



**PREMIUM**

Installation and  
Routine Maintenance



# **GREAVES**

## **HELICAL AREATOR UNITS**

# INTRODUCTION

The 'Premium' Aerator gear units incorporates the very best in modern gear design. It is a self-contained unit of simple rigid construction involving the minimum number of moving parts and embodying a lubrication system which ensures a positive supply of oil to gears and bearings at all running speeds.

Each gear unit is produced using the most up-to-date machinery and production technique ensuring the highest standards of accuracy and precision. Maintenance of the 'Premium' Aerator drives was one of the criteria considered at the design stage, and has led to the development of a unit that requires little maintenance but when needed may be worked on with a very nominal effort.

This publication outlines all necessary steps for correct installation and maintenance of the Aerator reducers; following this sequence should ensure the long trouble-free life of your unit.

SEW  
GEARS  
SEW  
GEARS

# UNIT IDENTIFICATION

## How to Identify your Unit:

1. Each unit carries nameplate for *Product description*. It depicts an individual six figure order number (O.No.) for identification purposes. This is in the form 160599. An enquiry to 'Premium' quoting this order number shall enable it to identify positively the gear units.

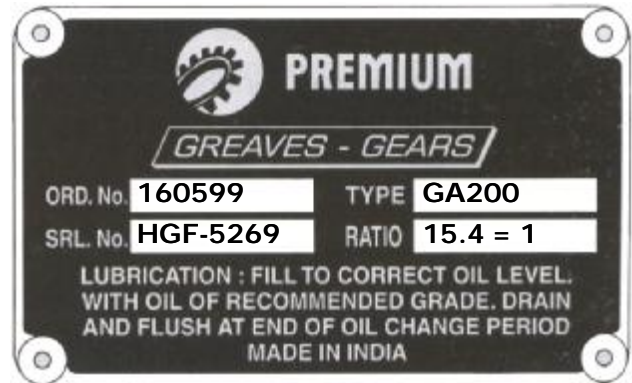
2. All gear units also have a code number on the nameplate for the designation purpose. This is in the form:

GA----- 200

    |                  |

Type of          Unit

Gear              Size



By using this reference in conjunction with the sales brochure the gear unit can be identified.

Note: When ordering replacement parts quote from the nameplates the following:

1. Order Number 2. Serial Number 3. Ratio 4. Type

These are essential. Replacement parts cannot be identified without this information.

## General Construction:

### GEARS AND PINIONS:

Helical gears and pinions made of high quality alloy case hardening steels are flank ground to precision grade for ensuring high standard of accuracy, long life and quiet running characteristics.

### CASE:

The main case along with top bearing housing is of high-quality close-grained cast iron. The casing accommodates the bearings and the gear trains and is design optimized to provide precisely calculated strengthening ribs and optimal wall thickness in critical load carrying areas. They are provided with easily accessible service ports.

### SHAFTING:

Input pinion shaft and output shaft is manufactured from direct hardening alloy steel capable of transmitting high torque.

### BEARINGS:

Branded taper roller bearings are used, as appropriate. These bearings are of ample capacity to support combined radial & thrust load.

### SHAFT SEALS:

Shaft extensions are fitted with spring-loaded rubber seals to prevent outflow of oil.

# STORAGE

## **P**rotection of Unit:

All units prior to despatch are test run with a rust preventive oil giving adequate protection to internal parts for a period of six months covering normal transport inland and overseas and coverage storage. When the unit is installed, the rust preventative dissolves in the first fill of lubricant without harmful effect. Shaft extensions are protected with a rust inhibitor which is proof against sea water and suitable for under-cover storage upto 12 months.

### **Notes:**

1. Where gear units are to operate in abnormal conditions, or where they are to stand for long periods without running, e.g. in plant installation, 'Premium' must be notified so that suitable protective arrangements can be made.
2. Gear units which are commissioned and then left standing for an extended period should be operated, loaded or unloaded for a short time every week to circulate the lubricant to protect surfaces. If, this is not possible the unit should be protected from corrosion.

# INSTALLATION

## **I**nstallation :

1. Clean shaft extensions and ventilator.
2. Secure unit to a rigid foundation using HD bolts to GR8.8 specification minimum. The foundation on which the unit is to be installed should be rigid, composed of either R.C.C. or properly machined steel structure of sufficient stiffness to ensure freedom from vibration.
3. Mount the specified motor onto the Motor flange adaptor taking location on the Spigot with HD bolts.
4. Mount the driven equipment through the output rigid coupling with HD bolts.
5. Fit necessary guards in accordance with factory acts.

### **Notes:**

1. All units are despatched without Oil or Grease. On installing the unit fill the recommended lubricant to correct level as per dipstick marking.
2. The top bearings are grease lubricated. Check for the presence of grease guns / nipples in the top bearing housings prior to operation.

# BEARINGS AND SEALS

## Bearings :

The bearings for aerator units are selected very carefully to best suit the requirements of each unit and to more than adequately deal with the designed maximum loads acting on them. Because of the load carrying capacity at higher speeds, taper roller bearings are used throughout.

If unit is dismantled or partly dismantled, on reassembly, the bearing end floats should be checked and adjusted as required. The taper roller bearings have tight tolerances of bearing end float and require careful setting. (Refer Table for Bearing End Float)

## Oil seals :

Oil seal should be replaced whenever unit is dismantled or if in service it shows signs of leakage or damage.

### RECOMMENDED PROCEDURE FOR REPLACING INPUT OIL SEAL:

1. Clean and drain unit.
2. Remove the motor from the motor mounting adaptor along with the input coupling.
3. Remove cap screw with a suitable allen key and withdraw the motor flange adaptor.
4. Check for burrs and scratches on the input shaft as these could damage the new seal.
5. Tap the old oil seal out of the motor mounting adaptor.
6. Clean joint faces of motor flange adaptor cum input oil catcher.
7. Coat joint faces of motor flange adaptor with a good jointing compound.
8. Replace motor mounting adaptor and tighten cap screws.
9. Fit replacement seal. Protect seal lips by wrapping shaft with thin strong paper coated with oil or grease. Coat seal lips with grease, then using appropriate sized, drift press into housing. For best performance, ensure that seal is seated square with the shaft.
10. Fill unit with the recommended lubricant to correct level and check the grease availability.

### RECOMMENDED PROCEDURE FOR REPLACING OUTPUT OIL SEAL:

1. Clean and drain unit.
2. Remove the rigid coupling by removing the coupling fixing nut.
3. Remove the coupling.
4. Remove the output bottom bearing housing by removing the fixing bolts.
5. Check for burrs and scratches on the output shaft as these could damage the new seal.
5. Tap the old oil seal out of the housing.
6. Clean joint faces.
7. Coat joint faces of oil catcher and main casing with a good jointing compound.
8. Replace oil catcher and tighten bolts.
9. Fit replacement seal. Protect seal lips by wrapping shaft with thin strong paper coated with oil or grease. Coat seal lips with grease, then using appropriate sized, drift press into housing. For best performance, ensure that seal is seated square with the shaft.
10. Fill unit with the recommended lubricant to correct level and check grease availability.
11. Fit the rigid coupling and the coupling nut.

# BEARINGS END FLOAT & TIGHTNING TORQUE

## R ecommended end float (mm):

UNIT SIZE	GA112	GA125	GA140	GA160	GA180	GA200	GA225	GA250
Input Shaft	0.025/ 0.075	0.025/ 0.075	0.025/ 0.075	0.050/ 0.100	0.050/ 0.100	0.050/ 0.100	0.050/ 0.100	0.050/ 0.100
2 <sup>nd</sup> Redn. Pinion Shaft	0.050/ 0.100	0.050/ 0.100	0.050/ 0.100	0.050/ 0.100	0.050/ 0.100	0.050/ 0.100	0.050/ 0.100	0.050/ 0.100
Final Pinion Shaft	0.050/ 0.100	0.050/ 0.100	0.050/ 0.100	0.050/ 0.100	0.050/ 0.100	0.050/ 0.100	0.050/ 0.100	0.050/ 0.100
Output Shaft	0.050/ 0.100	0.050/ 0.100	0.050/ 0.100	0.050/ 0.100	0.050/ 0.100	0.050/ 0.100	0.050/ 0.100	0.075/0.12 5

## T ightening torque :

Standard units are fitted with joint bolts, secured with loctite. Nuts / Bolts should be tightened to the correct torque during routine maintenance.

Gearbox Size	Case Joining Studs/Bolts			Cover and Housing Bolts		
	Thread Size	Torque (Nm)	Torque (lbf in)	Thread Size	Torque (Nm)	Torque (lbf in)
GA112	M10	35	310	M6	12	106
				M8	20	177
				M10	40	354
GA125	M10	35	310	M8	20	177
				M10	40	354
GA140	M10	35	310	M8	20	177
				M10	40	354
GA160	M12	60	531	M8	20	177
				M10	40	354
GA180	M16	160	1416	M8	20	177
				M10	40	354
GA200	M16	160	1416	M8	20	177
				M10	40	354
GA225	M20	310	2743	M8	20	177
				M12	70	619
GA250	M20	310	2743	M8	20	177
				M12	70	619

# LUBRICATION AND LUBRICANTS

**New Units:** All units are despatched without oil. Before operating a new unit it should be filled with a recommended lubricant upto the dipstick mark. Wherever possible run the unit for a short time without load to circulate the lubricant thoroughly. Subsequently stop the unit and recheck the oil level and if necessary, top up to the correct mark.

**Warning:** Do not overfill unit as this can cause leakage and overheating.

**Oil Changes:** As the oil is used, degradation takes place and since this process is more rapid at elevated temperatures, the oil must be changed to ensure satisfactory lubrication. The type of oil and time spent at highest temperatures determines the interval between oil changes.

## Oil Change Period:

Regular oil changes are essential to ensure that the gearbox gives long and trouble free service.

The procedure for changing the oil should be to drain the oil preferably when hot and after circulation. If the unit is to be flushed, the unit should be filled to the highest level with an flushing oil of viscosity grade 22 of any manufacturer and run before the flushing oil is drained. The activity should be carried out for a considerable period which will depend upon the amount of contaminations of the lubricating oil due to generation of wear debris and formation of sludge. Continue the flushing out operation till the original color of flushing oil is observed and signs of contamination is not visible. The procedure should be followed especially if the type of oil is to be changed.

Recycling of flushing oil may be done after passing through filters of 200 mesh.

The top bearings which are grease lubricated, should be re-greased at 2000 to 3000 hours intervals unless otherwise specified.

Operating Temperature	Oil Change period
Upto 110°C	6 Calender month

RECOMMENDED LUBRICANT ISO VG320	
Brand	Grade
Greaves	Greaves Traxol 32
Balmer Lawrie	Protomac SP 320
Bharat Petroleum	Cabol 320 or Amocam 320
Castrol	Alpha ZN320
Gulf	Harmony 320
Hindustan Petroleum	Enklo 320
Indian Oil	Servomesh SP320
Veedol	Avalon 320

## Oil required for first filling (liter):

UNIT SIZE	GA112	GA125	GA140	GA160	GA180	GA200	GA225	GA250
Oil Quantity	12	14	16	21	22	25	50	63

