

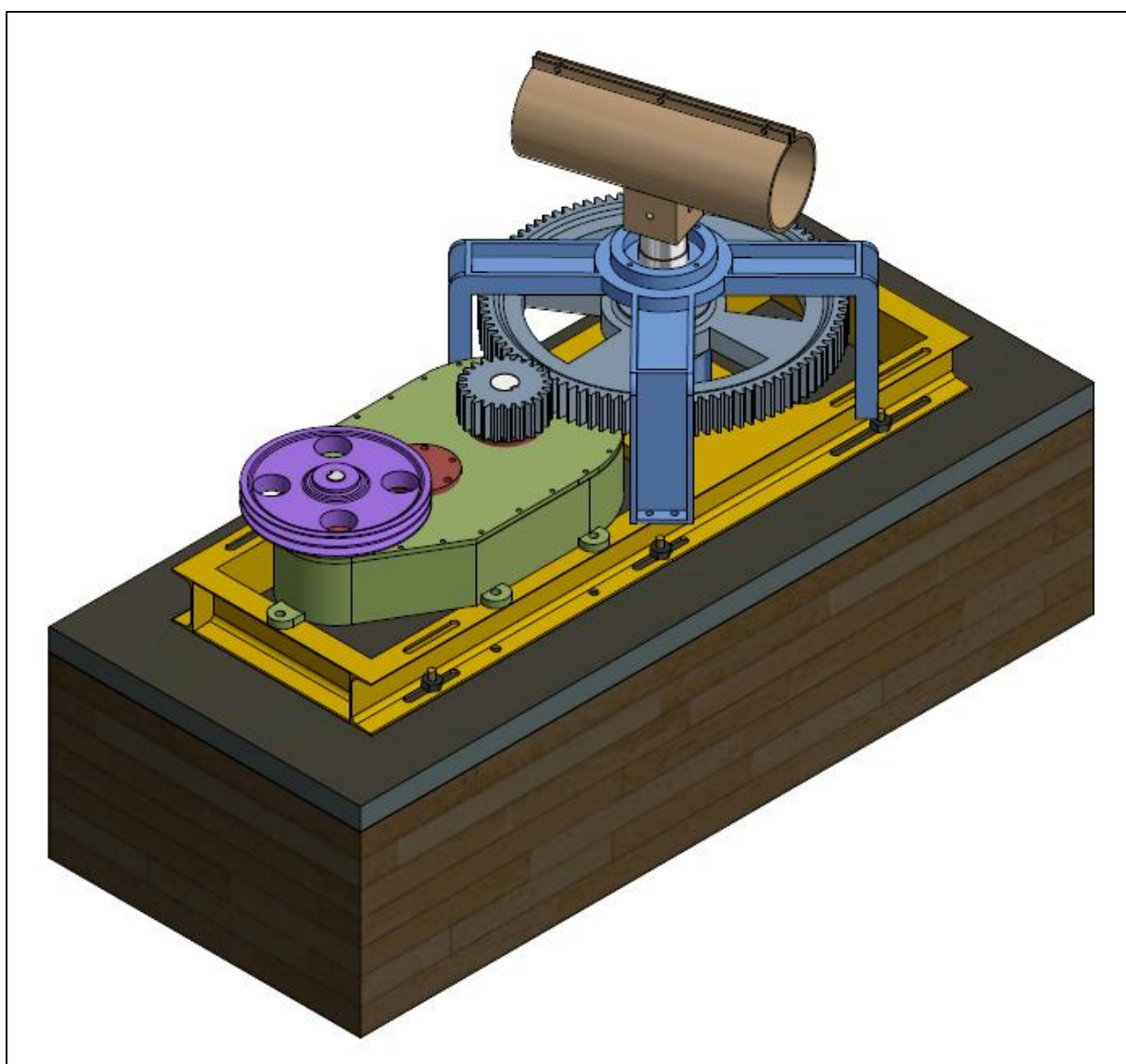


# USER'S MANUAL

A PRODUCT OF RuTAG IIT DELHI



## ANIMAL DRIVEN GEAR BOX



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**Revision sheet**




<b>Revision no.</b>	<b>Date</b>	<b>Revision description</b>	<b>Created by</b>
Revision 0	26/08/2020	User's manual created	Raj Kumar Gupta









## 1 INTENDED USE

The Animal Driven Gear Box (ADGB) is used to increase the speed (2 rpm of bullocks input to 126 rpm output). The ADGB is intended for use in agricultural applications (i.e. Screw Pump, Chaff Cutter, Paddy Thresher, Atta Chakki, etc.).

