GEAR PUMPS

Member of the Danfoss Group
TUROLLA
fast forward thinking

shhark®continuum® PUMPS

Group 2 | Technical Information

shhark continuum
when less is more

History of revisions

Date	Page	Changed	Rev.
May 2016	All	First edition	A

Reference documents

Title	Type
Group 1 *shhark®continuum®* Pumps	Technical Information
Group 2 *shhark®continuum®* Pumps	Technical Information
Group 3 *shhark®continuum®* Pumps	Technical Information
Group 4 *shhark®continuum®* Pumps	Technical Information
Hydraulic Fluids and Lubricants	Technical Information

Index

General information

Overview

Turolla *shhark®continuum®* pumps are ideal for a wide range of applications for:

- **Small vehicles,** such as aerial lifts, greens and fairway mowers and electric forklifts. These needs are served by the pumps in the SHCP33 range with integral valves and pressure balanced design for high efficiency, and extruded aluminum bodies for high strength.
- **Medium** and **large off-highway vehicles,** like tractors, backhoe loaders, dumpers, and telescopic handlers, we offer the SHCP38.

Many combinations of the above mentioned pumps are available as multiple units made to fit any need. Turolla provides standard pumps for use in industrial applications, including power packs.

Group 2 *shhark®continuum®* pumps representatives:

SHCP33 06SA

SHCP33 07CA

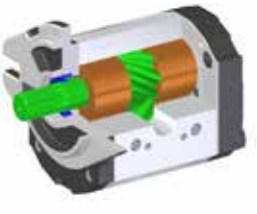
SHCP33 01BC

The innovation behind *shhark®continuum®* pumps

The *shhark®Continuum®* combines the advantages of external gears and screw pumps into a novel design able of dramatically reducing the sound pressure level.
Likewise classic gear pumps, the transport of the fluid is perpendicular to the axis of the gears; however the special shape of the teeth is such that the meshing occurs through just one point of contact, preventing the formation of any trapped volume.
Any over-pressurization and/or cavitation phenomena associated with the meshing process is thereby eliminated by design, with a drastic reduction of the hydraulic sources of noise.
The helix profile increases the low contact ratio resulting from the two conjugated profiles in the direction normal to the axis and ensures a gentle transmission, further reducing also the mechanical source of noise.
The lateral bushes do not present any relief pocket since trapped volumes are never generated, however an internal hydrostatic mechanism has been engineered to compensate the additional thrust generated by the helix design and maintain higher volumetric efficiency over a wide range of operating conditions.

Pump design

Turolla high performance *shhark®continuum®* pumps are fixed displacement gear pumps which consist of the pump housing, drive gear, driven gear, DU bushings, rear cover and front flange, shaft seal and inner/outer seals, as shown in the image below. The pressure balanced design of the pumps provides high efficiency for the entire series.



S cutaway

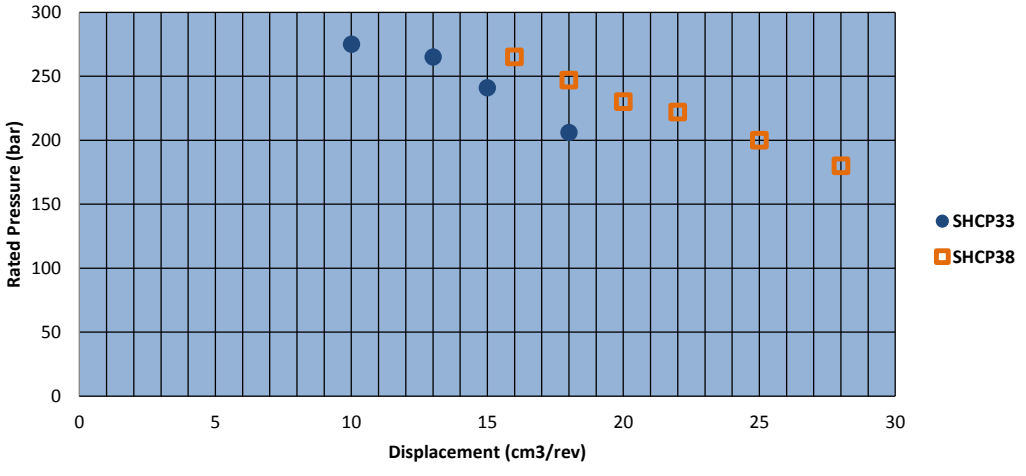
Features and benefits

shhark®continuum® pump attributes

- Wide range of displacements from 10.1 to 28.3 cm^3/rev [from 0.62 to 1.73 in^3/rev]
- Continuous pressure rating up to 275 bar [3988 psi]
- Speeds up to 3500 min^{-1} (rpm)
- SAE, DIN and European standard mounting flanges and shafts
- Compact, lightweight
- Multiple pump configurations available.
- Quiet operation
- Available with integral relief valve

Pump displacements

Quick reference chart for pump displacements vs. rated pressure



Technical Data

Technical Data

		SHCP33				SHCP38					
Frame size		**010**	**013**	**015**	**018**	**016**	**018**	**020**	**022**	**025**	**028**
Displacement	cm^3/rev [in^3/rev]	10.1 [0.62]	12.6 [0.77]	15.2 [0.93]	18.2 [1.11]	15.9 [0.97]	17.9 [1.09]	20 [1.22]	22.1 [1.35]	25.2 [1.54]	28.3 [1.73]
Peak pressure	bar [psi]	280 [4061]	280 [4061]	270 [3910]	270 [3910]	280 [4061]	280 [4061]	260 [3770]	230 [3360]	200 [2900]	200 [2900]
Rated pressure		250 [3626]	250 [3626]	240 [3481]	205 [2973]	250 [3626]	250 [3626]	230 [3335]	210 [3046]	190 [2756]	180 [2610]
Minimum speed	min^{-1} (rpm)	500*	500*	500*	500*	500*	500*	500*	500*	500*	500*
Maximum speed		3500	3500	3500	3000	3000	3000	3000	3000	3000	3000
Weight	kg [lb]	4.5 [9.9]	4.7 [10.4]	4.8 [10.6]	4.9 [10.9]	4.8 [10.6]	4.9 [10.9]	5.0 [11.0]	5.0 [11.0]	5.2 [11.5]	5.2 [11.7]
Moment of inertia of rotating components	x 10^{-6} $kg•m^2$ [x 10^{-6} $lb•ft^2$]	37.3 [883]	43.6 [1032]	50.1 [1186]	57.5 [1362]	72.0 [1705]	79.3 [1879]	86.2 [2041]	93.1 [2205]	103.3 [2246]	113.9 [2697]
Theoretical flow at maximum speed	l/min [US gal/min]	35.5 [9.4]	44.1 [11.6]	53.2 [14.1]	54.6 [14.4]	47.7 [12.6]	53.7 [14.2]	60.0 [15.9]	66.3 [17.5]	75.6 [20.0]	84.9 [22.4]

1 $kg•m^2$ = 23.68 $lb•ft^2$

* Below 1000 rpm please contact your Turolla representative

Caution

The rated and peak pressure mentioned are for pumps with flanged ports only. When threaded ports are required a de-rated performance has to be considered. To verify the compliance of an high pressure application with a threaded ports pump apply to a Turolla representative.

