

GENERAL PUMP *A member of the Interpump Group*

ZGRS1000 & ZGRS1125

Gear Reducer for Gas Engines

SPECIFICATIONS

Model Number	ZGRS1000	ZGRS1125
Maximum BHP (Engine HP)	25	
Maximum Engine RPM	3600	
Reduction Ratio	1:2.2	
Oil Capacity (SP Industrial Pump Oil Series 220)	9.47 Oz.	
Weight (without oil)	9.26 Lb.	
Fits Engine Shaft Diameter	1"	1.125"
Fits General Pump Models	47 Series (1450 RPM Versions) 66 Series (1450 RPM Versions)	
Reference: See SAE specification J609A-B for additional information on engine mounting dimensions.		

FEATURES

- Eliminates need for belts and pulleys. Saves time and money.
- Compact design for easier enclosure. Reduced size of mounting base.
- Oversized bearing system is self-aligning. Reduces load on motor bearings and pump bearings.
- Self-contained lubrication system
Uses 90W gear lube for quiet, long life operation.
Protects pump from failure due to gearbox oil loss.
Protects gearbox from failure due to oil loss in pump.
- Large, helical cut, hardened steel gears for quiet, long life operation.
- Large capacity crankcase.
- Reversible mounting for right or left hand drive gas engines. Includes reversible dipstick and oil level sight glass.
- Model ZGRS1000 for a 1" keyed shaft.
- Model ZGRS1125 for a 1.125" keyed shaft.



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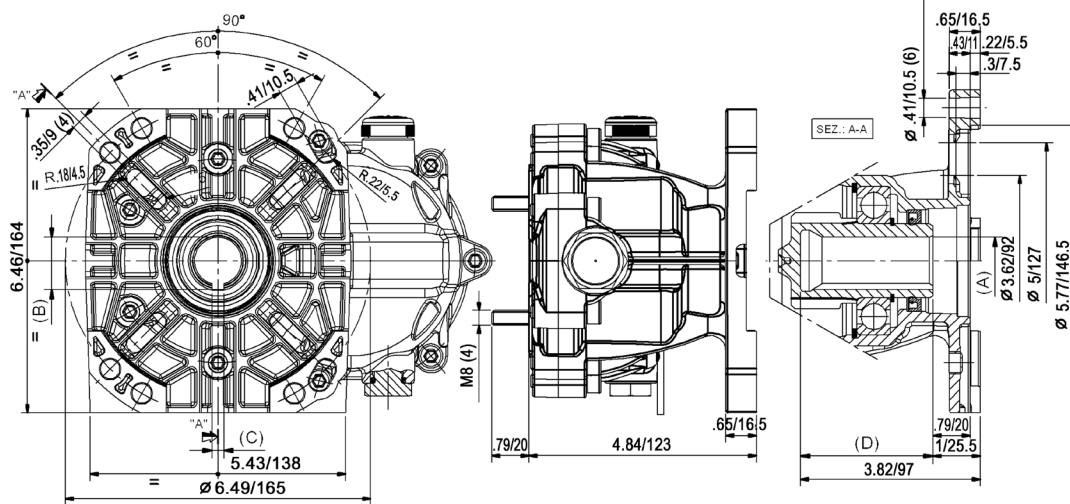


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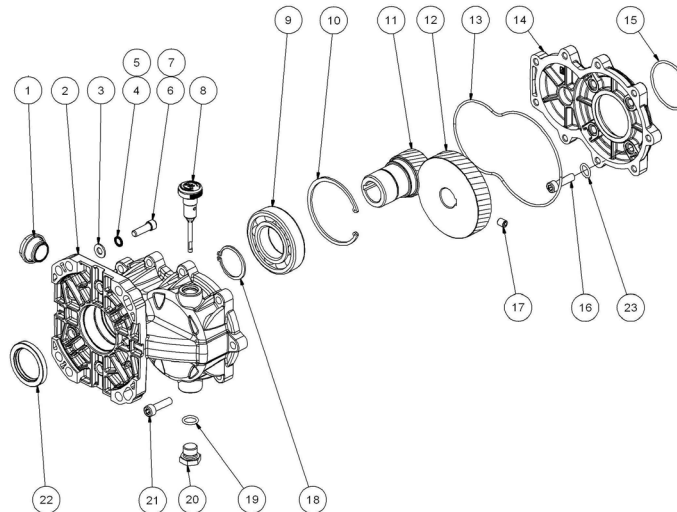
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DIMENSIONS



