

HY3-LN

External Gear Pumps

22 to 61 cc/rev, Up to 250 bar continuous

► DESCRIPTION:

HydrecO is pleased to introduce a brand new range of gear pumps and motors. Based on the experience and knowledge acquired over many years of engineering and manufacturing, the HY series is provided with an aluminum alloy housing, two gear wheels supported by sleeve bearings and cast iron flange and cover.

The HY3 series, available as pumps and motors, offers a high efficiency, low noise level and can be applied in standard and heavy duty applications, thanks to the high reliability and the accuracy of design and production. The pumps can be supplied as single, or as multiple units with a variety of options and flanges, shafts and ports, providing the right setup on each application. Feel free to contact your HydrecO representative to find out and to get the proper support in your selection.

- High performance hydraulic pumps
- Super quiet
- 4,060 PSI rated



HY3
Pump/Motor



HY3
Pump/Motor

► PERFORMANCE:

Max outlet port pressures		250 rated - 280 peak
Inlet port pressures		0.7 - 3 bar abs
Speed Range	All models	500 - 3000 rev/min
Temperature	Minimum at start-up	-25°C (-40°F)
	Maximum continuous	+80°C (+176°F)
	Maximum intermittent	+100°C (+212°F)
Viscosity	Maximum at start-up	2000 mm²/sec (9,000 SSU)
	Maximum continuous	250 mm²/sec (1150 SSU)
	Minimum continuous	10 mm²/sec (60 SSU)
	Optimum	15-25 mm²/sec (78-124 SSU)
Fluid Cleanliness	To ISO4406 solid contaminant	
	Start-up period	21/17
	Maximum in service	19/15
	Optimum	16/11
	Maximum water	0.1%
Fluid Velocity	Maximum in INLET line	2.5 m/sec (8 ft/sec)
	Recommended in INLET line	1.5 m/sec (5 ft/sec)
Shaft Loads	Maximum axial load	250 N (56 lb)
	Maximum radial load	500 N (112 lb)
Fluids	All data is quoted for mineral oils HM and HV. For fire resistant and environmentally aware fluids please contact your Continental/HydrecO Hydraulics representative.	
Rotation	Clockwise or Anti-clockwise viewed from shaft end (or reversible).	

► FEATURES:

- 3 Piece design
- Cast iron body option
- Helical as standard
- Flange and cover in cast iron
- Multiple units (ready to assemble)

Displacements

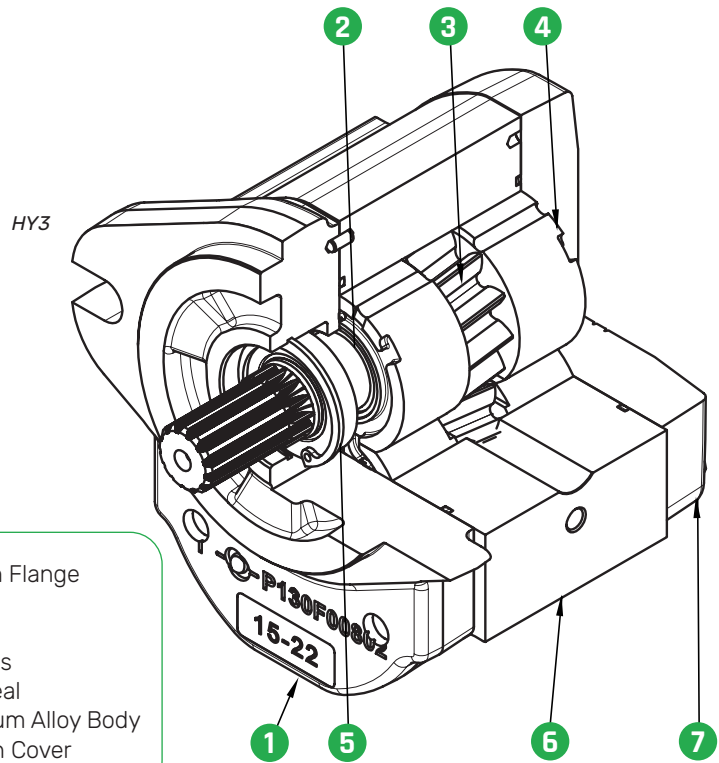
From 22 cm³/rev to 61 cm³/rev
From 1.34 in³/rev to 3.72 in³/rev:

Pressures

Max continuous 250 bar (3625 psi)
Max intermittent 270 bar (3915 psi)
Max peak 280 bar (4060 psi)

Max Speed

3000 rpm



- 1 - Cast Iron Flange
- 2 - Gaskets
- 3 - Gears
- 4 - Bushings
- 5 - Shaft Seal
- 6 - Aluminium Alloy Body
- 7 - Cast Iron Cover

HY3 C
Cast Iron
Pump/Motor



► FEATURES:

Displacement Range

GROUP	SIZE	DISPLACEMENT cm ³ /rev (in ³ /rev)	MAX PRESSURE bar (psi)			SPEED rpm	
			P1	P2	P3	min	max
HY3	22	22 (1.34)	250 (3625)	270 (3910)	280 (4060)	500	3000
	27	27 (1.63)	250 (3625)	270 (3910)	280 (4060)	500	3000
	33	33 (2.01)	240 (3480)	260 (3770)	270 (3915)	500	3000
	39	39 (2.38)	240 (3480)	260 (3770)	270 (3915)	500	3000
	44	44 (2.68)	230 (3335)	250 (3625)	260 (3770)	500	3000
	48	48 (2.93)	210 (3045)	230 (3335)	240 (3480)	500	2500
	52	52 (3.17)	210 (3045)	230 (3335)	240 (3480)	500	2500
	61	61 (3.72)	190 (2755)	210 (3045)	220 (3190)	500	2500

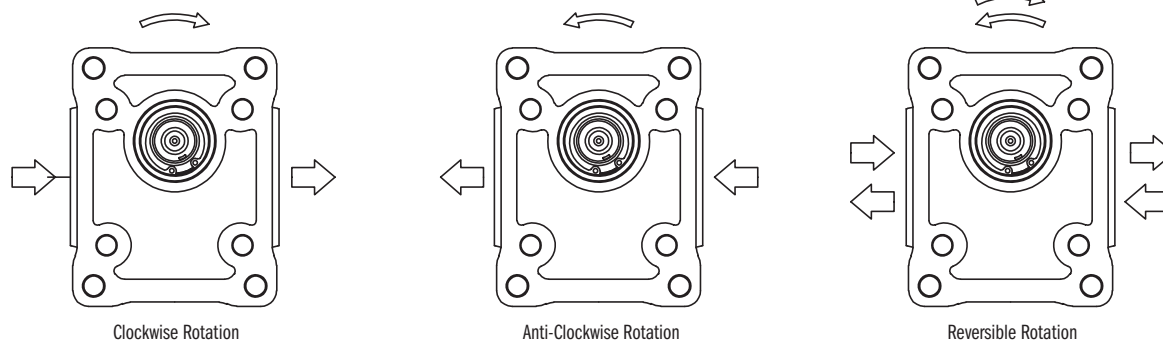
The data in the table refer to unidirectional pumps and motors.

