004	38.6	102.7	141.3
-3003	40	102.3	140.5
3003-3003	38.2	101.4	139.6

ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

TANDEM 1P - 1P

A2

INSTALLATION DIMENSIONS



PUMP TYPE.	DIM-X	DIM-Y	DIM-Z
3090-3090	63.4	182.1	246.4
-3072	"	178.7	239.7
-3060	"	176.4	235.1
-3052	"	174.9	232.0
-3044	"	173.4	229.0
-3036	"	164.3	211.0
-3028	"	162.8	207.9
-3020	"	161.3	204.8
-3017	"	160.5	203.2
3072-3072	60.1	172.1	233.0
-3060	"	169.8	228.5
-3052	"	168.2	225.4
-3044	"	166.7	222.3
-3036	"	157.7	204.3
-3028	"	156.1	201.2
-3020	"	154.6	198.1
-3017	"	153.8	196.6
3060-3060	57.8	165.2	224.0
-3052	"	163.6	221.0
-3044	"	162.1	218.0
-3036	"	153.1	200.0
-3028	"	151.5	197.0
-3020	"	150.0	193.5
-3017	"	149.2	192.0

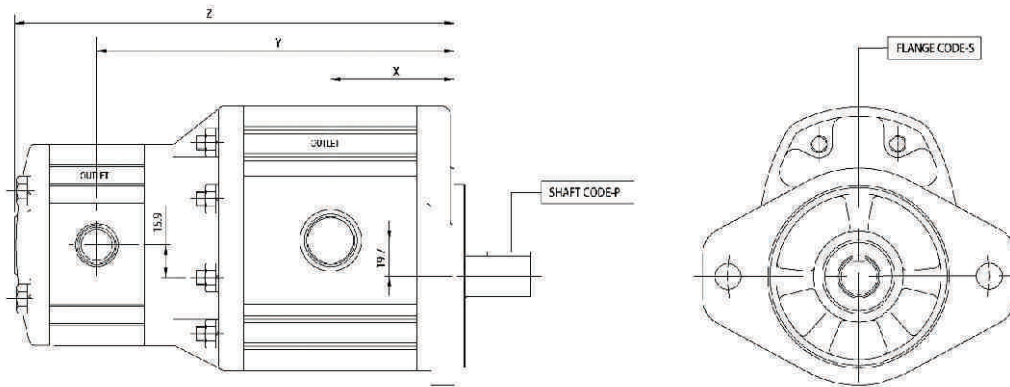
PUMP TYPE.	DIM-X	DIM-Y	DIM-Z
3052-3052	56.2	160.6	218.0
-3044	"	159.0	215.0
-3036	"	150.0	197.0
-3028	"	148.5	193.5
-3020	"	147.0	190.5
-3017	"	146.2	189.0
3044-3044	54.7	156.0	211.6
-3036	"	147.0	193.5
-3028	"	145.4	190.5
-3020	"	143.9	187.4
-3017	"	143.1	185.8
3036-3036	45.7	128.9	175.5
-3028	"	127.3	172.4
-3020	"	125.8	169.3
-3017	"	125.0	167.8
3028-3028	44.1	124.3	169.3
-3020	"	122.7	166.3
-3017	"	121.9	164.7
3020-3020	42.6	119.6	163.2
-3017	"	118.2	161.6
3017-3017	41.8	117.3	160.0

ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

TANDEM 2P - 1P

INSTALLATION DIMENSIONS

A2



PUMP TYPE 2P-1P	DIMENSIONS		
	X	Y	Z
3220-3090	81.7	241.6	305.9
-3072	*	238.3	299.3
-3060	*	236.0	294.7
-3052	*	234.5	291.7
-3044	*	232.9	288.5
-3036	*	223.9	270.5
-3028	*	222.4	267.5
-3020	*	220.8	264.3
-3017	*	220.1	262.9
3158-3090	74.3	226.7	291.0
-3072	*	223.4	284.4
-3060	*	221.1	279.8
-3052	*	219.6	276.8
-3044	*	218.0	273.6
-3036	*	209.0	255.6
-3028	*	207.5	252.6
-3020	*	205.9	249.4
-3017	*	205.2	248.0
3146-3090	72.8	223.7	288.0
-3072	*	220.4	281.4
-3060	*	218.1	276.8
-3052	*	216.6	273.8
-3044	*	215.0	270.6
-3036	*	206.0	252.6
-3028	*	204.5	249.6
-3020	*	202.9	246.4
-3017	*	202.2	245.0
3120-3090	69.7	217.6	281.9
-3072	*	214.3	275.3
-3060	*	212.0	270.7
-3052	*	210.5	267.7
-3044	*	208.9	264.5
-3036	*	199.9	246.5
-3028	*	198.4	243.5
-3020	*	196.8	240.3
-3017	*	196.1	238.9