Product code
Model code

A Family

SHCP33	Group 2 Pump (from 10cc up to 18cc)
SHCP38	Group 2 Pump (from 16cc up to 28cc)

B Displacement

SHCP33	
008	Displacement 8 cc*
010	Displacement 10 cc
011	Displacement 11 cc*
013	Displacement 13 cc
015	Displacement 15 cc
018	Displacement 18 cc

SHCP38	
013	Displacement 13 cc*
016	Displacement 16 cc
018	Displacement 18 cc
020	Displacement 20 cc
022	Displacement 22 cc
025	Displacement 25 cc
028	Displacement 28 cc
033	Displacement 33 cc*

*For this displacement please contact your Turolla representative

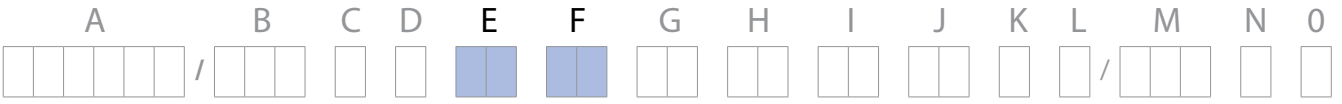
C Rotation

R	Right (Clockwise)
L	Left (Counterclockwise)*

D Project version

N	Standard gear pump

*For this option please contact your Turolla representative



E Mounting flange

Code	Description (Type of flange • Type of drive gear • Preferred ports for configuration)
01	pilot Ø36,5+4 holes
06	SAE A pilot Ø82,55+2 holes
A6	SAE A pilot Ø82,55+2 holes+seal on pilot
07	pilot Ø52+O-ring+2 holes through body

F Drive gear

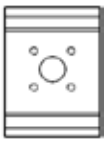
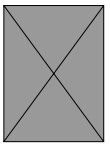
BC	Taper 1:8-M12x1,5-Key 4
CB	Tang 8x18xL6,5 FR03
GA	Parallel SAE Ø15,875-L23,8-Key 4x18
SA	Spline ANSI B92.1-9T-16/32
SB	Spline ANSI B92.1-11T-16/32

A B C D E F G H I J K L M N 0

G Rear cover

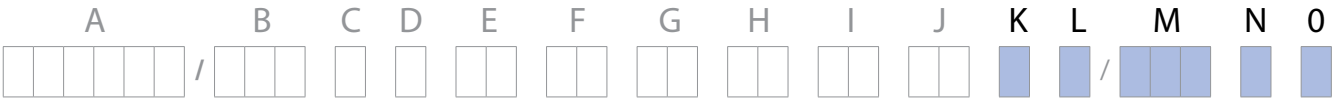
P1	Standard cover pump

H Inlet size I Outlet size

BD	19x40xM6	
B5	15x35xM6	
B7	20x40xM6	
F4	1/2 GAS	
F5	3/4 GAS	
E5	SAE O-ring port 10: 7/8 - 14 UN	
E6	SAE O-ring port 12: 1 1/16 UN	
E7	SAE O-ring port 16: 1 5/16-12UN	

J Port position & special body

NN	Std from catalog



K Seals

N	Standard NBR seals
B	VITON seals
D	VITON shaft seal with dust lip

L Screws

N	Std screws*

*For galvanized screws please contact your Turolla representative

M Set valve

NNN	No valve

N Type mark

N	Standard Turolla Marking
A	Standard Turolla Marking+Customer Code
Z	Without Marking

O Mark position

N	Standard Marking position (on top)
A	Special Marking position on the bottom

Determination of Nominal Pump Sizes

Based on SI units/Based on US units

Use these formulae to determine the nominal pump size for a specific application.

	Based on SI units	Based on US units
Output flow	$Q = \frac{Vg \cdot n \cdot \eta_v}{1000}$ l/min	$Q = \frac{Vg \cdot n \cdot \eta_v}{231}$ [US gal/min]
Input torque	$M = \frac{Vg \cdot \Delta p}{20 \cdot \pi \cdot \eta_m}$ N•m	$M = \frac{Vg \cdot \Delta p}{2 \cdot \pi \cdot \eta_m}$ [lbf•in]
Input power	$P = \frac{M \cdot n}{9550} = \frac{Q \cdot \Delta p}{600 \cdot \eta_t}$ kW	$P = \frac{M \cdot n}{63.025} = \frac{Q \cdot \Delta p}{1714 \cdot \eta_t}$ [hp]

Variables: *SI units [US units]*

V_g	=	Displacement per rev.	cm^3/rev [in^3/rev]
p_{HD}	=	Outlet pressure	bar [psi]
p_{ND}	=	Inlet pressure	bar [psi]
Δp	=	$p_{HD} - p_{ND}$	bar [psi]
n	=	Speed	min^{-1} (rpm)
η_v	=	Volumetric efficiency	
η_m	=	Mechanical (torque) efficiency	
η_t	=	Overall efficiency ($\eta_v \cdot \eta_m$)	

System Requirements

Pressure

Inlet pressure

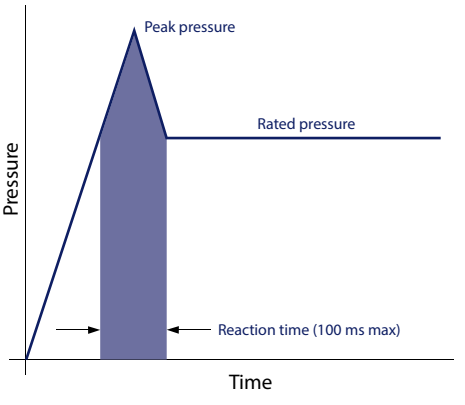
The inlet vacuum must be controlled within the prescribed range in order to achieve the expected pump life and performance.
The system design must meet inlet pressure requirements during all modes of operation.

Inlet pressure

Max. continuous vacuum	bar abs.	0.8 [23.6]
Max. pressure	[in. Hg]	3.0 [88.5]

Peak pressure is the highest intermittent pressure allowed. The reaction time of the pressure relief valve determines the duration of operation at pressure above the rated value. The maximum time interval is 100 ms. The illustration to the right shows peak pressure in relation to rated pressure and reaction time (100 ms maximum).

Time versus pressure



Rated pressure is the average, regularly occurring, operating pressure that does not compromise the product's life and performance.

System pressure is the pressure differential between the outlet and inlet ports. System pressure must remain at, or below, the rated pressure during normal operation to achieve expected life.

Hydraulic fluids

Ratings and data for SHCP33 and SHCP38 *shhark®continuum®* pumps are valid for operation with premium hydraulic fluids containing oxidation, rust, and foam inhibitors. These fluids must possess good thermal and hydrolytic stability to prevent wear, erosion, and corrosion of internal components. They include:

- Hydraulic fluids following DIN 51524, part 2 (HLP) and part 3 (HVLP) specifications
- API CD engine oils conforming to SAE J183
- M2C33F or G automatic transmission fluids
- Certain agricultural tractor fluids

Use only clean fluid in the pump and hydraulic circuit.

Caution

Never mix hydraulic fluids.

Please see Turolla publication Hydraulic Fluids and Lubricants Technical Information, **L1021414** for more information.

Temperature and viscosity

Temperature and viscosity requirements must be concurrently satisfied. Use petroleum / mineral-based fluids.

High temperature limits apply at the inlet port to the pump. The pump should run at or below the maximum continuous temperature. The peak temperature is based on material properties. Don't exceed it.

Cold oil, generally, doesn't affect the durability of pump components. It may affect the ability of oil to flow and transmit power. For this reason, keep the temperature at 16 °C [60 °F] above the pour point of the hydraulic fluid.

Minimum (cold start) **temperature** relates to the physical properties of component materials.

Minimum viscosity occurs only during brief occasions of maximum ambient temperature and severe duty cycle operation. You will encounter maximum viscosity only at cold start. During this condition, limit speeds until the system warms up. Size heat exchangers to keep the fluid within these limits. Test regularly to verify that these temperatures and viscosity limits aren't exceeded. For maximum unit efficiency and bearing life, keep the fluid viscosity in the recommended viscosity range.

Fluid viscosity

Maximum (cold start)	mm^2/s [SUS]	1000 [4600]
Recommended range		32-150* [148-695]
Minimum		10 [60]

Temperature

Minimum (cold start)	°C [°F]	-20 [-4]
Maximum continuous		80 [176]
Peak (intermittent)		90 [176]

*For viscosity value out of this range, please contact Turolla

Filtration

Filters

A Class 18/17/14 of ISO 4406 (or better) filter must be used.

Selecting a filter

When selecting a filter, please consider:

- Contaminant ingression rate
  (determined by factors such as the number of actuators used in the system)
- Generation of contaminants in the system
- Required fluid cleanliness
- Desired maintenance interval
- Filtration requirements of other system components

Measure filter efficiency with a Beta ratio (β_X). For:

- Suction filtration, with controlled reservoir ingression, use a $\beta_{35\text{-}45} = 75$ filter
- Return or pressure filtration, use a pressure filtration with an efficiency of $\beta_{10} = 75$.

βx ratio is a measure of filter efficiency defined by ISO 4572. It is the ratio of the number of particles greater than a given diameter ("$_x$" in microns) upstream of the filter to the number of these particles downstream of the filter.

Fluid cleanliness level and βx ratio

Fluid cleanliness level (per ISO 4406)	Class 18/17/14 or better
β_x ratio (suction filtration)	$\beta_{35\text{-}45} = 75$ and $\beta_{10} = 2$
β_x ratio (pressure or return filtration)	$\beta_{10} = 75$
Recommended inlet screen size	100-125 µm [0.004-0.005 in]*

*From 25 to 10 µm for heavy duty operations

The filtration requirements for each system are unique. Evaluate filtration system capacity by monitoring and testing prototypes.

Reservoir

The **reservoir** provides clean fluid, dissipates heat, removes entrained air and makes up for changes in fluid volume due to fluid expansion-contraction and flow imbalances associated with differential cylinders. A correctly sized reservoir accommodates maximum volume changes during all system operating modes. It promotes de-aeration of the fluid as it passes through, and accommodates a fluid dwell-time between 60 and 180 seconds, allowing entrained air to escape.
Hydraulic oil contains 10% of dissolved air by volume in normal conditions and the system should be design in order to avoid any over-areation of the hydraulic fluid, to limit any air release at the inlet port.

Minimum reservoir capacity depends on the volume required to cool and hold the oil from all retracted cylinders, allowing for expansion due to temperature changes. A fluid volume of 1 to 3 times the pump output flow (per minute) is satisfactory. The minimum reservoir capacity is 125% of the fluid volume.

The suction line shall be installed above the bottom of the reservoir to take advantage of gravity separation and prevent large foreign particles from entering the line. Cover the line with a 100-125 micron screen. The pump should be below the lowest expected fluid level.

Put the return-line below the lowest expected fluid level to allow discharge into the reservoir for maximum dwell and efficient deaeration. A baffle (or baffles) between the return and suction lines promotes deaeration and reduces fluid surges.

Pump life

Pump life is a function of speed, system pressure, and other system parameters (such as fluid quality and cleanliness).

All Turolla *shhark®continuum®* pumps use hydrodynamic journal bearings that have an oil film maintained between the gear/shaft and bearing surfaces at all times. If the oil film is sufficiently sustained through proper system maintenance and operating within recommended limits, long life can be expected.

B_{10} life expectancy number is generally associated with rolling element bearings. It does not exist for hydrodynamic bearings.

High pressure, resulting from high loads, impacts pump life. When submitting an application for review, provide machine duty cycle data that includes percentages of time at various loads and speeds. We strongly recommend a prototype testing program to verify operating parameters and their impact on life expectancy before finalizing any system design.

