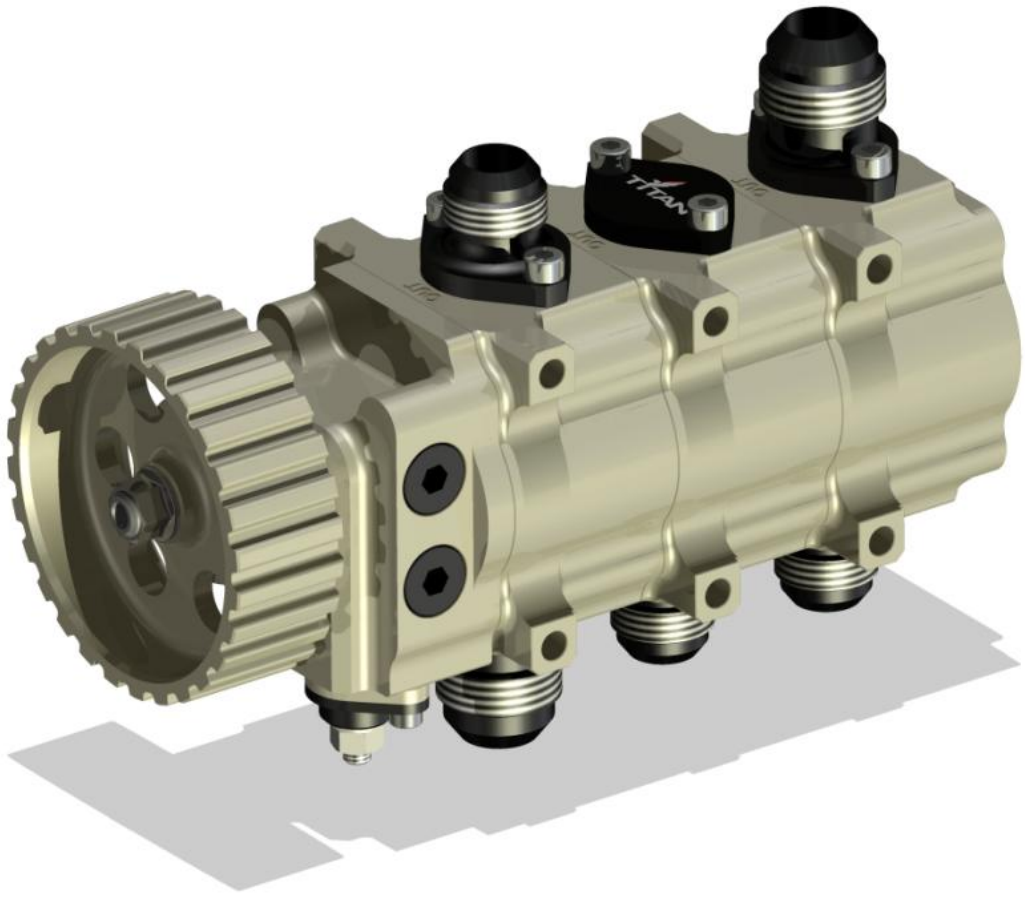
TITAN

OIL PUMPS TG2 & TR2

SPECIFICATIONS



CONTENTS

FOREWORD

With more than 20 years of Oil Pump design and manufacture experience, Titan Motorsport have a wide range of high quality and efficient pumping solutions available.

Assembled in the UK each Oil Pump has a number of build configurations and this guide shows the options for the standard range of pumps, including;

1. Spur Gear or Gerotor internals
2. Number of pressure and scavenge stages with scavenge ratio
3. Top or rear body exits
4. Nose length, PRV location and body length options
5. Oil line port connection interfaces flanged AN, swivel pipe, crimp, blanking, combined etc
6. Pulley size, tooth count and material construction

If you can't find a solution that suits you, we will be happy to discuss a bespoke pump to match your needs.

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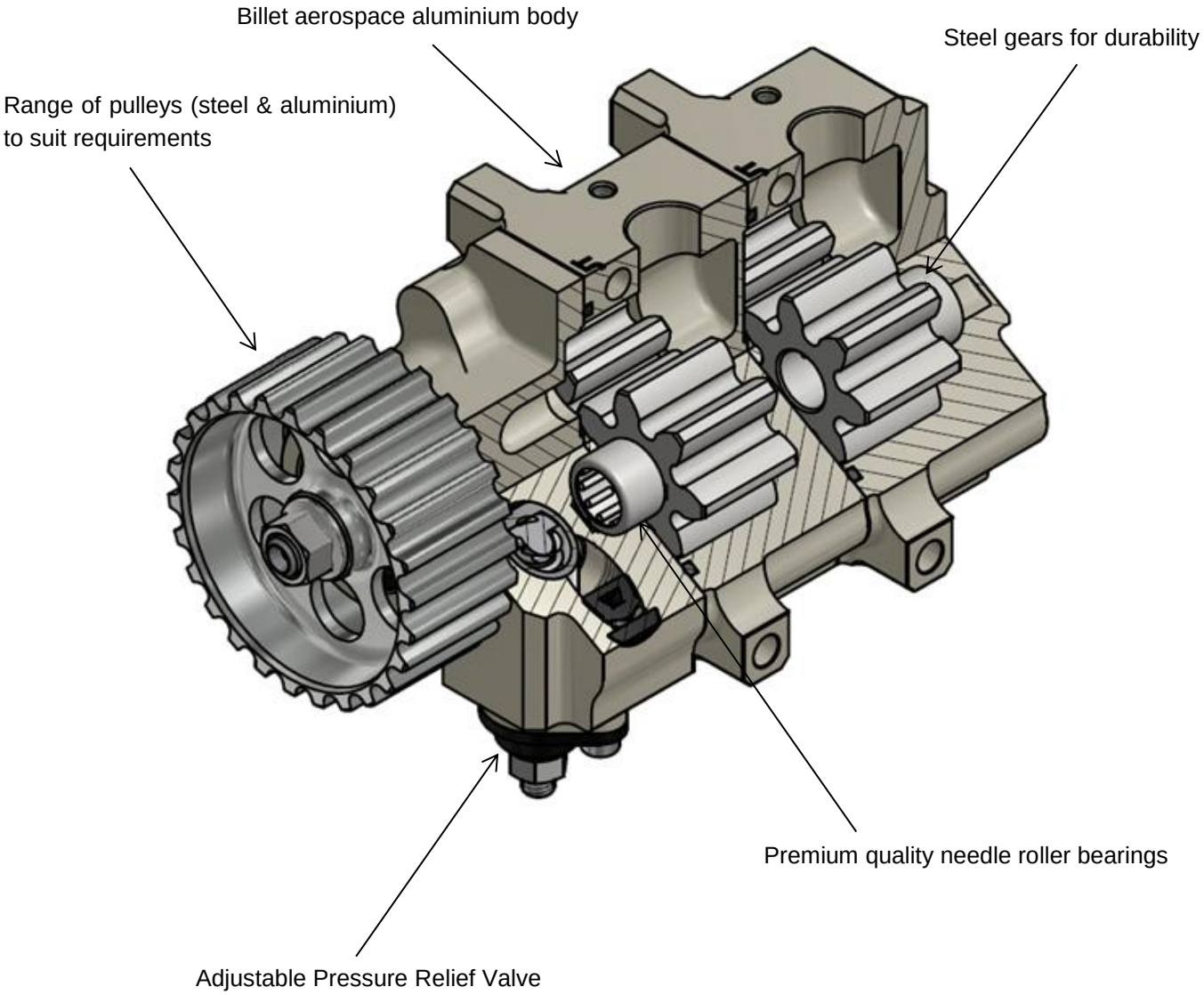
FEATURES

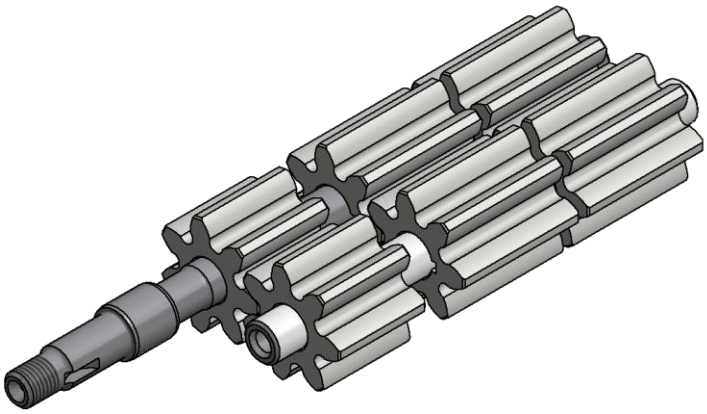
MATERIALS



Housing is anodised for durability and corrosion prevention.

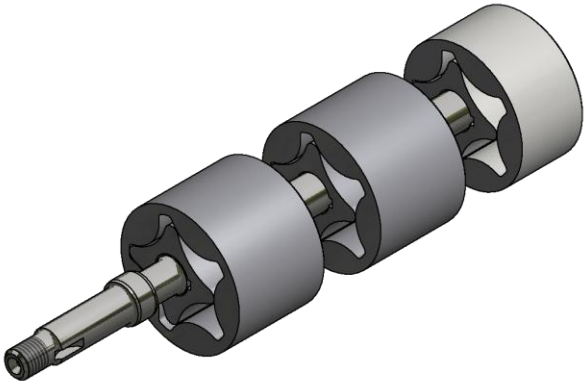
GEAR TYPES

TG2



Spur gears only
High flow and high pressure capability
Indicative flow rate: 7L per 10mm of gear per 1000 rpm
Max speed: 7000 rpm

TR2



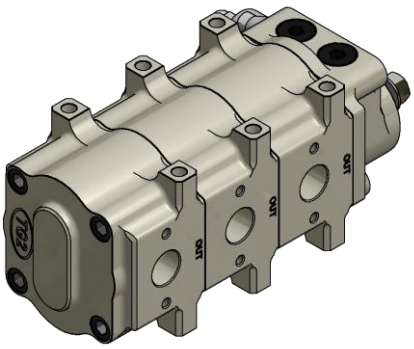
Gerotors only
Quiet operation
Indicative flow rate: 4.9L per 10mm of rotor per 1000 rpm
Max speed: 3500 rpm

OFF THE SHELF CONFIGURATIONS

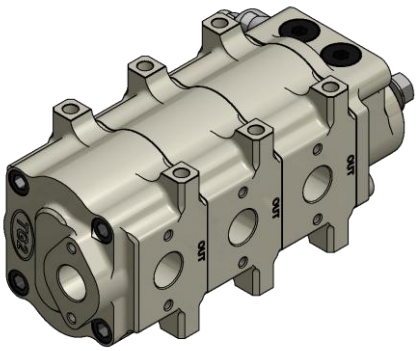
TG2 PUMPS

EXITS

Top Exits Only



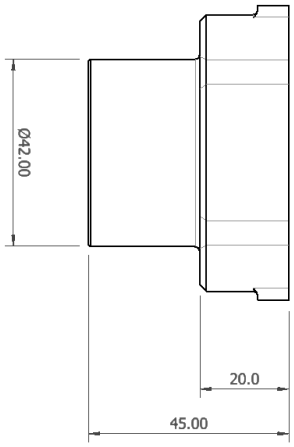
Rear Exit

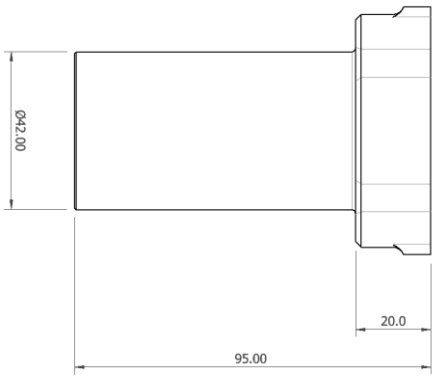


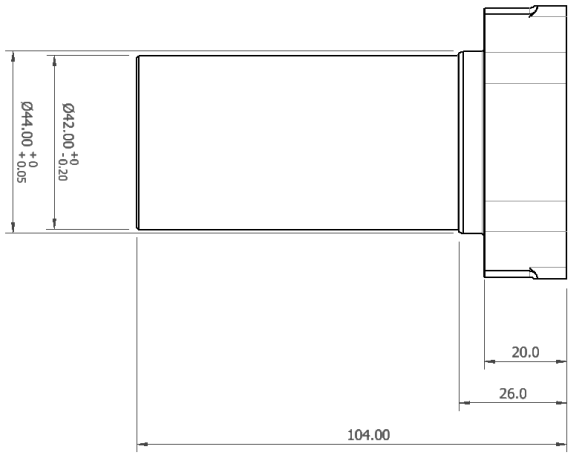
NOSES

Different nose lengths are available as standard.

