

CENTRAL FANS – COLASIT LTD

Edition 04_13

INSTALLATION, OPERATION & MAINTENANCE MANUAL



Valid for the following ranges:-

CMVeco125 – CMVeco400

CMV63 – CMV1250

CMHV450 – CMHV1250

CPV630 – CPV1250

BCV125 – BCV500

BI125G – B315N

CHVK63 – CHVK160

CHVS63 – CHVS250

CHVN315 – CHVN1250

FC125 – FC400

SV range

CHV High Pressure Range (use CHVS range)

INSTALLATION, OPERATION & MAINTENANCE MANUAL

Central Fans – Colasit Ltd

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1. Safety Instructions

Introduction – As with all rotating machinery and equipment great care must be taken when carrying out the following procedures:-

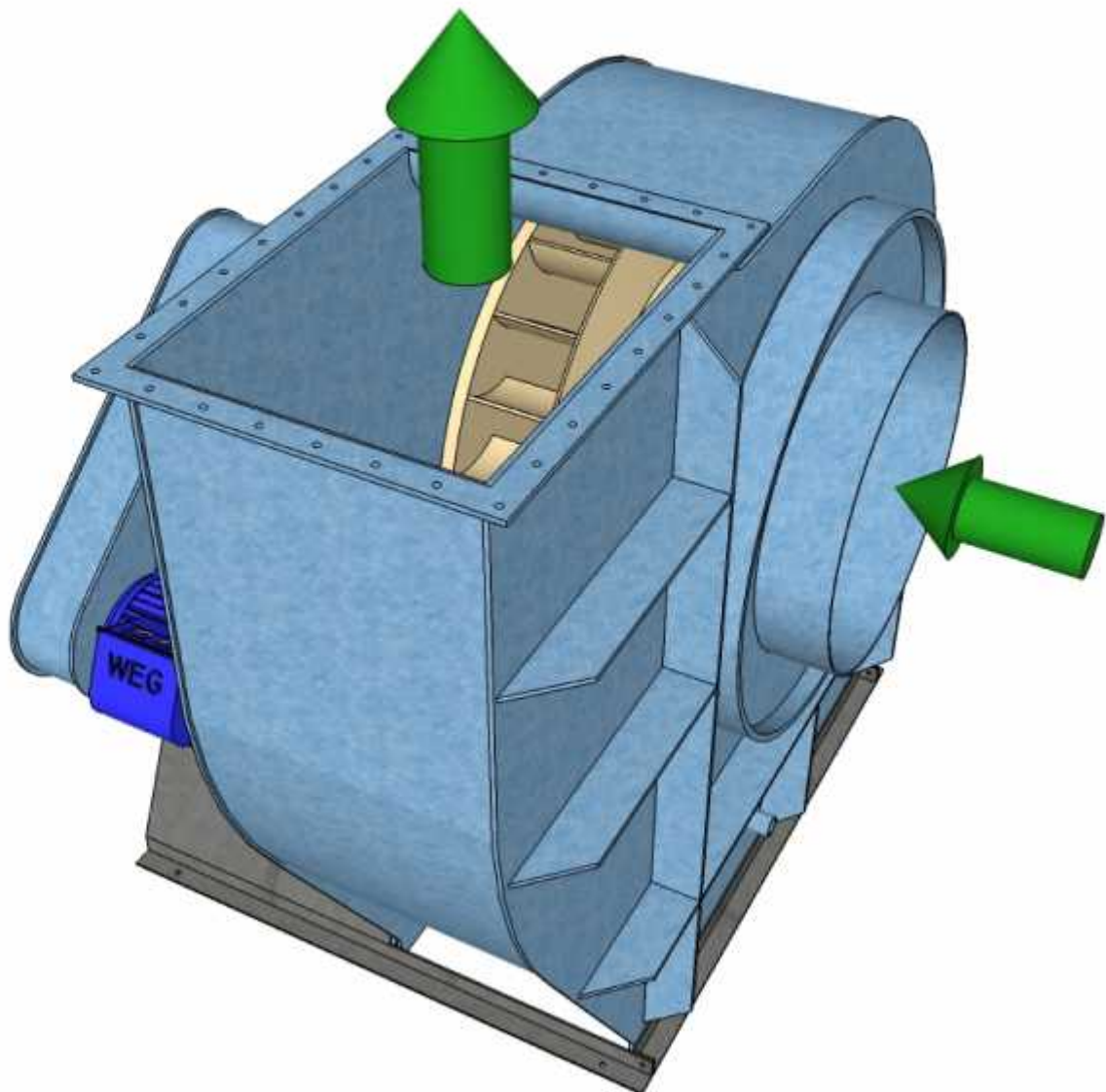
1. When off loading the fan unit use ONLY the lifting points provided, these will be shown on the general arrangement drawing, NEVER lift the fan by its shaft, casing or motor eye bolt, if unloading with a fork lift truck ensure you lift from the drive guard end only, take care to position the fan so it doesn't topple off the forks, in some cases extended forks may be required. (Ensure they are safe to use).
2. After the fan has been connected to the appropriate electrical supply (see motor plate) by an approved contractor / electrician the fan can be started for a few seconds only to check impeller rotation is correct, (keep all objects & hands clear of the inlet / outlet), this is indicated by the direction arrows on the fan & motor, if incorrect change wiring accordingly.
3. After the fan has been installed and before any ductwork or other connections are made, check for any foreign matter of any description within the fan casing, if present remove it immediately or this could cause damage to the fan impeller, in the worst case this could cause complete destruction of the impeller, this could cause serious injury to anyone near to the fan (Check ductwork at the same time).
4. Never operate the fan in a free inlet / outlet mode for more than a few seconds especially on high pressure fan units as this may cause motor overload / burnout, if this occurs the motor will require replacement which is not covered by our warranty.
5. Always check the current when running against the motor full load current stamped on the motor rating plate to ensure there is no overload, if fan is overloading stop fan and contact our Technical Department immediately for advice.
6. We recommend that all fans which are openly accessible be protected with a scatter shield around the fan casing, this is to protect anyone from flying debris should the impeller fail.
7. All fans which are to be used with a free inlet or outlet must be fitted with a mesh guard.
8. During any maintenance of any kind the fan / motor must be isolated from the electrical supply before any work is carried out.
9. To avoid overheating of the plastic components a minimum air velocity of 5m/s must be maintained.
- 10. All fans fitted with motors over 7.5 kW must be started by means of a Star-Delta starter or inverter only.....not direct on-line.**