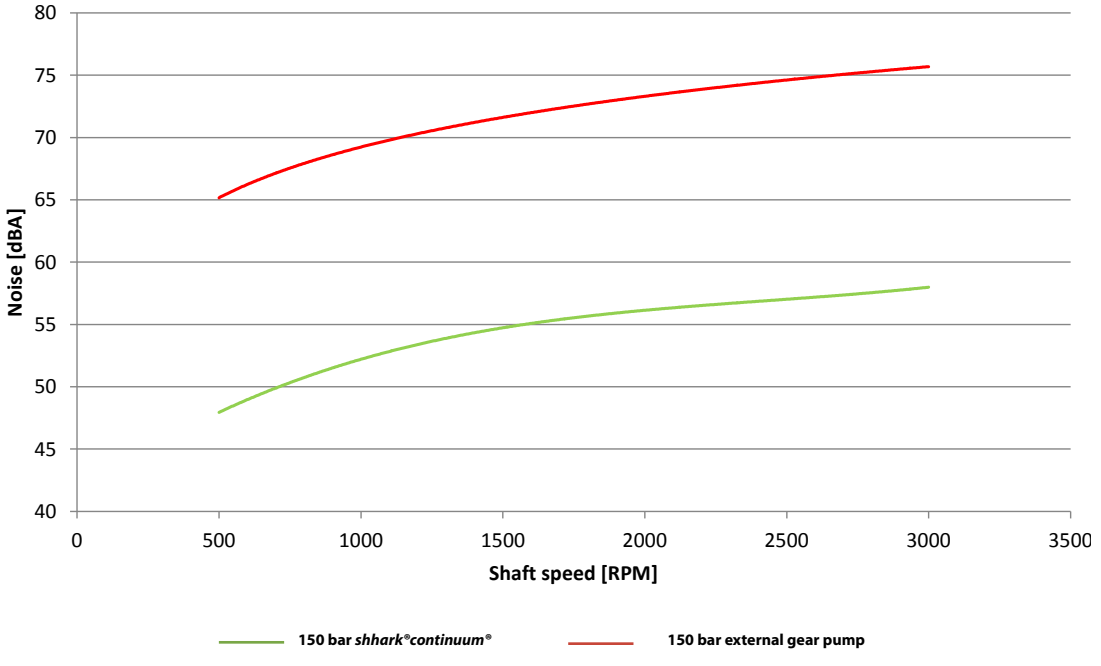
Sound levels

High pressure hydrostatic pumps and motors are characterized by noise and/or vibration levels that may be inconvenient for certain applications. Turolla *shhark®continuum®* pumps represent a novel and unique generation of gear pumps which eliminate the most significant sources of noise by design.

Thanks to the combination of helical design and single point contact operation, the *shhark®continuum®* achieves a reduction of 15dB(A) in the sound pressure level in comparison with standard gear pumps available on the market.

Contact your Turolla representative for assistance with system noise control.

Sound levels graph

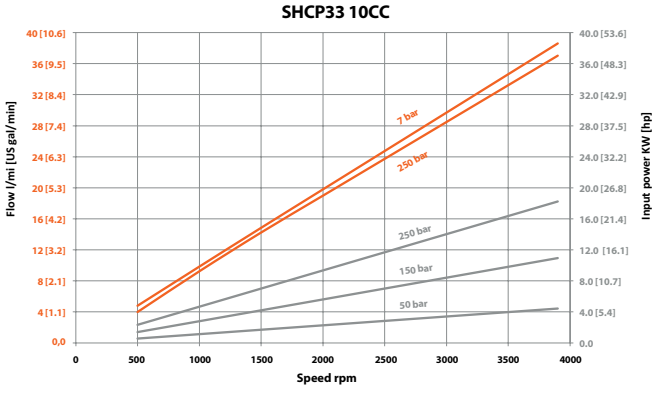


Pump Performance

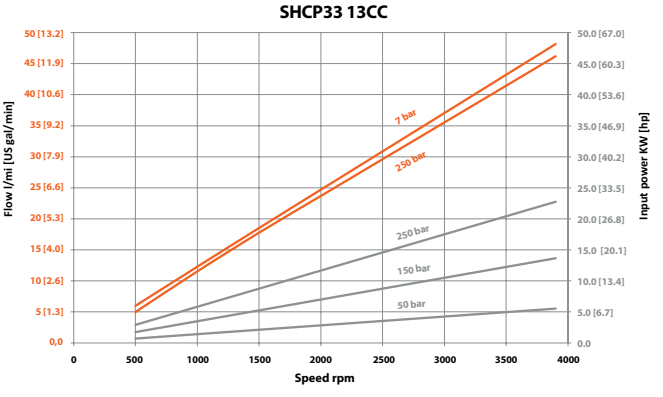
Performance graphs

The graphs on the next pages provide typical output flow and input power for Group 2 *shhark®continuum®* pumps at various working pressures. Data were taken using ISO VG46 petroleum /mineral based fluid at 50 °C (viscosity at 28 mm²/s [cSt]).