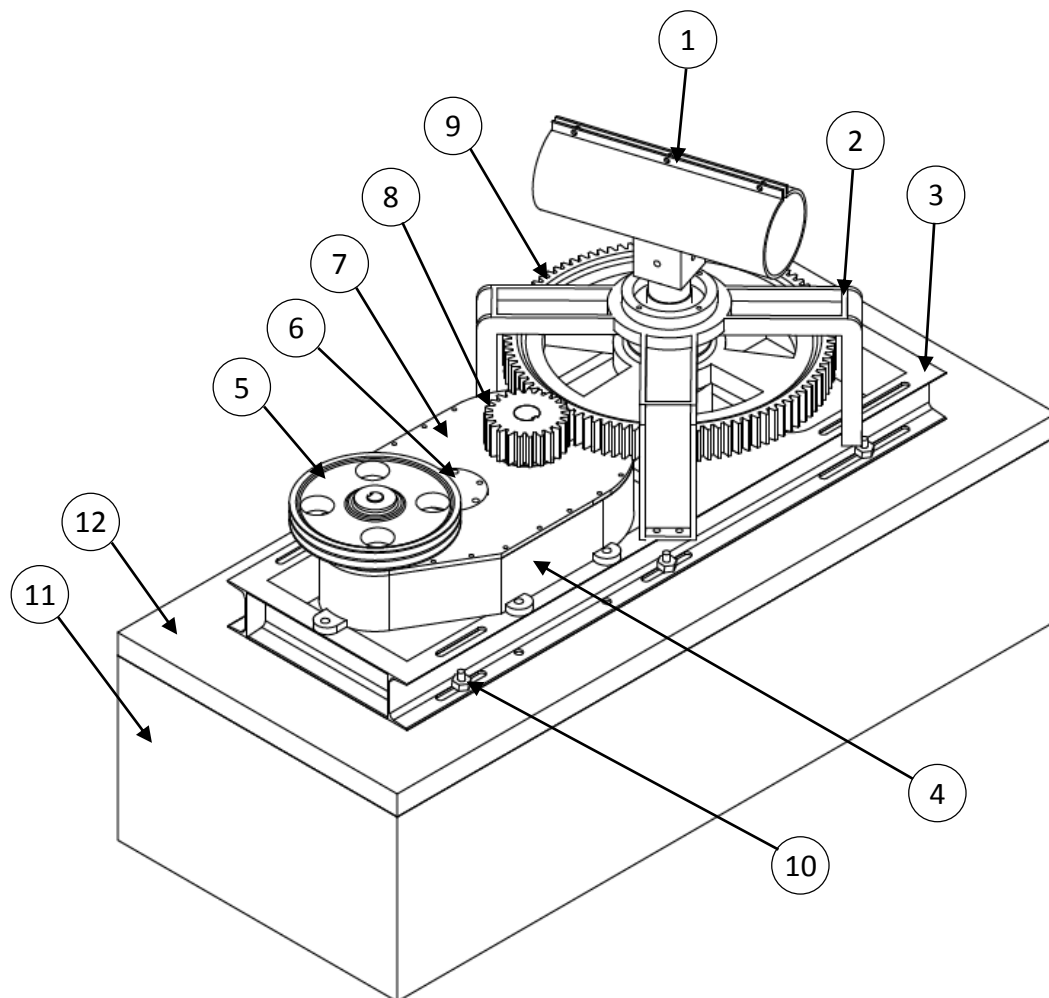
## 2 SAFETY PRECAUTIONS

 <b>WARNING</b>	Failure to follow these instructions property may result in personal injury or loss of life.
 <b>CAUTION</b>	Failure to follow these instructions properly may result in property damage or personal injury, which may be serious depending on the circumstances.

-  DO NOT ATTEMPT.
-  BE SURE TO FOLLOW INSTRUCTIONS.
-  BE SURE TO ESTABLISH EARTH CONNECTION.

 <b>WARNING</b>	 <b>CAUTION</b>
<ul style="list-style-type: none"> <li>• Do not step into circular area of the bullocks and the gearbox.</li> <li>• Do not try to excite the bullocks by force.</li> <li>• Do not loose shunt lever and bullocks harness.</li> <li>• Do not hitch the single bullock.</li> <li>• Working area of the bullocks should not be un-even. </li> </ul>	<ul style="list-style-type: none"> <li>• Keep the cattle drive gear set box covered properly. </li> </ul>
<ul style="list-style-type: none"> <li>• Do not install ADGB near any live electric connections. </li> </ul>	<ul style="list-style-type: none"> <li>• The ADGB unit must not be exposed to fire. </li> </ul>
<ul style="list-style-type: none"> <li>• Do not wear loose fitting clothes while operating the ADGB. </li> </ul>	<ul style="list-style-type: none"> <li>• Make sure that children do not operate the ADGB without adult supervision. </li> </ul>

### 3 PARTS AND THEIR FUNCTIONS



1. Drive Lever Holder
2. Centre Locking Frame
3. Base Plate
4. Gear Box
5. Drive V-Pulley
6. Bearing Housing
7. Gearbox Cover
8. Drive Gear Pinion
9. Drive Gear
10. Anchor Bolt
11. Brick Platform
12. Concrete Slab
13. Wooden Lever
14. Guide Roller

## 4 MACHINE FEATURES

1. It increases the output speed.
2. Standardized and compact gearbox design.
3. Minimum maintenance required.
4. Easy to install.
5. It can be used to transmit power to any of the applications at a time such as Screw Pump, Chaff-Cutter, Atta-Chakki, and Paddy Thresher.

## 5 INSTALLATION

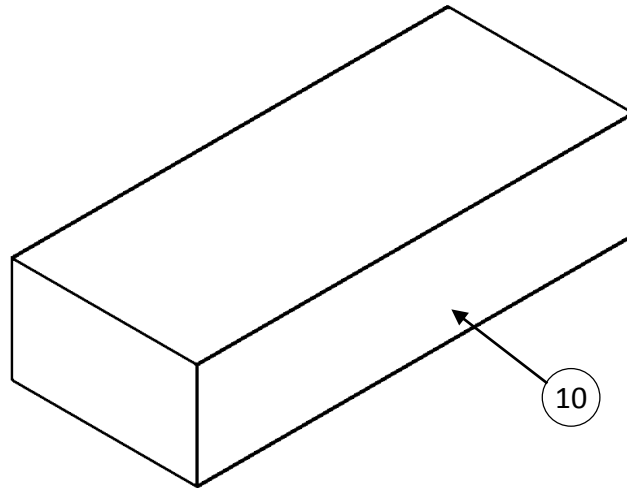
Installation requires civil work which is mentioned in the subsequent steps.

### 5.1 INSTALLATION TOOLS

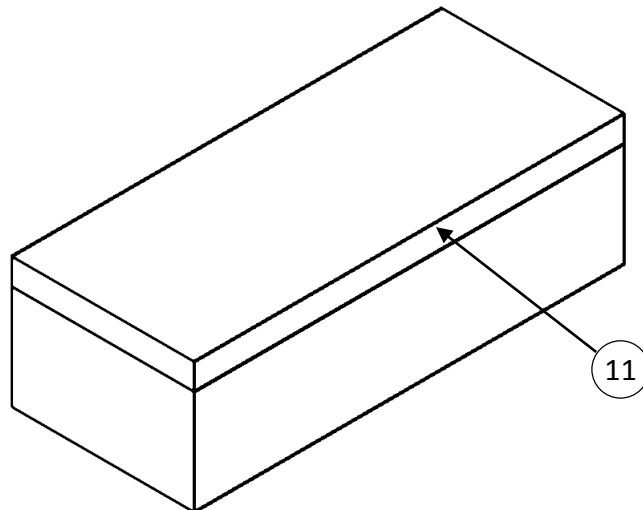
1. Countershaft bearing cones- Extractor/Bearing Puller
2. Adjustable Wrench
3. Screwdriver
4. Plier
5. Spanner set (No. 6-24)
6. Mallet (Soft Hammer)
7. Side Hammer
8. Snap Ring Plier
9. Dial gauge
10. BSW M8 L-Key