Pos.	Pinion Z=17	(A)	(B)	(C)	(D)
11	P/N 10023355	Ø25.4 G7 (+0.007/+0.028)	28.3 (0/+0.15)	6.4 (+/-0.02)	71.5 (+0.15/0)
11	P/N 10027155	Ø 28.6 H7 (+0.02/0)	31.5 (0/-0.1)	6.4 (+/-0.02)	72.5 (+0.15/0)

PARTS LIST



NO.	PART #	DESCRIPTION	QTY.	NO.	PART #	DESCRIPTION	QTY.
1.	97596800	Indicator, Oil Level	1	12.	10023455	Gear, Ring	1
2.	10075622	Box, Reducer	1	13.	90392900	O-ring, Ø152.07x2.62	1
3.	96702000	Washer, 8.4x13x1.5	1	14.	10075722	Cover, Gearbox, RS500, Alum.	1
4.	96701400	Washer	4	15.	90389800	O-ring, Ø56.82x2.62	1
5.	96710400	Washer	4	16.	99308500	Screw, M8x30	4
6.	99275500	Screw, Hex Head	4	17.	99301700	Screw, M8x30	1
7.	99334500	Screw, Hex Head	4	18.	90072500	Snap Ring	1
8.	98210750	Oil Dip Stick	1	19.	90383300	O-ring, Ø 13.95x2.62	1
9.	91852000	Bearing, Ball	1	20.	98210000	Plug, G3/8x13	1
10.	90097600	Ring, Retaining	1	21.	99308400	Screw, M8x30	9
11.	10023355	Gear, Pinion, 1"	1	22.	90168000	Radial Ring, 40x55x7	1
	10027155	Gear, Pinion, 1.125"	1	23.	90350700	O-ring, Ø 6x1.5	4

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INSTALLATION AND INSTRUCTIONS FOR USE

THIS DOCUMENT PROVIDES THE INSTRUCTIONS FOR THE INSTALLATION, USE AND MAINTENANCE OF THE REDUCTION GEAR, THEREFORE IT IS AN INTEGRAL PART OF IT AND MUST BE READ CAREFULLY BEFORE ANY USE AND KEPT WITH CARE. STRICTLY COMPLY WITH THE INSTRUCTIONS CONTAINED IN THIS DOCUMENT IN VIEW OF A SAFE AND EFFECTIVE USE OF THE REDUCTION GEAR. FAILURE TO COMPLY WITH THESE INSTRUCTIONS MIGHT CAUSE EARLY FAILURE AND RESULT IN SITUATIONS OF DANGER, IN ADDITION TO VOIDING ANY WARRANTY.

1. GENERAL INFORMATION

- 1.1 The ZGRS reduction gear is designed to be operated by a gasoline or diesel engine and to be coupled to General Pump high pressure pumps. It must be used in connection with other mechanical units/components in order to create a system with a definite function.
- 1.2 Since the ZGRS reduction gear is used within a complete system, installation and use must be suited to the type of system used and comply with the safety regulations in force in the country where the reduction gear is used.
- 1.3 Before using the reduction gear, make sure that the system the reduction gear is used with is certified to comply with the relevant directives and/or regulations.
- 1.4 Before installing and using the reduction gear for the first time, we suggest you check that it is undamaged and make sure that the rated features correspond to the required ones. If this is not the case, do not use the reduction gear and contact the Customer Service Department.
- 1.5 In order to install the reduction gear correctly, follow the instructions for the assembly and for the connections with pump and engine as stated in this instruction manual and/or on the reduction gear itself.
- 1.6 Assembly and installation must be made by qualified staff only, who must have the necessary mechanical and technical skills and be informed of the operating and safety instructions contained in this document.
- 1.7 In view of a correct functioning of the reduction gear, and in particular of the pump it is coupled to, the rating of the engine used must be suited to the pump performance. In any case, the engine power must not exceed 25 HP.



