

TITLE SHEET

SPECIFICATION FOR

Clean-Out Conveyor Drive with Gear reducer ***(For Gravimetric/Volumetric Feeder)***

Specification No. : GF-187
PGMA : 65-xxx

Revision No.:05

05	18-11-2003	Annexure-I LT motor data sheet added	
04	24.01.2002	Sheet 10/10. Pt.2 "After Functional testing" deleted; Cl.3.I added in sheet no.3/10& specification prepared in "word".	-Sd-
03	16.01.2001	Hub & Shear Pin As Spares Added.	-sd-
02	08.07.1997	Sl.No.12 was Gear Reduction Ratio Of the Geared Motor = 5:1 (Total Reduction 1041:1)	-sd-
01	08.07.1997	Point No. 5 & 6 Altered.	-sd-
00	-	First Release	-sd-
Rev. No.	Date	Revision Statement	Checked & Approved

	Name	Signature	Date
Prepared	S.Manivannan	-Sd-	25-01-2002
Checked	S.Selvaraju	-Sd-	25-01-2002
Approved	S.V.Sivaramulu	-Sd-	25-01-2002



Specification for Clean-Out Conveyor Drive With Gear Reducer

Spec. No.
GF-187/05

Page
2 /12

Scope of work

This specification covers the requirement for design, supply, manufacture, testing, marking and identification, packing for shipment and delivery of the items listed

Below.

- Clean-out conveyor drive AC geared motor with gear box.
- One torque hub
- Two shear pins

The extent of supply stated here in is not necessarily exhaustive and shall not relieve the vendor from his responsibility to provide goods and services necessary to satisfy the performance criteria and guarantees specified.

Application : Used for running 36" & 24" gravimetric feeder clean-out conveyor at constant speed.

Duty Class : Continuous and intermittent.
(Minimum 50 Starts Per Day)

Consisting Of :

- 1.0 Clean-out conveyor
Ac geared motor : Please refer sheet no. 05/12 & 06/12 of this specification.
- 2.0 Gear box.....: Please refer sheet no. 07/12, 08/12 & 09/12 of this specification for over all dimensions.
- 2.1 Gear box reduction : 1041:1 (Please refer table in sheet no. 07/12)
ratio
- 2.2 Gear arrangement : Helical and worm gear arrangement.
Approx. centre distance of worm gearing is 3.5 inches.
- 2.3 Output shaft and mating flange dimensions are strictly to be maintained as per the sketch shown on this specification so as to match with the mating components which are getting manufactured at BHEL- Trichy.
- 2.4 Please refer section-VV shown no. 09/12 of this specification. The shear pin should fail if the torque exceeds the value provided in the table corresponding to the size of feeder. The failure of shear pin should simultaneously actuate the micro switch which is to be used in customer annunciator circuit. The arrangement shown is suggestive only. The supplier shall suitably design the arrangement.



Specification for
**Clean-Out Conveyor Drive With
Gear Reducer**

Spec. No.
GF-187/05

Page
3 /12

- 2.5 Dimensions with Asterisk (*) marks should be strictly maintained. Other dimensions may be altered to suit the gearbox design but got approved by B.H.E.L, prior to proceeding with manufacture.
- 2.6 Only glass type oil level indicator must be provided. Dipstick type of arrangement is not acceptable.
- 3.0 Along with the offer, the supplier shall submit the following documents for evaluation in triplicate.**
- A. Dimensional general arrangement drawing showing AC geared motor and gear box with bill of materials.
 - B. Cross sectional drawings of AC geared motor and gearbox showing all the internals and spare parts with overall dimensions and with bill of materials.
 - C. A life guarantee certificate for 40,000 hours for gears and shaft.
 - D. A list of bearings used in the total system. The list shall indicate the make, size and type (whether sealed or non-sealed) of bearing.
 - E. A list showing all the oil seals, o-rings and circlips used in the total system. The list shall indicate the description, quantity, make, size, type, etc.
 - F. 3 Years O & M spare parts list along with pricing required for the total system. The list shall indicate the description, quantity, part no. & Ref. Drawings of the components.
 - G. Quality assurance plan shall be submitted by the supplier for raw material; in process & final Assy. QP shall be submitted for AC geared motor and gear box individually.
 - H. The documents as mentioned in sheet No. 05/12 & 06/12 of this specification for AC geared motor.
 - I. Calculation for shear key diameter with sketch; Material of construction with relevant Indian standard & clause no.