The maximum pressures of reversible pumps and motors are 15% lower than unidirectional ones.

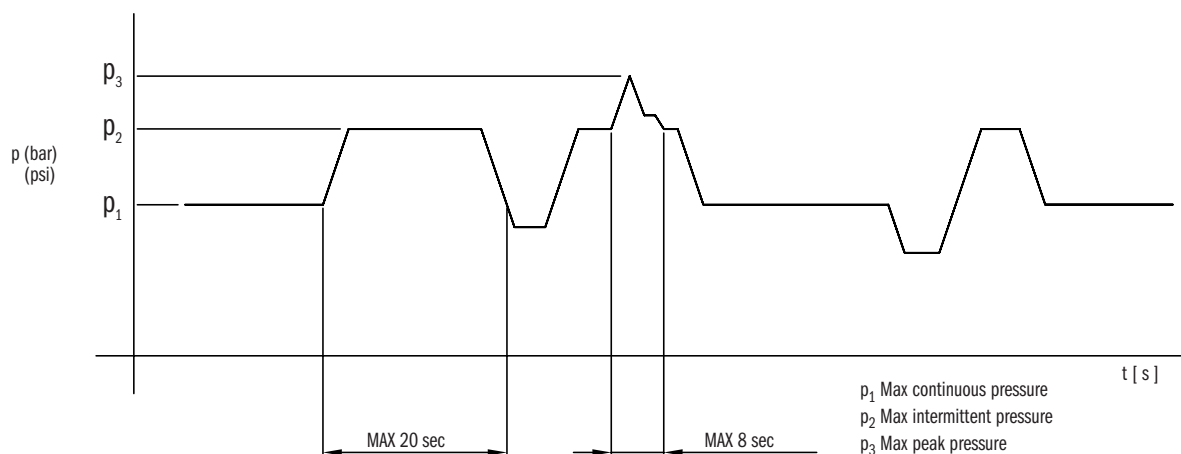
For different working conditions please contact Continental Hydraulics/Hydreco technical support.

General Characteristics:

Rotation Direction

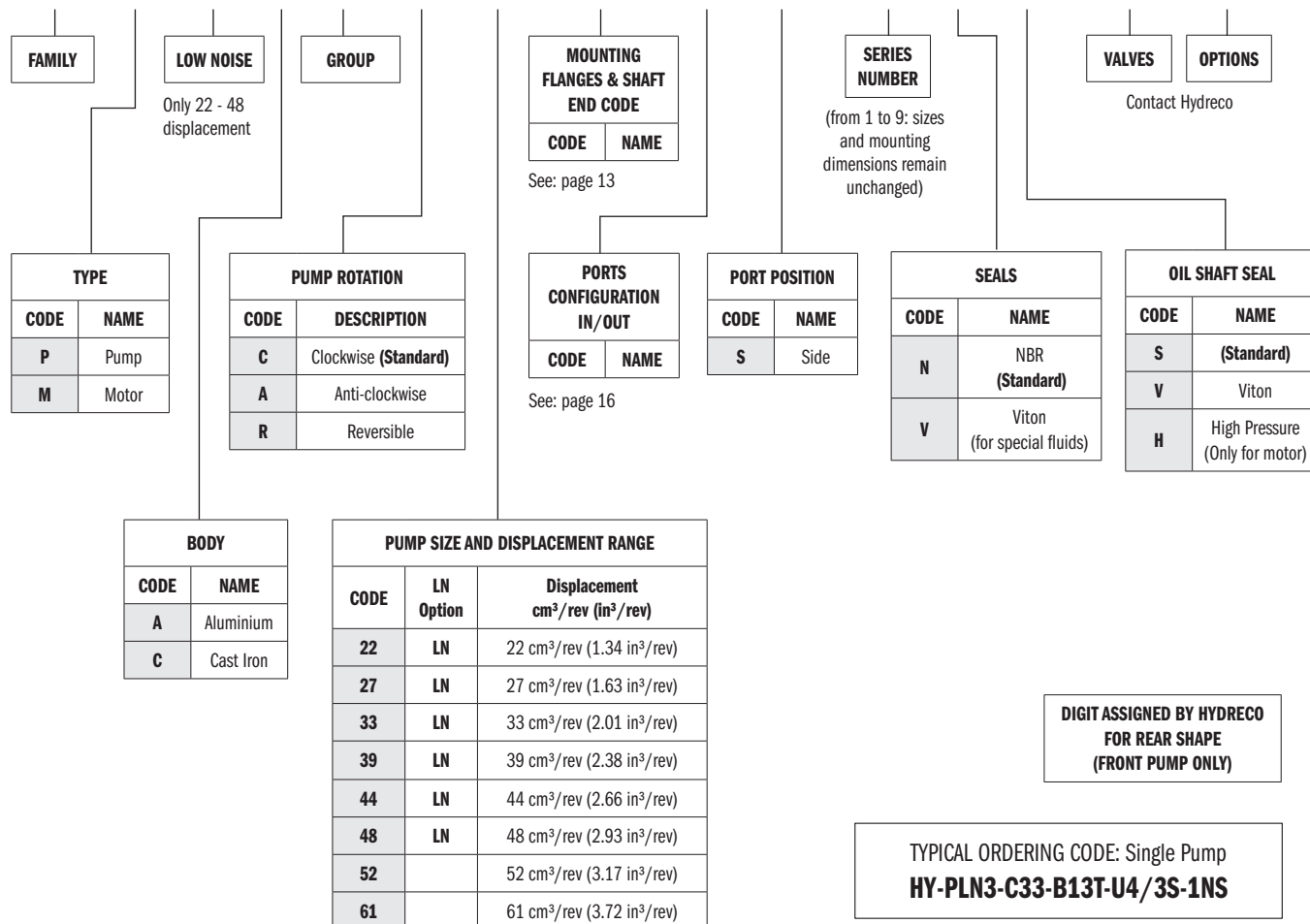


Definition of Pressures



► **IDENTIFICATION CODE: Single and Front Pump**

HY- **LN** **3-** - - - - -



HY3 single pump - clockwise rotation - 33cc - SAE B flange - 13T splined shaft - SAE threaded ports