In case of doubts, do not hesitate to contact the Customer Service Department.

2. ASSEMBLY AND INSTALLATION

The positions mentioned in the following instructions refer to the exploded view. Carefully clean all the driving parts/surfaces of the reduction gear, of the pump and of the engine.

2.1 Coupling to the pump:

- 2.1.1 Unscrew and remove the 4 screws fixing the case side cover, shaft outlet end of the pump the reduction gear be coupled to. See table of TECHNICAL FEATURES in order to choose the pumps to be used.
- 2.1.2 Lubricate the O-ring, pos. 15 and place it in the seat obtained on the outside end of the reduction gear cover pos. 14 by the hole provided for the pump shaft.
- 2.1.3 Center the reduction gear cover pos. 14 on the case side cover - shaft outlet end of the pump taking care that the O-ring pos. 15 stays in place correctly.
- 2.1.4 Fix the reduction gear cover pos. 14 to the pump by means of the four screws pos. 14 and tighten (torque wrench setting: 14.8 Ft.lbs./20 Nm). Check that the O-rings pos. 23 are present under the screw heads.
- 2.1.5 IMPORTANT - Place the reduction gear cover pos. 14 horizontally taking care that when the reduction gear is assembled, the oil dipstick cap pos. 8 is positioned upwards.
- 2.1.6 Lubricate the pump shaft with grease in order to make the assembly easier and prevent contact oxidation.
- 2.1.7 Fix the crown gear pos. 12 to the pump shaft up to limit stop. Make sure that the feather key is present on the shaft.
- 2.1.8 Fix the crown gear to the pump shaft by tightening the screw pos. 17 with 542 LOCKTITE (torque wrench setting: 10.3 Ft.lbs/14 Nm).
- 2.1.9 Lubricate the O-ring pos. 13 and place it into the seat of the reduction gear casing pos. 2.
- 2.1.10 Join the two parts of the reduction gear matching the reduction gear casing pos. 2 with the reduction gear cover pos. 14. Take care that the O-ring pos. 13 stays in place correctly. Position the toothing of the crown gear and of the pinion gear so as to make the mesh and the coupling easier.
- 2.1.11 Fix the reduction gear casing pos. 2 to the reduction gear cover pos. 14 by means of the nine screws pos. 21 and tighten (torque wrench setting: 14.8 Ft.lbs./20 Nm).
- 2.1.12 Screw down the oil drain cap pos. 20 (torque wrench setting: 20.5 Ft.lbs/40 Nm) into the lower part of the reduction gear casing pos. 2.
- 2.1.13 Make the first oil filling by the oil dipstick cap hole pos. 8 up to the middle of the oil window cap pos. 1. Approximately 9.47 oz. /0.28 liters are needed (See paragraph "LUBRICATING OIL").
- 2.1.14 Screw down the oil dipstick cap pos. 8

2.1 Coupling to the engine:

- 2.2.1 Lubricate the engine shaft with grease in order to make the assembly easier and prevent contact oxidation.
- 2.2.2 Center and couple the reduction gear/pump assembly to the engine by means of the flange taking care that the shaft and the hole are correctly aligned. See table of "TECHNICAL FEATURES" in order to choose the flange to be used with the engine. Make sure that the feather key is present on the engine shaft.
- 2.2.3 Do not force and/or damage the coupling of the engine shaft to the reduction gear pinion hole due to incorrect actions.
- 2.2.4 In order to obtain a good centering and a correct functioning we suggest you use engine shafts with the following matching tolerances for the shaft end:

Pinion	Engine Shaft
P/N 10023355 - Ø25.4 G7 (+0.007/+0.028)	Ø 25.4 f7 (-0.02/-0.041)
P/N 10027155 - Ø 28.6 H7 (0/+0.021)	Ø 28.6 f7 (-0.02/-0.041)

- 2.2.5 Fix the reduction gear/pump assembly to the engine by means of the four screws pos. 6 or 7 (see engine flange), of the washer pos. 3 and the washer pos. 4 or 5 and tighten (torque setting: pos 7 14.8 Ft.lbs./20 Nm, pos. 8 22 Ft lbs./30 Nm).



IMPORTANT: the pump must be fixed to the reduction gear only, therefore it must be suspended during working

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3 LUBRICATING OIL

3.1 For the inside lubrication use gear drive oils with cSt 104°F(40°C) ≥180 viscosity, better if containing addition agents in order to grant an excellent level of protection against wear, against foaming and to provide high oxidation and corrosion strength. We suggest you use General Pump Industrial Oil Series 8090.

3.2 This oil type are valid for room temperatures between 32° and 86° F (0° and 32°C). In case of different temperatures, contact the Customer Service Department.

3.3 Oil Change

3.3.1 The oil change must be carried out when the reduction gear is at working temperature.

3.3.2 Place a container under the drain plug pos. 20

3.3.3 Remove the oil dipstick cap pos. 8 and then the drain plug pos. 20.

3.3.4 Wait until all the oil has been drained, then screw back the drain plug pos. 20 (torque wrench setting: 29.5 Ft.lbs/40 Nm).

3.3.5 Fill with fresh oil up to the middle of the oil window cap pos. 1 and screw back the oil dipstick cap pos. 8.



IMPORTANT: The used oil must be disposed of properly and must not be dispersed into the environment.

4 MAINTENANCE

4.1 Maintenance and repair must be carried out by qualified and authorized staff only. Before any operation, make sure that the engine-reduction gear-pump assembly is shut down and made unusable.

4.3 Scheduled Maintenance

4.3.1 **After 50 working hours:** Change the oil after 50 working hours from the first use. Afterwards, the oil must be changed every 1000 working hours, or once a year.

4.3.2 **Every 500 hours:** Check the oil window pos. 1 to verify the oil level. If necessary, add oil up to the middle of the oil window. In case of a substantial decrease in the oil level, check that there are no leaks or dripping cause by excessive wear or by breaks.

4.3 Replace the reduction gear parts with original spare parts only Use only oil type as stated in the above paragraph.



IMPORTANT: After maintenance, we suggest you change the lubricating oil. Moreover, make sure that the reduction gear is re-assembled correctly and that the initial conditions are restored. If necessary, comply with the instructions contained in the above paragraph "ASSEMBLY AND INSTALLATION".

4.4 In case of disposal, we suggest you take the reduction gear to an authorized disposal center or contact the Customer Service Department.



IMPORTANT: the reduction gear shall not be tampered with for any reason and/or used for any other purpose other than the use it has been designed for. In case of tampering, the manufacturer disclaims all responsibility as to the reduction gear functioning and safety.

5 WARRANTY CONDITIONS

5.1 The period and conditions of warranty are specified in the purchase contract.

5.2 Warranty is voided in case the reduction gear is used for improper purposes, used at higher performances than the rated ones, repaired with non-original spare parts or if it turns out to be damaged due to the non-compliance with the operating instructions or to unauthorized tampering.

WARNINGS

WARNING: High Pressure Systems require a primary pressure regulating device (i.e. regulator, unloader) and a secondary pressure relief device (i.e. pop-off valve, relief valve). Failure to install such relief devices properly could result in personal injury or damage to pump or property. GP does not assume any liability or responsibility for the operation of the user's high pressure system.



WARNING: This product can expose you to chemicals including lead, which is known to the state of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov