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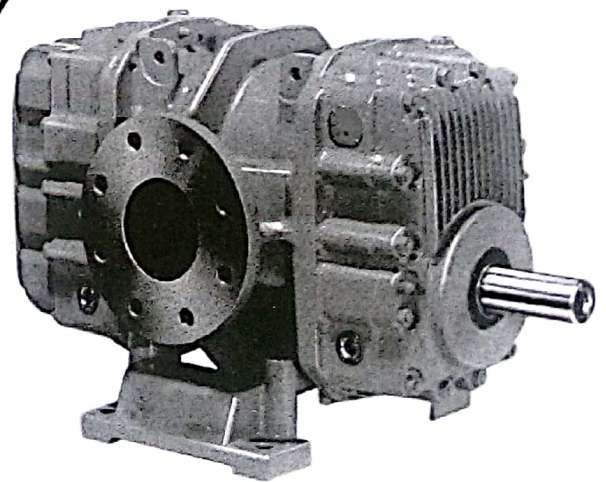
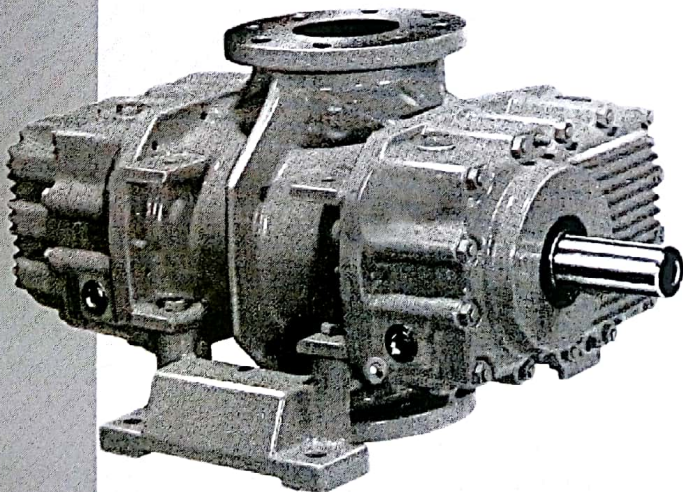


Beta

BLOWERS

ROTARY PISTON (ROOTS) TYPE

**INSTRUCTION MANUAL FOR INSTALLATION,
OPERATION AND MAINTENANCE**



Designed to Perform & Built to Excel
OMM/BR-01

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Customer Feedback Form



Dear Customer,

We congratulate and thank you for placing your trust on us and purchasing our product/s. We assure you that you have bought/owned one of the best blowers available in the market with dependable performance and efficient after sales service. We would be highly obliged if you could spare little time and complete the feedback questionnaires given below, which would serve as benchmark for us to improve further and serve you better. **On completion, the Questionnaire Form can be torn and dispatched to us on our office address.**

Pl. Fill/Tick the following:-

- How you came to know about β eta Blower. (Internet/ Trade show/ Advertisement/Friend's/Reference)
- What is the application of supplied Blower
- Did you find it easy to place your order with us - (Yes/No)
- Did you receive your order on time - (Yes/No)
- Is the shipment complete and without any damage - (Yes/No)
- Are you satisfied with the workmanship - (Yes/No)
- Is the blower performing to your expectation of desired performance. (Yes/No)
- Are you satisfied with the information available in O & M Manual. (Yes/No)

In order to maintain records at our ends for prompt services, we would appreciate if you also complete the following:-

Name.....Company's Name.....

Address.....

Contact No.....Fax.....Email.....

We look forward for an enduring relationship with you.

Thanks again.

Sincerely your's

Indrajeet Kumar Thakur
Director

Additional Suggestions/Remarks (if any):

FOREWORD



Dear customer,

Keeping pace with technological advancements and providing customer satisfaction needs no explanation towards success of any company. We have taken time to ingrain such virtues as our core values in our employees and incessantly follow the same. We value your trust for buying β positive displacement rotary twin lobe blower and assure you of best quality to suit your requirements.

Beta Machinefabrik Pvt. Ltd. is involved in development, production, marketing and sales of various types of twin lobe positive displacement rotary blowers. Each component of the β blower undergoes stringent quality control checks to ensure an international standard in accordance with ISO 9001:2008. We also put our sincere efforts to improve through other internationally followed quality techniques viz. Kaizen, Six Sigma, 7 Wastes, TQM etc.

It is our endeavor is to keep you abreast about the product through this manual containing information about installation, operation and maintenance of our blowers. We have taken efforts to ensure all facets of the blowers' but it would not be possible without your efforts in following our suggestions during installation, operation and maintenance, which would go a long way in ensuring trouble free operation of said blowers.

I wish to inform you that we have taken self-initiated actions to improve the quality and reliability aspects of our blowers and assure you for incessant improvements in future. Your feedbacks are precious input for our onward march to achieve new heights and keep the channel of communication open between us. This also helps us to fulfill our aim of 'Customer satisfaction'. Based on the these feedback, which is the basic input in any company's growth, we too have brought in several changes in our features and design aspect to fulfill the customers' requirements.

Looking forward to an enduring relationship with each of our customers.

A handwritten signature in black ink, appearing to read 'Sudesh Kumar Jha'.

Sudesh Kumar Jha
Chairman & Managing Director

INTRODUCTION

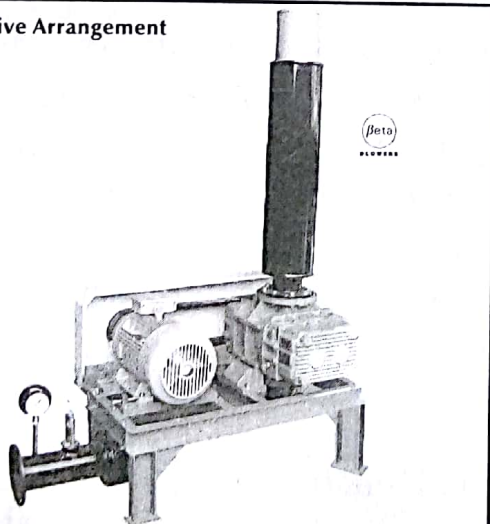
It goes without saying that we meticulously ensure laid down design criteria, quality and safety standards on each of our product. It is well known fact that an informed customer helps in ensuring designated life-cycle performance of equipment. Thus, through this manual, it is our endeavor to help to make you understand the basics, Dos & Don'ts of the purchased product in order to ensure optimal performance of the bower/s by you bought.

*We strongly recommend that prior operating your **Beta** rotary twin lobe blower, please spare some time to go through this manual.* We are sure that it would help you in being familiar with blower and its associated system for their installation, operation / exploitation and periodic maintenance. It would also provide you the most commonly occurred troubles, their symptoms and remedies; details of Hour based maintenance required to be undertaken on blowers; recommended spare list and procedure for proper storage of the purchased blower, in the eventuality of using it after 45 days of its receipt.

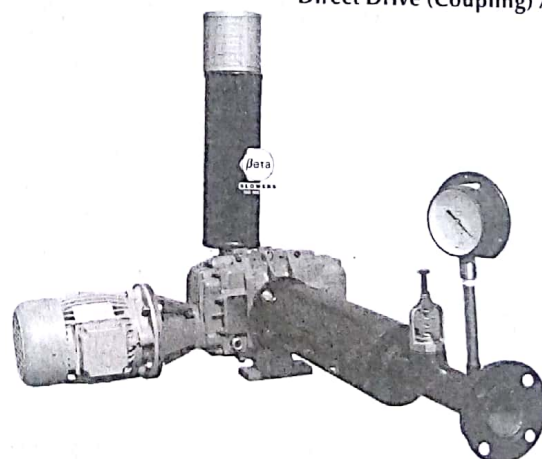
Present scenario of competitive world has reached to a stage where quality is to be recognized as an indispensable necessity in any industry, more so in engineering industry. Our incessant efforts to maintain the highest quality standard, putting each & every component of the blower to high quality checks and test bed trials to meet the customers' specific requirements ensures trouble free operation of the blower.

All **Beta** blowers are tested as per British Standard 1571 (part-II), mechanically balanced as per ISO:1940, Gr. 6.3 and all the flanges are supplied as per IS 6392 (Table-V).

V-Belt Drive Arrangement



Direct Drive (Coupling) Arrangement



TECHNICAL DATA



Blower Model:

Blower Sl. No.

1.0 Technical data:-

- 1.1 Flow Medium
- 1.2 Flow Direction Horizontal / Vertical
- 1.3 Direction of Rotation Clockwise / Anti Clockwise
- 1.4 Discharge Pressuremmwg
- 1.5 Free Air Deliverym³/Hr.
- 1.6 Recommended MotorKW/(HP)
- 1.7 Blower SpeedRPM
- 1.8 Motor SpeedRPM
- 1.9 Capacitym³/Hr.
- 1.10 Motor ratingKW/HP/RPM

2.0 Operating Data:-

- 2.1 Suction opening :
- 2.2 Discharge opening :
- 2.3 Orientation :
- 2.4 Suggested Pipeline size :

3.0 Lubrication:-

- 3.1 Oil filling
 - Drive side :Litre
 - Non drive side :Litre

3.2 Oil quality Commercial grade sulphur base Gear Oil/Synthetic Oil with a kinematic viscosity Between 320 to 350 or 220 cst at 40° C in continuous operation.

Note. For other relevant details on lub oil, please refer to the Page no. 12-13 on Lubrication.

WORKING PRINCIPLE

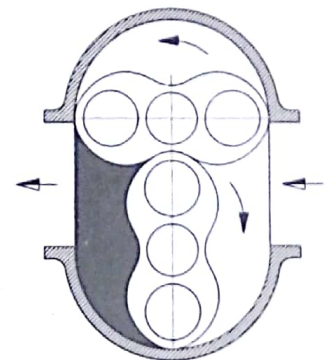
Beta twin lobe rotary blower is a positive displacement unit and its pumping capacity is determined by size, operating speed and differential pressure. The blower consists of two '8 shaped' rotors, which rotate in synchronous & opposite direction and suck a definite quantity of air/gas (depending on its application) between the rotating rotors, casing and side plates, carry the trapped volume of air/gas around the rotor and casing to the discharge port. The shape of the Rotor is designed in such a way that a small accurate clearance is maintained throughout between the rotors & between rotor and casing, which also gives an effective sealing from inlet port to the outlet port. Roots Blowers can be operated at high rotary speeds (1,500 - 3,000 RPM) because of the fact that there is no friction in the suction chamber.

The differential pressure developed by the blower depends on the resistance of the receiver system. The blower does not develop any pressure within the casing but it works against the back pressure i.e. against resistance of the connected system. Properly designed piping with long radius bends and tangentially connected T points ensure minimum pressure drop across pipe line resulting in energy saving. This also ensures that negligible/nil back-pressure is acting on the blower in-tum safeguarding the blowers from damages.

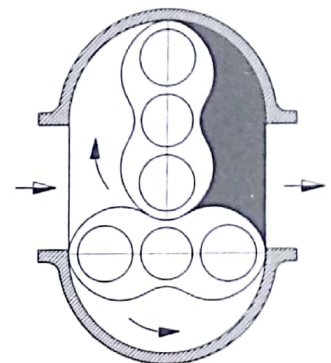
A pair of accurately machined alloy steel, hardened and ground timing gears between the rotating part and stationary part inside the blower chamber ensures that there is no requirement of lubrication within the chamber. It also ensures that the air delivered by twin lobe rotary piston blower is completely oil free.

The rotor shaft bearings are arranged in the two side pieces. They are designed as fixed bearings on one side and as sliding internal rings on the other in order to cater for unequal thermal expansion between housing and piston. The bearings are lubricated with oil thrown to the bearings and gears using splash disks. In order to protect the shaft, the sealing rings run on a protective sleeve that can be replaced whenever it is worn.

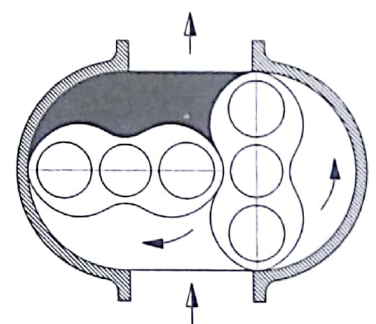
FIG. 1



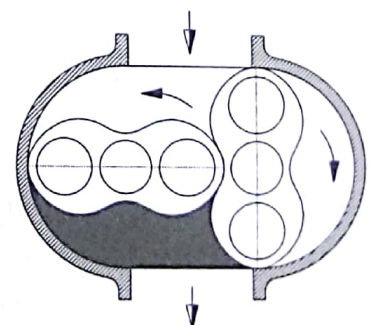
Clock Wise



Anti Clock Wise



Clock Wise

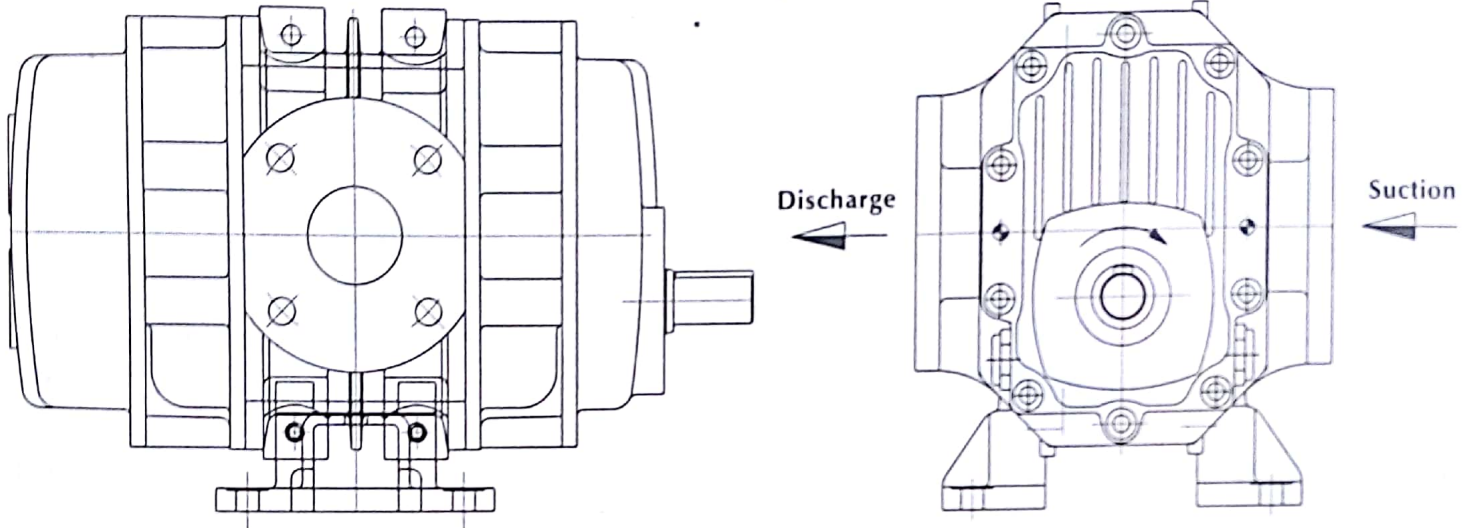


Anti Clock Wise

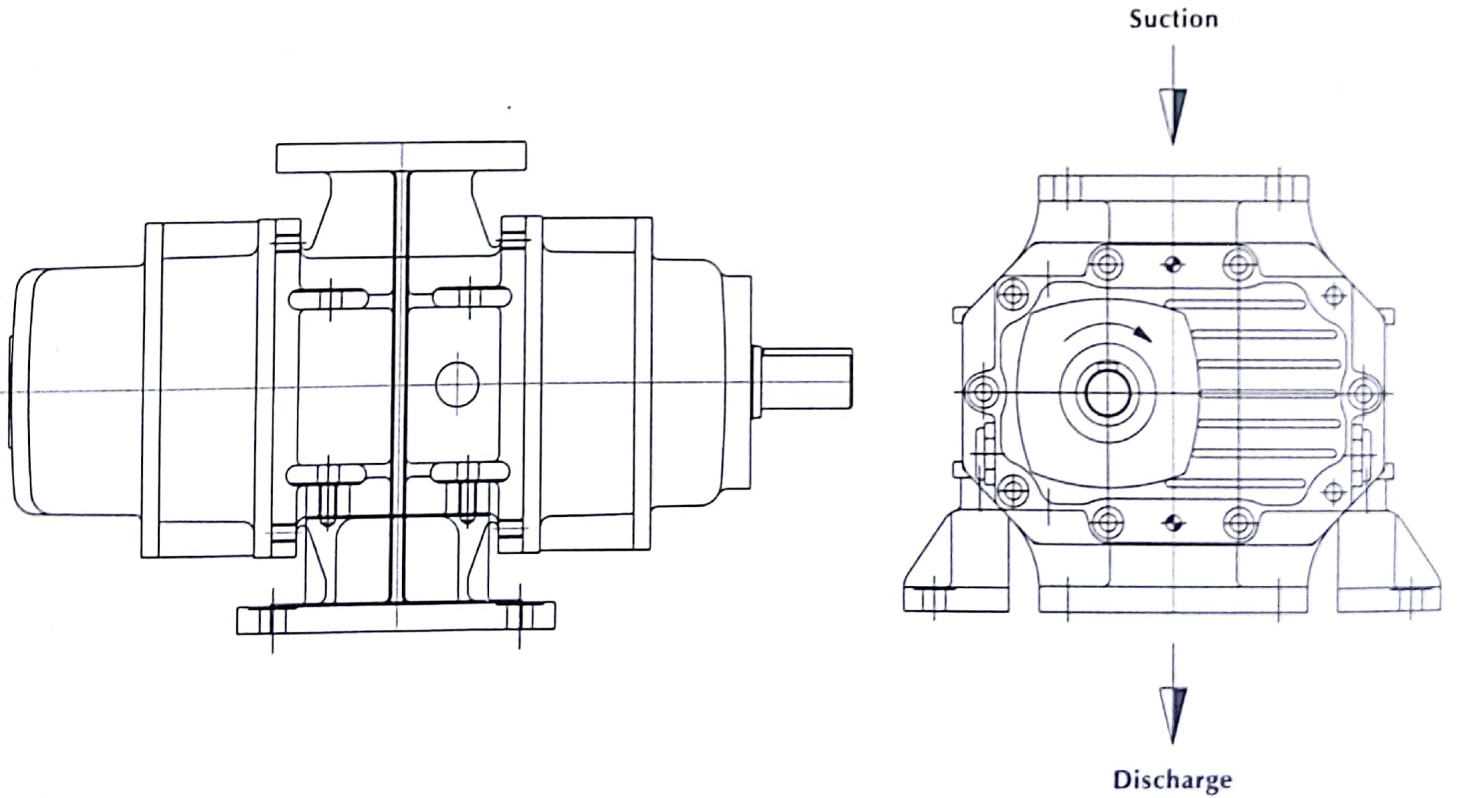
BARE SHAFT BLOWER DRAWING



FIG.2



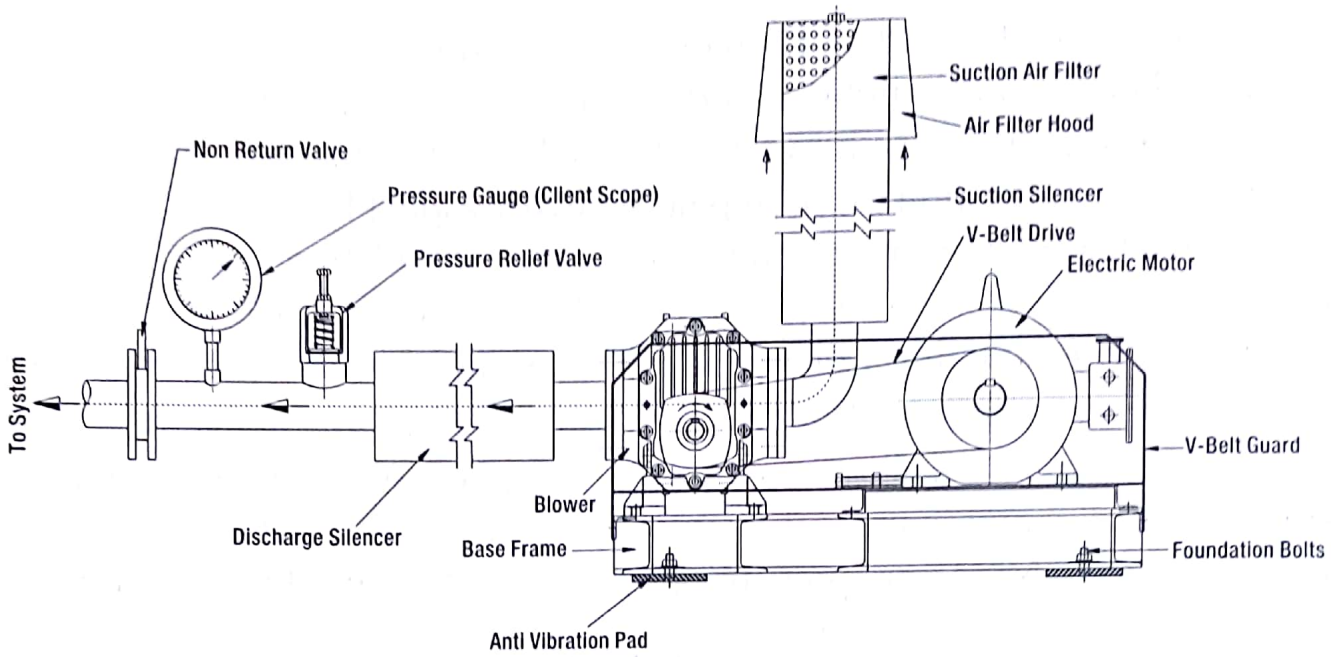
HORIZONTAL FLOW



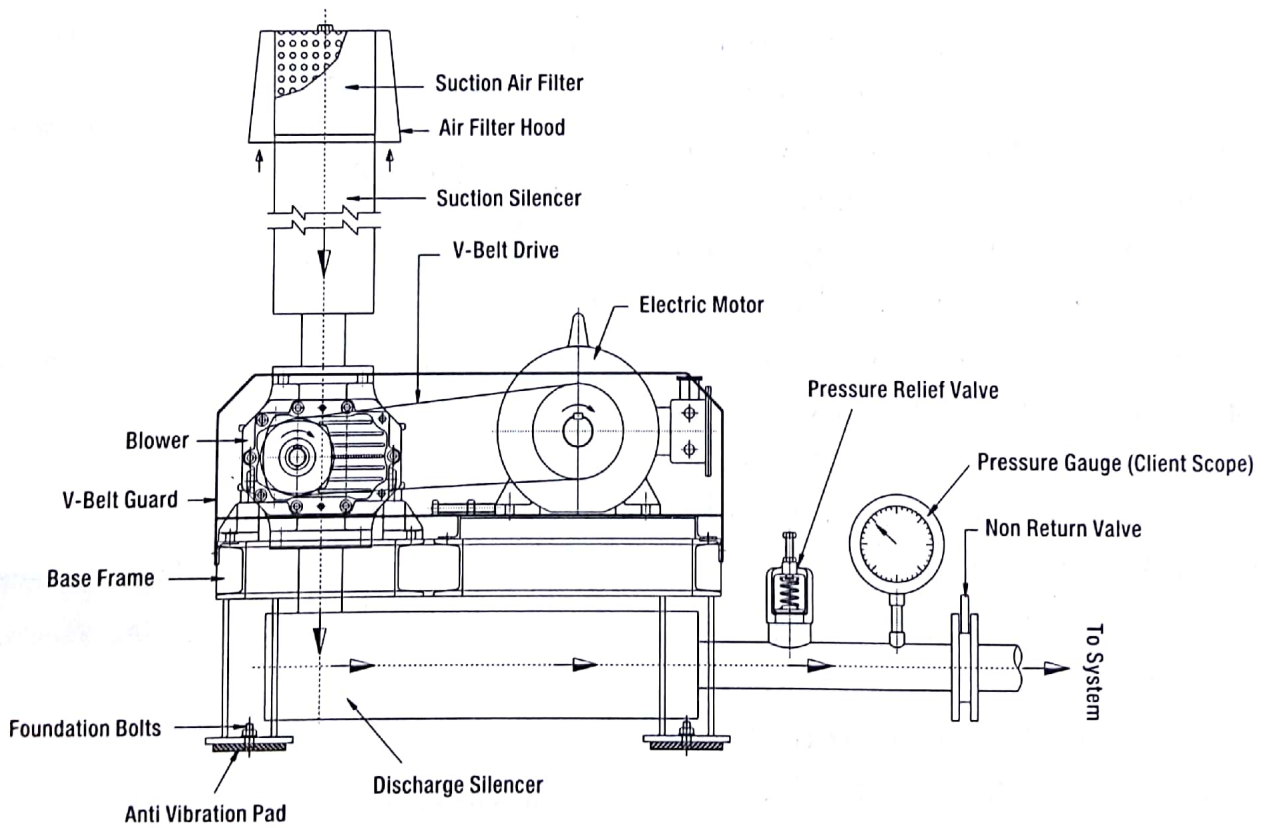
VERTICAL FLOW

1. **Suction Filter.** The filter protects the input air being sucked /used by the blower against from possible ingress of dust, dirt, oil mist and any foreign material. The dust entered inside the blower chamber gets deposited on casing inner wall and on the rotor. This reduces the clearance and may result in seizure of the blower. Similarly, any foreign particle sucked inside will result in damage to the blower. Thus, it is imperative that the suction filter is always kept clean for safe and smooth working of blower. Clean filter element also reduces the overheating of the blower, which otherwise may lead to possible damage.
2. **Silencer.** Silencer is primarily used to reduce the sound level. The sound produced by the blower is only an air-born sound as none of it's parts is touching each other. Silencer is used at both suction and discharge terminals for medium and high capacity blower as a standard fitting. However, Discharge Silencer can be fitted / provided for low capacity blower, if asked by the customer (at additional cost).
3. **Pressure Gauge.** It is an instrument to measure pressure across the connected system at the discharge end of blower.
4. **Safety Valve (Safety Device).** The safety valve is provided on the delivery side of the blower. It protects the blower against possible damage/seizure due to any abnormal rise in the pressure. A blockage in delivery line can lead to pressure rise and failure of blower / system pipelines. The valve can provide safe working for the blower and can be adjusted for operation whenever pressure rises beyond set limits.
5. **Non-Return Valve (NRV).** It may be fitted to the discharge port (after the silencer, if connected) to prevent the blower from running in opposite direction when switched off on load. Whenever more than one blowers are used in parallel having their air discharged into common header, NRV must be used to avoid the leakage of air from one blower to another.

FIG. 3



Accessories Layout for beta Blowers for Horizontal Flow



Accessories Layout for beta Blowers for Vertical Flow

INSTALLATION

General.

It is imperative that the blowers are installed as per laid down recommendations and safeties/standard practices of manufacturer (in the present case, we the 'Beta Blowers'), to enable it trouble free operations in due course. Due attention must be paid on every aspect for proper installation of the blower, preparation of foundation, drive installation etc. Care is also required during fitment of accessories and pipe work, which may result in noise/vibration emanating from them. Thus, fitment of dampening measure (i.e. silencer) also needs a careful consideration.

Install the blower in a well set up, clean & dry place with adequate space for inspection and maintenance. This blower is suitable for both indoor and outdoor location. Necessary precautions must be taken installing outside.

FOUNDATION

Place the base frame with/without blower on a leveled concrete surface or equally leveled foundation. Put the foundation bolt in the grouting pocket and holes provided in the base frame. Check the rough leveling of the base frame and fill the grouting pockets and allow it to set. After setting, place the anti vibration mounting between the base frame and concrete as shown in **fig.4**. Tighten the foundation bolts and check the level of base frame. Adjust the same to Zero-Zero level by placing packings (if required).

Now check the leveling of blower, between the base frame and the blower leg add shims (if required), then fasten the bolts. Ensure that the blower casing is not distorted when the foundation bolts are being tightened.

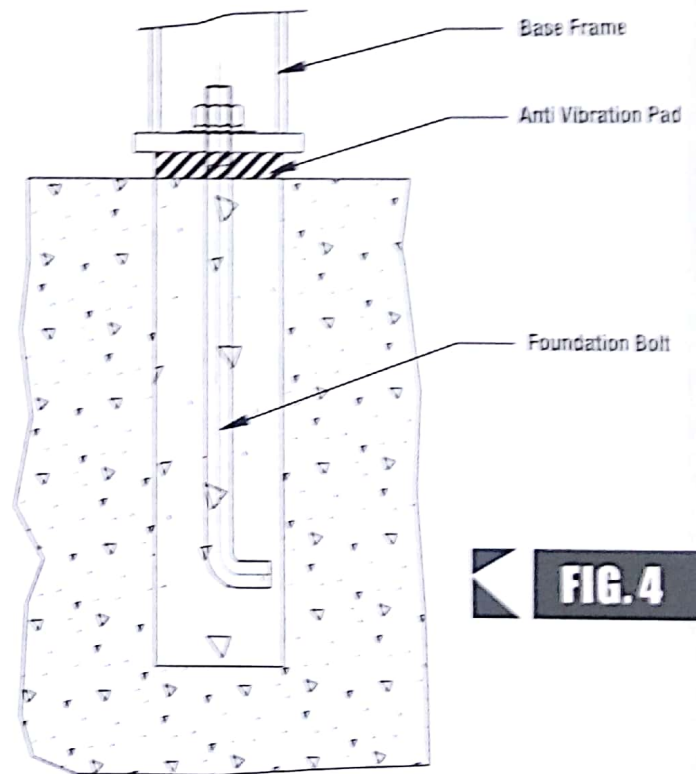


FIG.4

Foundation Detail

DRIVE INSTALLATION



Correct 'Coupling' and 'Alignment' are important factors for safe/trouble-free operation of the any rotating machinery. Thus, if the blower is directly coupled and alignment properly or not, needs to be confirmed prior giving 'START' to the blower.

The recommended gap should be maintained within the coupling and the alignment in both horizontal and vertical direction. A flexible coupling should be used to connect the driver and the blower shaft.

Belt Drive. Align the pulleys very carefully as non-alignment may lead to premature failure of the belt or bearing. V- belts are to be tightened in such a way that they are able to compressed by approx. 10 mm, when pressed with thumb in the middle of span. Care is also required to be taken to avoid 'Excessive Tension'.

Piping. It is essential that pipe connection should match up to the compressor flanges without strain and they are adequately supported.

Cautions.

- (a) Non-aligned coupling halves will lead to premature bearing failure and shaft breakage.
- (b) Over tightened belts lead to heavy bearing load and shaft deflections and may result in premature failure of bearing/shaft.
- (c) The belt pulleys are always supposed to be on the shaft in such a way that the belt pull is close to the machine.
- (d) Precaution must be taken to ensure that no load from pipe work is being transmitted/created on the blower.

CAPACITY CONTROL

The capacity / flow rate of the blower may be varied by changing the blower speed, (**however confirmation of the input power, flow rate and maximum speed must be taken from the manufacturer before making any alteration for safe operation of the blower**). Reduction in flow rate by lowering the blower speed is at times and can be used by the users as a power saving option. This can also be done on the other end, by venting out the excess air to the atmosphere. Refer Fig. 5 shown below, which explains the dos/don'ts of capacity control for adherence.

Caution. Never use valve on either suction or discharge line to throttle line for capacity/flow control.

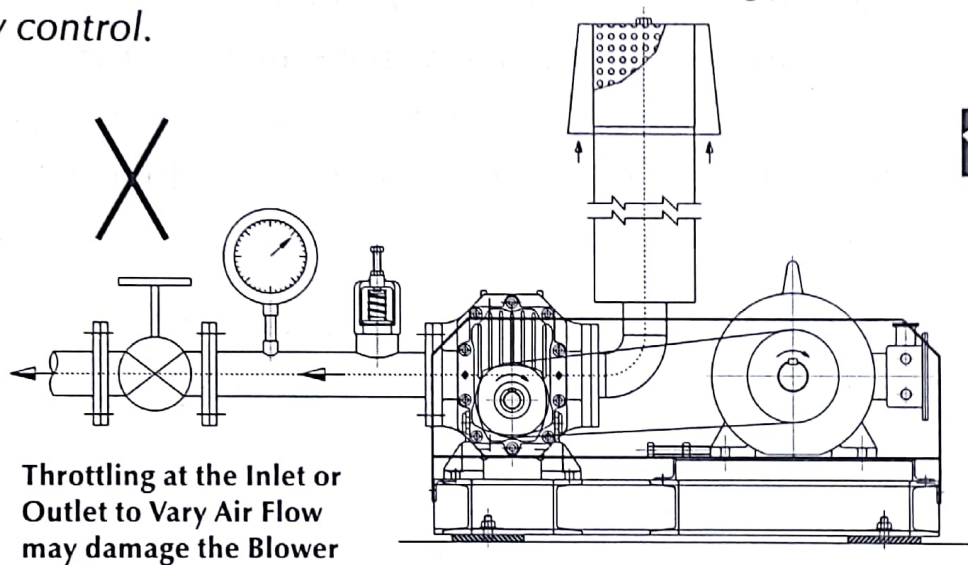
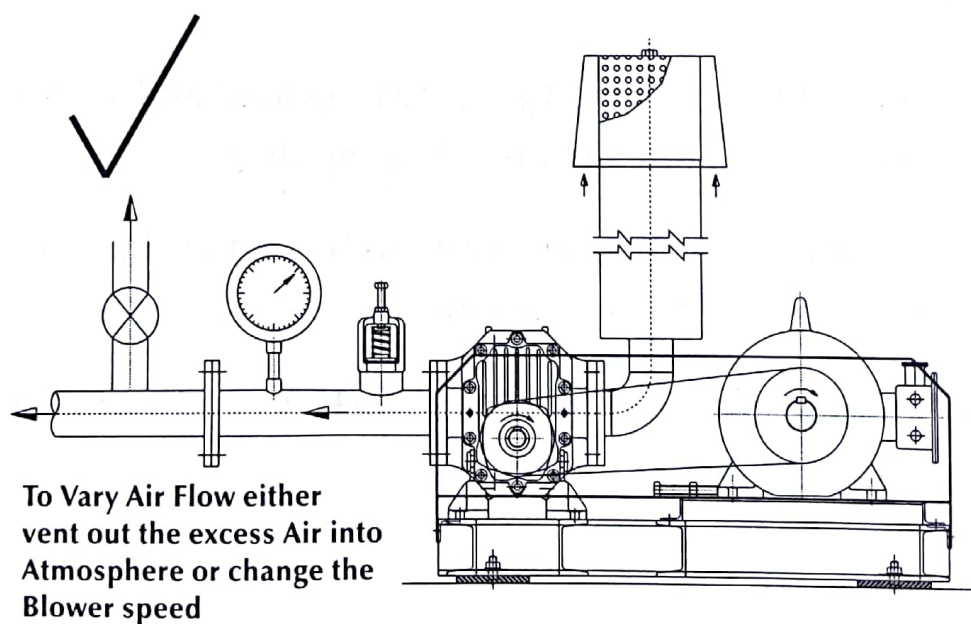
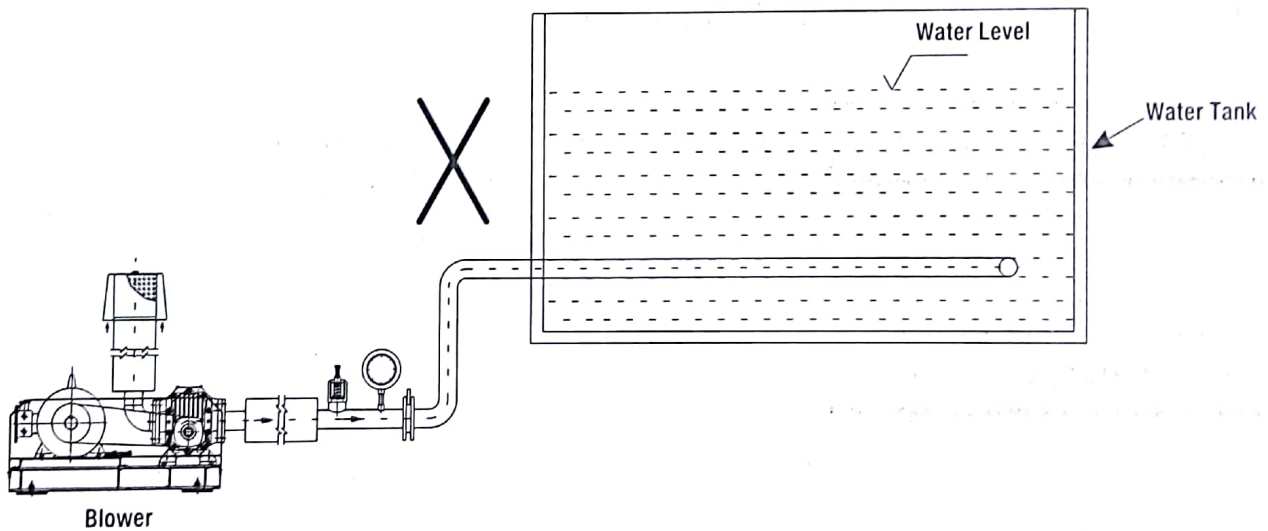
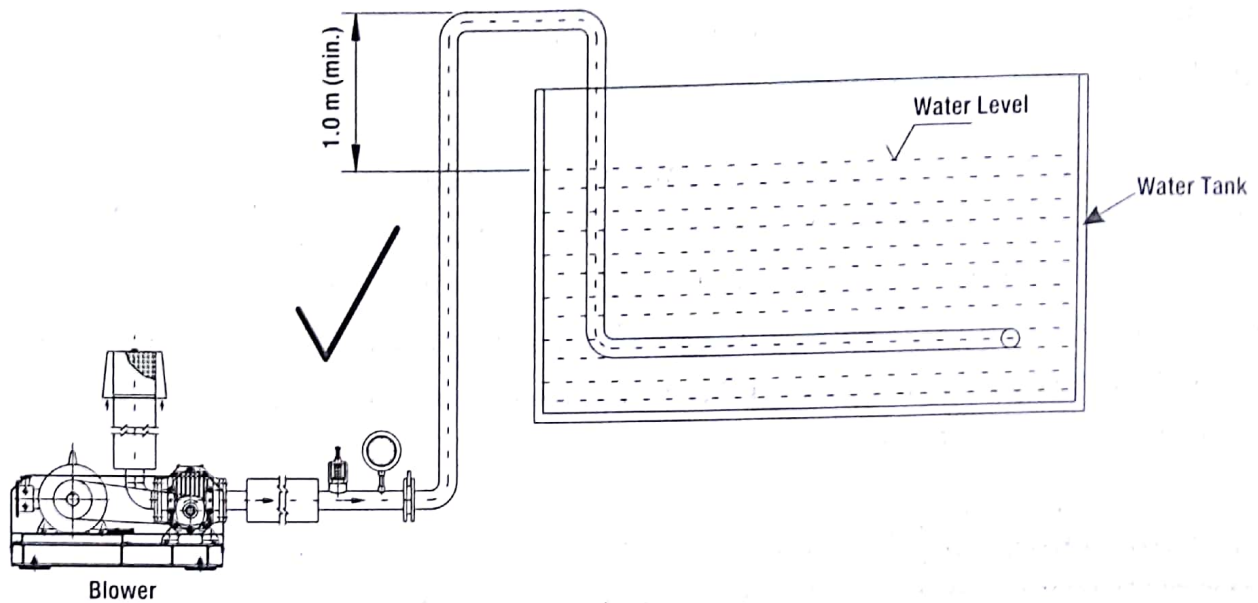


FIG. 5



GENERAL LAYOUT OF AERATION SYSTEM

FIG. 6 



Attention. The system layout should be designed in such a way that in any case, the back-flow of water should not occur due to gravity towards/inside the blower. Do not rely on NRV as it is provided to restrict the air flow (with minimal operating pressure) only in the backward direction (i.e. towards to blower), whereas, the back-flow of water pressure may be much more than the air flow pressure depending on the water-head. Figure No. 6 shown above, exemplifies the example/case in discussion.



BLOWERS
ISO 9001:2000

LUBRICATION

Beta blowers have been designed for both-end-oil-lubrication which in turns gives better limiting speed for blower, excellent bearing life and less temperature rise due to low frictional losses.

A good grade industrial type with anti-rust, oxidation and foam inhibited non detergent gear oil (of medium viscosity) is recommended. Oil level indicator is provided on both sides of oil covers to monitor the level of oil at any time. The oil should be periodically checked and fresh oil should be added as required to be maintained at proper level (i.e. between maximum and minimum levels marked on the blower's indicator glass).

Lubrication Schedule.

For sulphur base gear oil/normal gear oil- first oil change at 200 operating hours & subsequent oil change at every 2500 operating hours/06 months (whichever earlier). For synthetic oil- first oil change at 4000 operating hours or earlier, based on service condition. During scheduled oil changed, old oil should be completely flushed out before putting new oil.

Recommended Lubricant.

We recommend lubricating oil SP-320 of Indian Oil (IOCL) make. However, other lubricants having similar characteristics can also be used.

Lub-Oil Characteristics.

- Kinetic Viscosity, CST at 40oC : 320-350
- Viscosity Index : 90
- Flash Point, (Coc) : 232 °C
- Pour Point : -9 °C
- Color (ASTM) : 8
- Oil must have been passed for Rust Test :
- Operating Temperature : 100 °C or above

SOME ALTERNATE GEAR OIL

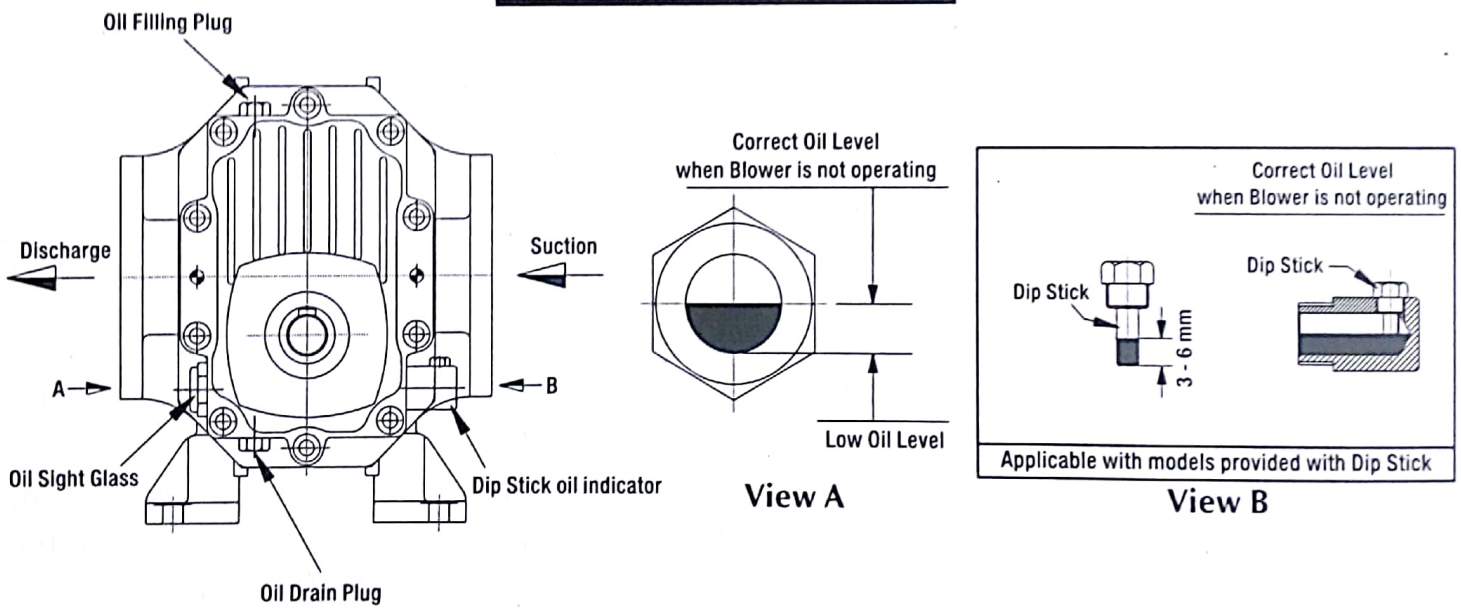
Brand	Sulphur Gear Oil Oil; Type/ Grade	Synthetic Base Gear Oil Type/Grade
Indian Oil	Servo Gear S.P.-320	Servo syn. Gear 220
Bharat Petroleum	Energol- 220xp	-
Castrol	Alpha- 220 & 80 W 90 LL	-
Shell	EP- 320	G.T.- 220

Attention.

- We recommend Synthetic Base Gear Oil for Air Cooled Blower having working pressure 0.6 to 0.75 kg/cm²
- A weekly checkup of the oil conditions and the level under normal working condition, ensures longer blower life.

LUBRICATION DIAGRAM

FIG.7



Oil Level Sight Glass. Both ends oil level must be at the Maximum (Max.) level of the sight glass, whenever it is not operating. Refill the oil, as & when it approaches the Minimum (Low) Level. Never overfill the oil as it always has detrimental effects on the normal operation of the blower.

Caution.

Over filling of oil will cause excessive heating of gear and entry of oil in the blower chamber. Both may lead to either blower failure or system defects/failure.



CHECK LIST AFTER INSTALLATION OF THE BLOWER

1. Check the level & tightness of base frame on the foundation.
2. Check the level & fixing of blower on the base frame.
3. Rotate the blower by hand and it must run freely by hand.
4. Check all the end connections and pipeline alignment (correct it if required).
5. Check the pipeline supports, tighten it (if required).
6. Check the electrical connections for their polarity and tightness.
7. Check the motor data to ensure correct speed/RPM matching for appropriate delivery of air, especially if the Motor is being procured and fitted by the customers.
8. Check the motor shaft/ motor pulley rotation.
9. Check the alignment of pulley and tension of the belt (correct it if required).
10. Ensure availability of recommended oil for blower at the site.
11. Check the fitting of safety valve, Pressure Gauge and direction of NRV in the system.
12. Check setting of safety valve for Pressure Condition.

Blower Start-up Check-off List.

Following procedures are recommended when the blower is to be started for the first time or the blower is put to operation after any major repair

work or the blower is removed from its foundation or being operated after a long gap:-

1. Check oil level of both chambers (Fill it, if required).
2. Inspect the interior of the blower for any rusting. Also, inspect suction and discharge lines to ensure that foreign particles (if any) have been removed.
3. Check the alignment and tension of V-belts.
4. Rotate Rotor by hand to ensure free run.
5. Switch 'ON/OFF' the motor two or three times by putting the starter in and out quickly to check the direction of rotation and also to ensure that the rotors are rotating freely.
6. Start the unit for 15 minutes with no load. During this check for abnormal noise and other indications of possible interference (if any).
7. After 15 minutes of no-load running, apply the load gradually and observe the unit for one hour. Check frequently for abnormal noise / over heating/ overloading during the first day of operation. *In case of any abnormality, do not operate the blower as it may result in serious damages.*
8. Readjust the tension of the V-belts after 2-3 days of operation and after every belt change/ replacement. Check the alignment and tension of V-belts.

Maintenance.

We believe in the principle of "Prevention is better than cure" and thus, recommend our valued customers **Planned Preventive Maintenance (PPM)**, which has become a proven tool for long life and trouble free operation cycle of any equipment. Accordingly, we recommend following PPM routines to be undertaken:-

ROUTINE CHECK-UP AND SERVICING ON BETA BLOWERS



1. Weekly or 100 Hrs of Operation (whichever is earlier).

CHECKS		OBSERVATIONS	ACTION
A.	Oil Level	Below red mark (half of sight glass) on sight glass of oil level indicator	Fill up the oil chamber with Specified grade of oil upto the specified mark.
B.	V-belt Condition	If belts are wearing out, check for trouble shooting.	Always, change the full set of the belts . Once belts are changed, use it for 01 hours and check the belt tension. Stop the blower and Press the belts using your hand with nominal force, displacement of belts should be ≤ 25 mm.
C.	Oil Leakage	-	Refer trouble shooting
D.	Discharge Pressure	If found, beyond specified Operating condition.	Refer trouble shooting
E.	Abnormal Sound	-	Refer trouble shooting
F.	Clearance Check	If found, more than the limit	Refer trouble shooting

2. After 1000 Hrs of Operation.

CHECKS		OBSERVATIONS	ACTION
A.	Check the safety relief valve, set pressure 10% above the working pressure.	The air is venting out from the safety relief valve and if the air is not venting out.	Correct the setting of the spring of the safety valve or check the system pressure.
B.	Check the filter element	Found Dirty.	Clean / Replace the filter element
C.	Check the tightness of belt.	Found Loose.	Proper adjustment to be done or Change the set of the belts.

Caution.

Do not dismantle or re-adjust the Internal Clearances without consulting Beta Service Team.

TROUBLE SHOOTING

SYMPTOM	PROBABLE CAUSE	REMEDY
No air flow	Speed too low. Wrong direction of flow. Obstruction in piping	Check speed and verify as per specification. Check the correct direction of rotation, repair/rectify (if required) Check suction and discharge line for any obstruction (clear them, if any).
Low capacity	Speed too low. Increased internal clearance Excessive pressure Discharge line leakage	Check speed and belt tension for slippage Adjust clearances. Check the line pressure, clear the obstructions (if any). Check up for open flow path.
Excessive power Consumption of blower	Speed too high Too high differential pressure Blockage of air in intake filter, partially close valve or blockage in delivery line causing excessive pressure or Impeller rubbing.	Correct speed, correct/ adjust line Pressure. Check pressure, clean filter and silencer. Reset Timing.
Over heating of bearings, gears and blower	Inadequate lubrication Too high differential pressure. Belt non-alignment/ Loose Belt or coupling non-alignment. Too much oil in gear case. Worn impeller/high internal clearance.	Check the oil condition & level, replace the oil if required. Check the pressure and correct if required, check and clean filter & silencer. Check coupling and belt alignment. Check oil level and drain, if required to requisite level. Replace impeller, reset clearance.
Vibration	Drive misalignment. Impeller rubbing (in casing or between impeller), Worn bearing/gear, Loose pulley, Dust deposition in rotor Core hole, Unbalanced pulley.	Check alignment. Check rubbing spot, readjust clearances, check gear condition for backlash (adjust, if required). Check bearing condition, if required replace bearings/ gears. Check pulley for correct fitment as loose pulley creates vibration Clean rotor & recheck balancing.

Blower fails after running for a short period (i.e. seizure)	<p>Insufficient axial clearance.</p> <p>Over heating due to top rubbing of internal parts, Too high differential Pressure</p> <p>Misalignment of drive or pipeline connections.</p>	<p>Re-adjust internal clearances.</p> <p>Verify differential pressure and carry-out necessary adjustment.</p> <p>Correct Misalignment</p>
Knocking sound (i.e. abnormal sound) or (noisy operation)	<p>Timing is out.</p> <p>Distortion due to improper mounting.</p> <p>Worn bearing/gear.</p>	<p>Re-adjust timing.</p> <p>It should be done in presence of Beta service representative.</p> <p>Change Gear/bearing if required.</p>
<p>Oil leakage</p> <p>1.Through oil filling hole.</p> <p>2.Through air vent hole.</p> <p>3.Outside the blower through oil seal.</p>	<p>Excessive oil level for sls. 1 & 2.</p> <p>Damaged oil seal.</p>	<p>Correct oil level.</p> <p>Replace oil seal.</p>

Storage of Blowers.

All Beta Blowers are packed at factory with adequate protection to permit normal storage up to 45 days. If the equipment is to be stored for extended period following

measures should be taken to prevent possible damage:-

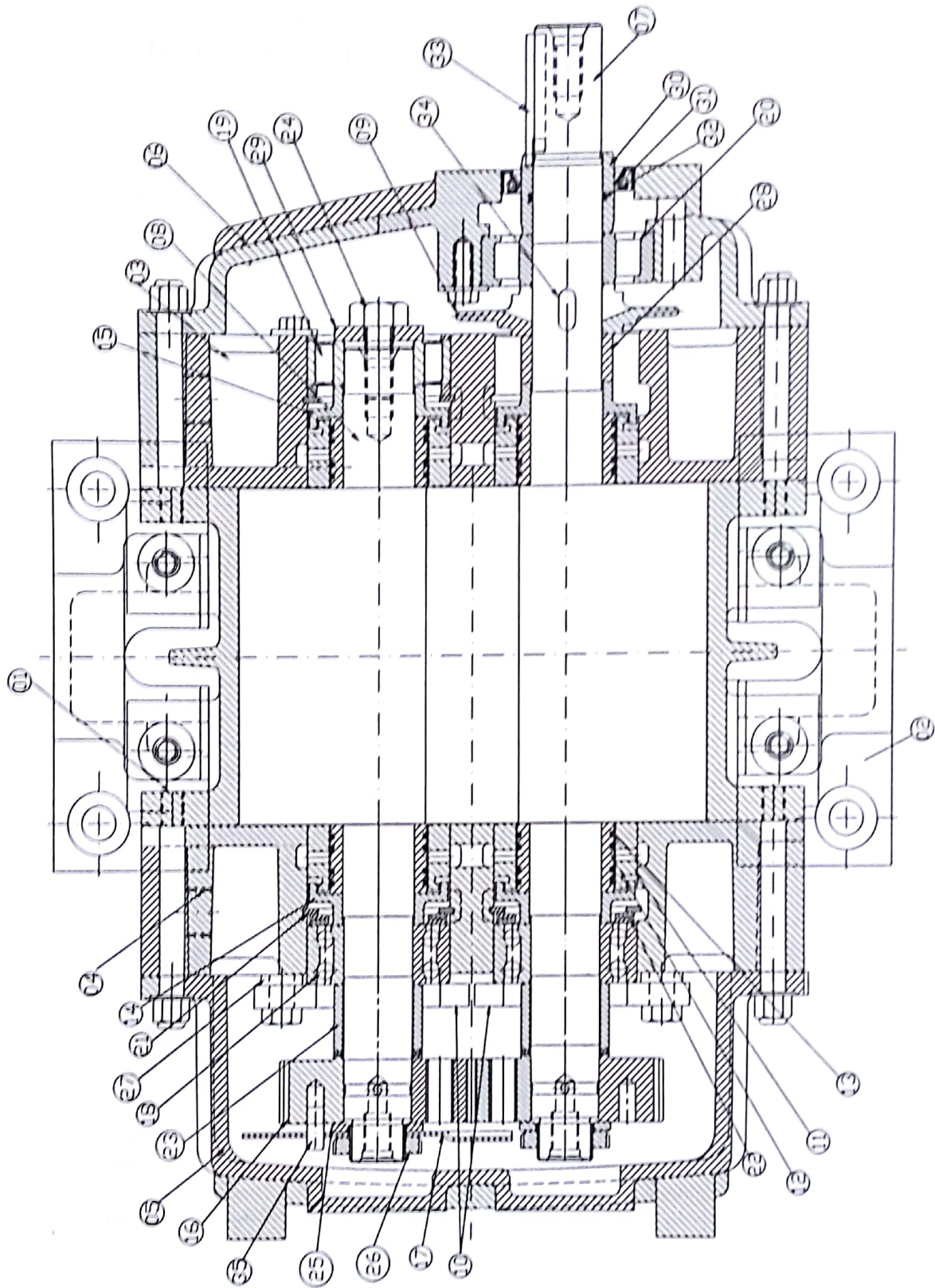
- Store the blower in a clean and dry area.
- Put some (approx 15% of casing volume lubricating oil inside the casing and make sure that inlet and outlet ports are tightly closed to prevent the entry of foreign materials inside the casing.
- To prevent rusting of gears and bearing inside the blower, the oil reservoirs should be filled with normal lubricating oil.
- Proper protection is to be provided to avoid any accidental mechanical damage.
- Spray anti rust at input shaft near the oil seal.
- Rotate the input shaft 10 to 15 turns fortnightly during storage.
- Before putting the blower into operation, drain all oil and refill upto the proper operating level with recommended lubricant, inspect condition of oil seal (replace if necessary) and ensure that blower is rotating freely, prior following normal starting procedure mentioned on Page 14.

**PART LIST & RECOMMENDED SPARES
MODEL 20.00 TO 23.11**

SL. NO.	QTY.	DESCRIPTION
01	01	Casing(boby)
02	02	Leg
03	01	Casing Cover (de)
04	01	Casing Cover (nde)
05	01	End Cover (nde)
06	01	End Cover (de)
07S	01	Driver Rotor
08S	01	Driven Rotor
09S	01	Oil Flinger (de)
10S	02	Bearing Retainer (nde)
11S	04	Side Plate Bush
12#	04	Piston Ring Retainer
13#	16	Piston Ring
14S	02	Oil Thrower (nde)
15S	02	Oil Thrower (de)
16S	1 PAIR	Helical Timing Gear
17S	01	Oil Flinger (nde)
18#	02	Angular Contact Ball Brg. (nde)
19#	01	Cylindrical Roller Brg. (de & Dn Shaft) NJ
20#	01	Cylindrical Roller Brg. (de & Dr Shaft) NU
21#	03	Internal Circlip
22#	04	Tensioning Disc Spring
23S	02 SET	Locking Bush & Adjusting Locking Ring
24#	01	Hex Bolt
25	02	Spacer (nde)
26#	02	Chuck Nut
27	04	Adjusting Spacer (nde)
28	01	Distance Ring
29	01	Lock Washer (de & Dn Shaft)
30S	01	Oil Seal Bush At Shaft End
31#	01	Oil Seal
32#	01	O-ring
33#	01	Parallel Key
34#	01	Key for Oil Flinger
35#	01	Hollow Pin

- Recommended spare to be kept in stock for un-interrupted operation
 \$ - Recommended spare for long term operation cycle

FIG. 8



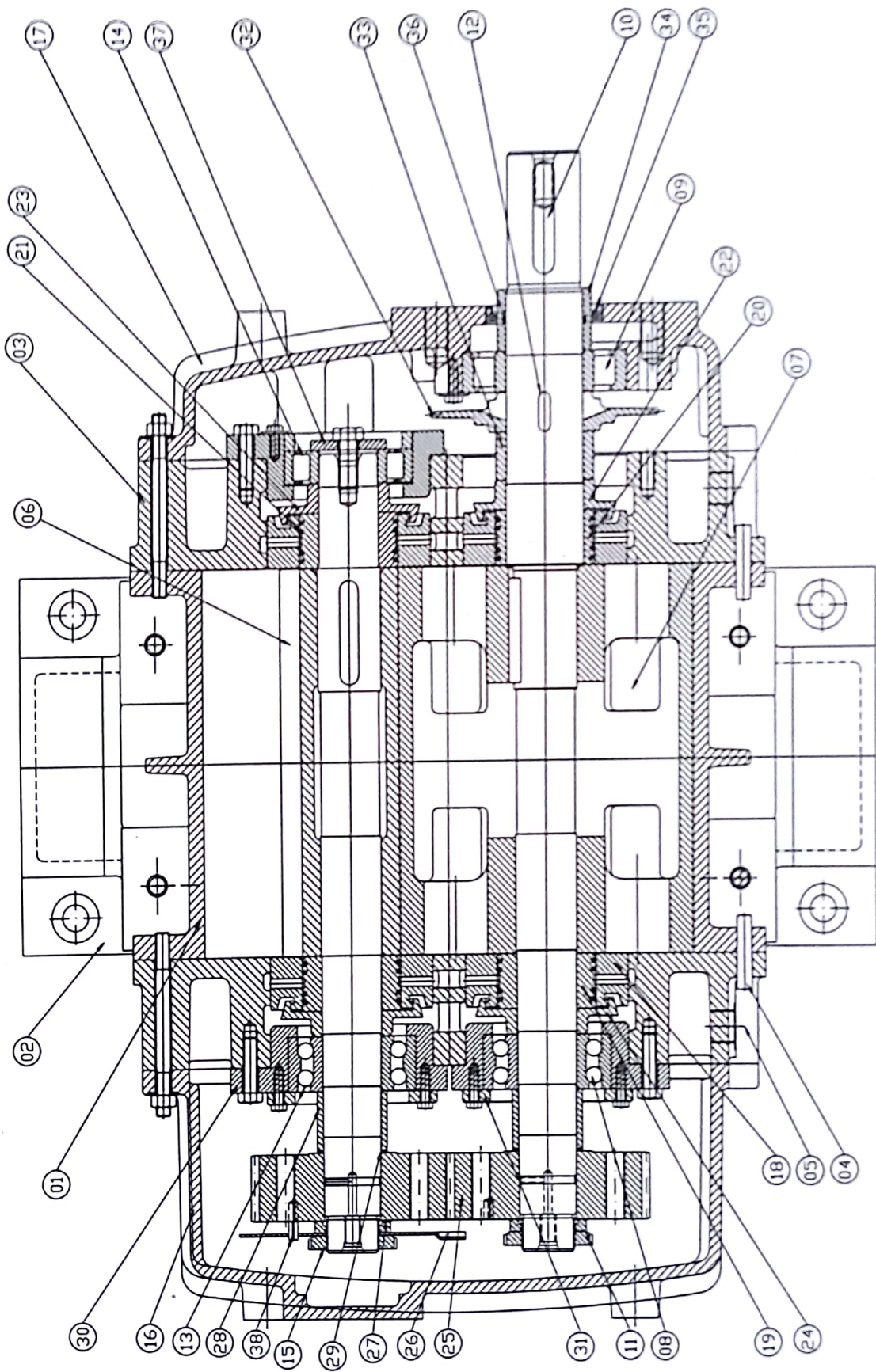
Cross Sectional Diagram from BR 20.00 to BR 23.11



PART LIST & RECOMMENDED SPARES MODEL 24.12 TO 25.17

SL. NO.	QTY.	DESCRIPTION	SL. NO.	QTY.	DESCRIPTION
1	1	Casing	20	1	Piston Ring Retainer De
2	2	Leg For Casing	21	16	Piston Ring
3	2	Casing Cover	22	1	Oil Thrower De At Drive Shaft
4	4	Solid Taper Pin	23	1	Oil Thrower De At Driven Shaft
5	4	Oil Sight Glass With Washer	24	2	Oil Thrower Nde
6	2	Driven Rotor	25	1 SET	Helical Timing Gear
7	1	Driver Rotor	26	1	Oil Flinger For Nde
8	1	Double Row Ang. Contact Ball Brg.	27	2	Spacer For Nde
9	1	Cyli Ndrical Roller Bearing NU	28	2	Looking Bush
10	1	Key For Pulley	29	4	Locking Adjusting Washer
11	1	Check Nut	30	3	Bearing Housing
12	1	Key for Oil Flinger DE	31	2	Bearing Retainer For Nde
13	1	Double Row Ang. Contact Ball Brg.	32	1	Oil Flinger For De
14	1	Cylindrical Roller Brg. NJ	33	1	Distance Ring For De
15	1	Check Nut	34	1	Oil Seal Bush At Shaft End
16	1	End Cover For Non Drive End	35	1	Rotary Shaft Seal
17	1	End Cover For Drive End	36	1	O-ring
18	4	Side Plate Bush	37	1	Bgr. Locking Plate De At Driven Shaft
19	3	Piston Ring Retainer	38	1	Hollow Pin

FIG. 9

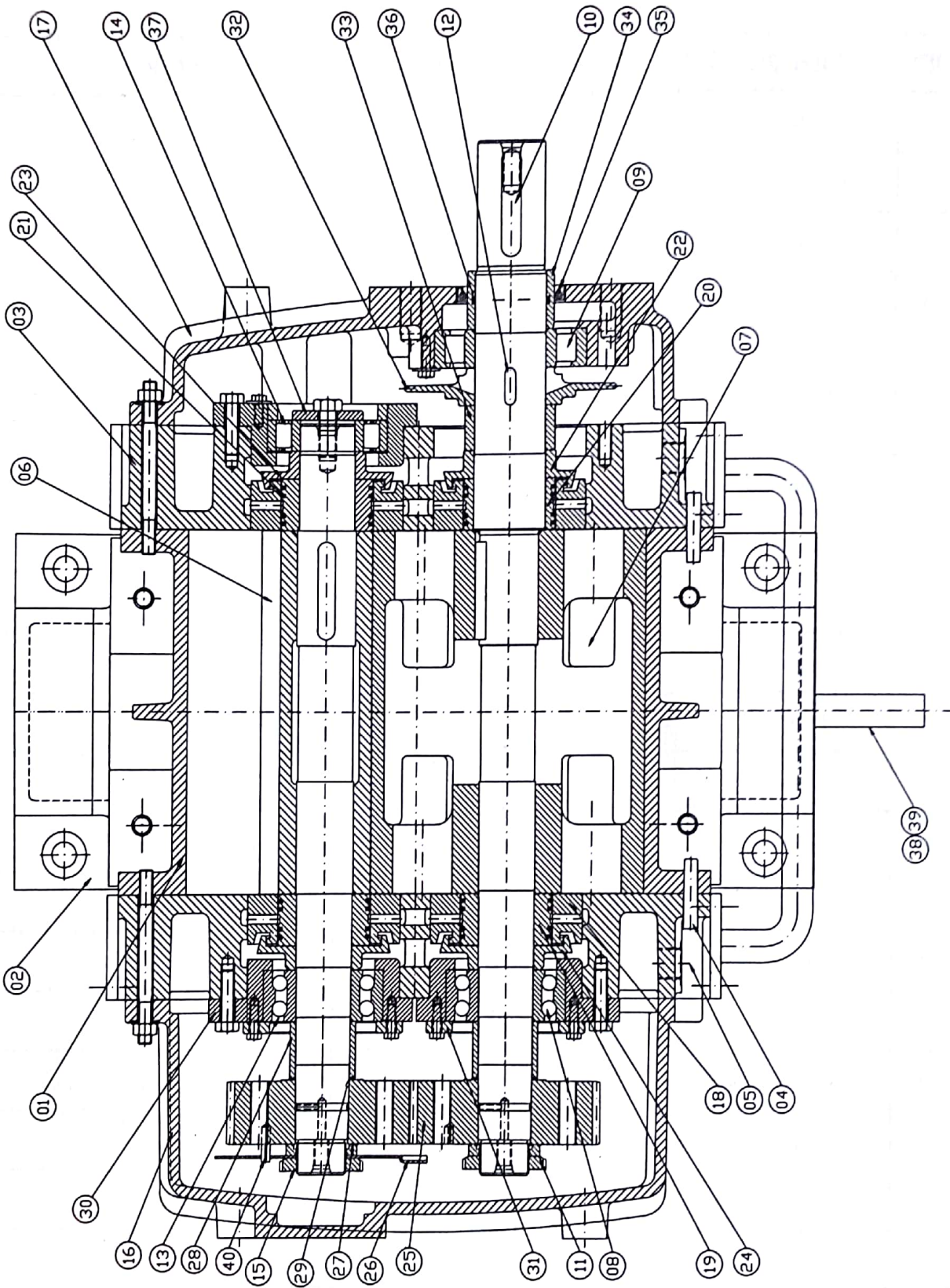


Cross Sectional Diagram from BR 24.12 to BR 25.17

**PART LIST & RECOMMENDED SPARES
MODEL 24.12 TO 25.17 WATER COOLED**

SL. NO.	QTY.	DESCRIPTION	SL. NO.	QTY.	DESCRIPTION
1	1	Casing	21	16	Piston Ring
2	2	Leg For Casing	22	1	Oil Thrower De At Drive Shaft
3	2	Casing Cover	23	1	Oil Thrower De At Driven Shaft
4	4	Solid Taper Pin	24	2	Oil Thrower Nde
5	4	Oil Sight Glass With Washer	25	1 SET	Helical Timing Gear
6	1	Driven Rotor	26	1	Oil Flinger For Nde
7	1	Driver Rotor	27	2	Spacer For Nde
8	1	Double Row Ang. Contact Ball Brg.	28	2	Locking Bush
9	1	Cylindrical Roller Bearing NU	29	4	Locking Adjusting Washer
10	1	Key For Pulley	30	3	Bearing Housing
11	1	Check Nut	31	2	Bearing Retainer For Nde
12	1	Key for Oil Flinger DE	32	1	Oil Flinger For De
13	1	Double Row Ang. Contact Ball Brg.	33	1	Distance Ring For De
14	1	Cylindrical Roller Brg. NJ	34	1	Oil Seal Bush At Shaft End
15	1	Check Nut	35	1	Rotary Shaft Seal
16	1	End Cover For Non Drive End	36	1	O-ring
17	1	End Cover For Drive End	37	1	Bgr. Locking Plate De At Driven Shaft
18	4	Side Plate Bush	38	2	Cooling Water Outlet
19	3	Piston Ring Retainer	39	4	Cooling Water Inlet
20	1	Piston Ring Retainer De	40	1	Hollow Pin

FIG. 10

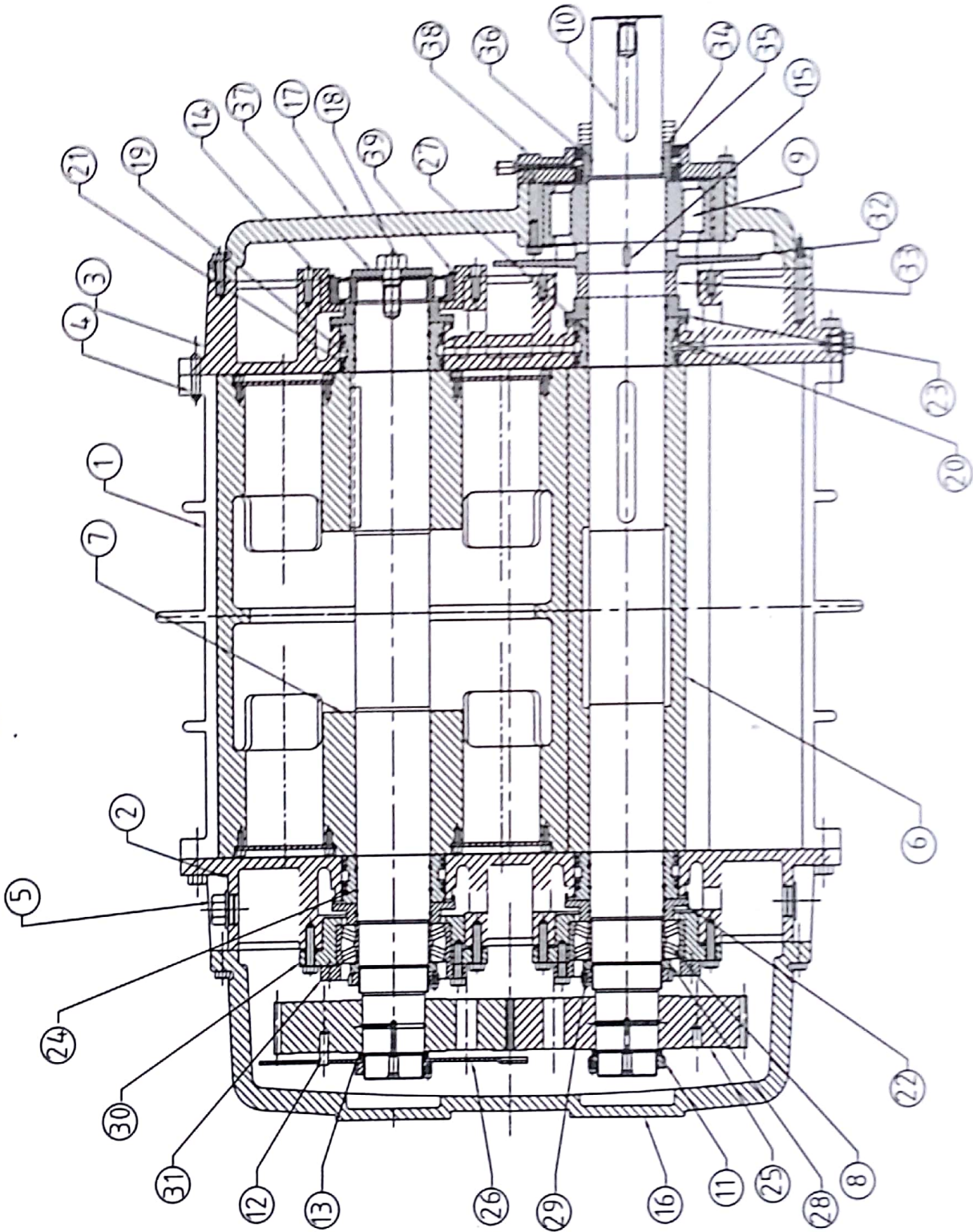


Cross Sectional Diagram from 24.12 to 25.17 Water Cooled Blower

PART LIST & RECOMMENDED SPARES
MODEL 26.18 to 29.27

SL. NO.	QTY.	DESCRIPTION	SL. NO.	QTY.	DESCRIPTION
1	1	Casing	21	16	Piston Ring
2	1	Casing Cover Nde	22	3	Oil Thrower
3	1	Casing Cover De	23	1	Oil Thrower De At Drive Shaft
4	4	Solid Taper Pin	24	9	O - Ring
5	4	Oil Sight Glass With Washer	25	1 SET	Helical Timing Gear
6	2	Driver Rotor	26	1	Oil Flinger (nde)
7	1	Driven Rotor	27	3	O - Ring
8	2	Spherical Roller Brg.	28	2	Locking Spacer For Nde
9	1	Cylindrical Roller Bearing NU	29	2	Check Nut
10	1	Key For Pulley	30	3	Bearing Housing
11	2	Check Nut	31	2	Bearing Retainer For Nde
12	1	Hollow Pin	32	1	Oil Flinger For De
13	2	Spacer (nde)	33	1	Distance Ring For De
14	1	Cylindrical Roller Bearing NJ	34	1	Oil Seal Bush At Shaft End
15	1	Key For Oil Flinger	35	2	Rotary Shaft Seal
16	1	End Cover For Non Drive End	36	1	O-ring
17	1	End Cover For Drive End	37	1	Bgr. Locking Plate De At Driven Shaft
18	1	Hex Bolt	38	2	Seal Ring Housing
19	3	Piston Ring Retaine	39	1	Internal Circlip
20	1	Piston Ring Retainer De			

FIG. 11



Cross Sectional Diagram from BR 26.18 TO 29.27

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Beta blowers are very ruggedly built and are almost maintenance free. We have tried to provide our customers all the relevant informations. For any further assistance, we are at your disposal to advice you the best possible solution and services.

Note : The warranty will stand cancelled if the machine is found running without oil or with incorrect layout which may lead to blower failure.

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For any assistance, contact us at :

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