► **IDENTIFICATION CODE:** Intermediate Pump (for Multiple Pumps)

+ A 3 - - S - -

GROUP

BODY	
CODE	NAME
A	Aluminium
C	Cast Iron

PORTS CONFIGURATION IN/OUT	
CODE	NAME

See: page 16

**SERIES
NUMBER**

(from 1 to 9: sizes
and mounting
dimensions remain
unchanged)

SEALS

CODE	NAME
N	NBR (Standard)
V	Viton (for special fluids)

PUMP SIZE AND DISPLACEMENT RANGE

CODE	LN Option	Displacement cm ³ /rev (in ³ /rev)
22	LN	22 cm ³ /rev (1.34 in ³ /rev)
27	LN	27 cm ³ /rev (1.63 in ³ /rev)
33	LN	33 cm ³ /rev (2.01 in ³ /rev)
39	LN	39 cm ³ /rev (2.38 in ³ /rev)
44	LN	44 cm ³ /rev (2.66 in ³ /rev)
48	LN	48 cm ³ /rev (2.93 in ³ /rev)
52		52 cm ³ /rev (3.17 in ³ /rev)
61		61 cm ³ /rev (3.72 in ³ /rev)

PORT POSITION

CODE	NAME
S	Side

TYPICAL ORDERING CODE:

Double Pump - Clockwise - 27cc + 22cc

SAE-B - BT Spline - SAE Ports*

Tandem:

HY-PLN3-C27-B13T-U4/3S-1NS+LNA3-22-U4/3S-1N

HY3 double pump - clockwise rotation - 27cc + 22cc

SAE-B Flange with 13 tooth spline shaft SAE threaded ports

TYPICAL ORDERING CODE:

Triple Pump - Clockwise - 27cc + 22cc + 6cc

SAE-B - 13T Spline Shaft - SAE Ports*

HY-PLN3-C27-B13T-U4/3S-1NS+LNA3-22-U4/3S-1N+LNA2-06-U25/25S-1N

HY3 triple - clockwise rotation + HY3 intermediate + HY2 back pump

SAE-B Flange with 13 tooth spline shaft SAE threaded ports

► **IDENTIFICATION CODE:** For Isolated intermediate Pumps

LN **3** - - -

LOW NOISE

GROUP

SERIES
NUMBER

(from 1 to 9: sizes
and mounting
dimensions remain
unchanged)

BODY	
CODE	NAME
A	Aluminium
C	Cast Iron

PUMP ROTATION	
CODE	DESCRIPTION
C	Clockwise (Standard)
A	Anti-clockwise
R	Reversible

PORT POSITION	
CODE	NAME
S	Side
R	Rear

SEALS	
CODE	NAME
N	NBR (Standard)
V	Viton (for special fluids)

OIL SHAFT SEAL	
CODE	NAME
OMIT	(Standard)
SS	If separate stages are needed

See: page 16

PUMP SIZE AND DISPLACEMENT RANGE		
CODE	LN Option	Displacement cm ³ /rev (in ³ /rev)
22	LN	22 cm ³ /rev (1.34 in ³ /rev)
27	LN	27 cm ³ /rev (1.63 in ³ /rev)
33	LN	33 cm ³ /rev (2.01 in ³ /rev)
39	LN	39 cm ³ /rev (2.38 in ³ /rev)
44	LN	44 cm ³ /rev (2.66 in ³ /rev)
48	LN	48 cm ³ /rev (2.93 in ³ /rev)
52		52 cm ³ /rev (3.17 in ³ /rev)
61		61 cm ³ /rev (3.72 in ³ /rev)

PORTS CONFIGURATION IN/OUT	
CODE	NAME

See: page 16

TYPICAL ORDERING CODE:
LNA3-C44-U5/4S-1NSS

► PERFORMANCE DATA:

General Characteristics

It is essential that pumps are installed so that they can always fill with fluid. 'HY' Series pumps inlet porting is designed to facilitate full volume fill but the following machine design recommendations should be followed.

Direction Rotation (Viewed from shaft end)	Clockwise (C)
	Anti-clockwise (A)
	Reversible (R)
Range inlet pressure - pump	0.7 ÷ 3 bar (10 ÷ 43 psi)
Max back pressure on the unidirectional motors and reversible with internal drainage	P ₁ (continue) max 5 bar (72 psi)
	P ₂ (for 20 sec) max 8 bar (115 psi)
	P ₃ (for 5 sec) max 15 bar (215 psi)
Reversible Motor Max pressure in drain	5 bar (72 psi)
Temperature fluid (MIN, MAX, PEAK) °C	-25, 80, 100 NBR
	-25, 110, 125 VITON
Range of viscosity	From 10 to 100 mm ² /s (cSt) IDEAL
	Up to 750 mm ² /s (cSt) RECOMMENDED
	Up to 1000 mm ² /s (cSt) START
Fluid type	Mineral oil

Recommended Filtration

Working pressure bar (psi)	$\Delta p < 140$ (2030)	140 (2030) $< \Delta p < 210$ (3040)	$\Delta p > 210$ (3040)
Class contamination NAS 1638	10	9	8
Class contamination ISO 4406:1999	21/19/16	20/18/15	19/17/14

Q = flow rate (L/min)
 V = displacement (cm³/rev)
 n = speed (min⁻¹)
 M = torque (Nm)
 P = power (kW)
 Δp = pressure (bar)