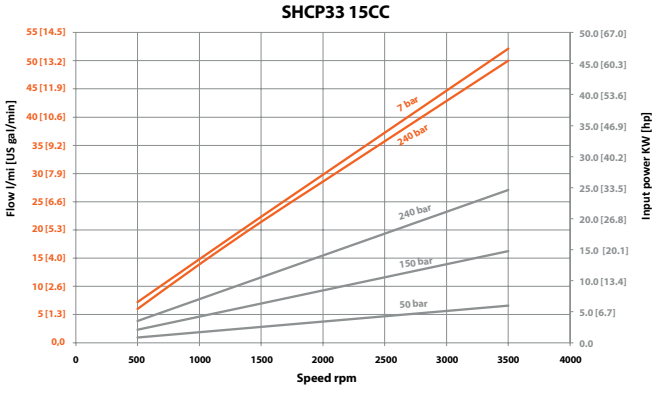
Performance graph for 010 frame size



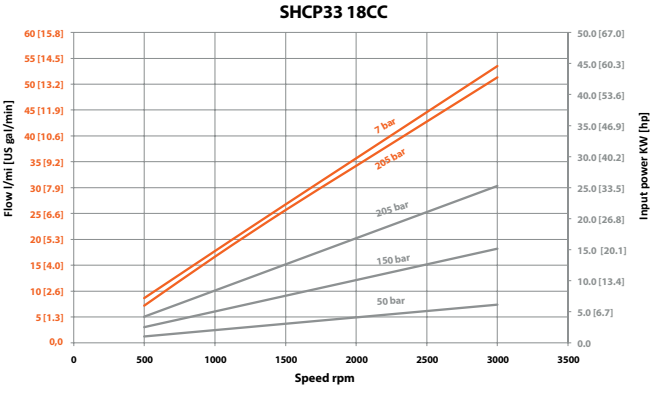
Performance graph for 013 frame size



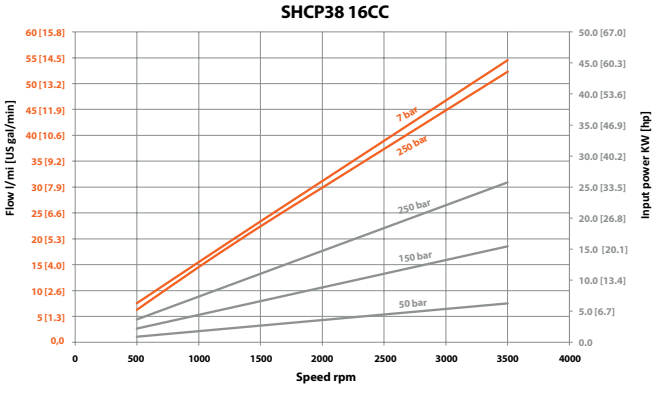
Performance graph for 015 frame size



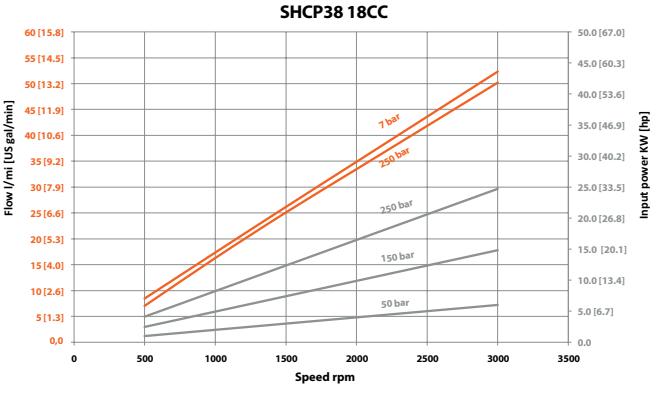
Performance graph for 018 frame size



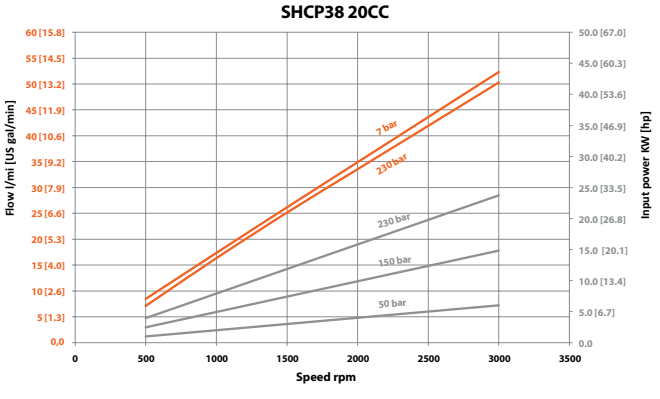
Performance graph for 016 frame size



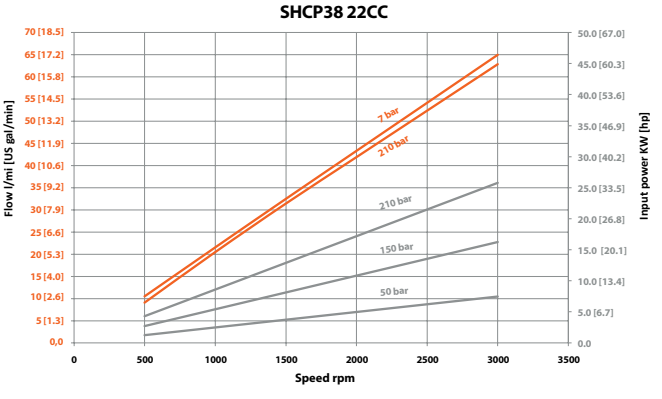
Performance graph for 018 frame size



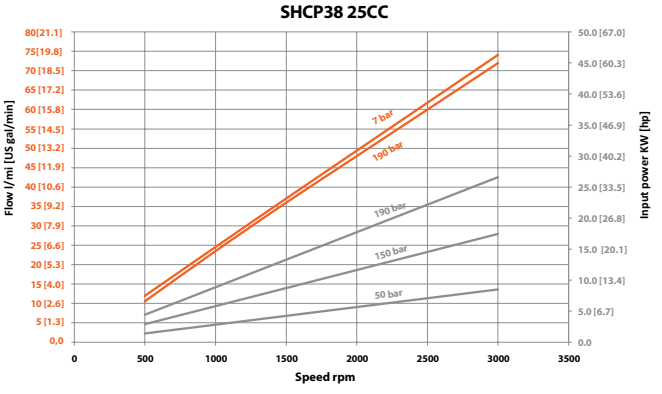
Performance graph for 020 frame size



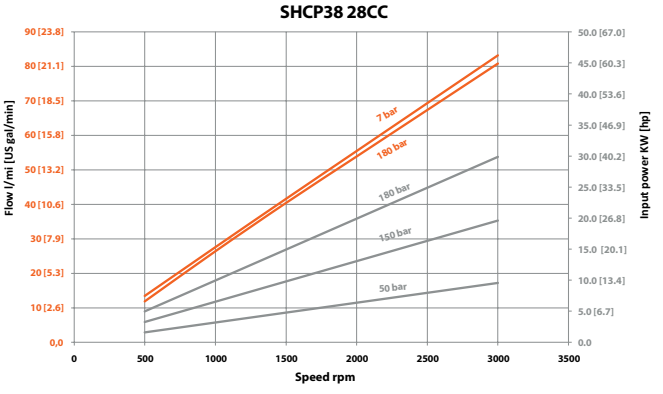
Performance graph for 022 frame size



Performance graph for 025 frame size

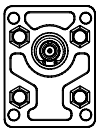
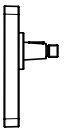
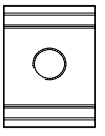
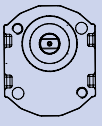
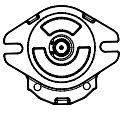
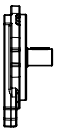
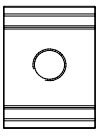
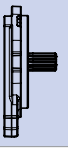
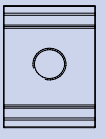
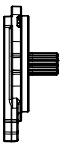
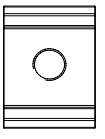


Performance graph for 028 frame size



Product Options

Flange, shaft and ports configurations SHCP33 and SHCP38

Code	Flange		Shaft		Ports	
01BC	Pilot Ø36.5 + 4 holes		Taper 1:8-M12X1.5-key 4		Threaded GAS (BSPP)	
07CB	Pilot Ø52+Oring + 2holes through body		Tang 8X18XL6.5 FR03		German std, X pattern	
06GA	SAE A pilot Ø 82.55 + 2 holes		Parallel SAE Ø15.875-L23.8 – key 4X18		Threaded SAE O-Ring boss	
06SA	SAE A pilot Ø 82.55 + 2 holes		Spline ANSI B92.1-9T-16/32		Threaded SAE O-Ring boss	
06SB	SAE A pilot Ø 82.55 + 2 holes		Spline ANSI B92.1 11T- 16/32		Threaded SAE O-Ring boss	

Shaft options

Direction is viewed facing the shaft. Group 2 *shhark®continuum®* pumps are available with a variety of tang, splined, parallel, and tapered shaft ends. Not all shaft styles are available with all flange styles.

Shaft versus flange availability and torque capability

Shaft		**Mounting flange code with maximum torque** in N•m [lbf•in]		
Description	*Code*	**01**	**07**	**06**
Taper 1:8	**BC**	150 [1328]	–	–
Spline ANSI B92.1-9T-16/32	**SA**	–	–	110 [974]
Spline ANSI B92.1-11T-16/32	**SB**	–	–	170 [1505]
Tang 8x18xL6,5 FR03	**CB**	–	70 [620]	–
Parallel SAE Ø15,875 - L23,8 - Key 4x18	**GA**	–	–	80 [708]

Other shaft options may exist. Contact your Turolla representative for availability.

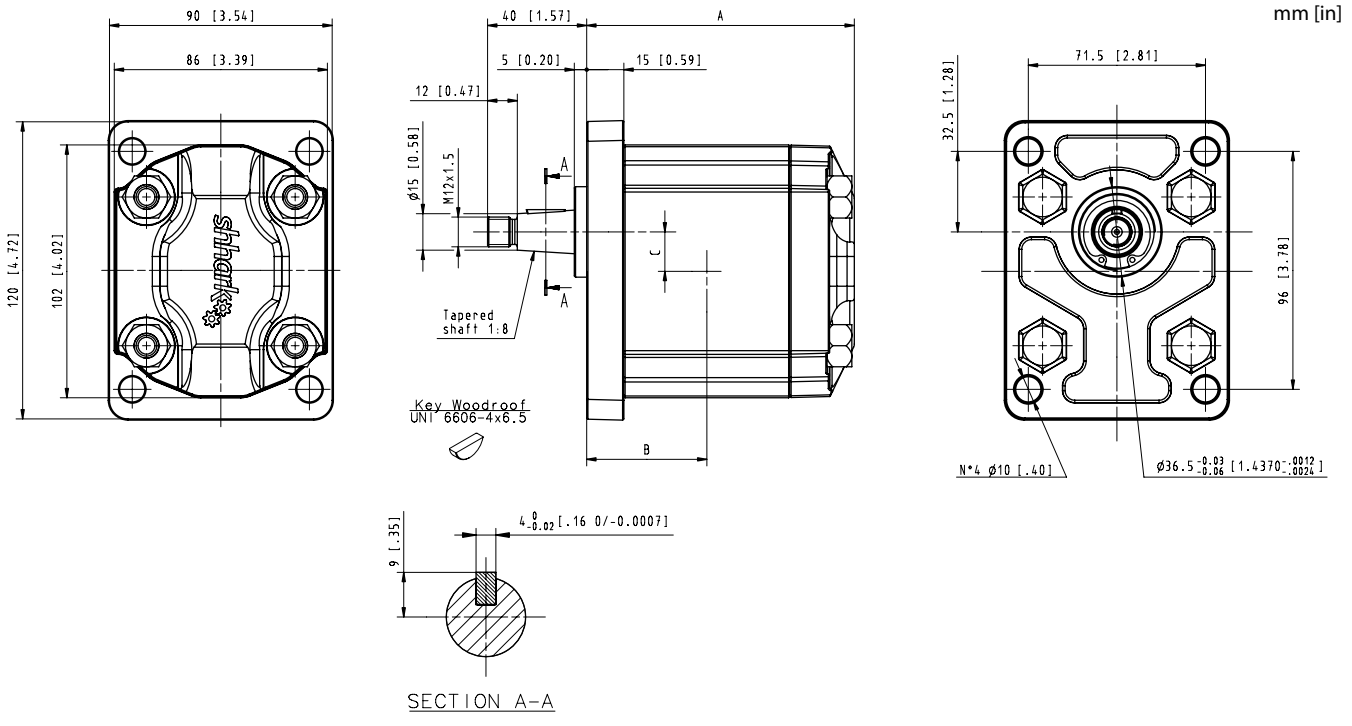
Caution

Shaft torque capability may limit allowable pressure. Torque ratings assume no external radial loading. Applied torque must not exceed these limits, regardless of stated pressure parameters. Maximum torque ratings are based on shaft torsional fatigue strength.

Dimensions

SHCP33 and SHCP38 - 01BC

mm [in]



SHCP33 and SHCP38 - 01BC dimensions

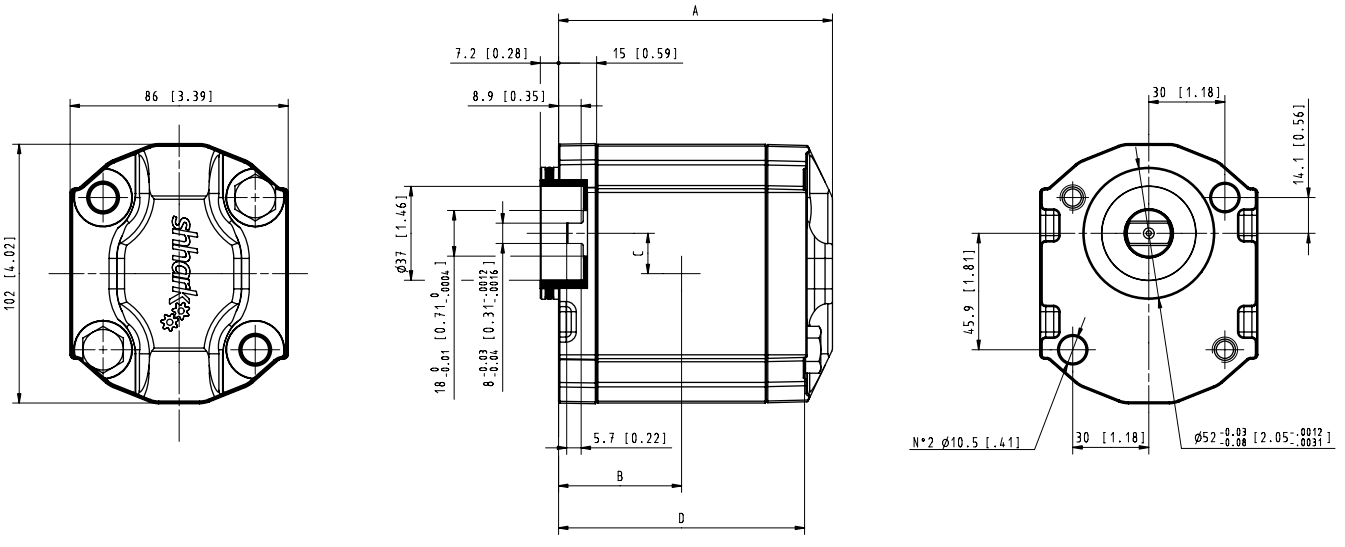
		SHCP33				SHCP38					
Frame size		**10**	**13**	**15**	**18**	**16**	**18**	**20**	**22**	**25**	**28**
Dimension mm [in]	**A**	104.5 [4.11]	109.4 [4.31]	114.4 [4.50]	120.2 [4.73]	108.0 [4.25]	111.0 [4.37]	114.0 [4.49]	117.0 [4.61]	121.5 [4.78]	126.0 [4.96]
Dimension mm [in]	**B**	46.8 [1.84]	49.2 [1.94]	51.7 [2.03]	54.6 [2.15]	48.5 [1.91]	50.0 [1.97]	51.5 [2.03]	53.0 [2.09]	55.3 [2.18]	57.5 [2.26]
Dimension mm [in]	**C**	13.75 [0.54]				15.90 [0.63]					