	Specification for Clean-Out Conveyor Drive With Gear Reducer	Spec. No. GF-187/05	Page 4 /12
--	--	---	--

4.0 The successful bidder shall submit the following documents in triplicate.

- A. Dimensional general arrangement drawing and cross sectional drawing as called for in 3A & 3B submitted by the bidder shall be modified in line with BHEL's comments and got approved before going for production.
 - B. Quality assurance plan as called for in 3.G submitted by the bidder shall be modified in line with BHEL's comments for raw materials, in process and final Assy. Modified QP shall be for AC geared motor and gear box individually and got approved by BHEL.
 - C. Test certificate for no load and full load for each Assy. (The motor should be designed for 50 starts per day.)
- 5.0. Catalogues, preservation (storage) procedure and O&M manuals for AC geared motor and gearbox shall form part of the supply. Number of copies required will be specified in the purchase order. The catalogues and manuals shall be printed (Black & White) and supplied in bound volumes. Three copies shall be sent to BHEL for advance information and one copy must accompany along with each shipment. Balance copies shall be sent thro' regular despatch.
- 6.0 Other Information's Required :-
- A. Weight of AC geared motor.
 - B. Weight of gearbox.
 - C. Lubrication details.
 - D. Painting details.
 - E. Coupling details in between AC geared motor & gearbox.
 - F. Recommended storage and preservation procedure prior to Assy, after Assy. but prior to regular running.
- 7.0 Packing: -

The total drive assembly should be properly covered with thick tear-proof polythene sheets and despatched in suitable moisture-proof and tamper-proof wooden cratings.



Specification for
**Clean-Out Conveyor Drive With
Gear Reducer**

Spec. No.
GF-187/05

Page
5 / 12

Clean-Out Conveyor Drive (AC Geared Motor)

- | | | |
|-----|---------------------------------------|--|
| 1. | Application | : To drive the clean-out conveyor chain. |
| 2. | Motor rating | : 0.25 KW |
| 3. | Power supply
for the drive | : 415 V $\pm$ 10%, 50 HZ $\pm$ 5%, 3 ϕ |
| 4. | Ambient temperature | : 50° C |
| 5. | Duty cycle | : Continuous & intermittent (minimum 50
starts per day) |
| 6. | Speed of drive
at full load | : 950 RPM |
| 7. | Method of starting | : DOL |
| 8. | Mounting & position | : Horizontal flange mounting. |
| 9. | Type of enclosure | : TENV |
| 10. | Degree of protection | : IP 55 |
| 11. | Class of insulation | : B or F |
| 12. | Total gear reduction
Ratio | : 1041 $\pm$ 5 : 1 |
| 13. | Temperature rise
over 50°c Ambient | : Shall be limited to that of
class 'B' by resistance method. |



Specification for
**Clean-Out Conveyor Drive With
Gear Reducer**

Spec. No.
GF-187/05

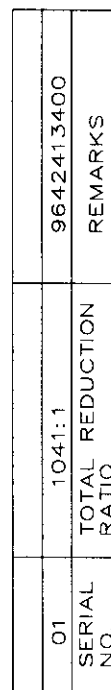
Page
6 /12

General

1. Geared motor will be assembled to a gear box assy. for a total reduction ratio as per table shown in sheet no. 07/12
2. Motors to be supplied wit lifting eye bolts.
3. Motor supplier shall fully comply with the enclosed Lt motor specification in addition to the above points.