# SHIPPING SPECIFICATION

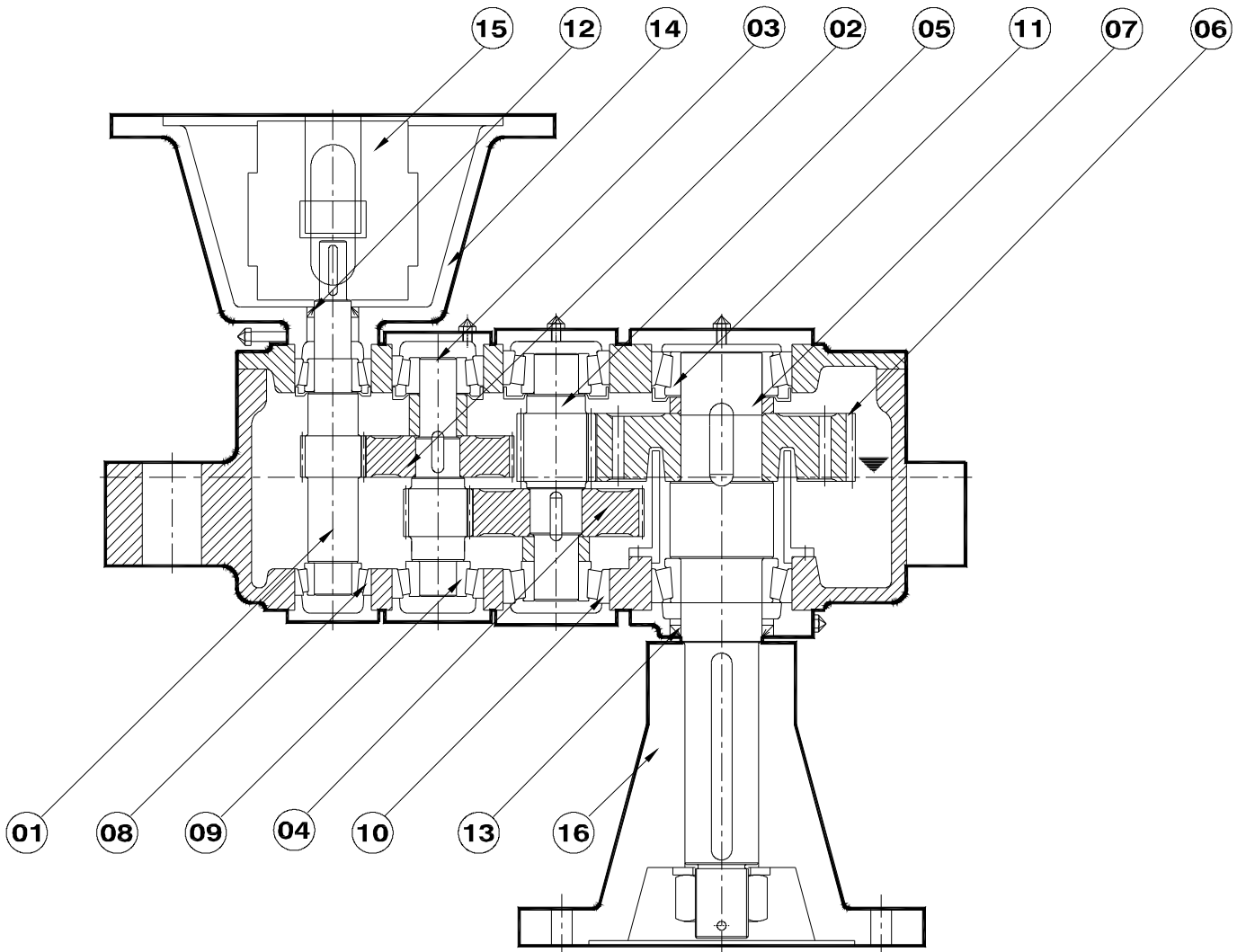
## Net & gross weight:

UNIT SIZE	GA112	GA125	GA140	GA160	GA180	GA200	GA225	GA250
Net Weight	200	245	290	310	330	400	520	650
Gross Weight	230	280	330	360	380	460	600	750

**WARNING :** *The customer shall be responsible for the proper use of articles supplied by the company, particularly the rotating elements between their driven members, and their guarding for safety, and the company shall not be responsible for any injury or damage sustained as a result of the improper use of the article supplied.*

*Attention is hereby drawn to the danger of using naked lights in proximity of openings in geared motors supplied by the company, and the company shall not be liable for any claim for injury or damage arising from any contravention of this warning.*

# IDENTIFICATION OF PARTS



Item No.	Description	Qty/Unit
01	INPUT PINION WITH SHAFT	01
02	1 <sup>ST</sup> STAGE WHEEL	01
03	2 <sup>ND</sup> STAGE PINION SHAFT	01
04	2 <sup>ND</sup> STAGE WHEEL	01
05	FINAL PINION SHAFT	01
06	OUTPUT WHEEL	01
07	OUTPUT SHAFT	01
08	INPUT BEARINGS	02
09	1 <sup>ST</sup> INTERMEDIATE BEARINGS	02
10	2 <sup>ND</sup> INTERMEDIATE BEARINGS	02
11	OUTPUT BEARINGS	02
12	INPUT OIL SEAL	01
13	OUTPUT OIL SEAL	01
14	MOTOR MOUNTING ADAPTOR	01
15	INPUT FLEXIBLE COUPLING	01
16	OUTPUT RIGID COUPLING	01

**PREMIUM****Premium Energy Transmission Limited**

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 Website : [www.premiumtransmission.com](http://www.premiumtransmission.com)

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**Eastern Region :**

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 Tel. : (91-80) 22268773/2506, Fax : (91-80) 22253472.

**Hyderabad :** 6-2-47, A. C. Guards, 1st floor, P.B. No. 9, Hyderabad - 500 004.  
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**Kochi :** 39/5567, M. G. Road, Emakulam, Kochi - 682 015.  
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