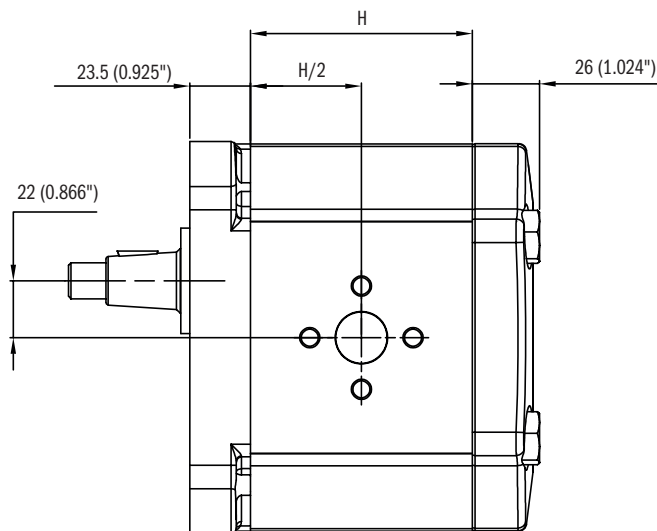
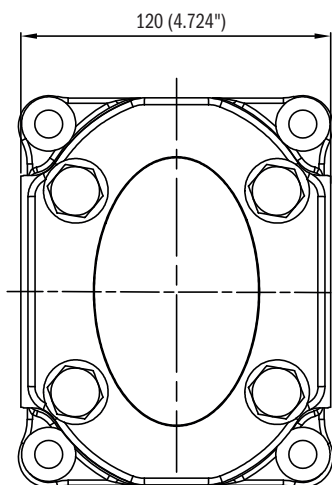
PERFORMANCE	PUMPS	MOTORS
η_v = Volumetric efficiency	≈ 0.96	≈ 0.95
η_{hm} = hydro-mechanical efficiency	≈ 0.88	≈ 0.85
η_t = total efficiency	≈ 0.84	≈ 0.81

► **INSTALLATION DATA:**

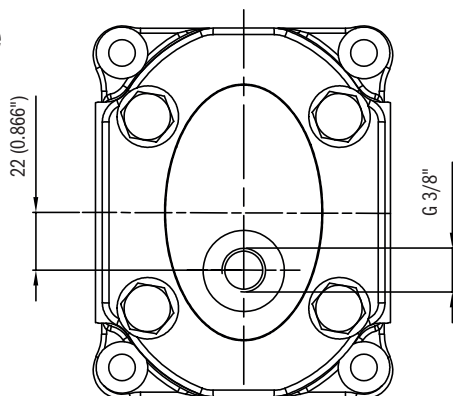
Dimensions mm (inch)

Single Pumps

**Unidirectional
Cover**



**Reversible
Cover**

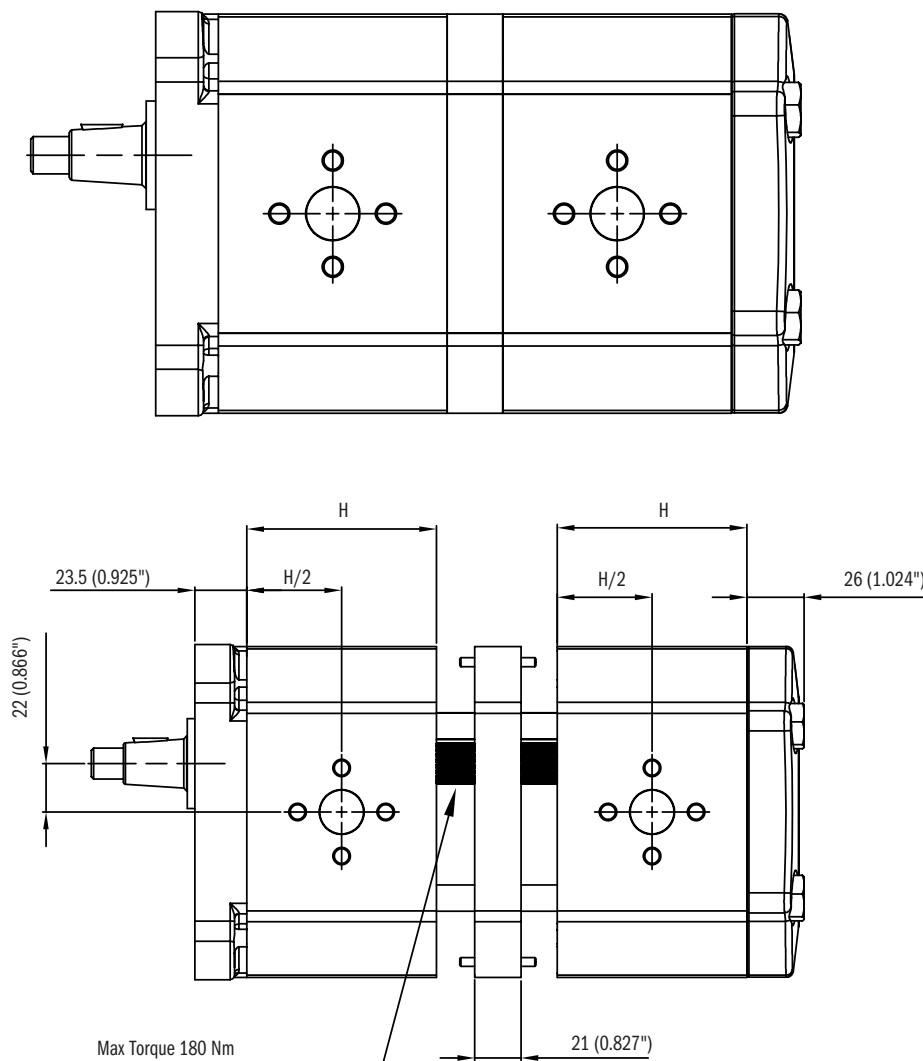


HY3 Pump Size	H mm (inches)	Weight (Kg)
22	70.8 (2.787)	8.6
27	74.6 (2.937)	8.9
33	79.2 (3.118)	9.2
39	83.8 (3.299)	9.5
44	87.6 (3.448)	9.8
48	100.6 (3.960)	10.0
52	103.7 (4.087)	10.2
61	110.6 (4.354)	10.4

► **INSTALLATION DATA:**

Dimensions mm (inch)