Model code examples and maximum shaft torque

Flange/drive gear	Model code example	Maximum shaft torque
01BC	SHCP33/013LN01BCP1F5F5NNNN/NNNNN	150 N•m [1328 lbf•in]
01BC	SHCP38/022LN01BCP1F5F5NNNN/NNNNN	150 N•m [1328 lbf•in]

For further details see Model Code, pages 8-11.

SHCP33 and SHCP38 – 07CB



SHCP33 and SHCP38 - 07CA dimensions

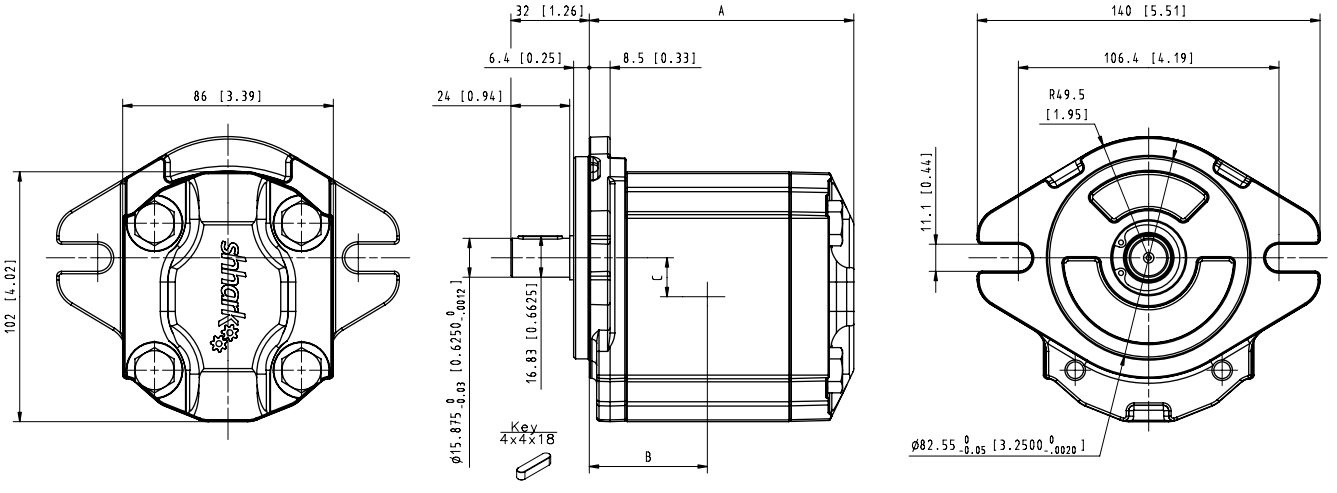
		SHCP33				SHCP38					
Frame size		**10**	**13**	**15**	**18**	**16**	**18**	**20**	**22**	**25**	**28**
Dimension mm [in]	**A**	104.5 [4.11]	109.4 [4.31]	114.4 [4.50]	120.2 [4.73]	108.0 [4.25]	111.0 [4.37]	114.0 [4.49]	117.0 [4.61]	121.5 [4.78]	126.0 [4.96]
Dimension mm [in]	**B**	46.8 [1.84]	49.2 [1.94]	51.7 [2.03]	54.6 [2.15]	48.5 [1.91]	50.0 [1.97]	51.5 [2.03]	53.0 [2.09]	55.3 [2.18]	57.5 [2.26]
Dimension mm [in]	**C**	13.75 [0.54]				15.90 [0.63]					
Dimension mm [in]	**D**	93.5 [3.68]	98.4 [3.87]	103.4 [4.07]	109.2 [4.30]	97.0 [3.82]	100.0 [3.94]	103.0 [4.05]	106.0 [4.17]	110.0 [4.33]	115.0 [4.53]

Model code examples and maximum shaft torque

Flange/drive gear	Model code example	Maximum shaft torque
07CB	SHCP33/018RN07CBP1B7B5NNNN/NNNNN	70 N•m [620 lbf•in]
07CB	SHCP38/025RN07CBP1B7B5NNNN/NNNNN	70 N•m [620 lbf•in]

For further details see Model Code, pages 8-11.

SHCP33 and SHCP38 – 06GA



SHCP33 and SHCP38 - 06GA dimensions

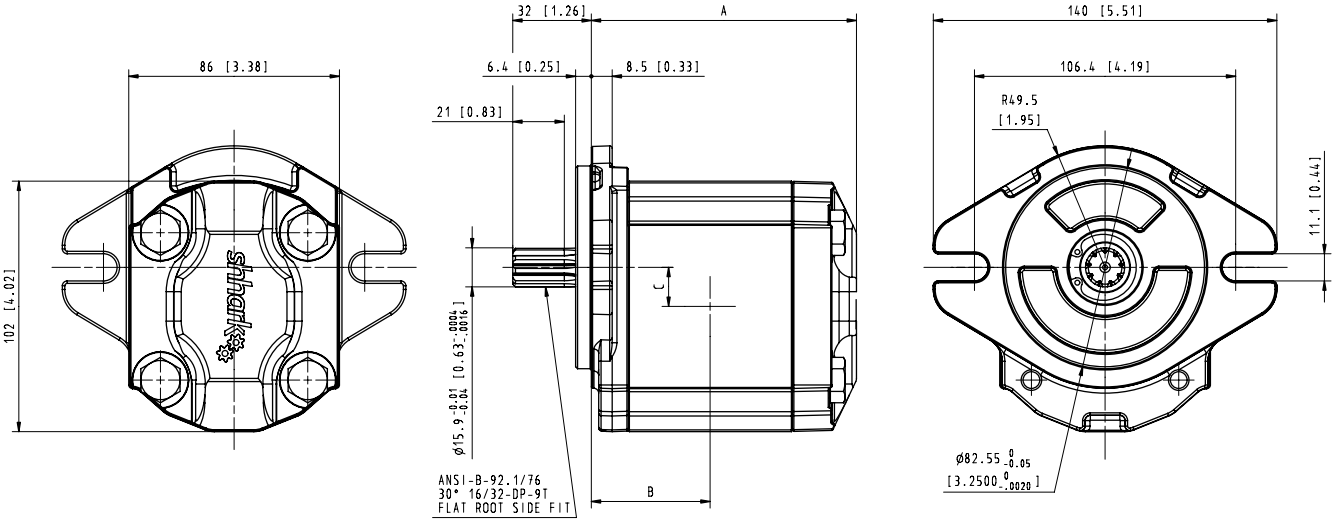
		SHCP33				SHCP38					
Frame size		**10**	**13**	**15**	**18**	**16**	**18**	**20**	**22**	**25**	**28**
Dimension mm [in]	**A**	104.5 [4.11]	109.4 [4.31]	114.4 [4.50]	120.2 [4.73]	108.0 [4.25]	111.0 [4.37]	114.0 [4.49]	117.0 [4.61]	121.5 [4.78]	126.0 [4.96]
Dimension mm [in]	**B**	46.8 [1.84]	49.2 [1.94]	51.7 [2.03]	54.6 [2.15]	48.5 [1.91]	50.0 [1.97]	51.5 [2.03]	53.0 [2.09]	55.3 [2.18]	57.5 [2.26]
Dimension mm [in]	**C**	13.75 [0.54]				15.90 [0.63]					

Model code examples and maximum shaft torque

Flange/drive gear	Model code example	Maximum shaft torque
06GA	SHCP33/018RN06GAP1E8E5NNNN/NNNNN	80 N•m [708 lbf•in]
06GA	SHCP38/025RN06GAP1E8E5NNNN/NNNNN	80 N•m [708 lbf•in]

For further details see Model Code, pages 8-11.

SHCP33 and SHCP38 – 06SA



SHCP33 and SHCP38 - 06SA dimensions

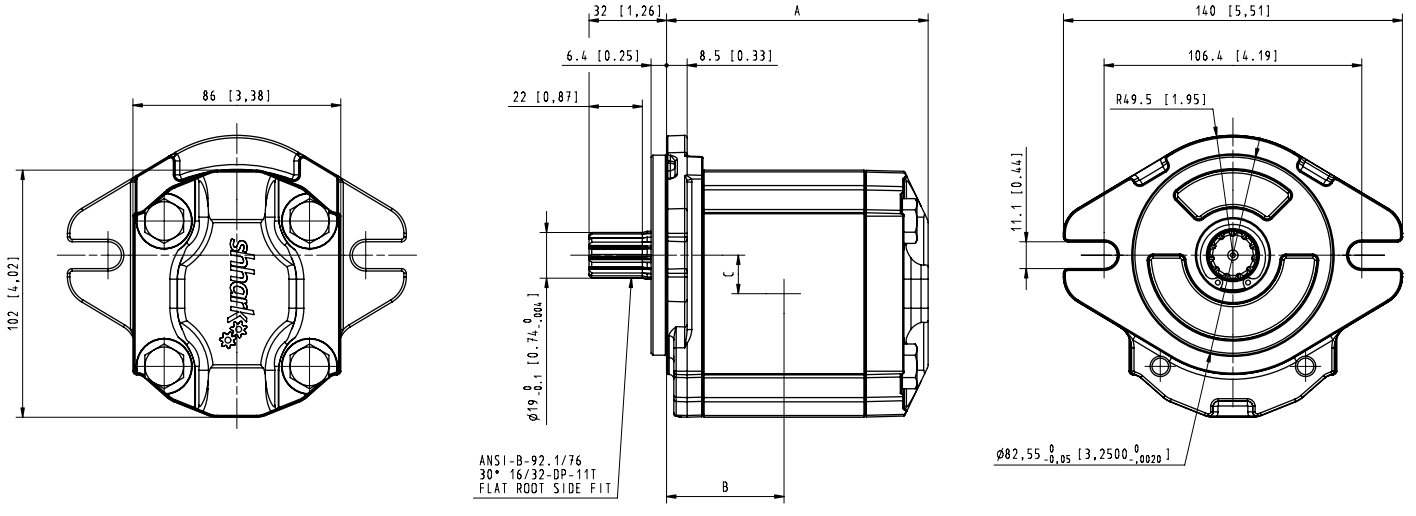
		SHCP33				SHCP38					
Frame size		**10**	**13**	**15**	**18**	**16**	**18**	**20**	**22**	**25**	**28**
Dimension mm [in]	**A**	104.5 [4.11]	109.4 [4.31]	114.4 [4.50]	120.2 [4.73]	108.0 [4.25]	111.0 [4.37]	114.0 [4.49]	117.0 [4.61]	121.5 [4.78]	126.0 [4.96]
Dimension mm [in]	**B**	46.8 [1.84]	49.2 [1.94]	51.7 [2.03]	54.6 [2.15]	48.5 [1.91]	50.0 [1.97]	51.5 [2.03]	53.0 [2.09]	55.3 [2.18]	57.5 [2.26]
Dimension mm [in]	**C**	13.75 [0.54]				15.90 [0.63]					

Model code examples and maximum shaft torque

Flange/drive gear	Model code example	Maximum shaft torque
06SA	SHCP33/010RN06SAP1E6E5NNNN/NNNNN	110 N•m [708 lbf•in]
06SA	SHCP38/016RN06SAP1E6E5NNNN/NNNNN	110 N•m [708 lbf•in]

For further details see Model Code, pages 8-11.

SHCP38 – 06SB



SHCP38 - 06SB dimensions

		SHCP38					
Frame size		**16**	**18**	**20**	**22**	**25**	**28**
Dimension mm [in]	**A**	108.0 [4.25]	111.0 [4.37]	114.0 [4.49]	117.0 [4.61]	121.5 [4.78]	126.0 [4.96]
Dimension mm [in]	**B**	48.5 [1.91]	50.0 [1.97]	51.5 [2.03]	53.0 [2.09]	55.3 [2.18]	57.5 [2.26]
Dimension mm [in]	**C**	15.90 [0.63]					

Model code examples and maximum shaft torque

Flange/drive gear	Model code example	Maximum shaft torque
06SB	SHCP38/025RN06SBP1E8E5NNNN/NNNNN	170 N•m [1505 lbf•in]

For further details see Model Code, pages 8-11.

Note

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