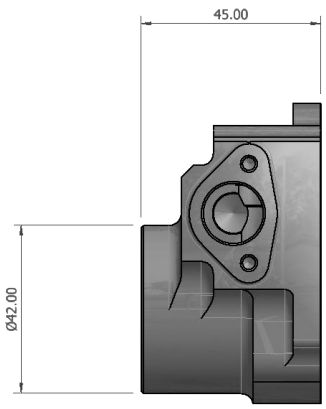
Without Pressure Relief Valve

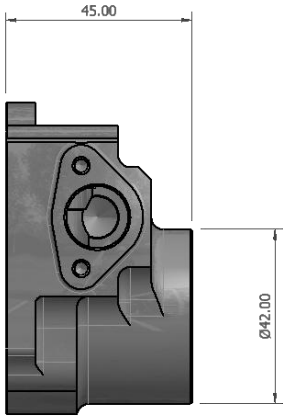






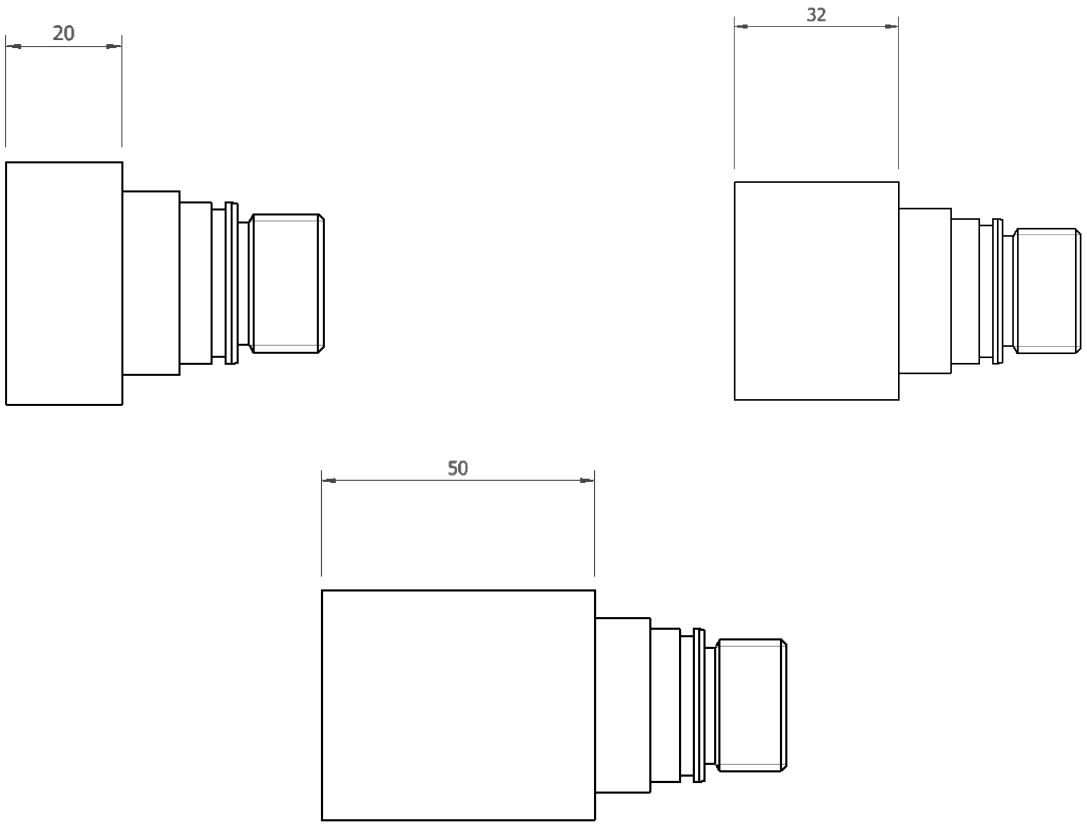
With Pressure Relief Valve



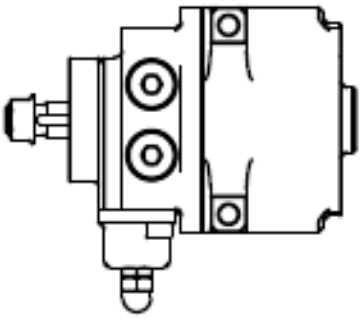
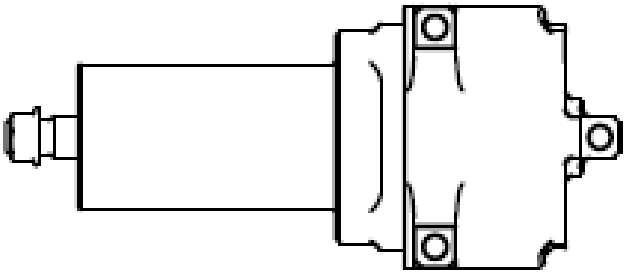
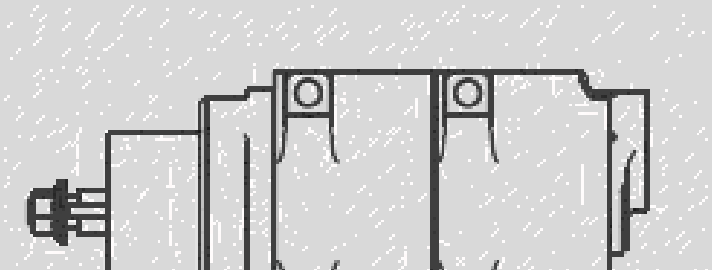
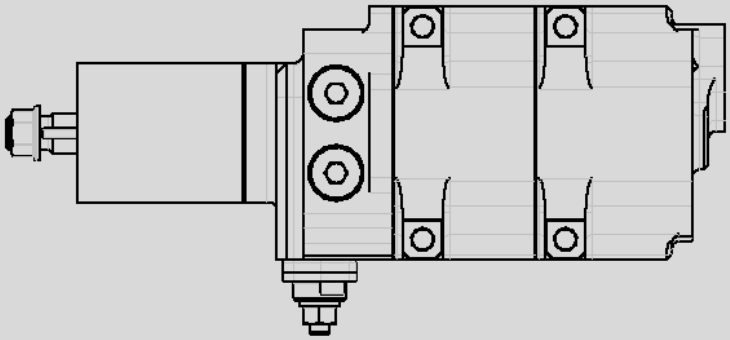