Documents required from vendor along with offer :-

1. Certified dimension drawing.
2. Certified connection diagram.

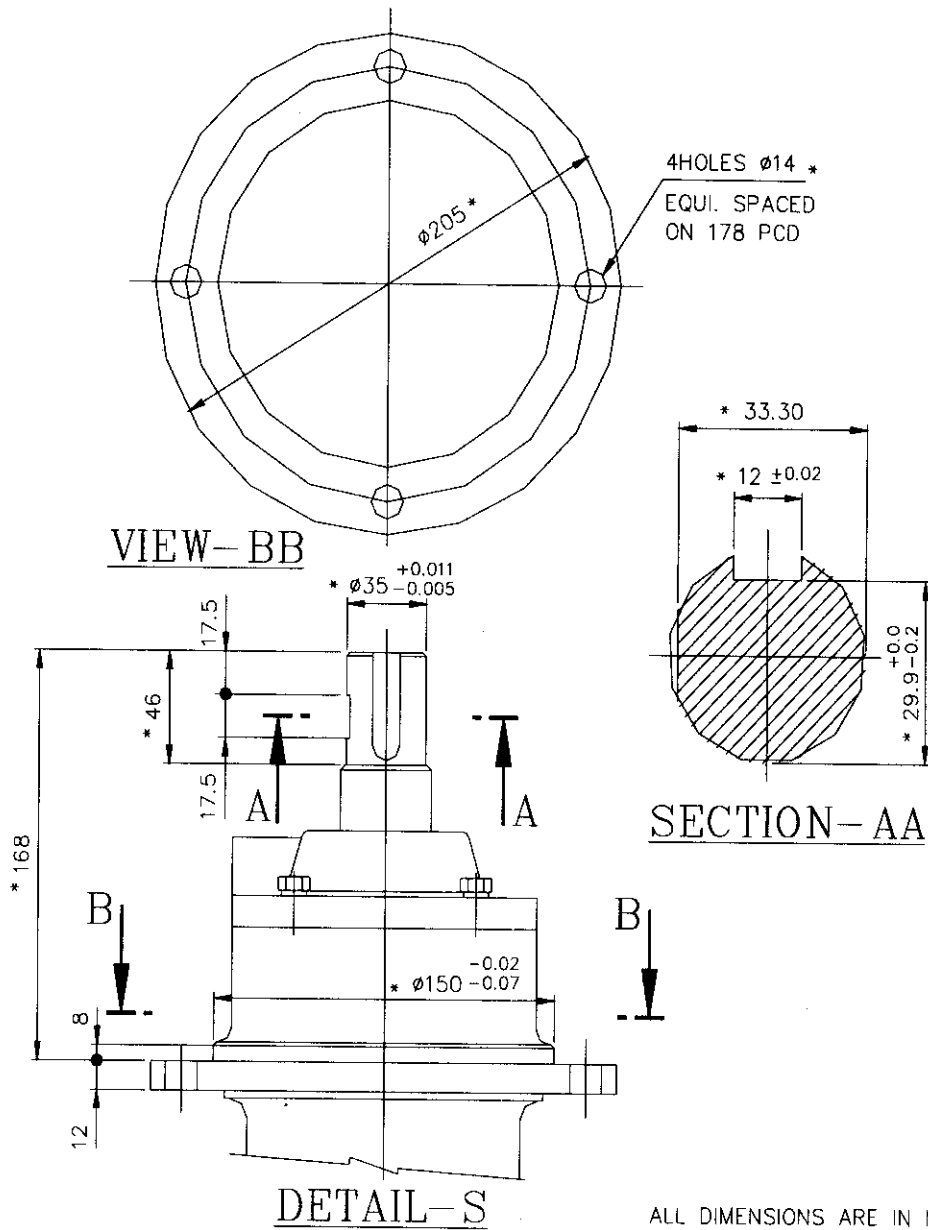




**Specification for
Clean-Out Conveyor Drive With
Gear Reducer**

**Spec. No.
GF-187/05**

**Page
8 / 12**



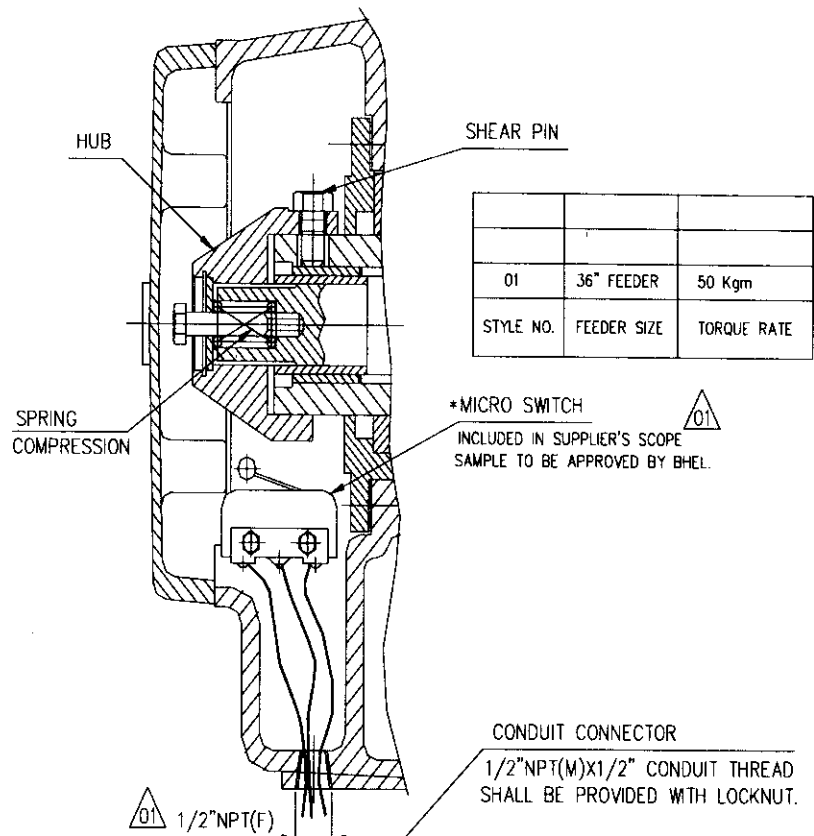


Specification for Clean-Out Conveyor Drive With Gear Reducer

Spec. No.
GF-187/05

Page
9/12

THE SHEAR PIN & MICRO-SWITCH ARRANGEMENT SHOWN IS SUGGESTIVE ONLY.
SHEAR PIN SHOULD SHEAR OFF IF THE TORQUE EXCEEDS THE VALUE PROVIDED
IN THE TABLE CORRESPONDING TO THE SIZE OF FEEDER.



SECTION-VV (PARTIAL)

*NOTE :-

CONTACT RATING OF SHEAR PIN MICRO-SWITCH :- 5A AT 240V AC OR 0.5A AT 220V DC.

ALL DIMENSIONS ARE IN MM

	Specification for Clean-Out Conveyor Drive With Gear Reducer	Spec. No. GF-187/05	Page 10 /12
--	---	--------------------------------	------------------------

Annexure to purchase Specn. GF-187
(C.O.Conveyor Drive with Reducer)

1. All Gears, pinion, shafts are to be subjected to ultrasonic testing and MPI after machining.
2. Backlash of gear wheels and pinions and teeth contact before functional testing (No loading run test) shall be checked.
3. Materials used shall be of tested Quality and shall be co-related with TCs for mechanical and chemical properties.
4. Gear boxes shall be run tested till the bearing temperature are stabilised and for a minimum of 4 hours and checks for smooth running, temperature rise, noise level etc. shall be carried out.
5. Motors shall be routine and type tested as per IS-325.
Degree of protection test for enclosure:
Type test certificate will be furnished for first numeral.
If type test certificate is not available for second numeral,
Test for second numeral will be repeated for motors.
Test on motors are to be carried out based on data sheet approved by BHEL.
6. Quality plans shall be mutually discussed and finalised with BHEL.

	Specification for Clean-Out Conveyor Drive With Gear Reducer	Spec. No. GF-187/05	Page 11 /12