Side View



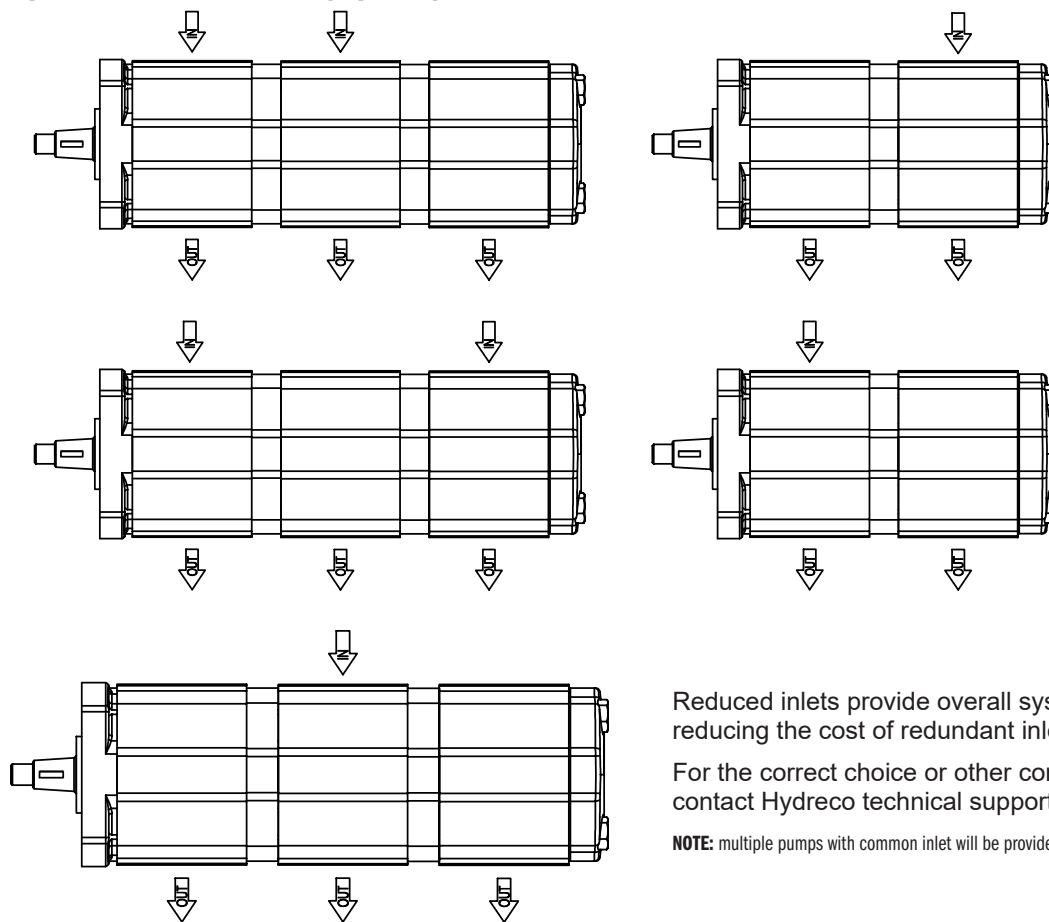
STANDARD
Configuration tandem pumps

HY3 Pump Size	H mm (Inches)	Weight (Kg)
22	70.8 (2.787)	4.0
27	74.6 (2.937)	4.3
33	79.2 (3.118)	4.6
39	83.8 (3.299)	4.9
44	87.6 (3.448)	5.2
48	100.6 (3.960)	5.4
52	103.7 (4.087)	5.6
61	110.6 (4.354)	5.8

► INSTALLATION DATA:

Dimensions mm (inch)

Examples with Common inlet (top view)



Reduced inlets provide overall systems savings by reducing the cost of redundant inlet hose and fittings.

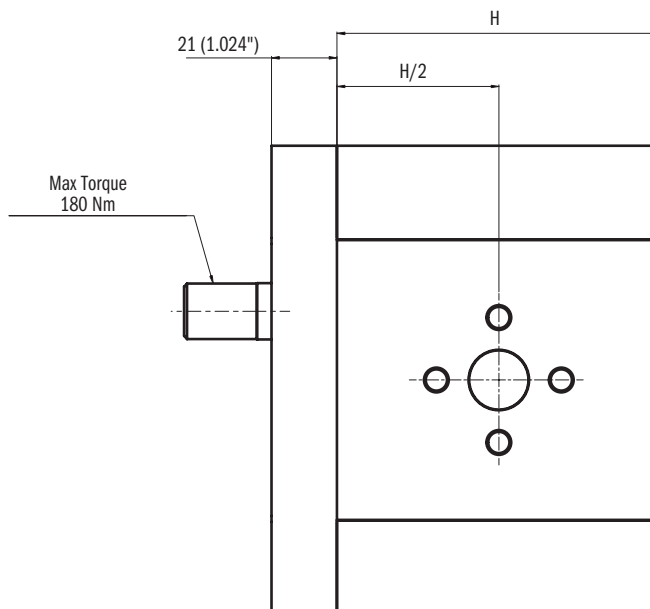
For the correct choice or other combinations please contact Hydreco technical support.

NOTE: multiple pumps with common inlet will be provided with a special body.

Dimensions (side view)

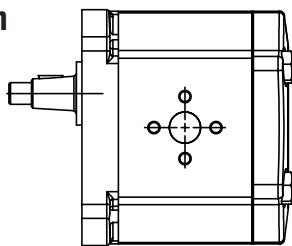
The HY3 intermediate pumps include the intermediate flange and coupling to easily assemble tandem or multiple pumps.

HY3 Pump Size	H mm (inches)	Weight (Kg)
22	70.8 (2.787)	4.0
27	74.6 (2.937)	4.3
33	79.2 (3.118)	4.6
39	83.8 (3.299)	4.9
44	87.6 (3.448)	5.2
48	100.6 (3.960)	5.4
52	103.7 (4.087)	5.6
61	110.6 (4.354)	5.8

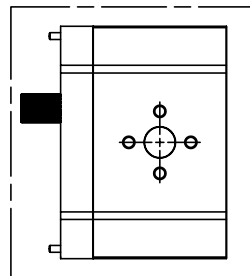


► INSTALLATION DATA:

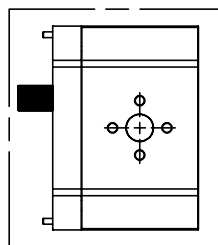
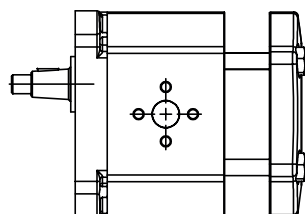
How to make Tandem pumps using an intermediate pump (side view)