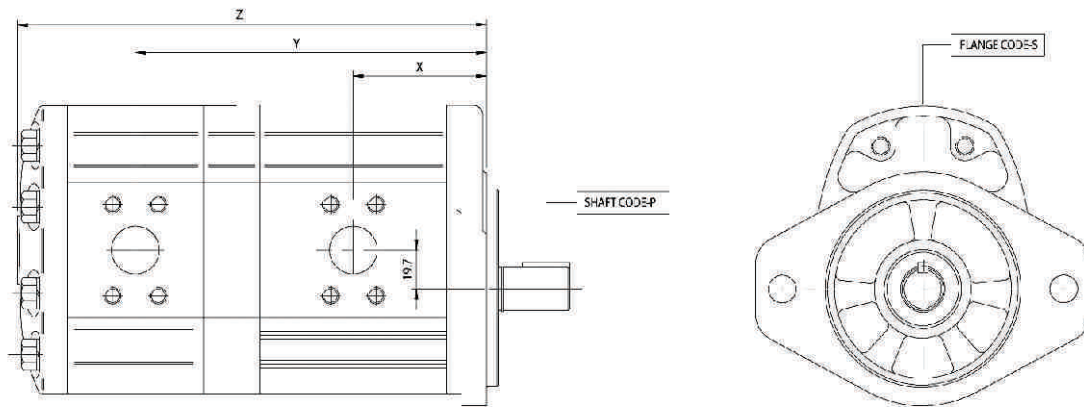
PUMP TYPE 2P-1P	DIMENSIONS		
	X	Y	Z
3105-3090	67.9	213.8	278.1
-3072	*	210.5	271.5
-3060	*	208.2	266.9
-3052	*	206.7	263.9
-3044	*	205.1	260.7
-3036	*	196.1	242.7
-3028	*	194.6	239.7
-3020	*	193.0	236.5
-3017	*	192.3	235.1
3090-3090	59.1	196.4	260.7
-3072	*	193.1	254.1
-3060	*	190.8	249.5
-3052	*	189.3	246.6
-3044	*	187.7	243.3
-3036	*	178.7	225.3
-3028	*	177.2	222.3
-3020	*	175.6	219.1
-3017	*	174.9	217.7
3070-3060	56.6	185.9	244.6
-3052	*	184.4	241.6
-3044	*	182.8	238.4
-3036	*	173.8	220.4
-3028	*	172.3	217.4
-3020	*	170.7	214.2
-3017	*	170.0	212.8
3050-3044	54.3	178.0	233.6
-3036	*	169.0	215.6
-3028	*	167.5	212.6
-3020	*	165.9	209.4
-3017	*	165.2	208.0

ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

TANDEM 2P - 2P

A2

INSTALLATION DIMENSIONS



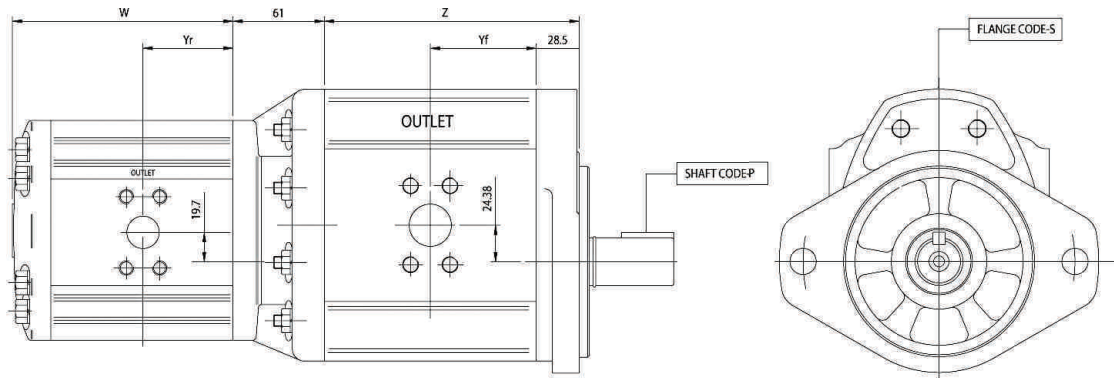
PUMP TYPE 2P - 2P	DIMENSIONS		
	X	Y	Z
3158-3158	74.3	212.8	291.2
-3145	"	211.2	288.0
-3120	"	208.2	282.0
-3105	"	206.3	278.3
-3090	"	197.6	261.0
-3070	"	195.1	256.0
-3050	"	192.7	251.0
3146-3146	72.8	208.2	285.0
-3120	"	205.1	279.0
-3105	"	203.3	275.3
-3090	"	194.5	257.7
-3070	"	192.1	252.9
-3050	"	189.7	248.1
3120-3120	69.7	199.0	272.8
-3105	"	197.2	269.2
-3090	"	188.4	251.6
-3070	"	186.0	246.8
-3050	"	183.6	241.9
3105-3105	67.9	193.5	265.5
-3090	"	184.7	248.0
-3070	"	182.3	243.1
-3050	"	179.9	238.3
3090-3090	59.1	167.2	230.4
-3070	"	164.8	225.6
-3050	"	162.4	220.8
3070-3070	56.7	160.0	220.8
-3050	"	157.5	216.0
3050-3050	54.3	152.7	211.1

ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

TANDEM 3P - 2P

INSTALLATION DIMENSIONS

A2



PUMP TYPE 3P-2P	DIMENSIONS			
	Z	Y-FRONT	Y-REAR	W
3500-3220	67.9	213.8	60.2	146.0
-3158	"	52.7	54.4	131.0
-3146	"	51.3	51.3	128.0
-3120	"	48.3	48.3	122.3
-3105	"	46.5	46.5	118.6
-3090	"	37.6	37.6	101.0
-3070	"	35.0	35.0	96.2
-3050	"	32.8	32.8	91.5
3380-3220	148.8	60.2	60.2	146.0
-3158	"	54.4	54.4	131.0
-3146	"	51.3	51.3	128.0
-3120	"	48.3	48.3	122.3
-3105	"	"	46.5	118.6
-3090	"	"	37.6	101.0
-3070	"	"	35.0	96.2
-3050	"	"	32.8	91.5
3330-3220	140.8	56.14	60.2	146.0
-3158	"	"	54.4	131.0
-3146	"	"	51.3	128.0
-3120	"	"	48.3	122.3
-3105	"	"	46.5	118.6
-3090	"	"	37.6	101.0
-3070	"	"	35.0	96.2
-3050	"	"	32.8	91.5
3300-3220	135.6	53.6	60.2	146.0
-3158	"	"	54.4	131.0
-3146	"	"	51.3	128.0
-3120	"	"	48.3	122.3
-3105	"	"	46.5	118.6
-3090	"	"	37.6	101.0
-3070	"	"	35.0	96.2
-3050	"	"	32.8	91.5

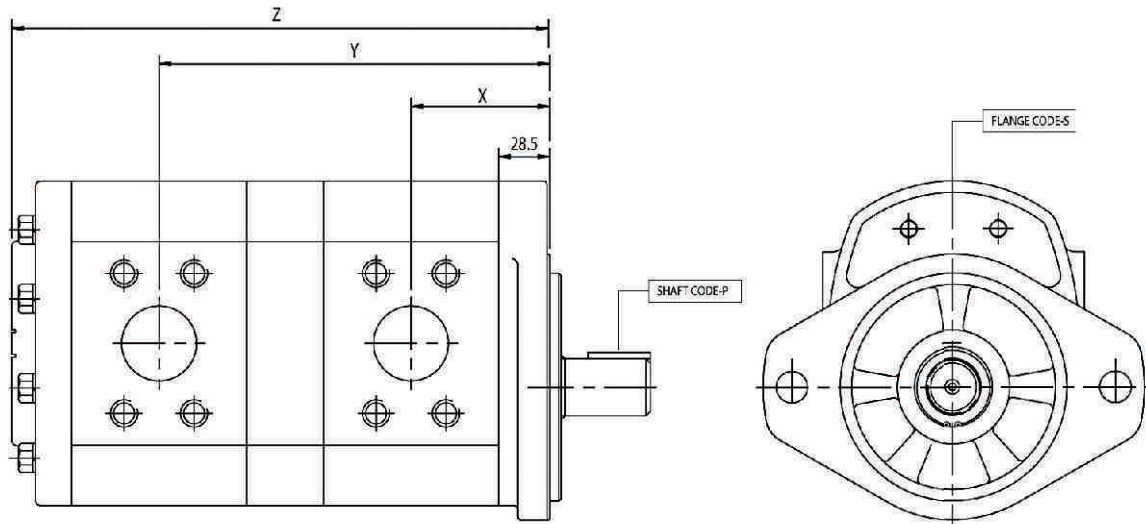
PUMP TYPE 3P-2P	DIMENSIONS			
	Z	Y-FRONT	Y-REAR	W
3250-3220	127.7	49.6	60.2	146.0
-3158	"	"	54.4	131.0
-3146	"	"	51.3	128.0
-3120	"	"	48.3	122.3
-3105	"	"	46.5	118.6
-3090	"	"	37.6	101.0
-3070	"	"	35.0	96.2
-3050	"	"	32.8	91.5
3210-3158	121.34	46.4	54.4	131.0
-3146	"	"	51.3	128.0
-3120	"	"	48.3	122.3
-3105	"	"	46.5	118.6
-3090	"	"	37.6	101.0
-3070	"	"	35.0	96.2
-3050	"	"	32.8	91.5
3180-3158	116.5	44.0	54.4	131.0
-3146	"	"	51.3	128.0
-3120	"	"	48.3	122.3
-3105	"	"	46.5	118.6
-3090	"	"	37.6	101.0
-3070	"	"	35.0	96.2
-3050	"	"	32.8	91.5
3150-3146	111.6	41.6	51.3	128.0
-3120	"	"	48.3	122.3
-3105	"	"	46.5	118.6
-3090	"	"	37.6	101.0
-3070	"	"	35.0	96.2
-3050	"	"	32.8	91.5

ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

TANDEM 3P - 3P

A2

INSTALLATION DIMENSIONS



PUMP TYPE.	DIM-X	DIM-Y	DIM-Z
3500-3500	98.9	280.4	384.3
-3380	"	270.2	363.8
-3330	"	266.1	355.8
-3300	"	263.6	350.6
-3250	"	259.6	342.7
-3210	"	256.4	336.3
-3180	"	254.0	331.5
-3150	"	251.6	326.6
3380-3380	88.6	249.6	343.3
-3330	"	245.6	335.3
-3300	"	243.0	330.1
-3250	"	239.1	322.2
-3210	"	235.9	315.8
-3180	"	233.5	311.0
-3150	"	231.1	306.1
3330-3330	84.6	237.6	327.2
-3300	"	235.0	322.0
-3250	"	231.1	314.1
-3210	"	227.9	307.8
-3180	"	225.5	302.9
-3150	"	223.1	298.1

PUMP TYPE.	DIM-X	DIM-Y	DIM-Z
3300-3300	82.1	229.9	316.9
-3250	"	225.9	309.0
-3210	"	222.7	302.6
-3180	"	220.3	297.8
-3150	"	217.9	292.9
3250-3250	78.1	218.0	301.1
-3210	"	214.8	294.7
-3180	"	212.4	289.9
-3150	"	210.0	285.0
3210-3210	74.9	208.5	288.4
-3180	"	206.0	283.6
-3150	"	203.6	278.6
3180-3180	72.5	201.2	278.7
-3150	"	198.8	273.8
3150-3150	70.1	193.9	269.0

ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED.

TANDEM PUMP PRESSURE LIMITATION RATING

The pressure ratings of tandem pumps are limited by the torque capacity of the drive shaft and the intermediate connecting spline.

In order to determine these limitations:

1. Multiply the pressure on each section of the pump by the displacement of each section. This gives the PQ rating for each pump section. The sum of both PQ values must not exceed that given for the type of input drive shaft selected.
- 2 The PQ rating for the rear pump must not exceed the value given for the tandem spline coupling.

PUMP	SHAFT	PQ psi x in ³ /rev	PQ bar x cc/rev
0P	Taper code T	2,500	2,820
	Parallel code P	2,500	2,820
	Tandem Spline	1,600	1,810
1P	Taper code T & K	5,550	6,270
	Parallel code P	5,550	6,270
	Spline code S	4,355	4,920
	Tandem Spline	4,350	5,790
2P	Taper code T	11,100	12,470
	Parallel code P	11,100	12,470
	Spline code S	13,800	15,600
	Spline code Q	13,800	15,600
	Tandem Spline	9,260	10,400
3P	Taper code T	21,100	23,900
	Parallel code P	34,400	38,800
	Spline code S	42,200	47,600
	Tandem Spline	16,590	8,800



POSSIBLE MULTIPLE PUMP GROUP COMBINATIONS

- 0P 0P
- 0P 0P 0P
- 0P 0P 0P 0P
- 1P 0P
- 1P 1P
- 1P 1P 1P
- 1P 1P 1P 1P
- 2P 0P
- 2P 1P
- 2P 2P
- 2P 1P 1P
- 2P 2P 1P
- 2P 2P 2P
- 3P 1P
- 3P 2P
- 3P 3P
- 3P 2P 2P
- 3P 3P 2P
- 3P 3P 3P