IF IN ANY DOUBT CHECK FIRST

Don't put yourself or others at risk by ignoring the information contained with this manual.

2. Description

A fan is defined as a rotary bladed machine for moving a continuous flow of air and has a rotating impeller carrying a number of blades, these blades exert force on the air thereby maintaining flow, the fan shown below is a Centrifugal type fan unit, the air enters the impeller through the fan inlet, turns through 90° and then progresses radially outwards between the blades, exiting the fan casing through the discharge.



3. Installation

Introduction – Correct installation, operation and maintenance is essential to obtain the most efficient, dependable performance from your equipment, the following instructions are intended to assist you in installing, operating and maintaining the fan unit supplied by Central Fans – Colasit Ltd, reducing down time and lowering expenditure on repairs and replacements.

Handling

1. The equipment should always be handled carefully to prevent damage, our fans are normally despatched fully assembled and manufactured using Thermoplastic materials that can be easily damaged especially in cold conditions, therefore it is particularly important to avoid dropping or jarring these units.
2. All our fans are supplied with lifting lugs or points from which any lifting should be carried out, these are positioned to reduce straining of the unit to a minimum, should the fan unit be dropped or damaged it must be checked and if found necessary inspected by one of our engineers before being installed or operated.

Installation

1. Reinforced concrete is recommended as the best type of foundation, the minimum weight of concrete should be twice the total weight of the fan unit, if the fan is to be mounted on steelwork then it must be well braced in all directions with the fan on AV mounts to prevent noise and vibration being transmitted through the steel supports, in the worst case this can cause damage to the steel structure.
2. All ductwork connected to our fans must be supported by separate means, under no circumstances should any ductwork, stacks, silencers etc be supported from our fans. Flexible connections are available and should be used to isolate the fan from the ductwork to prevent straining of the fan case, which if occurs could foul the impeller causing serious damage to the impeller.
3. Only qualified electricians to carry out connections / wiring to our fans, all connections must be suitable for the application and must be weatherproof to IP55 as a minimum, please note that the motor is supplied with temporary glands only to prevent foreign objects from entering the terminal box, these must be replaced with the above before connections are made. Motors are labelled as such before leaving the factory.
4. Before starting the fan double check that there are no foreign objects either in the casing or ductwork, otherwise when the fan is started this will be drawn into the fan causing complete destruction of the impeller putting yourself and others at risk of injury from flying debris.

Remember be safe, check first

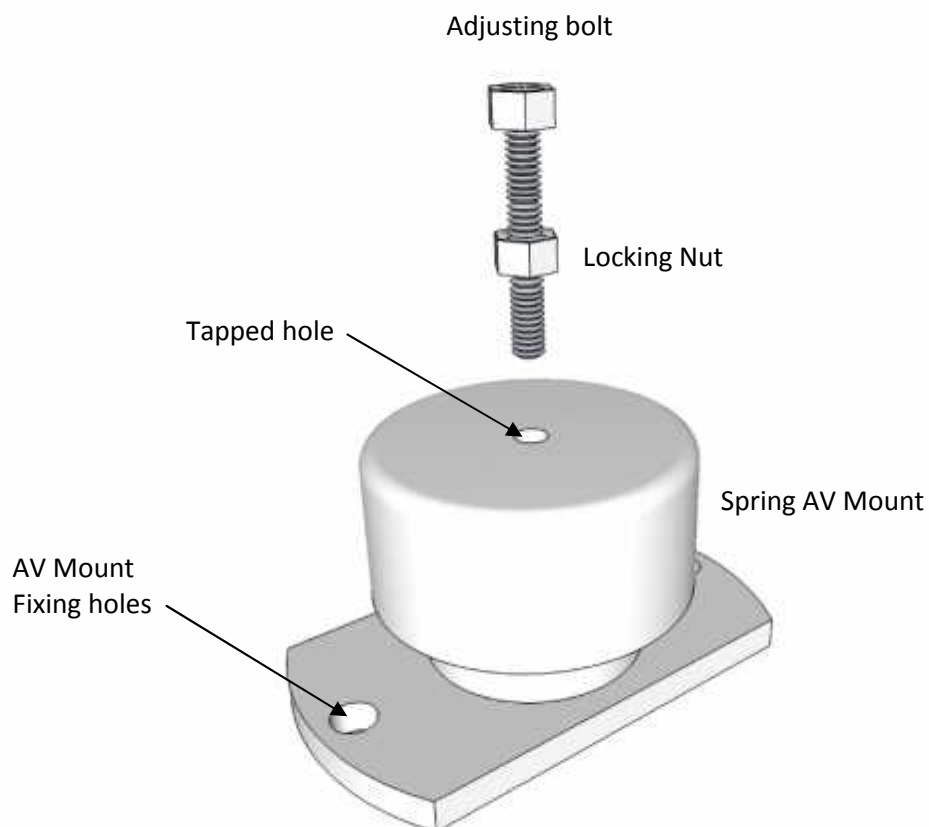
3. INSTALLATION

AV Mounts (spring type)

Instructions

Position the mount beneath the fan base to be installed lining up the holes in the base with the tapped holes in the top of the spring mount, insert the adjusting bolt completely with locking nut into the tapped hole in the AV mount until finger tight, when all mounts are in position tighten each adjusting bolt until all mounts are the same height, this will also level the fan unit, don't forget to tighten the locking nut onto the fan base to prevent the adjusting bolt becoming loose.

Note! Do not fix the mount to the floor or steel support before fixing to the fan base, as this may cause distortion of the mount if misaligned.