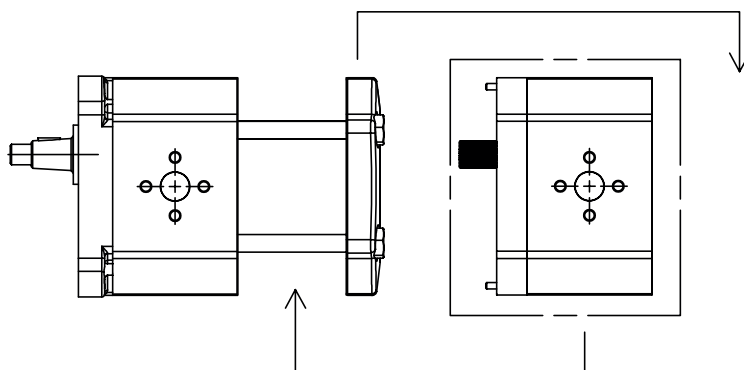
STANDARD PUMP



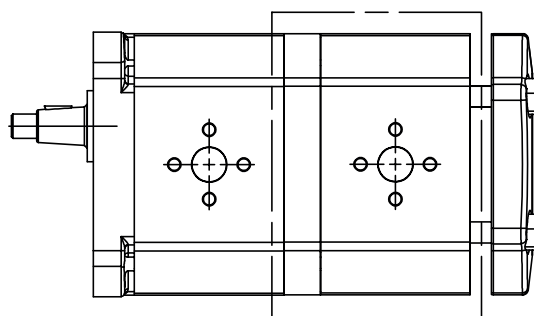
INTERMEDIATE PUMP



A. Loosen, and remove, the clamp screws and remove the cover.



B. Connect the intermediate pump.

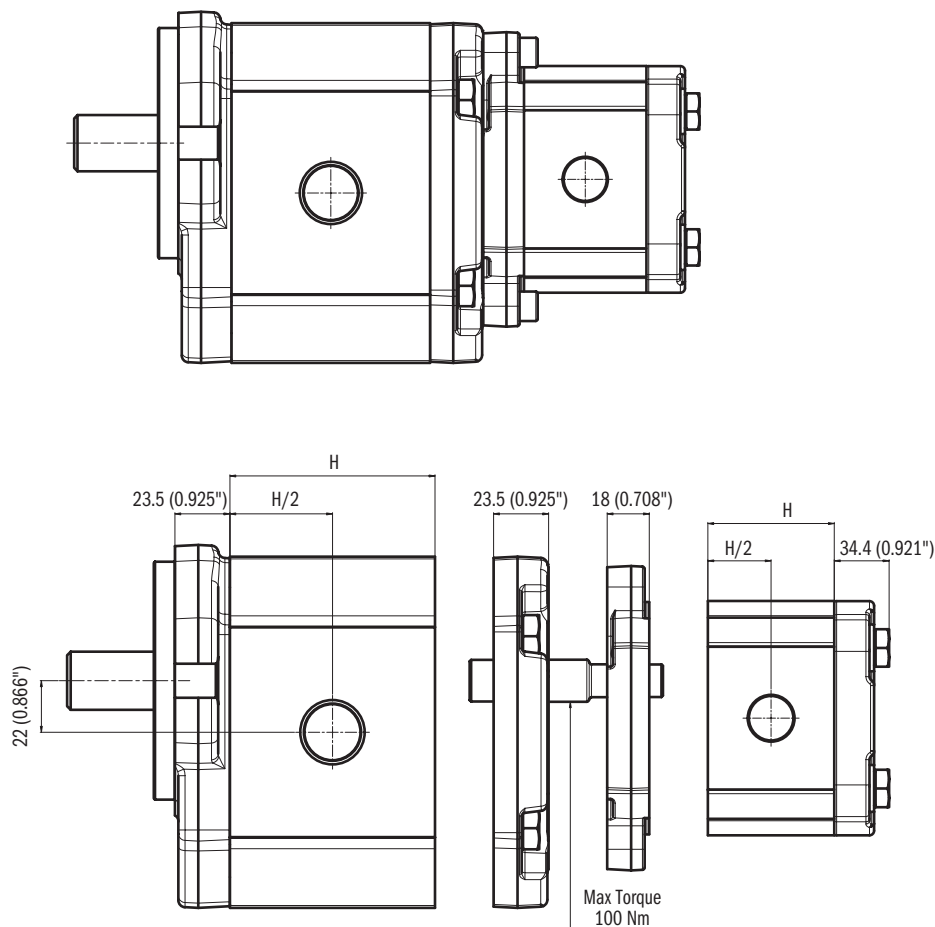


C. Assembling the tandem pump.
Refit the clamp screws.

SCREWS TIGHTENING
TORQUE = 100 ± 5 Nm (74 FT-LB)
For length of closure screws = see page 18

► **INSTALLATION DATA:**

Dimensions mm (inch)



STANDARD CONFIGURATION

Tandem Pumps

HY3 Pump Size	H mm (inches)
22	70.8 (2.787)
27	74.6 (2.937)
33	79.2 (3.118)
39	83.8 (3.299)
44	87.6 (3.448)
48	100.6 (3.960)
52	103.7 (4.087)
61	110.6 (4.354)

HY2 Pump/Motor Size	H mm (inches)
04	48.6 (1.913)
06	51.5 (2.027)
08	54.0 (2.125)
11	58.4 (2.299)
14	63.2 (2.488)
16	66.6 (2.622)
20	71.3 (2.807)
22	82.0 (3.228)
25	86.6 (3.409)
28	91.0 (3.582)
31	96.1 (3.783)

Tandem Pumps Screw Lengths

Size cc Gr.3	22	27	33	39	44	48	52	61
22	200	210	245	215	220	235	235	245
27		210	245	220	225	240	240	250
33			220	225	230	240	245	250
39				230	230	245	250	255
44					240	250	255	260
48						265	265	275
52							270	275
61								285