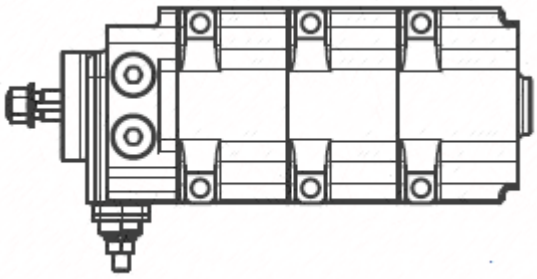
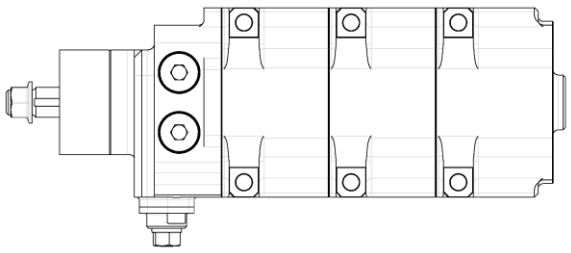
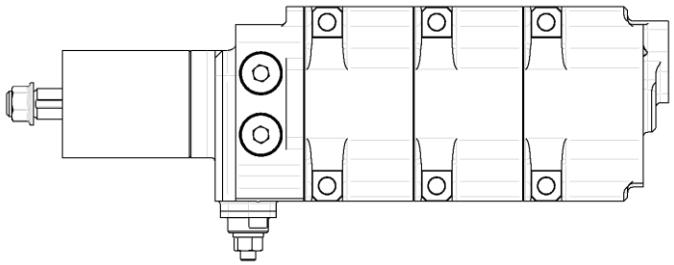
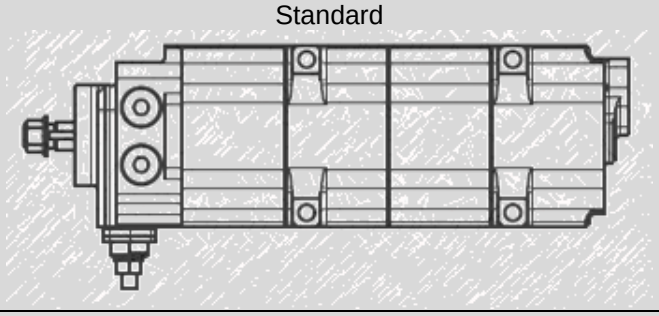
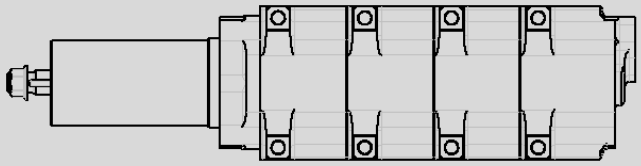
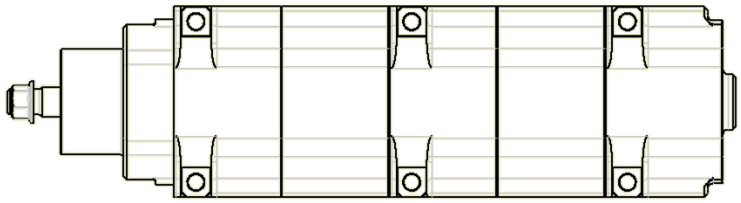
Both side PRV available. It can be noticed the the standard nose, either with or without PRV, is 45mm long and thus are interchangeable.

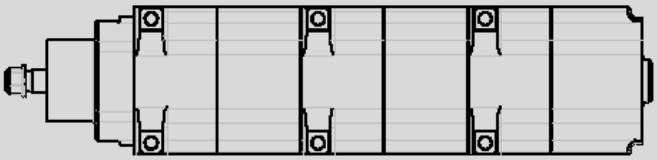
The nose can be extended using extensions



DRIVING SHAFT OFF THE SHELF CONFIGURATIONS

Single stage	Standard	
	Extended 50	
2 stages	Standard	
	Extended 50	

3 stages	Standard	
	Extended 20	
	Extended 50	
4 stages	Standard	
	Extended 59	
5 stages	Standard	

7 stages	Standard 

BODY HOUSING LENGTHS

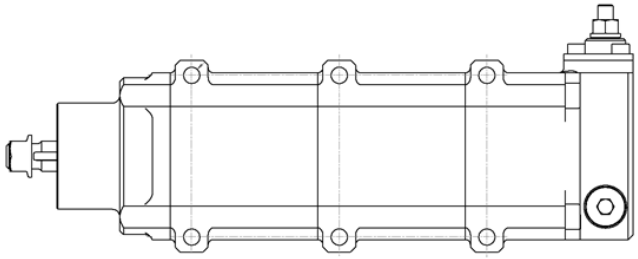
Housing	Siamese housing	End housing	
		Top exit	Rear exit
15			
18			
20			
25			
30			
35			
40			

TR2 PUMPS

The only TR2 pump available off the shelf is

TRIPLE STAGES

SINGLE PRESSURE, TWIN SCAVENGE



Gerotor lengths: 25x35x35

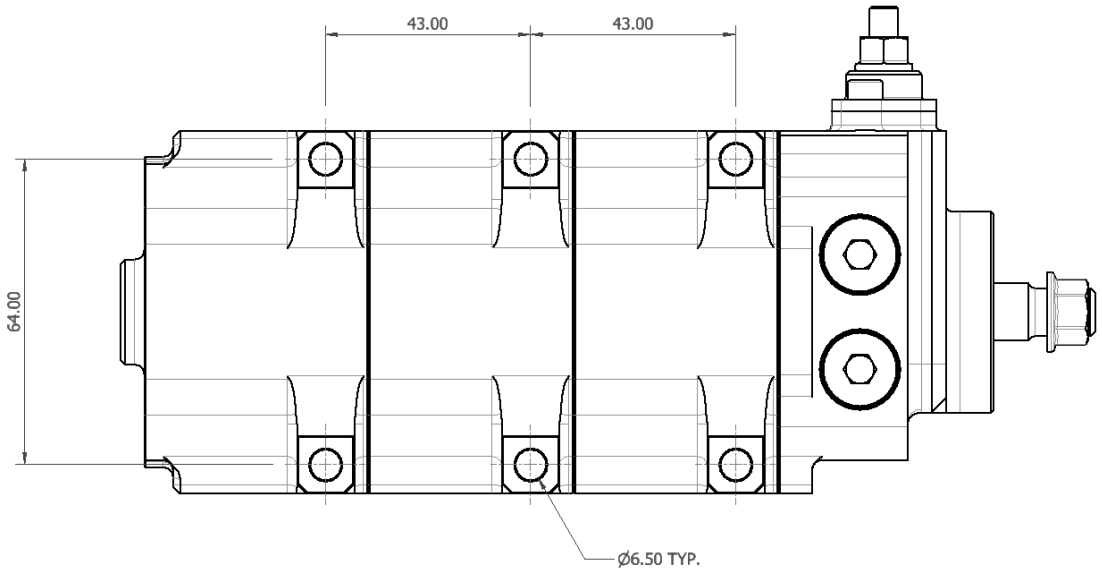
Part n°:
A10-160-601-01
(Rear pressure, 45.00 long nose)

The modular design eases the development of new pumps so if you can find a pump that suits your needs, please contact us.