3. INSTALLATION

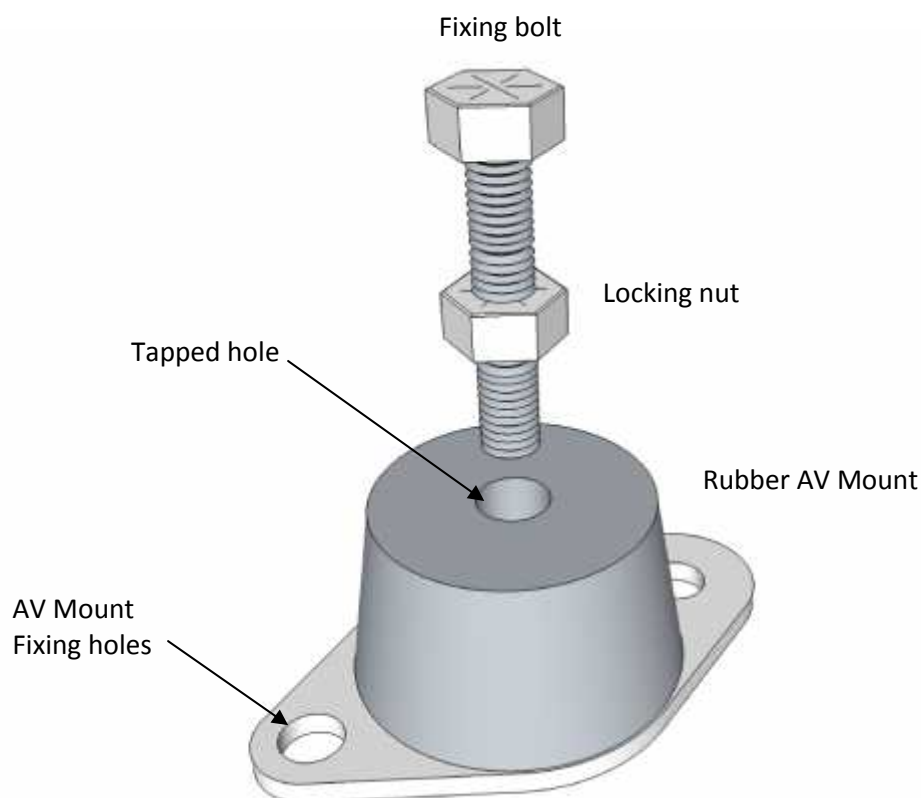
AV Mounts (rubber type)

Instructions

Position the mount beneath the fan base to be installed, line up the holes in the fan base with the tapped hole in the top of the mount and inset the fixing bolt into the mount and fully tighten, the locking nut should then be tightened to prevent mount becoming loose.

Each mount can now be fixed into position as further adjustment is not required.

Note! Do not fix the mount to floor or steelwork before fixing to fan unit as this may cause distortion of the mount.



4. OPERATING INSTRUCTIONS

1. Install fan unit on a rigid, level foundation, if installing on a support steelwork this must be well braced in all directions with the fan mounted on AV mounts (see section 3), this is vital for a smooth trouble free operation.
2. Connect the motor(s) to an appropriate power supply as per the wiring instructions (section 7.3) of this manual. Wiring instructions can also be found in / on the motor.
3. If the fan is inverter driven there is a recommended minimum speed / frequency of 25Hz on 2 pole (3000rpm) motors and 20Hz on 4 pole (1500rpm) motors.
4. If the fan unit is fitted with an earthing node this must be connected to an appropriate earthing system.
5. Start fan for a few seconds only to determine the rotation is correct (if not already done so), if incorrect change wiring as appropriate.
6. Check motor running current against the motor rating plate to ensure the motor is not overloading, if this is the case check wiring, rotation, voltage and system pressure drop (Δp), if fault cannot be found contact our Technical Department for further advice.
7. After the fan has been running for approx 30 mins, check that none of the bearings (V-Belt Drive models only) are running hot, i.e in excess of 85°C (185°F) at the housing surface.
8. After the fan has been running for 1 hour check belt tension (V-Belt Drive models only) and re-tension as per the instructions in section 5 of this manual, check again after 24 hours of running, please note further checks may be required depending on the fan usage i.e. heavy duty, two speed or high ambient temperatures.
9. Check once a week for the first month to ensure that there is no excessive loss of lubricant from the bearings, some loss may occur as normal.
10. Deposits on the impeller can lead to unbalanced running especially if some of these fall off when running, this will eventually damage the fan / motor bearings and could in severe cases cause impeller failure, therefore if the fan should start to vibrate investigate immediately and rectify.
11. After the above checks have been carried out the fan unit should only require an annual service, belt tensioning, greasing bearings and keep the motor vents clear of any debris.
12. All **ATEX** rated fans must be evaluated annually to conform to current regulations.

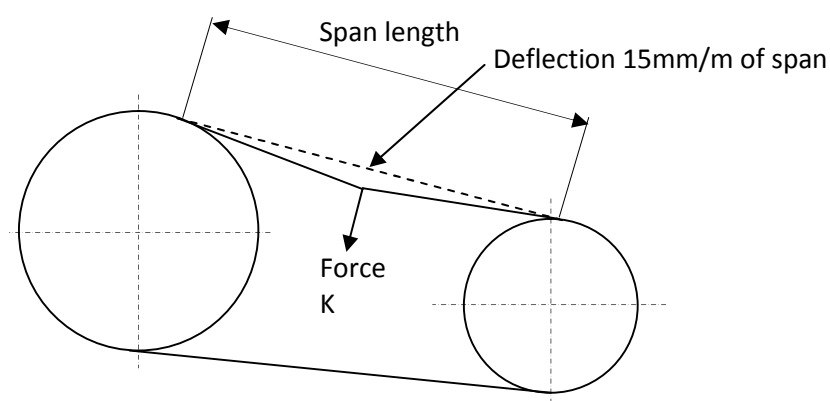
5. Maintenance – V-Belt Drives

Introduction

The V-Belt Drive fitted to the fan unit has been installed, tested and tensioned correctly before leaving our factory, it should be checked and re-tensioned after the first hour of running, and again after 24 hours of operation as the V-Belts will stretch under normal conditions before reaching their optimum length, further adjustment may be required (see section 4.8).

Belt adjustment must be carried out using the following procedures.

- Using the diagram below measure the span length of the drive.
- At the centre of the span apply a force K (perpendicular to the span) large enough to deflect the belt by 15mm per metre of span.
- The deflection force of any V-Belt Drive should be between the min & max figures shown in the table below.



Belt Cross Section	Small Pulley ϕ	K min (Kg)	K max (Kg)
SPZ	$\phi 63 - \phi 85$	1.5	2.0
	Above $\phi 85$	2.0	3.0
SPA	$\phi 90 - \phi 125$	3.5	4.5
	Above $\phi 125$	4.0	5.0
SPB	$\phi 140 - \phi 230$	4.0	5.5
	Above $\phi 230$	5.0	7.0
SPC	Above $\phi 224$	8.0	11.0

5. Maintenance – V-Belt Drives

The following procedures should be followed when replacing V-Belts:-

Fan types:-

CMV500 – CMV1250

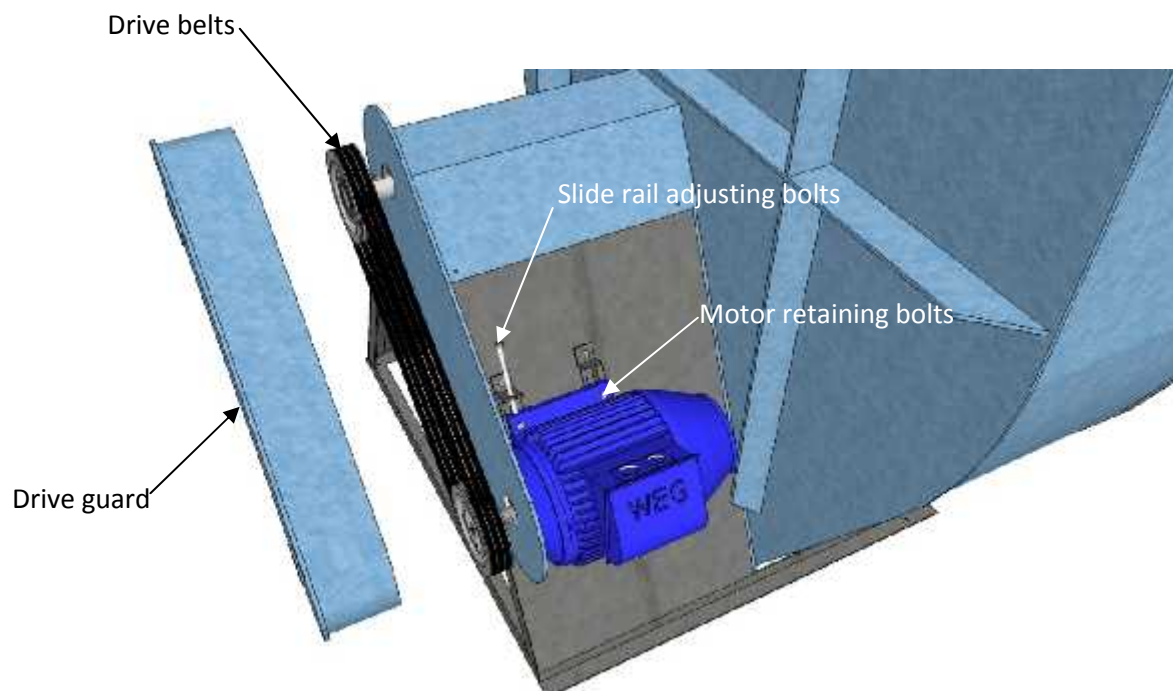
CMHV450 – CMHV1250

CHVN315 – CHVN1250

CPV630 - CPV1250

CHVS63 – CHVS250

1. Isolate fan unit from the power supply.
2. Remove drive guard.
3. Loosen motor retaining bolts and move motor towards the fan shaft by means of the slide rail adjusting bolts and remove old belts.
4. Place new belts into the pulley grooves, never lever them over the pulleys with a crowbar or screw driver as this may damage the belts or pulley rims causing premature failure of the new belts, always use the same type / size and ensure they are a matched set.
5. Tighten the belts by increasing the centre distance between the pulleys by using the slide rail adjusting bolts until the belts are taut.
6. Tension the belts as per the instructions in previous section; ensure the pulleys are still in alignment.
7. Replace all guards and ensure fixings bolts are tight.
8. Operate as normal remembering to adjust the belt tension as explained in the previous section.



5. Maintenance – V-Belt Drives

Fan types:-

CMVeco125 – CMVeco400

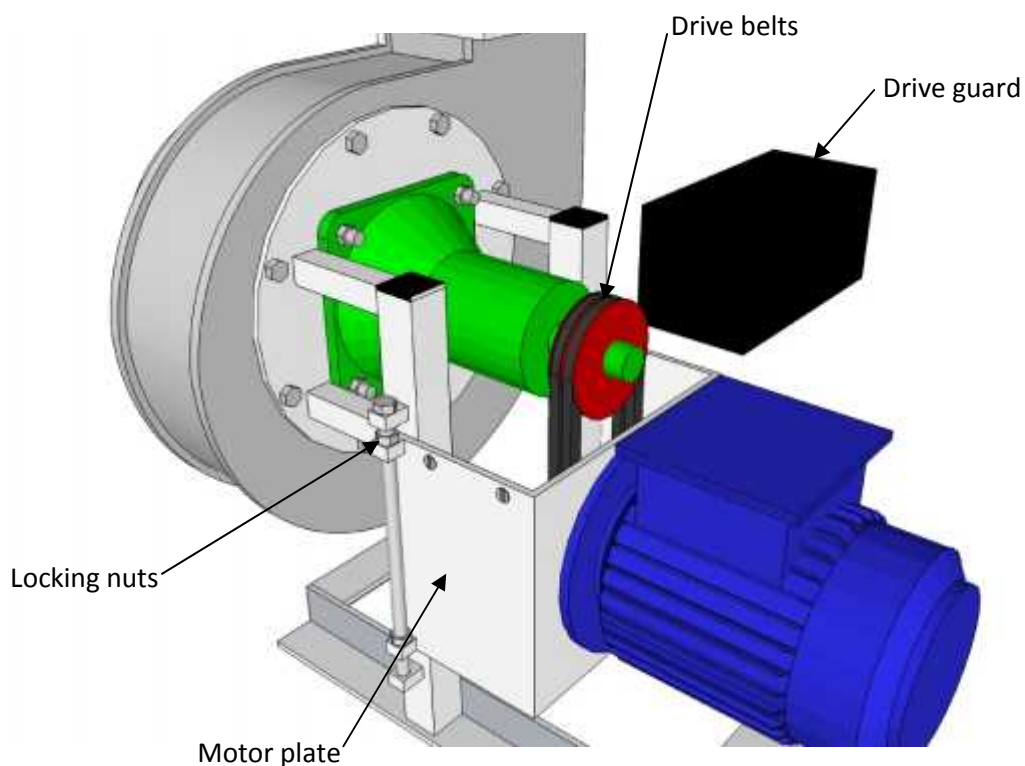
CMV450

BCV125 – BCV500

CHVK63 – CHVK160

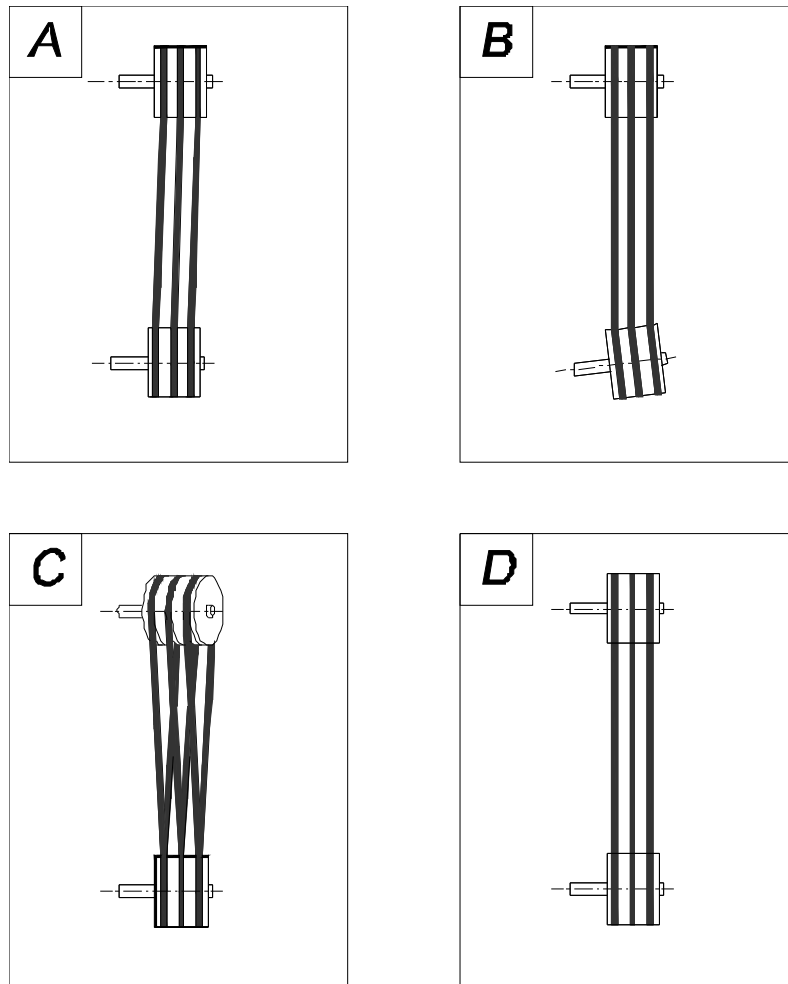
BI125G – BI315N

1. Isolate fan unit from power supply.
2. Remove guard.
3. Loosen the locking nuts from the adjusters on motor mounting plate and lift motor plate upwards and remove old belts.
4. Place new belts into the pulley grooves, never lever them over the pulleys with a crowbar or screw driver as this may damage the belts or pulley rims causing premature failure of the new belts, always use the same type / size and ensure they are a matched set.
5. Tighten the belts by tightening the locking nuts equally until taut.
6. Tension the belts as per the instructions in previous section; ensure the pulleys are still in alignment.
7. Replace all guards and ensure fixing bolts are tight.
8. Operate as normal remembering to adjust the belt tension as previously explained in previous section.