TANDEM PUMPS HY3+HY3

M12 screws size

10.9 screws class

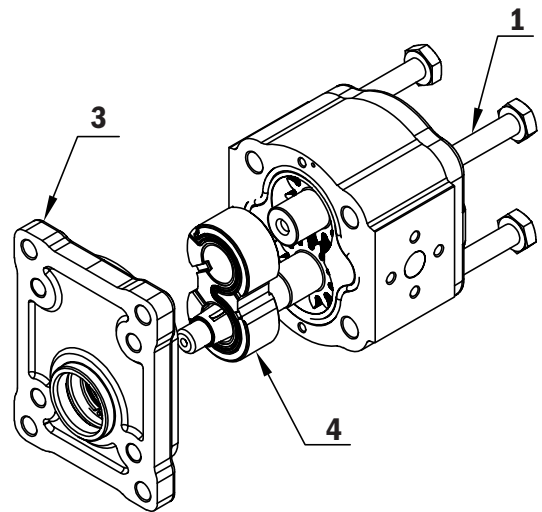
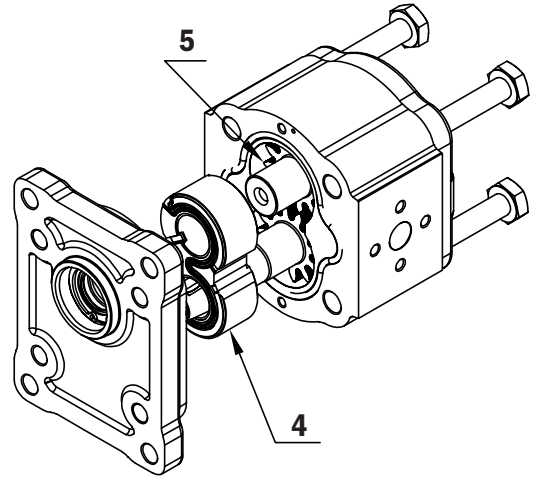
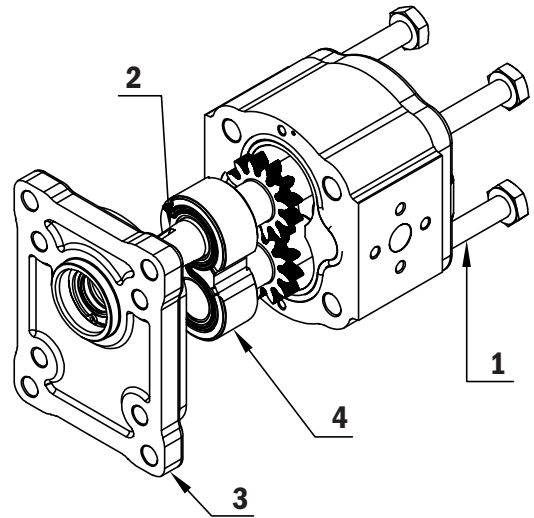
Screws Tightening Torque = 100 +/- 5 Nm (74 LB/FT)

Length expressed in millimeters

► INSTALLATION DATA:

Units Rotating Changing Instructions

- A. Clean the pump externally with care
- B. Coat the sharp edges of the drive shaft (2) with adhesive tape and smear a layer of clean grease on the shaft and extension to avoid damaging the lip of the shaft seal when removing the mounting
- C. Lay the pump on the working area in order to have the mounted flange turned upside.
- D. Loosen, and remove, the clamp screws (1).
- E. Remove the mounting flange (3), taking care to keep the flange as straight as possible during removal.
- F. Ensure that while removing the front mounting flange, the drive shaft and other components remain in position.
- G. Ease the drive gear (2) up to facilitate removal of bearings (4), taking care that the precision ground surfaces do not become damaged, and removed the drive gear
- H. Remove the driven gear (2) without overturning. The rear flange has not to be removed.
- I. Re-locate the driven gear in the position previously occupied by the drive gear (2).
- J. Re-locate the drive gear (2) in the position previously occupied by the driven gear (5).
- K. Re-locate the bushing (4) without rotating. Refit the front mounting flange (3) turned by 180°.
- L. Refit the clamp screws (1).
SCREW TIGHTENING TORQUE = 100±5 Nm - M12 (74 LB/FT)
- M. Check that the pump rotates freely when the drive shaft (2) is turned by hand.
- N. If not a pressure plate seal may be pinched.
- O. The pump is ready for installation with the new direction of rotation.



► **FLANGE & SHAFT:**

Dimensions mm (inch)

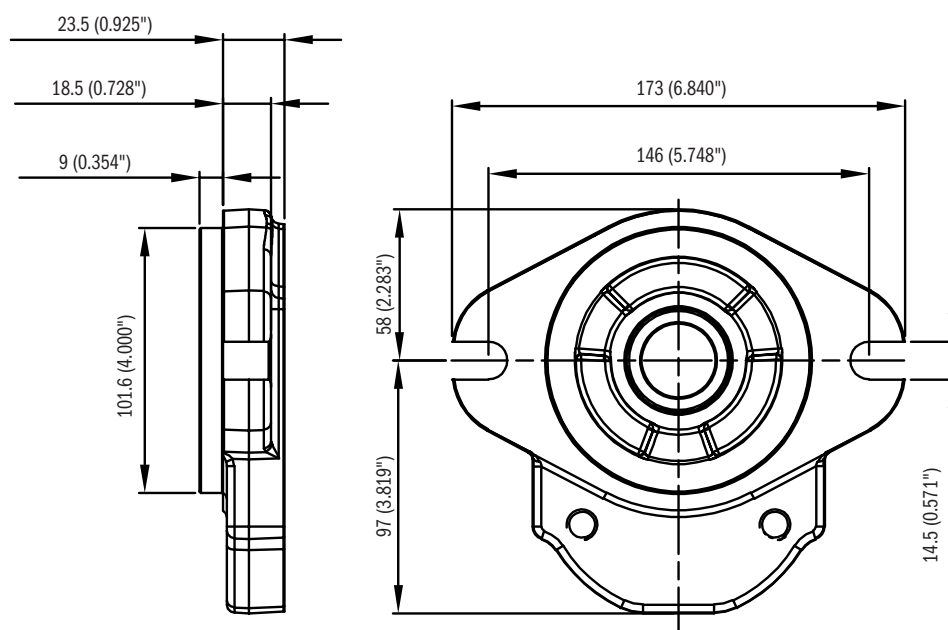
STANDARD CODES	FLANGE	SHAFT	AVAILABLE DISPLACEMENT
B13T	B = SAE B flange $\varnothing 101.6$	13T = Splined shaft 13T 16/32"	22 to 61 cc
B15T	B = SAE B flange $\varnothing 101.6$	15T = Splined shaft 15T 16/32"	22 to 61 cc
B22P	B = SAE B flange $\varnothing 101.6$	22P = Parallel shaft $\varnothing 22.22$ 7/8"	22 to 61 cc

* For other configurations than those indicated, please contact Hydreco technical support. Other displacements can be evaluated on request.

