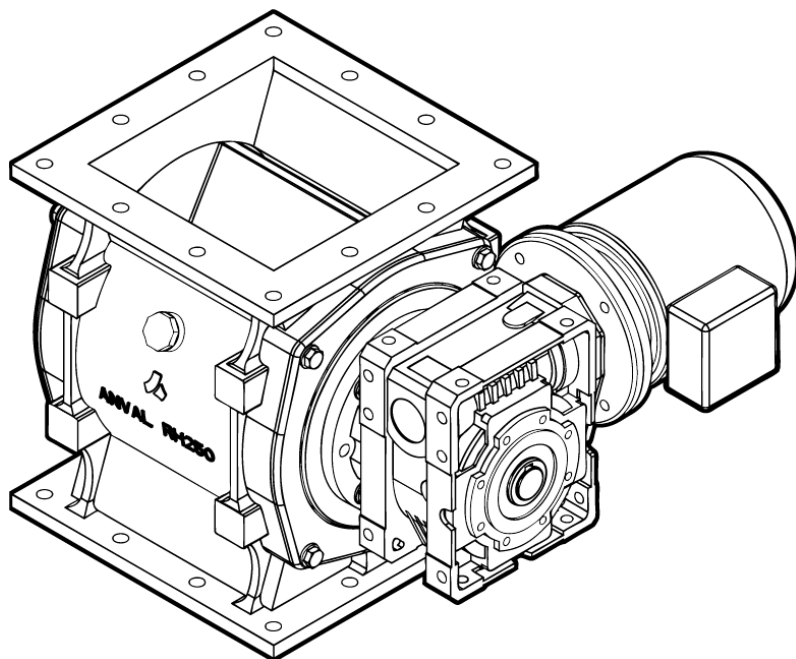




RHXSERIES

RHX Series Rotary Valve

Installation, Safety, Operational and Maintenance Manual



045

ISO 9001:2015 Reg. No.748699

Contents

General Information.....	5
Purpose of the Manual.....	5
Symbols.....	5
Safety Information.....	7
Safety Precautions.....	7
Conformity to Standards.....	8
Operating Limits & Conditions	8
Safety Instructions	9
Safety Guard.....	10
Special Conditions for Safe Use.....	11
Model Identification.....	13
Equipment Identification.....	14
Atex Markings.....	14
Requesting Technical Assistance.....	15
Manufacturer's Liability	15
Handling & Transport	16
Packaging.....	16
Packing Dimension Details.....	17
Handling Instructions	18
Moving Packages	18
Moving the Equipment.....	18
Lifting.....	19
Storage.....	19
Installation Pre-requisites & Installation.....	20
Installation Pre-requisites	20
Installation.....	20
Installation Drawing.....	21
Operation and Commissioning	22
Model Selection Chart.....	23
Capacity Chart.....	23
Speed vs. Throughput	24
Technical Information.....	25
Dimension Data – Direct Drive	25
Table 1: Dimension Details for Direct Drive (D)	26
Dimension Data – Chain Drive.....	27
Table 2: Dimension Details for Chain Drive(C)	28

Dimension Data – Bare Shaft.....	29
Table 3: Dimension Details for Bare Shaft (B).....	30
Standard Component Information:.....	31
Direct Drive (D) Component Information:.....	31
Bare Shaft (B) Component Information:.....	31
Table 4: Direct Drive (D) and Bare Shaft (B) Component Details	32
Chain Drive (C) Component Information:.....	33
Table 5: Chain Drive (C) Component Information.....	34
Anval Standard - Sealing	35
Purge Sealing	35
Under Speed Sensors (P)	36
Rotor Configurations.....	36
Air Vent / Cleaning	36
Testing & Using the Valve.....	37
Maintenance.....	38
Routine Maintenance.....	39
Lubrication.....	40
Maintenance Schedule	41
Surface Cleaning.....	42
Replacing & Scrapping.....	43
Replacing Parts	43
Spare Parts Reordering	43
Scrapping the Equipment	44
Troubleshooting.....	45
Notes.....	47

General Information

Purpose of the Manual

This manual has been compiled to provide information on the safety, transport, handling, installation, maintenance, repair, disassembly and dismantling of the RHX series valve.

Apart from adhering to established engineering practices, the information given in this manual must be carefully read and applied rigorously.

Failure to adhere to the information provided herein may result in risk to personal health and safety, and economic damages.

This information, provided in the original language (English) of the Manufacturer, may be made available in other languages to meet legal and/or commercial requirements.

The documentation must be stored by a person with the correct authority and must always be made available for consultation. In case of loss or damage, replacement documentation must be requested directly from the Manufacturer. This manual reflects the engineering standards applied to the valve at the time of commercialization.

The Manufacturer reserves the right to modify, supplement and improve the manual, without the present publication being, for that reason, considered inadequate.

Significant sections of the manual and important specifications are highlighted by symbols whose meanings are given on the following page.

Symbols

The operations highlighted by these symbols must be carried out by qualified professionals specially trained in the safety requirements for zones characterized by potentially explosive atmospheres.

Failure to observe these instructions may result in serious risks to personal and environmental safety.



This symbol indicates situations of serious danger which, if ignored, may result in serious risks to the health and safety of personnel.



This symbol indicates the need to adopt specific precautions to avoid risks to the health and safety of personnel and possible economic damages.



This symbol indicates important technical information.

Safety Information

Safety Precautions

Carefully read the instructions given in this manual, especially those regarding safety.

Persons charged with working on the equipment at any time in its service life must be trained specifically for the purpose with special abilities & experience in this area as well as being equipped with the appropriate tools & individual safety equipment. Failure to meet these requirements constitutes a risk to personal health & safety. Use the equipment for the applications envisaged by the manufacturer. Improper use can result in risks to personal health, safety & economic damage.

Keep the equipment at its maximum efficiency by following the routine maintenance schedule. This enables the unit to operate at maximum performance over a long service life in compliance with safety regulations.

When working on the equipment in areas that are difficult to access or hazardous, ensure that adequate safety precautions are taken for the operator & others in compliance with the provisions of law on health & safety at work.

All maintenance, inspection & repairs must only be carried out by an expert maintenance technician. It is therefore, essential to implement operating procedures which address potential hazards & their prevention for the entire equipment. The expert maintenance technician must always work with extreme caution in full compliance with applicable safety standards.

During operation wear only the apparel & safety equipment indicated in the user instructions provided by the manufacturer or laid down by applicable laws on safety at work.

Replace worn components with original spare parts. Use the lubricants (Oil & grease) recommended by the manufacturer.

Do not dump polluting materials into the environment. Dispose of all such materials as stipulated by applicable legislation. After replacing lubricants clean the gear unit's surfaces & the walk-on surfaces around the work area.



The applications defined by the manufacturer are those industrial applications for which the equipment has been developed.

Conformity to Standards

All RHX Series valves are CE, ATEX marked and designed in compliance with intention for **use in potentially explosive atmospheres** with the provisions of all applicable Essential Health & Safety Requirements. All explosion- proof products for use in explosive atmospheres are designed in compliance with one or more of the following approvals

- ATEX Directive 2014/34/EU

ATEX

- Group: II
- Category: 1/2 GD
- Temperature Class: T 100 °C to T450 °C
- Gas Group ATEX Marking: II 1/2 Ex h IIA T5 to T1 Ga / Gb
- Dust Group ATEX Marking: II 1/2 Ex h IIIA T100°C to T450°C Da / Db
- ATEX EC Certificate:

If requested, the above conformity of standards certifications can be supplied complete with manufacturer's declaration.

Operating Limits & Conditions

Ambient Conditions:

Ambient temperature: Min -20° C to Max +40° C

Usage of the equipment in the temperature outside the ambient range has to be discussed with the manufacturer.

Do not use the equipment, if not explicitly intended for the purpose, in a potentially explosive atmosphere or where the use of explosion-proof equipment is specified.

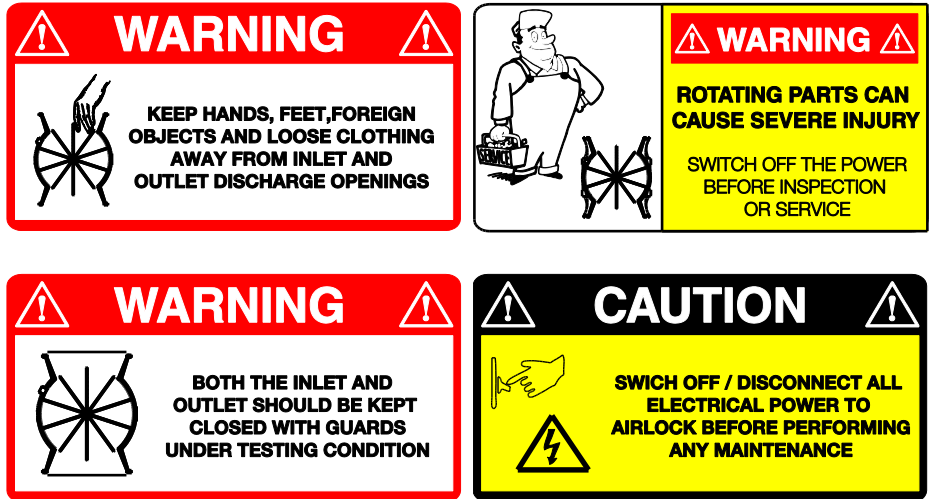


If the equipment is installed in a poorly lit area, use additional lamps & ensure that the work is done in compliance with appliance with applicable with applicable safety legislation.

Noise - Vibration

The equipment operates well below 80db in no load condition with minimal vibration. Specific noise tests can be conducted at the time of purchase by the manufacturer upon request.

Safety Instructions



This symbol, indicates the direction in which the rotor must rotate. If the unit is rotating in the wrong direction, possible damage to the unit may result.



Safety Guard

The inlet and outlet of the valves must be guarded in situ to prevent anyone inserting fingers, hands etc., into the rotating valve. This guarding cannot be incorporated into the valve assembly and is not supplied along with the valve. It must be, therefore, be supplied by the installation contractor and fitted as a separate guarding during plant assembly.

All RHX series rotary valves come with a vent port in the side of the body. This port is fitted with a threaded plug which should only be removed when the valve is isolated from the electrical supply and the vent port is piped to a venting system.



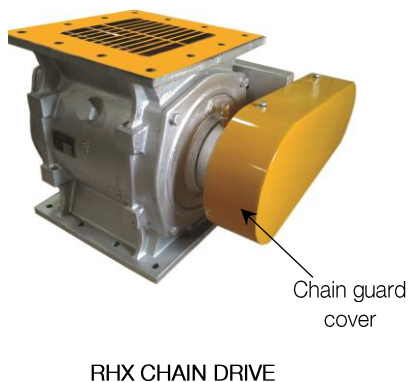
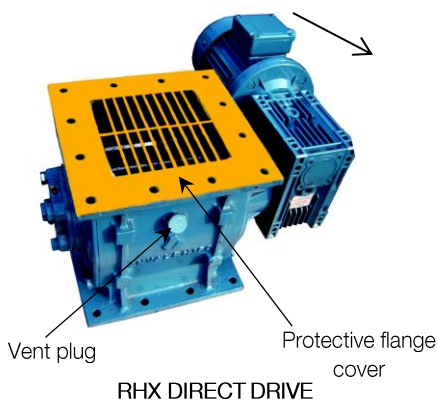
Do not install Rotary Airlock valves & feeders in an application which leaves the inlet or outlet flange opening exposed.



Inlet and Outlet flange guards are MANDATORY if the inlet or outlet flange opening is exposed while the rotor is running.



Do not remove the vent plug and insert a finger, stick or any other object. Permanent damage will be caused to the valve and any other object inserted will be amputated.



Note: These protective flange covers are available upon request and provided as an accessory to the valve.



Once the protective flange/chain guard cover is removed from valve, do not place hands or feet in the valve or attempt to turn rotor assembly by hand.

Special Conditions for Safe Use

The following points must be considered while using the valve in potentially explosive atmosphere.

- All relevant metallic parts of the equipment shall be bonded to a fixed and secure platform.
- The equipment shall be installed such that the final installation provides protection from parts of the body coming into contact with the rotating parts of the valve.
- The equipment shall be installed such that the final installation prevents the entry of falling objects into the equipment.
- The equipment shall be cleaned at regular intervals to prevent a build-up of dust on any part of the apparatus.
- Equipment should NOT to be used as an explosion suppression device.
- To prevent hazards arising from propagating brush discharges on the painted parts the equipment shall not be subjected to any charging mechanisms stronger than the manual rubbing of its surfaces

Maximum RPM of the valve should never exceed the criteria given below.

MODEL	MAX. RPM
RHX150	31
RHX200	28
RHX250	30
RHX300	30
RHX350	25
RHX400	25
RHX500	25
RHX600	22
RHX750	16

Model Identification

The below represents ANVAL codification format for choosing the appropriate model:

Opening Size / Model

150	200	250	300	350	400	500	600	750
-----	-----	-----	-----	-----	-----	-----	-----	-----

Optional Sealing

*	G	A
None	Grease Purge	Gas Purge

Temperature Range

X	Y	Z
200-300°C	>300 - 400°C	>400°C

Optional Variation

F	W
Flexible Tips	Wear Tips

Optional Variation

P	Proximity Sensor
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RHX 250 D

31/Deviation



Type / Series

RHX
Atex Rotary Valves

Optional Accessories

L	K	T	U
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Please refer to the addendum

Rotor RPM (Not Required for "B" Selection)

5#	6#	7#	10	12	14*	18	22	31
----	----	----	----	----	-----	----	----	----

* Default with D & C. #not applicable for "C" Selection

Rotor Type

N*	M	Q	R	S
Closed Rotor	Closed Rotor Fabricated	Open Rotor Fabricated	Reduced Pocket Open Rotor Fabricated	Scalloped Rotor Fabricated

Variation / Drive Type

D*	C	B
Direct Drive	Chain Drive	Bare Shaft

*Default Selection

L: Deflector Plate T: Blow thru Adapter

K: Counter Flanges U: Shear Pin

Equipment Identification



Model No – Model details of the Valve
(See Model Identification for reference);
Last 2 digits represent RPM of the Valve

Serial No – Unique reference code

Mfg. Date – Month & Year of
Manufacturing

The nameplate and the information thereon must be readable at all times and consequently cleaned from time to time. Should the nameplate wear and/or become damaged so as to affect its readability or that of even one of the items of information thereon, the user must request a new nameplate from the Manufacturer, and replace the old one.

Atex Markings

CE 2261	II 1/2 Ex h IIA T5 to T1 Ga/Gb II 1/2 Ex h IIIA T100°C to T450°C Da/Db	
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CE Marking Details

European Hazardous Mark

EC Type examination
certificate

- II - Equipment Group
- 1/2 - Zone 20(Internal) and
Zone 21(External)
- D - Dust
- G - Gas
- h - Protection method –
Construction Safety
- T - Surface Temperature
Class

Requesting Technical Assistance

For any technical service needs, contact the Manufacturer's sales network, quoting the information on the unit's nameplate, with the approximate hours of service and the type of defect.

Manufacturer's Liability

The Manufacturer declines all liability for cases of:

- Use of the valve in violation of local laws on safety and accident prevention in the workplace.
- Incorrect installation, disregard or incorrect application of the instructions provided in this manual.
- Incorrect or defective power supply
- Modifications or tampering.
- Work done on the unit by unqualified or unsuitable persons.

The safety of the valve also depends on scrupulous observance of the instructions given in this manual, in particular:

- Always operate the valve within its operating limits.
- Diligently observe the routine maintenance schedule.
- Only authorize trained operators to inspect and service the unit.
- Use only original spare parts
- Do not attempt to use the valve contrary to the instructions supplied.
- The instructions given in this manual do not substitute but summarize the provisions of applicable safety legislation.

Handling & Transport

Packaging

The standard packaging, when supplied & unless otherwise agreed, is not proofed against rainfall and designated for environments which are under cover & not humid. Storage in all other conditions requires specific packaging.

Carton Box packaging is done up to RHX350, beyond this, wooden box packing is used.



SYMBOL	DESCRIPTION
	This way up
	Do not clamp
	Do not use hooks
	Do not stack
	Keep away from water
	Fragile
	Handle with Care
	Recycle



On the receipt of the equipment, check that the delivery item corresponds to the purchase order & that it is not damaged or faulty in anyway. Refer any nonconformity to the manufacturer at info@anval.net

Dispose of packaging materials as laid down by the provisions of law

Packing Dimension Details

MODEL	VALVE TYPE	PACKING MATERIAL	L X B X H	GROSS WEIGHT
RHX150	Direct Drive	Carton Box	607 x 540 x 340	65
RHX150	Chain Drive	Carton Box	551 x 450 x 340	85
RHX200	Direct Drive	Carton Box	674 x 617 x 430	105
RHX200	Chain Drive	Carton Box	700 x 552 x 430	122
RHX250	Direct Drive	Carton Box	760 x 663 x 510	165
RHX250	Chain Drive	Carton Box	717 x 646 x 510	186
RHX300	Direct Drive	Carton Box	818 x 698 x 570	210
RHX300	Chain Drive	Carton Box	810 x 716 x 570	237
RHX350	Direct Drive	Carton Box	900 x 778 x 625	280
RHX350	Chain Drive	Carton Box	850 x 750 x 625	365
RHX400	Direct Drive	Wooden Box	1032 x 994 x 720	430
RHX400	Chain Drive	Wooden Box	946 x 854 x 720	428
RHX500	Direct Drive	Wooden Box	1189 x 1126 x 860	685
RHX500	Chain Drive	Wooden Box	1080 x 1025 x 860	636
RHX600	Direct Drive	Wooden Box	1282 x 1168 x 1000	1575
RHX600	Chain Drive	Wooden Box	1295 x 1210 x 1000	1400
RHX750	Direct Drive	Wooden Box	1476 x 1409 x 1220	1820
RHX750	Chain Drive	Wooden Box	1552 x 1308 x 1220	1690

All dimensions in mm, weight in Kgs.

Approximate dimension only. Varies with motor size and gear box variation. L x B x H denotes the Length, Breadth and Height of the package box.

Handling Instructions

Handle packages as per the manufacturer's instructions & those marked on the packages themselves. Since the weight & shape of packages may make manual handling unfeasible, special equipment must be used to avoid damage & injury.



The person authorised to handle the product must take all necessary precautions to safeguard their safety & that of all other persons involved.

Moving Packages

Prepare a suitable, delimited area with a level floor or surface for unloading the packages. Prepare the equipment required for handling the package. The lifting & handling equipment used (e.g. crane or lift truck) must have adequate capacity for the weight & size of the load, taking into account its attachment points & centre of gravity. If required, this information is indicated on the package itself. Bind heavy packages with chains, belts & steel ropes after checking whether they are capable of sustaining the weight of the load, which is generally specified.

Moving the Equipment



All the following operations must be done with due care & caution without sudden movements

- Identify the attachment points for lifting the equipment.
- Prepare the gear unit for lifting by attaching straps, hooks, shackles etc... to its attachment points, or alternatively, use a pallet for moving the load. If using a crane, first lift it out of its packaging.
- If using a lift truck or pallet truck, remove the packaging & fit the truck's forks at the indicated positions
- First lift the load very slowly to check that it is stable.
- Move the equipment to the unloading area & lower it gently into position, taking care not to cause sudden oscillations while moving it.



Use the eye bolts in such a way that it manages the entire load in conjunction with centre of gravity.

Lifting



When lifting, use accessories such as eyebolts, snap hooks, screw clamps, straps, ropes, hoax etc. which are certified & adequate for the load.

The load must not be allowed to sway or oscillate by more than 15degree in any direction when being lifted. If the oscillation exceeds the limit, stop & repeat the lifting operation as instructed.

Storage

- Do not store the unit in excessively humid conditions or where it is exposed to the weather (do not store outdoors)
- Do not place the equipment directly on the ground
- Place the equipment on a stable base & make sure that it is not subjected to accidental displacements
- Store the packaged equipment in accordance with the instructions on the packaging itself
- If the equipment is stored for more than 6 months, fill the gear unit with lubricating oil & cover all machined external surfaces with a quality rust proofing product)
- Safety precautions to be taken when returning the equipment to service after storage
- The external surfaces must be thoroughly cleaned of all rust proofing products, contaminants & other impurities (use a standard commercial solvent). Do this outside any explosion hazard area.
- The solvent must not touch the seal rings as this can damage them & render them ineffective.
- If the oil or protective material used during storage is not compatible with the synthetic oil used during the machine's operation, the interior of the unit must be thoroughly cleaned before filling with the operating oil.

Installation Pre-requisites & Installation



The entire installation process must be planned based on the general design of the machine. The person authorised to do the work must, if necessary, implement a safety plan to safeguard all persons directly involved & rigorously apply all applicable legislation.

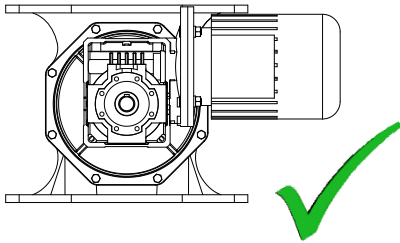
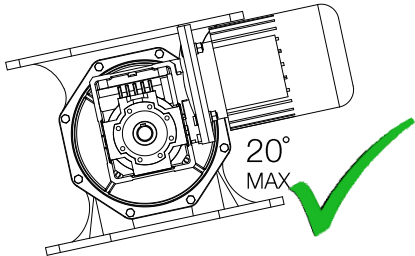
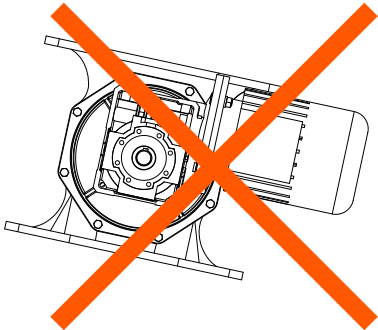
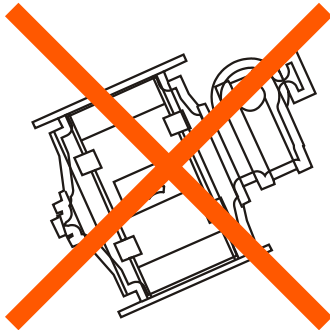
Installation Pre-requisites

- Thoroughly clean all packaging materials & protective product residue from the equipment if any.
- Check that the data on the nameplate corresponds to that which is specified on the order.
- Ensure that the structure to which the equipment is to be mounted is sufficiently robust & rigid to support its weight & operating stresses.
- For motor, kindly refer to the motor manufacturer instruction manual.
- Check that the machine on which the equipment is to be mounted is switched off & cannot be accidentally switched on.
- If the work environment is corrosive for the equipment, take the special precautions required for aggressive environments. In this case, contact us for sales service.

Installation

- Place the equipment in the vicinity of the installation area.
- Mount the equipment & secure it to the structure at the points provided. The equipment should be secured to the structure through all the mounting points on the mount specified (flange)
- **Preferred position:** It is best to install in a vertical position. An angle of up to 20degree can be used, providing shaft is in horizontal position & angle is in anti-clockwise direction (when viewed from drive end)
- **Bolting:** Ensure all bolting is right & valve is mounted securely to installation.
- **Cleanliness:** Ensure entry to valve is clean & no foreign objects are in the system that can feed into the valve.
- **Rotation Direction:** Rotor must rotate in a clockwise direction when viewed from the drive end.

Installation Drawing

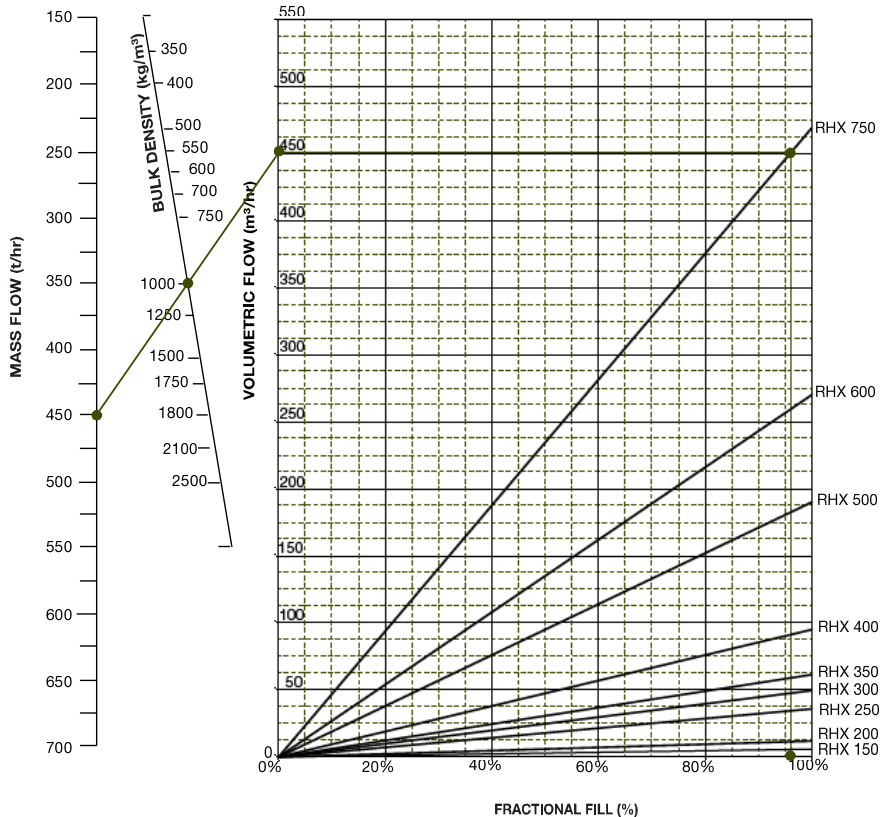
<p>HORIZONTAL Preferred Mounting Positions</p>	<p>TILTED ANTI CLOCKWISE FROM DRIVE END Acceptable</p>
	
<p>TILTED CLOCKWISE FROM DRIVE END Not recommended</p>	<p>SIDE TILTED WITH SHAFT ANGLED Not recommended</p>
	

Operation and Commissioning

- Speed has been set at the factory end based on the customer's requirement.
- In case of Chain drive (C) small variations in speed can be achieved by changing the sprocket.
- Valve's performance depends on the performance of the system where it is installed, thus any major deviation from the defined specification will call for complete investigation.
- Within the warranty period any dismantling of valves has to be carried out under the vigilance or guidance of the company's officials.

Model Selection Chart

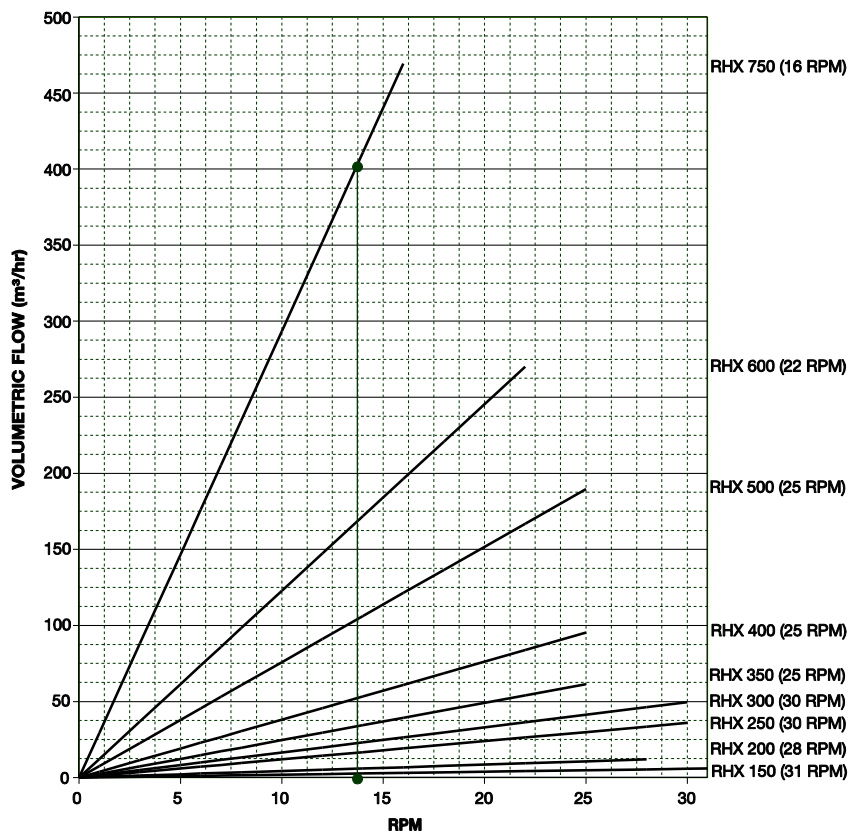
Capacity Chart



Example: A material with a bulk density of 1000(kg/m³) and required capacity of 450(t/hr) can be achieved by RHX750 at 96% filling capacity with 16 RPM.

Note: This chart is prepared for the guidance purpose only. Considering 31 RPM for RHX150, 28 RPM for RHX 200, 30 RPM for RHX 250/300, 25 RPM for RH400, 25 RPM for RHX500, 22 RPM for RHX 600 and 16 RPM for RHX 750.

Speed vs. Throughput



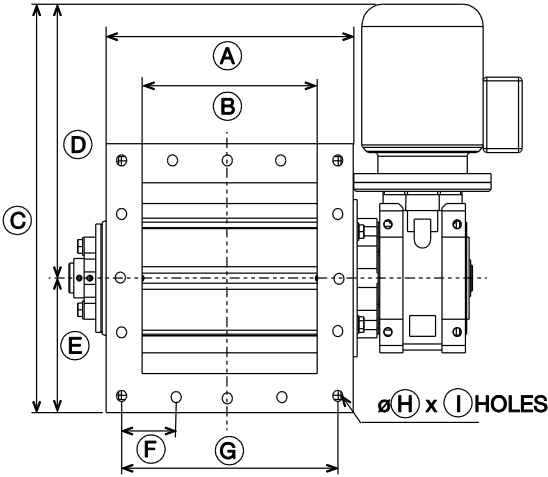
- 14 RPM default for Direct (D) and Chain (C) drive
- RPM not required for Bare shaft (B)

Note: This chart is prepared for guidance purpose only, considering 100% filling capacity.

Technical Information

Dimension Data – Direct Drive

TOP VIEW



SIDE VIEW

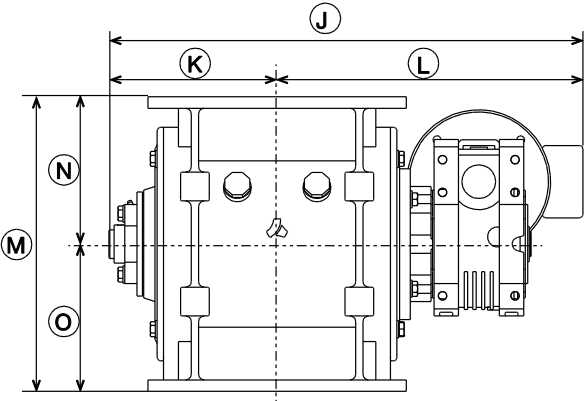


Table 1: Dimension Details for Direct Drive (D)

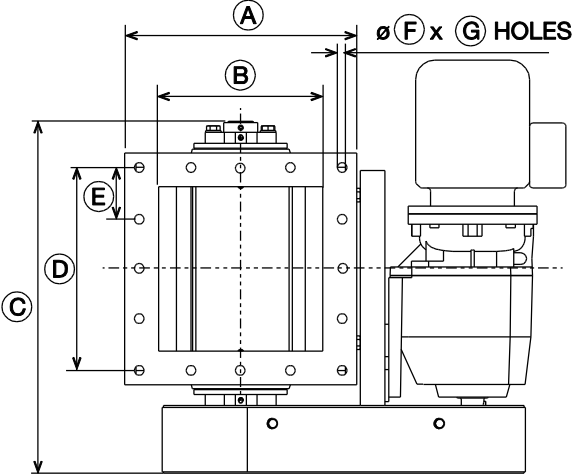
NAME	RHX150	RHX200	RHX250	RHX300	RHX350	RHX400	RHX500	RHX600	RHX750
A	□ 240	□ 300	□ 360	□ 430	□ 480	□ 530	□ 630	□ 760	□ 930
B	□ 150	□ 200	□ 250	□ 300	□ 350	□ 400	□ 500	□ 600	□ 750
C#	440	517	563	598	678	894	1026	1068	1309
D#	320	367	383	383	438	629	711	940	1050
E	120	150	180	215	240	265	315	380	465
F	70	85	105	94	106	94	114	100	108
G	210	255	315	376	424	470	570	700	864
H	12	14	15	15	15	15	15	18	18
I	12	12	12	16	16	20	20	28	32
J#	507	574	660	718	800	932	1089	1182	1376
K	150	190	232	250	290	325	375	457	465
L#	357	384	428	468	510	607	714	725	911
M	240	330	410	470	525	620	760	900	1120
N	120	165	205	235	262.5	310	380	450	560
O	120	165	205	235	262.5	310	380	450	560
Net Weight	50	84	146	183	255	400	650	1500	1750
Gross weight	65	105	165	210	280	430	685	1575	1820

All dimensions in mm, weight in Kgs.

Approximate dimension only. Varies with motor size and gear box variation.

Dimension Data – Chain Drive

TOP VIEW



SIDE VIEW ELEVATION

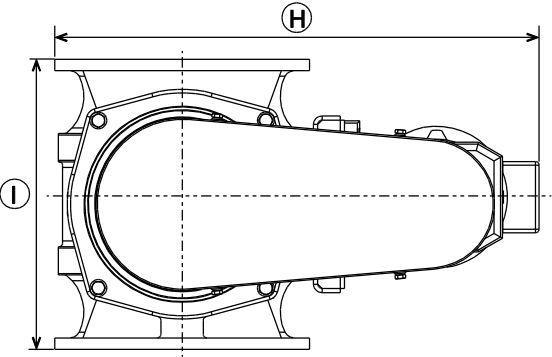


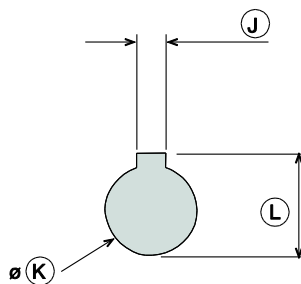
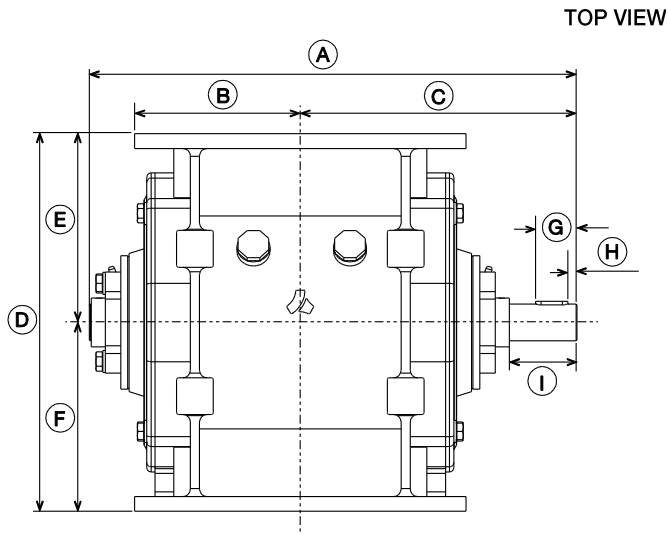
Table 2: Dimension Details for Chain Drive(C)

NAME	RH-X150	RH-X200	RH-X250	RH-X300	RH-X350	RH-X400	RH-X500	RH-X600	RH-X750
A	□240	□300	□360	□430	□480	□530	□630	□760	□ 930
B	□150	□200	□250	□300	□350	□400	□500	□600	□ 750
C [#]	350	452	546	616	650	754	925	1110	1208
D	210	255	315	376	424	470	570	700	864
E	70	85	105	94	106	94	114	100	108
F	12	14	15	15	15	15	15	18	18
G	12	12	12	16	16	20	20	28	32
H [#]	451	600	617	710	750	846	980	1195	1452
I	240	330	410	470	525	620	760	900	1120
Net Weight	68	102	164	214	340	400	608	1343	1600
Gross weight	85	122	186	237	365	428	636	1400	1690

All dimensions in mm, weight in Kgs.

Approximate dimension only. Varies with motor size and gear box variation.

Dimension Data – Bare Shaft



**DRIVEN SHAFT SECTION
(BARE SHAFT)**

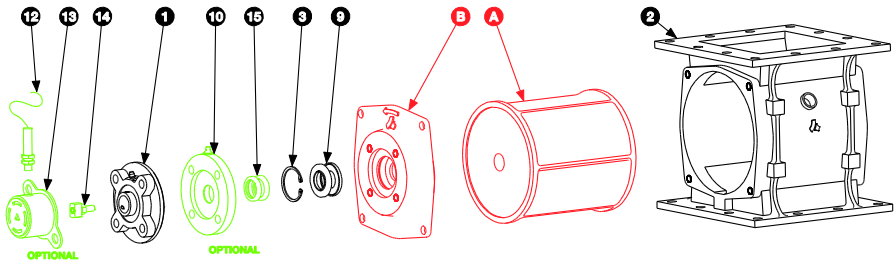
Table 3: Dimension Details for Bare Shaft (B)

NAME	RHX150	RHX200	RHX250	RHX300	RHX350	RHX400	RHX500	RHX600	RHX750
A	375	437	530	590	630	730	870	1025	1125
B	150	150	180	215	290	265	315	380	465
C	225	260	300	331	350	396	455	505	660
D	240	330	410	470	525	620	760	900	1120
E	120	165	205	235	262.5	310	380	450	560
F	120	165	205	235	262.5	310	380	450	560
G	30	35	45	45	65	55	50	75	50
H	5	5	10	10	5	5	10	10	5
I	60	60	75	75	72	77	51	55	75
J	8	8	12	12	14	14	18	18	20
K	25	30	40	40	45	50	60	60	70
L	28.3	33.3	43.3	43.3	48.3	53.3	63.3	63.3	74.9
Net Weight	35	61	116	161	210	331	513	1200	1500
Gross weight	43	70	128	173	225	350	536	1255	1560

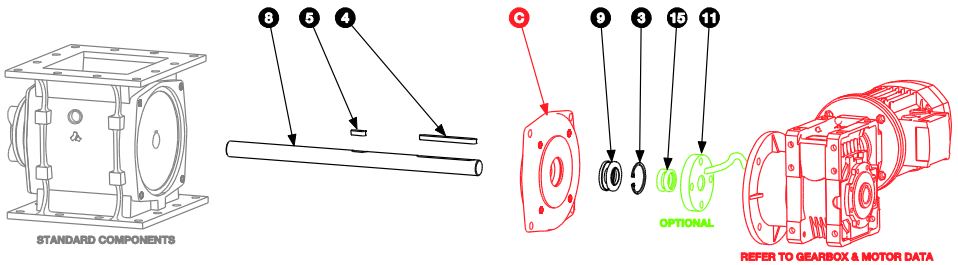
All dimensions in mm, weight in Kgs.

Approximate dimension only.

Standard Component Information:



Direct Drive (D) Component Information:



Bare Shaft (B) Component Information:

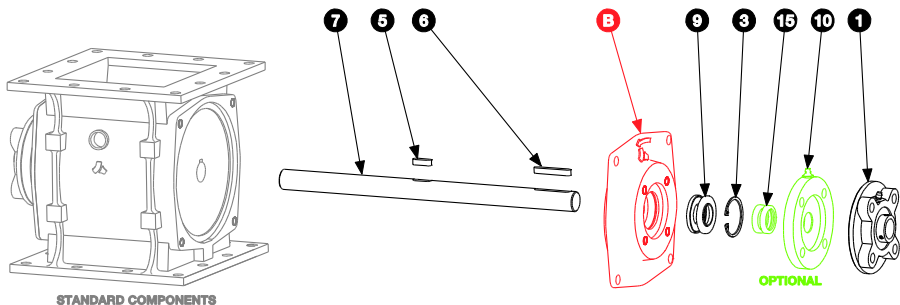


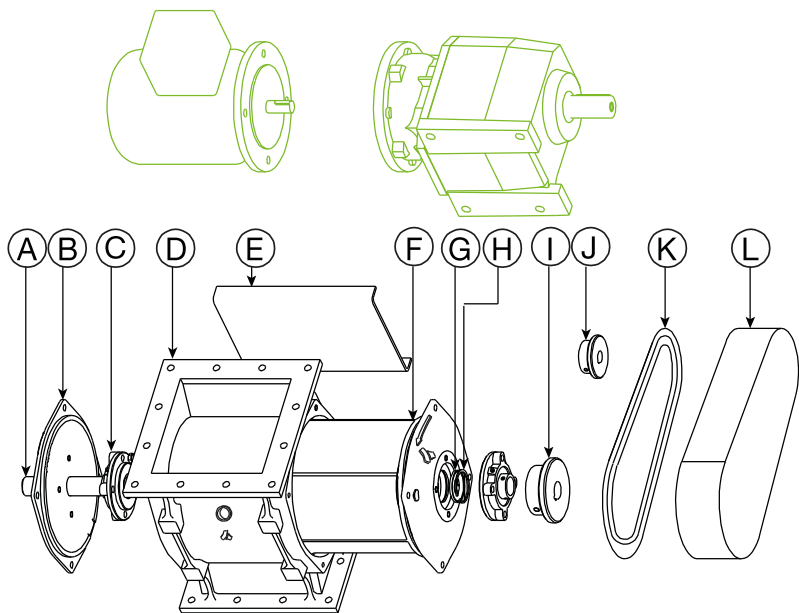
Table 4: Direct Drive (D) and Bare Shaft (B) Component Details

NAME DESCRIPTION	RHX150		RHX200		RHX250		RHX300		RHX350		RHX400		RHX500		RHX600		RHX750	
	D	B	D	B	D	B	D	B	D	B	D	B	D	B	D	B	D	B
1 BEARING CARTRIDGE ASSEMBLY	100-7643	100-7156	100-6922	100-6922	101-3668	100-4140	100-1003	100-1003	103-2464									
	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2
2 BODY	100-7698	101-3435	101-3792	101-3792	101-3975	101-3975	101-3994	101-4041	101-4467	101-4479	103-2485							
	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
3 CIRCLIP	100-8214	100-8778	101-1786	101-1786	100-7362	100-6310	100-7463	100-7463	100-6297									
	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
4 KEY (GEARBOX)	100-6751	101-3912	101-3963	101-3963	101-1679	100-2202	101-4527	101-4527	101-4527	101-4527	102-4410							
	1 0	1 0	1 0	1 0	1 0	1 0	2 0	2 0	2 0	2 0	2 0	2 0	2 0	2 0	2 0	2 0	2 0	2 0
5 KEY (ROTOR)	101-3724	101-2591	101-3962	101-3962	101-3979	101-3993	100-2202	101-4527	101-4527	101-4527	-							
	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 0	1 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
6 KEY (SPROCKET)	101-3724	101-2591	101-3962	101-3962	101-3962	100-2201	102-0739	100-9732	101-4527	101-4527	103-2635							
	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1
7 SHAFT (BARE DRIVE (B))	103-0748	102-1074	102-9504	102-9515	102-9518	102-9531	102-9673	103-0765	-									
	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1
8 SHAFT (DIRECT DRIVE (D))	101-3723	102-0533	101-3915	101-3978	101-3992	101-4036	101-4465	101-4478	-									
	1 0	1 0	1 0	1 0	1 0	1 0	1 0	1 0	1 0	1 0	1 0	1 0	1 0	1 0	1 0	1 0	1 0	1 0
9 LABRYNTH SEAL	100-6826	100-4177	100-6828	100-6828	100-6112	100-6288	100-5723	100-5723	103-2467									
	4 4	4 4	4 4	4 4	4 4	4 4	4 4	4 4	4 4	4 4	6 6	6 6	6 6	6 6	6 6	6 6	6 6	6 6
10 GAS PURGE(A) BEARING SIDE SEAL*	101-9892	103-0785	102-0032	102-0032	103-0787	103-0791	102-4380	103-0808	103-2584									
	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
10 GREASE PURGE(G) BEARING SIDE SEAL*	103-0783	101-9944	101-9969	101-9969	102-0075	101-9218	103-0789	103-0806	103-2583									
	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
11 GAS PURGE(A) DRIVE SIDE SEAL*	101-9893	103-0786	102-0876	102-0876	103-0788	103-0792	103-0803	103-0807	103-2586									
	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
11 GREASE (G) PURGE DRIVE SIDE SEAL*	103-0784	101-9947	101-9972	101-9972	102-0078	103-0790	103-0804	103-0805	103-2587									
	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
12 UNDERSPEED SENSOR*	103-0904	103-0904	103-0904	103-0904	103-0904	103-0904	103-0905	103-0905	103-0905									
	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
13 UNDERSPEED SENSOR BRACKET*	101-7377	102-0903	101-5931	101-5931	101-1493	101-1493	102-4801	102-4801	103-2580									
	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
14 UNDERSPEED SENSOR TARGET*	101-7376	102-0924	101-5935	101-5935	101-0403	101-0403	102-4810	102-4810	103-2581									
	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
15 VITON SEAL *	101-9895	101-9946	101-9971	101-9971	101-3186	101-6977	102-4394	102-4394	102-9262									
	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
A ROTOR *	101-3722	101-3909	101-3795	101-3977	101-3999	101-4044	103-0795	103-0796	103-2382									
	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
B BEARING SIDE PLATE	101-3717	101-3463	101-3793	101-3976	101-3995	101-4042	101-4468	101-4480	103-2564									
	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2
C DRIVE SIDE PLATE	101-3726	101-3700	101-3794	101-3981	101-3998	101-4043	101-4469	101-4481	103-2567									
	1 0	1 0	1 0	1 0	1 0	1 0	1 0	1 0	1 0	1 0	1 0	1 0	1 0	1 0	1 0	1 0	1 0	1 0

* Optional Component.

D = Direct Drive Quantity, B = Bare Shaft Quantity

Chain Drive (C) Component Information:



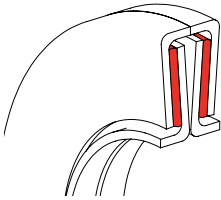
CHAIN DRIVE (C) COMPONENTS

Table 5: Chain Drive (C) Component Information

NAME DESCRIPTION	RHX 150	RHX 200	RHX 250	RHX 300	RHX 350	RHX 400	RHX 500	RHX 600	RHX 750
	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity
A SHAFT	103-0748 1	102-1074 1	102-9504 1	102-9515 1	102-9518 1	102-9531 1	102-9673 1	103-0765 1	- 0
B BEARING SIDE PLATE	101-3717 2	101-3463 2	101-3793 2	101-3976 2	101-3995 2	101-4042 2	101-4468 2	101-4480 2	103-2564 2
C BEARING	100-7643 2	100-7156 2	100-6922 2	100-6922 2	101-3668 2	101-4140 2	100-1003 2	100-1003 2	103-2464 2
D BODY	100-7698 1	101-3435 1	101-3792 1	101-3975 1	101-3994 1	101-4041 1	101-4467 1	101-4479 1	103-2485 1
E GEARBOX BRACKET	103-0739 1	102-0459 1	102-9506 1	102-9514 1	102-9519 1	102-9533 1	102-9677 1	103-0754 1	103-2578 1
F ROTOR	101-3722 1	101-3909 1	101-3795 1	101-3977 1	101-3999 1	101-4044 1	102-9672 1	103-0802 1	103-2395 1
G LABRYNTH SEAL	100-6826 4	100-6827 4	100-6828 4	100-6828 4	100-6112 4	100-6288 4	100-5723 4	100-5723 6	103-2467 6
H CIRCLIP	100-8214 2	100-8778 2	101-1786 2	101-1786 2	100-7362 2	100-6310 2	100-7463 2	100-7463 2	100-6297 2
I DRIVEN SPROCKET	103-0749 1	102-0470 1	102-0911 1	102-0911 1	102-4861 1	102-9535 1	102-5359 1	102-5359 1	103-2573 1
J DRIVE SPROCKET	103-0750 1	100-6739 1	102-9505 1	102-9505 1	102-9523 1	102-9536 1	102-9536 1	103-0762 1	101-9111 1
K CHAIN	103-0752 1	102-0471 1	102-0909 1	102-9516 1	1024873 1	102-9539 1	102-9688 1	103-0763 1	103-2638 1
L CHAIN GUARD	103-0738 1	102-0464 1	102-0916 1	101-6346 1	102-4867 1	101-9024 1	102-9681 1	103-0759 1	103-2611 1

* Optional Component.

Anval Standard - Sealing



The Labyrinth seal, which is a mechanical seal that fits around the axle or shaft to prevent the leakage of any particles.

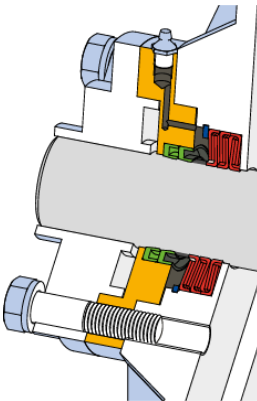
Generally, a Labyrinth seal is composed of many threads or grooves that are tightly fit inside the casing, thus making difficult for the dust to pass through a long and difficult path.

Labyrinth seals on rotating shafts provide a non-contact sealing action by controlling the passage of particles through a variety of chambers by centrifugal motion, as well as by the formation of controlled material vortices.

'Double labyrinth Seals' fitted with flock pads, greased on each side of the valve, are standard with all rotary valves.

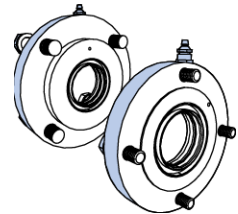
- Longer life span
- Sealing not on the shaft
- No adjustments

Purge Sealing



Grease Purge (G) Sealing

For extreme duty, valves can be fitted with a grease purge unit over the labyrinth seal. By creating a grease filled cavity between the seals, it prevents the escape of any dust particles or gases.

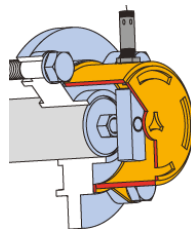


Air Purge (A) Sealing

When grease cannot be used, air or other gases can be used to purge the seal so all dust particles or product cases are flushed back into the product stream.

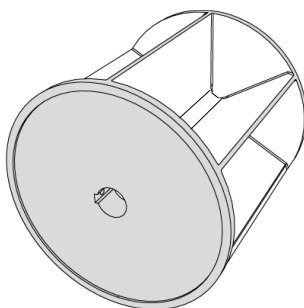
Under Speed Sensors (P)

Under speed sensors can be supplied and fitted to RHX Series valves. These are mounted on a specifically designed bracket that is bolted onto the bearing.



Rotor Configurations

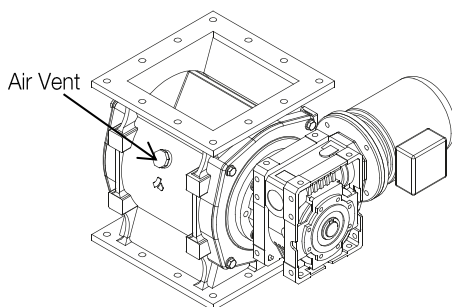
The standard RHX Series rotor is closed, which has the least amount of potential wear. Open rotor, Reduced Pocket, Scalloped Rotor fabricated can be provided where required.



Typical Closed Rotor

Air Vent / Cleaning

Air vent is available for RHX rotary valve to release the gas leakage when feeding a positive pressure system.



Testing & Using the Valve

The equipment has been factory tested by the manufacturer. Please contact us for further information regarding ANVAL's testing processes.

Before starting the equipment, check that

- The machine incorporating the equipment complies with the provisions of the ATEX Directive 2014/34/EU & any other applicable safety legislation.
- The equipment's mounting position in the installation corresponds to that prescribed & indicated in installation drawing.
- The electrical power supply & control systems are suitable & operational as stipulated in standard & grounded as per standard EN ISO 80079-36 & EN ISO 80079-37.
- The motor power supply corresponds to that prescribed & is within +/-5% of the rated valve.
- The motor is examined for the direction of rotation & if it runs the other way, it is to be recalibrated by a trained person
- The oil level in the gear unit is as prescribed & that there are no leaks from the caps or gaskets



Before putting the equipment into service, the user must ensure that the plant in which it is installed complies with all applicable directives, especially those regarding health & safety in the work place.



Cover the opening with a safety closure while testing the valve as per safety standard. Also ensure that the valve is never left unattended during the course of testing

Maintenance



Maintenance & replacement work must be carried out by authorized person, maintenance technicians trained in the observance of applicable laws on health & safety at work & the special ambient problems attendant on the installation.



Before doing any work on the unit, the operator must first switch off the power to the equipment & ensure that it is out of service, as well as taking all necessary precautions against it being accidentally switch on again or its parts moving without warning.

Furthermore all additional environmental safety precautions must be taken into account (e.g. elimination of residual gas or dust, etc.)

- Before doing any maintenance work, activate all safety equipment and, if necessary, inform persons working in the vicinity. In particular, mark off the area around the unit & prevent access to any equipment which, if activated, might be the cause of unexpected health & safety hazards.
- Replace worn components with original spare parts only.
- Use the lubricants recommended by the manufacturer
- When working on the gear unit always replace gaskets & seals with new original ones
- If a gear unit bearing requires replacement, it is a good practice to also replace the other bearing supporting the same shaft.
- We recommend replacing the lubricating oil after all maintenance work.

The above instructions are aimed at ensuring efficient & safe operation of the gear unit.

The manufacturer declines all liability for injury & damage to components due the use of non-original spare-parts & non-routine work which modifies the safety requirements without prior authorisation of the manufacturer.



Do not dump polluting liquids, worn parts & maintenance waste into the environment. Dispose of all such materials as stipulated by applicable legislation.

Routine Maintenance



Before working on the valve, Isolate and Disconnect the electrical supply.

The following must be checked and adjusted as necessary;

Shaft Seals

- Check and replace the shaft seals annually.

Drive Sprockets and Chain

- Check and adjust the chain drive tension quarterly.
- Before replacing the chain, examine the sprocket teeth for signs of wear and renew if necessary.
- When replacing the sprockets and drive chain ensure the sprockets are correctly aligned and the chain tension is correct.

Bearings

Standard bearing used across the RHX series are greased packed, sealed for life and maintenance free. Even though they should be checked every 3 months and grease needs to be purged weekly.

When replacing the bearings, use manufacturer recommended replacement parts only. Other bearings may fit, but will not function properly. If the bearings are removed from the airlock for any reason, they must be replaced, not reinstalled.

Geared Motors

Maintain the geared motors as described in manufacturer's instructions.

Grease Purge

Greasing needs be done every month.

Gas Purge

Inert gas to be used for cleaning the product blocked in the labyrinth seals and need to be purged every month.



It is recommended that the complete rotary valve be dismantled for cleaning, inspection and overhaul as necessary at regular intervals. The intervals between such routine overhauls will vary with the product being handled and the operating time. To a larger degree the rate of wear for a particular application would be assessed by practical experience.

Lubrication

Gearbox Lubrication

Maintain or change oil as per the Gear box instruction manual.



If a leak is found, identify the cause of the fault, repair it & refill with lubricant before operating the equipment

Most Commonly used Gearbox Oil

As per the manufacturers recommendation, Shell Tivela S320 or Shell (Tivela Oil SC320) , Kluber (Klubersynth GH 6 320), Aral (Degol GS 320), Total (Carter SY 320), IP (Telium Oil VSF 320 oAgip), Caltex (EP320) & Mobil (Glygoyle HE 320 or equivalent long-life synthetic lubricant to be used.

- Maintain required level and change if oil it is contaminated.

Bearing Lubrication

- Normal Temperature : Multipurpose grease (Monthly)
- High Temperature : Moly based grease (Monthly)

Grease Purge Lubrication (G)

- Normal Temperature : Multipurpose grease (Monthly)
- High Temperature : Moly based grease (Monthly)

Checking Efficiency

- Remove dust deposits on the surface of the equipment & its parts
- Check that noise at constant load does not vary. Excessive vibration or noise can indicate wear of the gear train or failure of a bearing
- Check the power absorption, voltage against the nominal values & any lubricant leaks
- Check all bolted couplings for wear, deformation or corrosion & tighten them down fully without over tightening
- Check the clearance for wear against the original with a feeler gauge

Maintenance Schedule

Maintenance routine statements are prescribed in the table format for easy care.

SL. NO.	DESCRIPTION	WEEKLY	MONTHLY	QUARTERLY	HALF YEARLY	ANNUALLY
1	Shaft Seals					R
2	Greasing on Bearings	L				
3	Grease Packing on Bearings			R		
4	Grease Purging		L			
5	Gas Purging		C & L			
6	Chain Drive Tension			C ,A & L		
7	Drive & Driven Sprockets			C & L		
8	Dust deposits on Gear Box & Motor		C			
9	Tightening of Fasteners		I			
10	Clean Material in Rotor Through Vent Plug *				C	
11	Gearbox Oil Change	As per Manufacturer's Instruction.				

* Based on application & Material used.

ABBREVIATION	DESCRIPTION
I	Inspect & Correct or Replace if necessary
R	Replace or Change
L	Lubricate
C	Clean
A	Adjust

Surface Cleaning

Clean all dust & process waste off the equipment. Do not use solvents or other products which are incompatible with the construction material and do not direct high-pressure jets of water at the gear unit.



If the equipment is to be painted, tape the nameplate & running parts to prevent contact with solvent.

Replacing & Scrapping

Replacing Parts

- Do not hesitate to replace parts and/or components if they are not able to guarantee safe and reliable operation.
- Never improvise repairs
- The use of non-original spare parts not only voids the warranty but can compromise gear unit operation.

Spare Parts Reordering

For RS Series, following spare parts can be reordered

- SHAFT SEAL KIT – Needs 2 kit for a valve
 - Shaft seal kit includes, Labyrinth Seal, Spacer ring, Oil Seal, and Internal Circlip
- SHAFT KIT – Needs 1 kit for a valve
 - Shaft Kit, includes shaft with keys.
- BEARING KIT - For Direct drive needs 1 kit; For Chain drive needs 2 kit
 - Bearing kit includes, Bearings.
- OTHERS – Please check the part list details available in Page. Number. 28 & 29 and or Check with GAD if any.

Kindly send your query or clarifications to info@anval.net.

NOTE: On ordering the items, please mention the valve serial number available in the product name plate.



Do not attempt to re-use parts or components which appear to be in good condition after they have been checked and/or replaced by qualified personnel and declared unsuitable for use.

Scrapping the Equipment

- This must only be done by operators trained in the observance of applicable laws on health & safety in the workplace.
- Dispose of all such materials as stipulated by applicable environmental protection legislation.
- Do not dump non-biodegradable products, lubricants & non-ferrous materials (rubber, PVC, resins, etc.) into the environment.

Troubleshooting

The table below provides information on common problems, causes & solutions relevant to the piece of equipment.

Problem	Cause	Solution
Motor Stalls	Foreign or large object jammed between rotor & body	Object needs to be removed. Reverse the motor for few seconds so that object may re-arrange itself & fall through
	Product size too large , lumpy or stringy with valve running at 100% full	Increase the valve speed so that rotor pockets are only partially full allowing larger objects to pass
	Electric overload set too low	Reset
Air Leaks Past Rotor	Excessive pressure downstream due to blockage or design fault	Check & make necessary changes
	Rotor damaged	Check & replace if necessary
	O-ring or packed silicon damaged.	Check & replace if necessary
Excessive Equipment Noise	Rotor moved to side or foreign body caught in rotor	Re-adjust rotor or remove foreign body
Seal Leakage	Seal damaged	Replace seal
	Pressure too high for standard seal	Fit grease purge seal
	Circlip not in place, allowing seal to move	Check Circlip and refit if necessary
Minimal or No Product Discharge	Rotor clogged up due to sticky material	Check through inspection opening & clean if necessary.
	Failure of part of the drive train	Check out & replace faulty component
Abnormal Noise at Gear unit Mounting	Mounting bolts loose	Tighten down to specified torque
	Mounting bolts worn	Replace bolts

Gear unit Oil Leaks	Oil level too high	Check oil level and make necessary changes
	Casing/Coupling seals inadequate	Contact authorised workshop
	Gaskets worn	Contact authorised workshop
Gear unit doesn't run or runs with difficulty	Oil Viscosity too high	Replace oil
	Oil level too high	Check oil level for required changes
	Service load too high	Redesign drive for actual service load
Output shaft doesn't turn with motor running	Gears damaged	Contact authorised workshop

Notes

Disclaimer:

All drawings are conceptual only and are subject to change without notice at the discretion; Anval reserves the right to make additions, deletions and modifications to the drawings. Individual product dimensions indicated are approximate, may vary due to construction, and may vary from individual requirements indicated here within and may vary with actual construction.

E: info@anval.net

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PROJECT

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