### 5.2 INSTALLATION STEPS

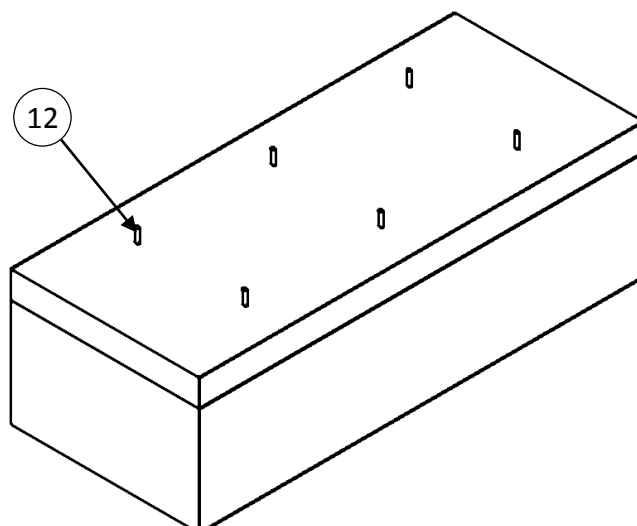
1. The ADGB requires to be fixed on the elevated platform at a height optimum to the average height of the bullocks. Also the total area required for rotation of the bullocks (Diameter: 10 meters) needs to be levelled properly.
2. Construct the platform using bricks, sand and cement mortar. The size of platform is Length: 1650 mm; Width: 700 mm; Height: 400 mm. (10)



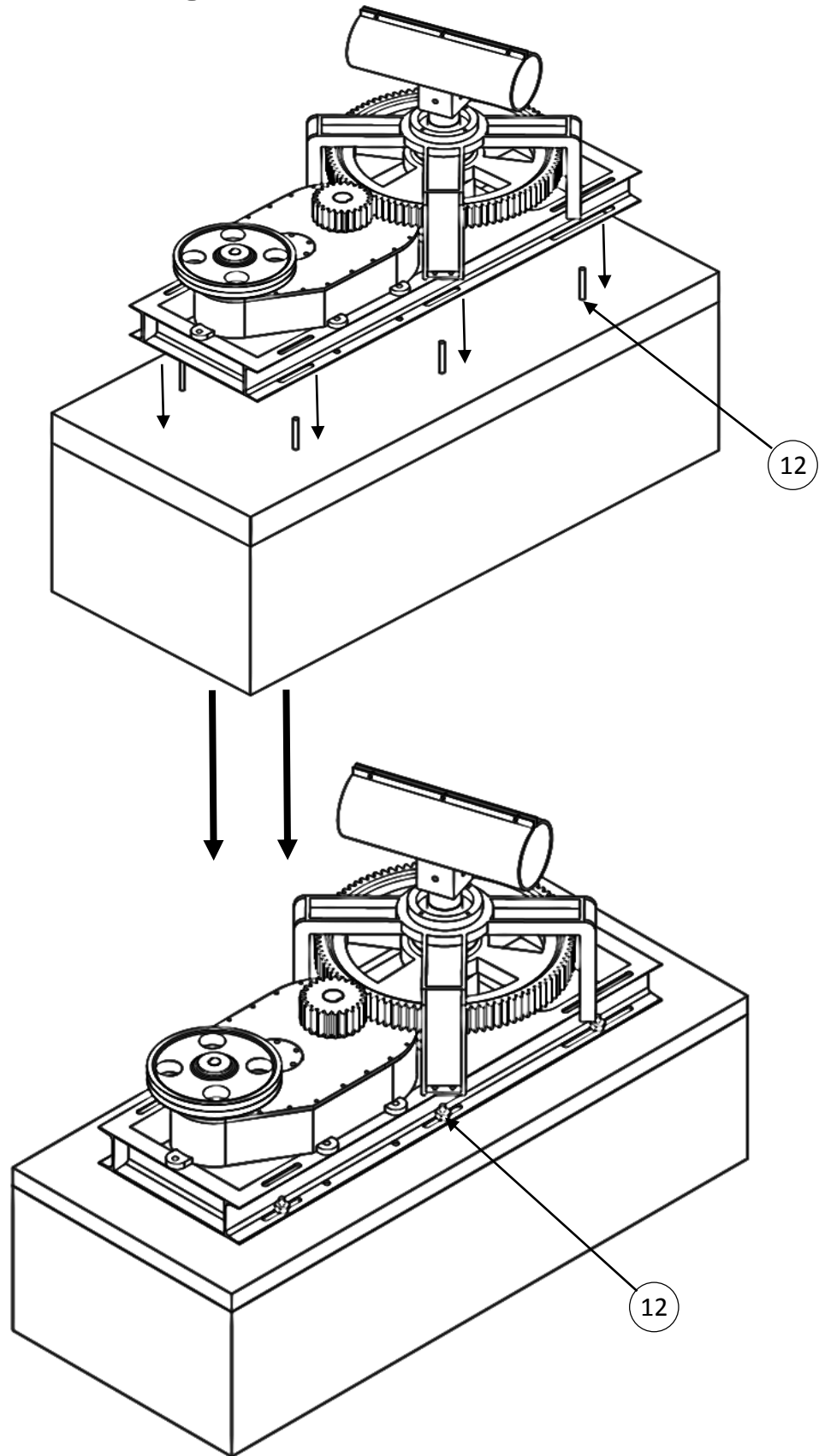
3. Cast the top layer with concrete (100 mm thick) over the entire span of the brick platform and maintain the accuracy of horizontal surface using spirit level. Cure the entire platform for 72 hours or more to attain the necessary strength of the slab. (11)



4. Use to the template (Appendix B) to mark the position for drilling holes for the anchor fasteners to fix the ADGB over the top of the accurately horizontal (12) concrete slab. For dimensions refer Appendix-A.

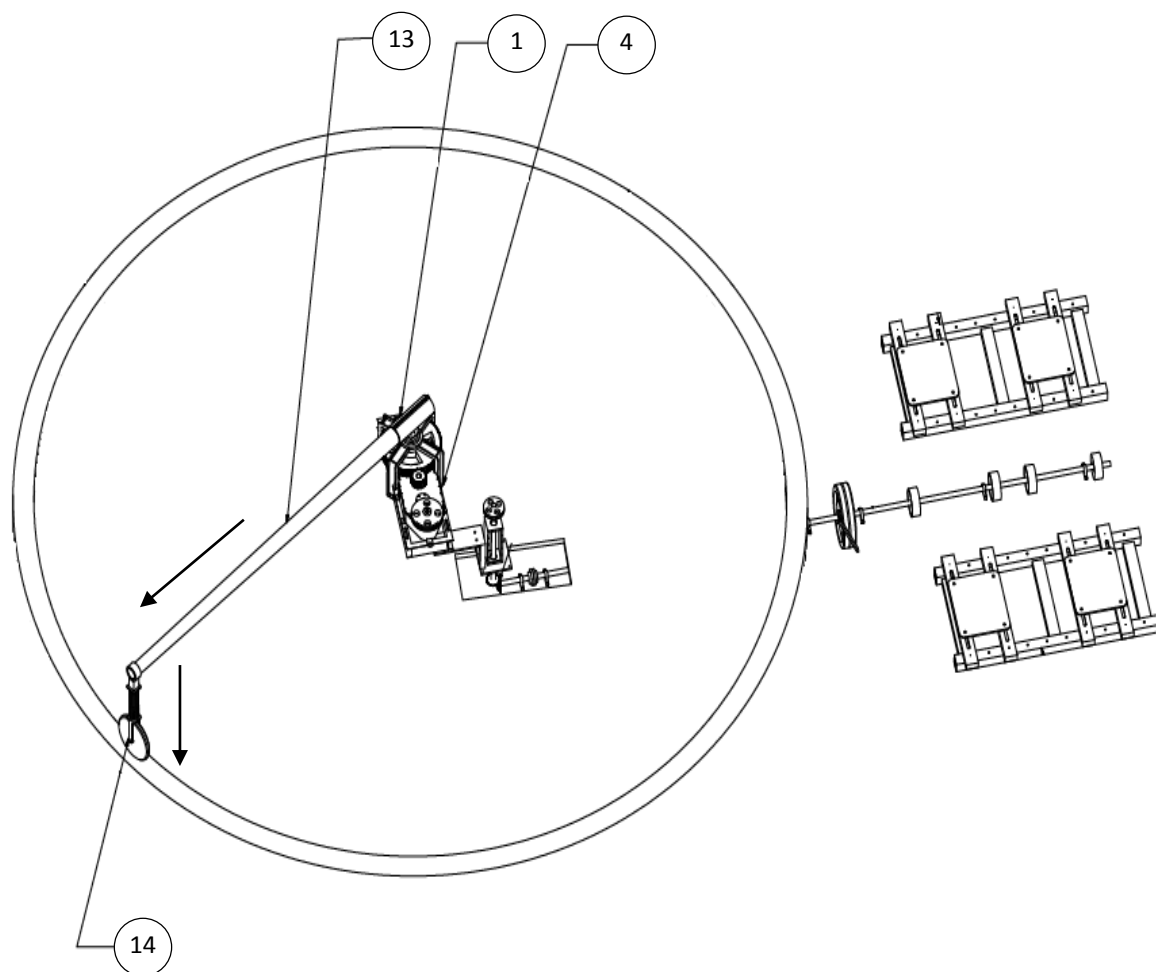


5. Use 8 inch (200mm) anchor bolts, fit them into the drilled holes and tighten the ADGB using washer and nuts. (12)





## 6 OPERATION



### 6.1 OPERATING PROCEDURE

- i. Attach one end of the wooden lever of the recommended length (05 meters) to the lever holder at the gearbox and other end to the lever guide roller. (14)
- ii. Hitch the harness (yoke, rope, neck/shoulder, etc.) of the pair of bullocks firmly with the wooden lever (13) at guide roller end. (14)
- iii. The pair of bullocks which are yoked are ready to drag the lever along the circular path.
- iv. The ADGB is now ready for operation.

## 7 MAINTENANCE

1. Oil should be changed after 300 hours (run-in period).
2. Visually check oil level and seal leakage regularly.
3. Use specified grade of grease, gear oil and lubricating oil.
4. For proper working, it should be inspected regularly for wear and tear of the parts. It should be lubricated well with the gear oil.

## 8 SPECIFICATIONS

Length: 1200 mm

Width: 450 mm

Height: 450 mm

Gear ratio: 1:63

Speed ratio (Speed increase with Belt pulley): 1:4

Weight – 125 Kgs.

Specification of Gear Oil, Grease and Seal:

Sl. No.	Particular	Grade
1.	Gear Oil	Industrial Gear Oil - ISO 68
2.	Grease	Oil Based common Grease

## 9 WARRANTY/ GUARANTEE

Warranty period one year from the date of purchase against manufacturing defects.

## 10 DISPOSAL REQUIREMENT

Dispose the gear oil and metallic parts in accordance with relevant local and national legislation.

## 11 CONTACTS

**Technical Support:** RuTAG IIT Delhi, Deptt. of Mech. Engg, Block-III, Room No.-343, IIT Delhi, Hauz Khas, New Delhi – 110016

Ph. No.: 011 – 2659 1385

**Local Support:** M/s. Panchal Pumps & Systems, Kanpur, Uttar Pradesh.

Appendix A: Template for Drilling Holes for the Anchor Fasteners to Fix the ADGB all the views and DPC