► **FLANGE:**

CODE [B]

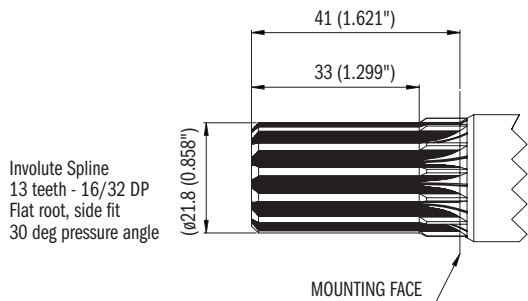
SAE (A) - 2 BOLTS



► **SHAFT:**

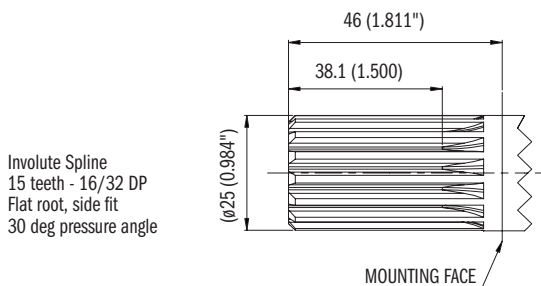
Dimensions mm (inch)

CODE [13T] SAE (B) ϕ 22 SPLINE



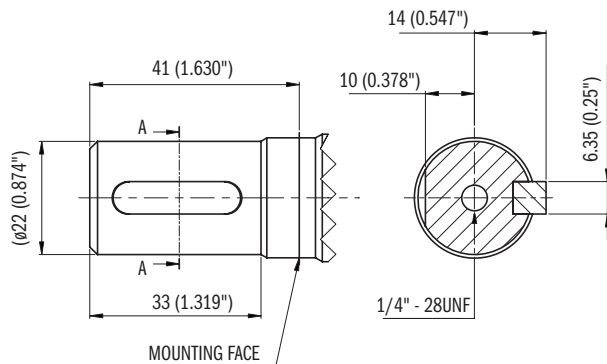
Max Torque = 290 Nm (2567 lbf in)

CODE [15T] SAE (B) ϕ 25 SPLINE



Max Torque = 400 Nm (3540 lbf in)

CODE [22P] SAE (B) 22.22 mm PARALLEL



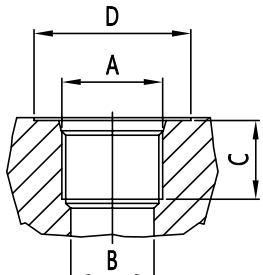
Max Torque = 200 Nm (1770 lbf in)

SHAFT OIL SEAL

CODE: 13T 22P T3 = 15 x 40 x7

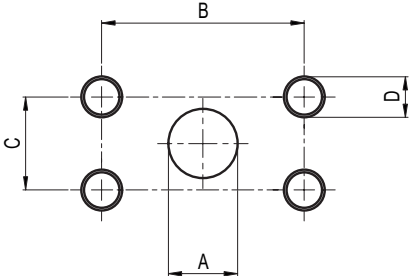
CODE: 15T = 28 x 40 x7

► **PORT DETAILS:**

SAE THREADED PORTS (U) Compliant with SAE J514	Ordering Code	Dimensions mm (inches)				Tightening Torque Nm [lbf in]	
		A	B	C	D	Low Pressure	High Pressure
	3	1 1/16" - 12 UNF	24 (0.944)	20 (0.787)	42 (1.654)	40 [355]	120 [1060]
	4	1 5/16" - 12 UNF	30 (1.200)	20 (0.787)	49 (1.929)	60 [530]	170 [1500]
	5	1 5/8" - 12 UNF	39 (1.539)	20 (0.787)	58 (2.283)	70 [620]	210 [1850]
	6	1 7/8" - 12 UNF	45 (1.771)	20 (0.787)	65 (2.559)	100 [885]	270 [2390]

STANDARD PORTS CONFIGURATION				
CODE	SUCTION	PRESSURE	POSITION	SIZE
U4/3S	1 5/6" = 12 UNF	1 1/16" = 12 UNF	S = SIDE	22 to 33
U5/4S	1 5/8" = 12 UNF	1 5/16" = 12 UNF	S = SIDE	39 to 52
U6/5S	1 7/8" = 12 UNF	1 5/8" = 12 UNF	S = SIDE	61

INLET PORTS = For multiple pumps with single inlet please contact Hydreco technical support

SAE FLANGED PORTS - J518 (SM)	Ordering Code	Dimensions mm (inches)				SAE J518 Code 61	Tightening Torque Nm [lbf in]	
		A	B	C	D	Dash Size	Low Pressure	High Pressure
	2	12.5 (0.472)	38.1 (1.50)	17.5 (0.688)	M8	08	15 [133]	20 [180]
	3	19 (1.748)	47.6 (1.874)	22.2 (0.874)	M10	12	20 [180]	35 [320]
	4	25.4 (1.00)	52.4 (2.063)	26.2 (1.031)	M10	16	20 [180]	35 [320]
	5	30.5 (1.201)	58.7 (2.311)	30.2 (1.187)	M10	20	20 [180]	35 [320]
	6	39.3 (1.547)	69.8 (2.748)	35.7 (1.405)	M12	24	30 [270]	60 [540]

STANDARD PORTS CONFIGURATION				
CODE	SUCTION	PRESSURE	POSITION	SIZE
SM 3/2	3 = ø19 mm	2 = ø12.5 mm	Side (fixed)	22
SM 4/3	4 = ø25.4 mm	3 = ø19 mm	Side (fixed)	27 to 33
SM 5/4	5 = ø30.5 mm	4 = ø25.4 mm	Side (fixed)	39 to 52
SM 6/5	6 = ø39.3 mm	5 = ø30.5 mm	Side (fixed)	61

INLET PORTS = For multiple pumps with single inlet please contact Hydreco technical support