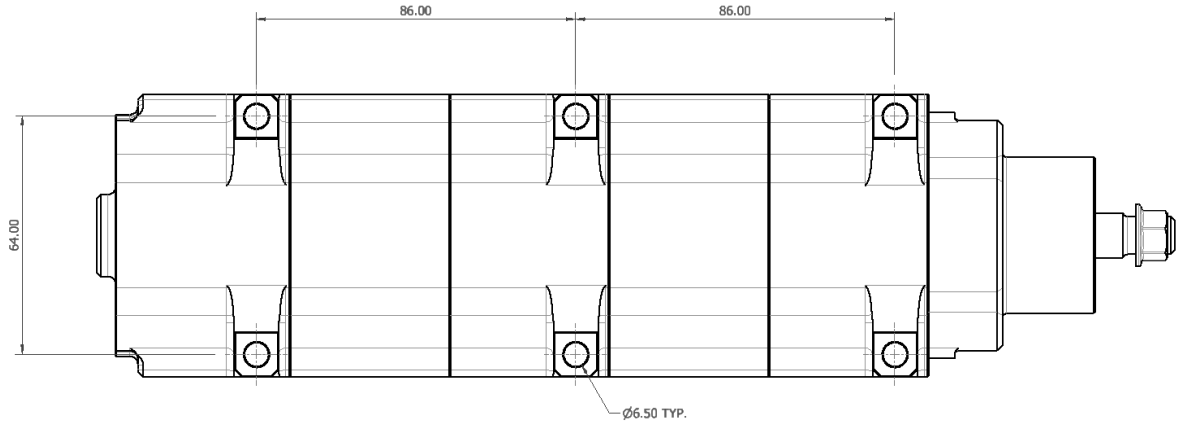
MOUNTING DIMENSIONS

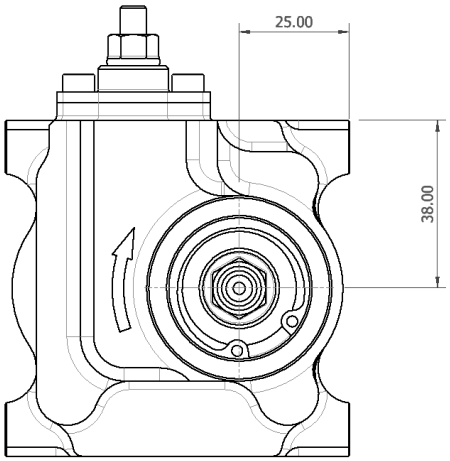
All oil pumps have to be mounted using M6 bolts or studs.

TG2

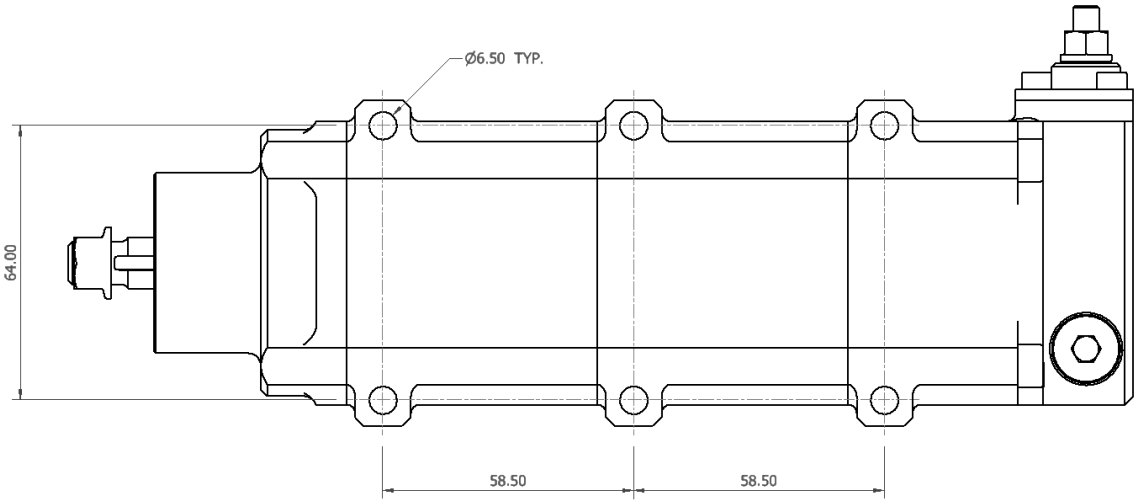


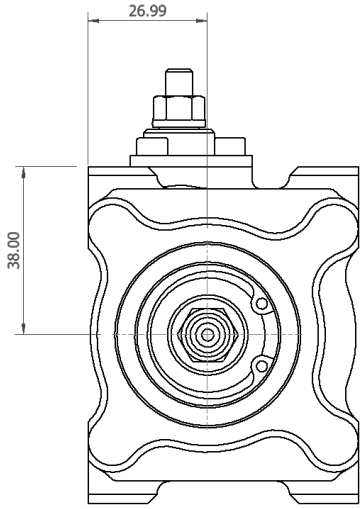
Or for long pumps:





TR2

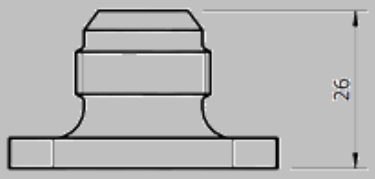
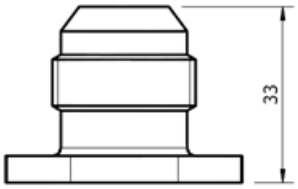
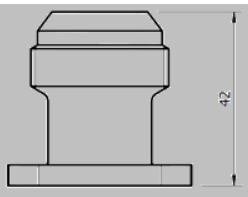


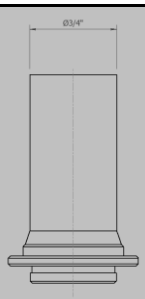
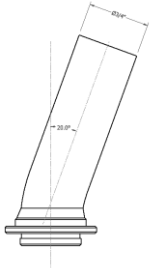


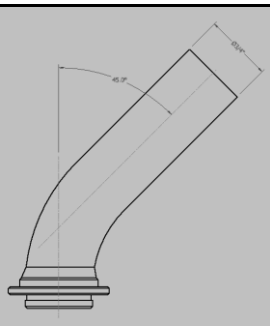
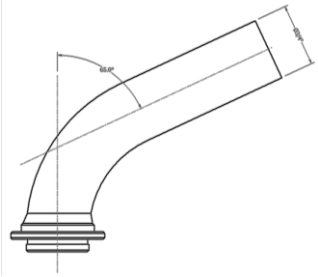
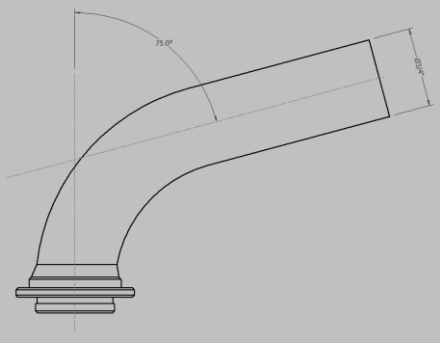
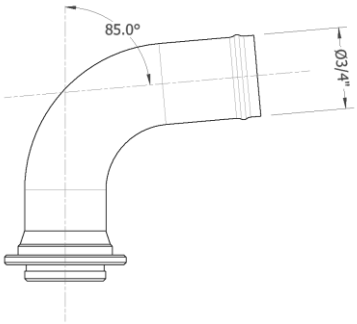
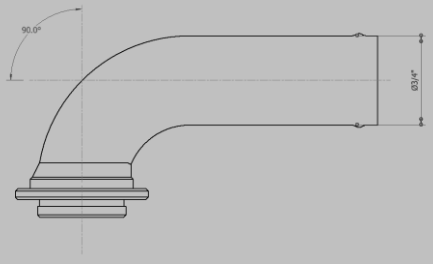
OPTIONS

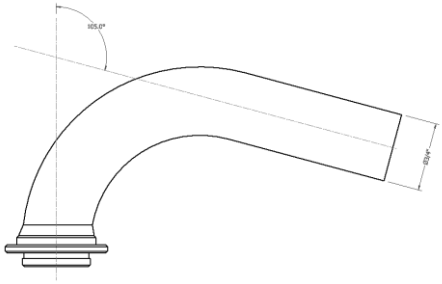
FITTINGS

OIL IN & OUT

FLANGED UNIONS	Part n°:
 -10	E03-165-155-01 (Steel) E03-165-155-02 (Aluminium)
 -12	E03-165-215-01 (Steel) E03-165-215-02 (Aluminium)
 -16	A10-165-148-01 (Aluminium)

SWIVEL UNION PIPES Ø3/4”	Part n°
 *Straight pipe*	E03-165-170-01
 *20° Pipe*	E03-165-159-01

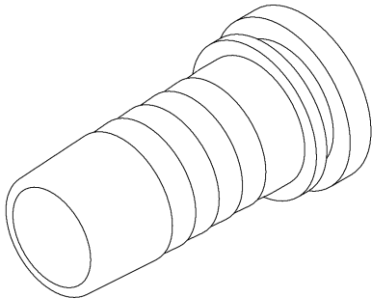
 *45° Pipe*	E03-165-158-01
 *65° Pipe*	E03-165-153-00
 *75° Pipe*	E03-165-146-00
 *85° Pipe*	C22-165-502-01
 *90° Pipe*	E03-165-144-00

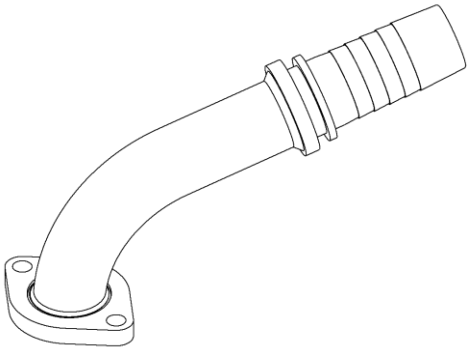


E03-165-151-00

105° Pipe

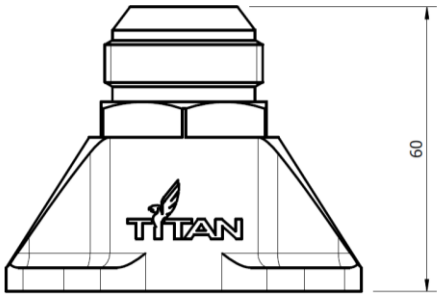
A crimp hose pipe end can also be added on request





Part n°: A10-165-173-01

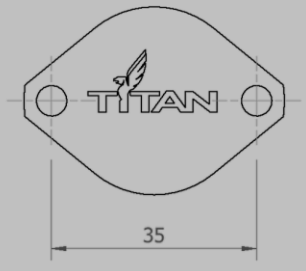
OIL OUT



-16

A10-165-148-02 (Aluminium)

Combined union for linking scavenge returns outside of the pump bodies



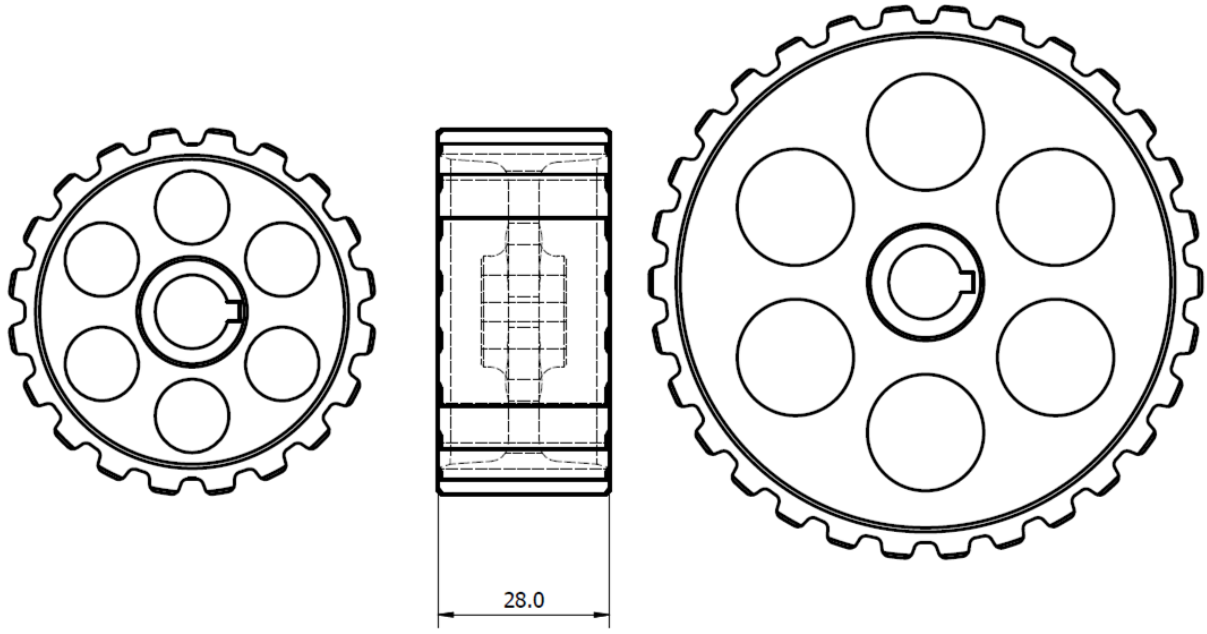
E01-129-584-02

Blanking flange

PULLEYS

The shafts are design to receive a 404 Woodruff key. Please see below for our range of matching pulleys.

3/8" 'L' PITCH TRAPEZOIDAL

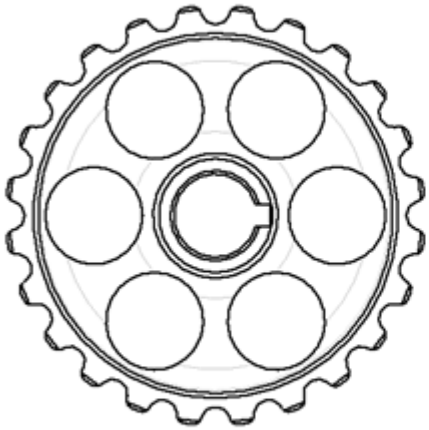


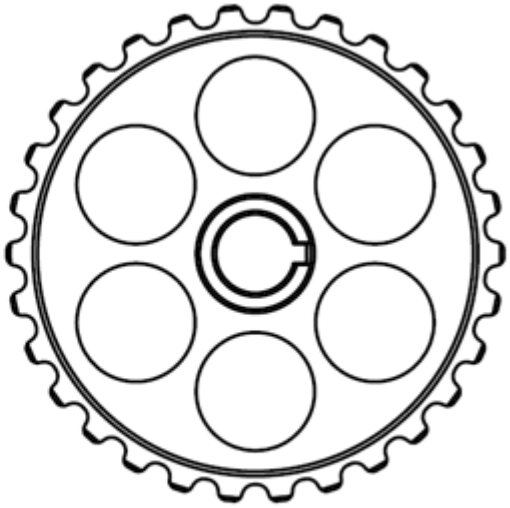
PULLEYS AVAILABLE FROM 20T THROUGH TO 32T (IN 2 TEETH INCREMENTS)

OFF THE SHELF 'L' PITCH PULLEYS

Description		Part n°
15 Teeth	Aluminium	A10-923-113-01
18 Teeth	Aluminium	A10-923-112-01
19 Teeth	Steel	C44-923-101-01
20 Teeth	Steel	A10-923-106-01
	Aluminium	A10-923-106-02
22 Teeth	Steel	A10-923-107-01
	Aluminium	A10-923-107-02
24 Teeth	Steel	A10-923-108-01
	Aluminium	A10-923-108-02
26 Teeth	Steel	A10-923-109-01
	Aluminium	A10-923-109-02
28 Teeth	Steel	A10-923-110-01
	Aluminium	A10-923-110-02
30 Teeth	Steel	A10-923-111-01
	Aluminium	A10-923-111-02
32 Teeth	Steel	A10-923-115-01
39 Teeth	Aluminium	A10-923-114-02
43 Teeth	Aluminium	A10-924-117-01

8M HTD





PULLEYS AVAILABLE FROM 20T THROUGH TO 32T (IN 2 TEETH INCREMENTS)

OFF THE SHELF 8M PULLEYS

Description		Part n°
24 Teeth	Steel	A10-924-108-01
26 Teeth	Steel	A10-924-109-02
30 Teeth	Steel	A10-924-111-01
31 Teeth	Steel	A10-924-104-01
36 Teeth	Steel	A10-924-116-01
44 Teeth	Aluminium	A10-924-113-01

Other pulleys can be designed and manufactured on demand.

SERVICING PARTS

PUMPS

Description	Part n°
Needle bearing	BNM-121-610-01
Ball bearing	BDM-123-210-03
Pump body O'ring	SRN-206-160-45
Lip Seal	SLN-152-807-00
PRV O'ring	SRN-204-017-44
Blanking bunk O'ring	SRN-206-009-45
Nose extension O'ring	SRN-206-025-45
Circlip	CBF-001-032-00

FITTINGS

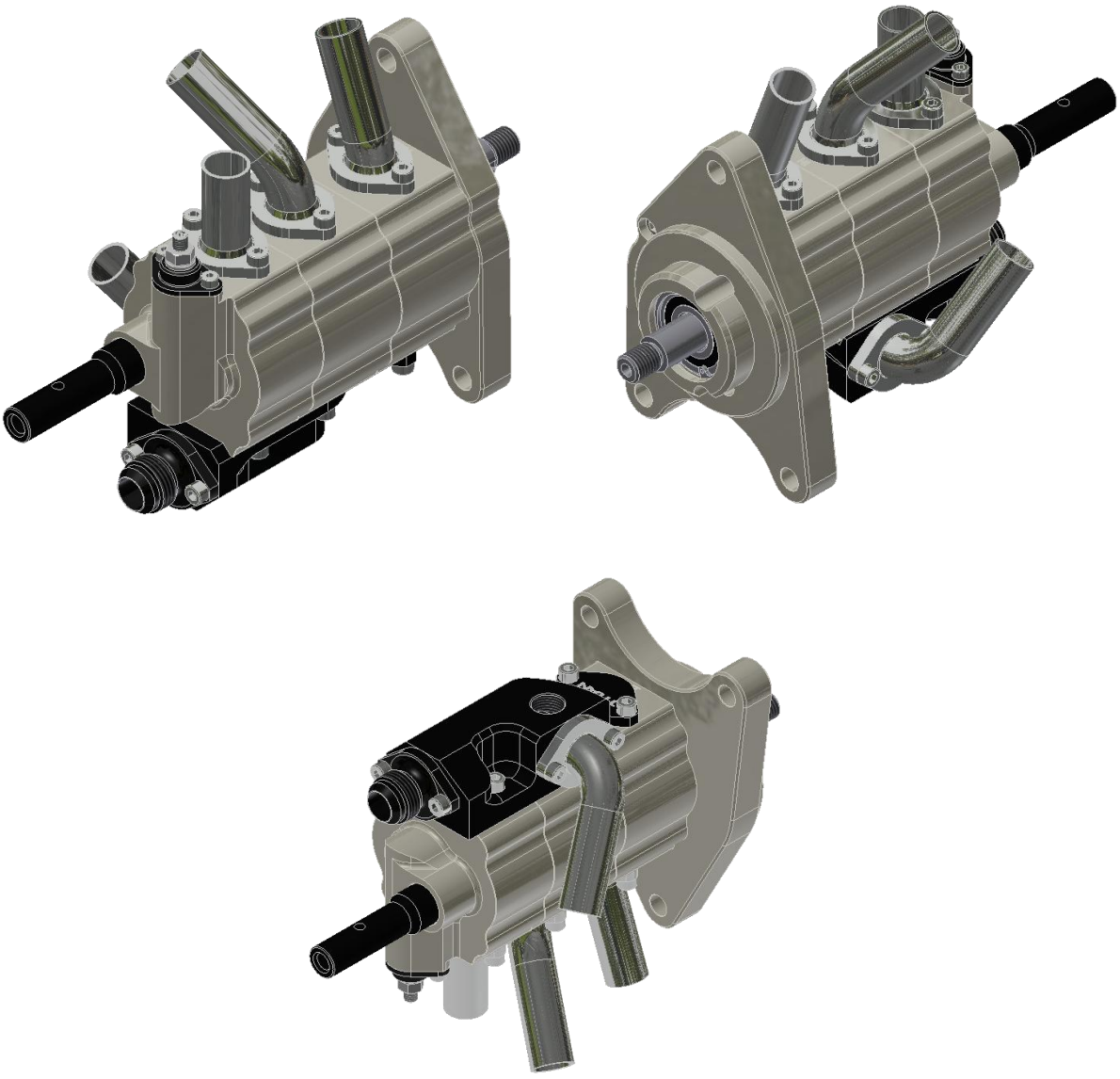
Description	Part N°
Union pipe O'ring	SRN-204-017-44
Flange for swivel union pipe	E03-165-142-00
Flange O'ring	SRN-200-118-56
Union screw	MCS-05C-012-11

BESPOKE PUMP CAPABILITIES

As a designing and manufacturing company, we are able to create bespoke pump solutions to suit your needs.

Shown below is an example of a bespoke designed pump

This TG2 pump features a rear PRV layout, a custom nose mounting system and custom union connection ports.



FAQ – ORDERING AND CONFIGURING A PUMP

Question 1

You have off the shelf pump configurations, how do we go about configuring the options and ordering one. And how quickly can we receive our pump after ordering?

Answer 1

Almost every pump is assembled on demand to the specification the customer specifies. There are a few major configuration choices such as;

1. Flow rate will determine Spur Gear or Gerotor internals
2. How many pressure and scavenge stages and pump sizes
3. Installation considerations will influence top or rear body exits nose length, PRV location and body length options
4. Oil line port connection interfaces flanged AN, swivel pipe, crimp, blanking, combined etc
5. Pulley size, tooth count and material construction

Titan can help with selection – please contact us.

Question 2

Is it possible to service the pump and what spare parts do you sell? How long will you maintain spare parts for this series of pumps?

Answer 2

Titan have been in the oil pump business since the 1980's and are still able to supply spare parts and service items for the Series 1 pumps from back then. There is a comprehensive list of spare parts and service kits listed for all Titan TG2 and TR2 pumps.

Question 3

Approximately how much is an off the shelf TG2 pump configurations, how do we go about configuring the options and ordering one. And how quickly can we receive our pump after ordering?

Answer 3

Clearly dependant on configuration and the number of stages, a typical 3 stage pump starts at £600.

FAQ – TECHNICAL INFORMATION

Question 1

What is the recommended filtration size to maintain optimum life of the internals?

Answer 1

The recommended stainless gauze filter is 0.5mm for a Gear and Gerotor style pumps and this is part of the Titan dry sump kit designs. The gear style can be run with 1mm gauze for reduced restriction.

Question 2

What chemicals or oils will the O rings start to degrade with?

Answer 2

Titan normally uses Nitrile O rings which are suitable for all engine oils. Nitrile is stable from -30degC to +120degC. Different materials such as Viton can be selected – please contact us.

Question 3

What is the minimum viscosity oil we can use before the pump starts to not maintain pressure?

Answer 3

A commonly used oil is Mobil 1 which is a 5W-30 grade and Titan have observed no loss of performance due to viscosity. Loss of efficiency and pressure can be a number of things such as worn internals due to passing debris or running dry or the target engine is demanding more oil flow resulting in a drop in pressure.

Question 4

How hot can the oil get before damaging the internal bearings and o rings?

Answer 4

Titan have experienced running pumps up to 120 deg C without issues. Higher temperatures are likely to degrade the Engine Oil and the O rings.

Question 5

How do I adjust the PRV, and what is the recommended procedure for this? What is the maximum pressure on the pump?

Answer 5

Titan fix the PRV at nominal position only and do not set the relief pressure, this is to be performed by the customer once the engine has been run and is up to temperature.

Question 6

What happens when we spin the pump outside the maximum rpm?

Answer 6

Over revving a pump will lead to cavitation and a drop off in efficiency. Gear pumps are rated to 7000rpm max and Gerotor are rated to 3500rpm max. Some installations of Gear pumps have exceeded this maximum but please check with Titan before planning on this.

Question 7

What is the body material and will it withstand salt water corrosion?

Answer 7

The pump body is cast in the UK from 2000 series aluminium, machined at Titan and then anodised for a good level of protection. The bearing at the front is a sealed bearing.

Question 8

What is the suction power on the scavenge side of the pump and how do we define or configure this in our design?

Answer 8

Generally the ratio of pressure to scavenge size is 2:1. Running steadily larger scavenge stages will increase the scavenge vacuum effect, which could result in less efficiency. Using too small a scavenge stage may not keep up with the demand of the main pumping stage. Scavenging Turbo oil should be planned carefully.

Question 9

What is 404 Woodruff key dimension and can we use a Metric pulley? Can we gear drive a TG2 and what axial load can we tolerate with the nose bearing?

Answer 9

A 404 Woodruff is an extremely common method for Pulley mounting. Other designs are possible for example gear driven, metric and spline – please contact Titan for more information. The axial load on the nose bearing is not normally an issue but care should be taken to not over tighten the belt.

Question 10

We need a custom pump design for particular project, what is involved in designing this pump, can we supply design drawings and Titan design from those? What format CAD package do you use and can we receive outline models for our vehicle integration?

Answer 10

Custom pumps are a popular request for Titan, please contact us with your challenge big or small. Titan uses Autodesk Inventor and are able to work with STP files and other formats.