---	---	--------------------------------	------------------------

Annexure-I
LT motor data sheet

Supplier to fill up & submit along with the offer for evaluation

Sl.No.	Characteristics	Vendor's Confirmation
01	Application	
02	Manufacturer	
03	Type & Frame size and Degree of protection	
04	Rated out put in KW & speed	
05	Rated Voltage, Frequency & Phase	
06	Full load current	
07	Full Laod efficiency and power factor	
08	Duty cycle	
09	Rated torque	
10	Starting current	
11	Starting torque in %age of full load torque	
12	Pull up torque in %age of full load torque	
13	Pull out torque in %age of full load torque	
14	No load starting time	
15	Locked rotor withstand time at rated voltage	a)Hot b)Cold
16	Locked rotor withstand time at minimum starting voltage	a)Hot b)Cold
17	Locked rotor withstand time at 110% of rated voltage	a)Hot b)Cold
18	Starting time at minimum starting voltage with mechanism coupled	
19	Starting time at rated voltage with mechanism coupled	
20	Minimum permissible starting time	
21	Stator thermal time constant	



**Specification for
Clean-Out Conveyor Drive With
Gear Reducer**

**Spec. No.
GF-187/05**

**Page
12 /12**

Sl.No.	Characteristics	Vendor's Confirmation
22	Stator winding connection	
23	Class of insulation & temperature rise	
24	Type & number of terminals brought out	
25	Resistance per phase	
26	Quantity & Power consumption of space heater	
27	Direction of rotation	
28	Bearing make and type	Drive End: Non Drive end:
29	Lubricant quantity, Grade & Recommended interval of Lubrication	
30	Type of mounting & shaft orientation	
31.0	Terminal box	
31.1	Location & angle of rotation	
31.2	Gland size for stator winding	
31.3	Gland size for space heater	
31.4	Cable Entry	
32	GD ² of motor (in Kg-M ²)	
33	Total weight of motor (in kg)	
34	Anticipated bearing life	
35	Method of connection to driven equipment	
36	Limiting rotor temperature for determining safe stall time	
Vendor's Signature with office seal		