5. Maintenance – V-Belt Drives

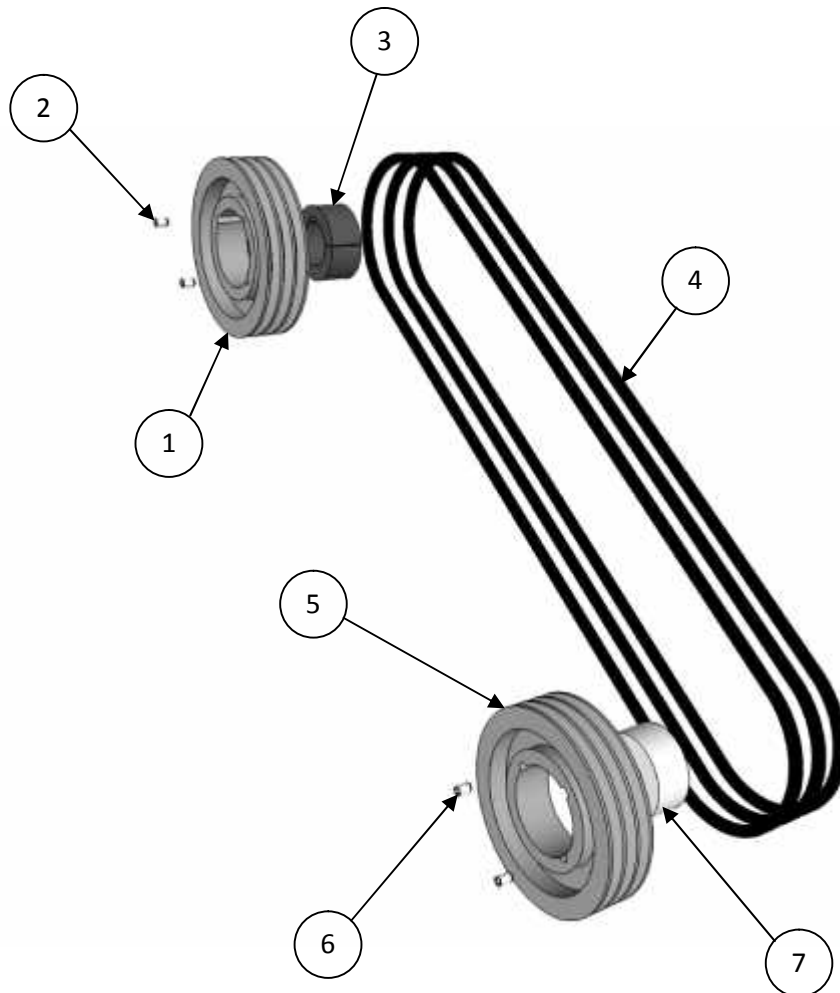
Misalignment examples:-



Misalignment type	Correction required
A - offset	Correct by moving either pulley along its shaft until aligned.
B - angled	Correct by resetting shafts parallel; ensure no deflection is taking place in the support steelwork or shafts.
C - angled	Shafts not in same plane, correct by resetting shafts in same plane.
D - correct	No adjustment necessary.

5. Maintenance – V-Belt Drives

V-Belt Drive assembly details



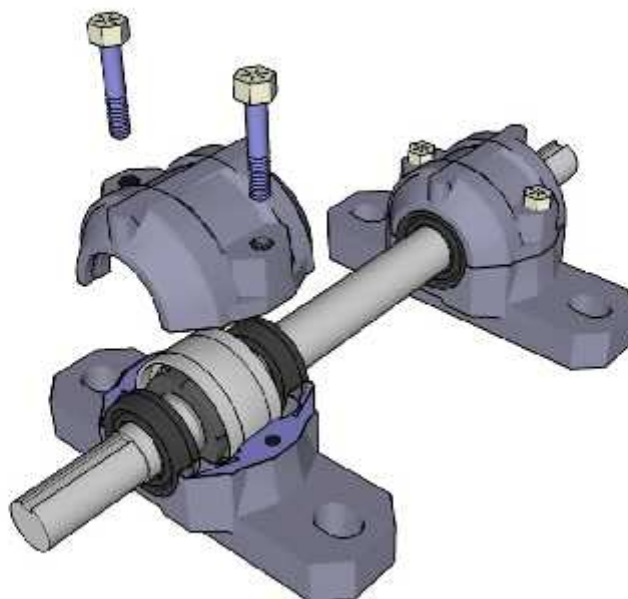
Part No	Part Description	Material	No Required
1	Fan pulley	Cast iron	1
2	Fan bush grub screws	Steel	2 – 3
3	Fan bush	Cast iron	1
4	V-Belts	Rubber	2 – 10
5	Motor pulley	Cast iron	1 – 2
6	Motor bush grub screws	Steel	2 – 6
7	Motor bush	Cast iron	1

6. Maintenance – Bearings

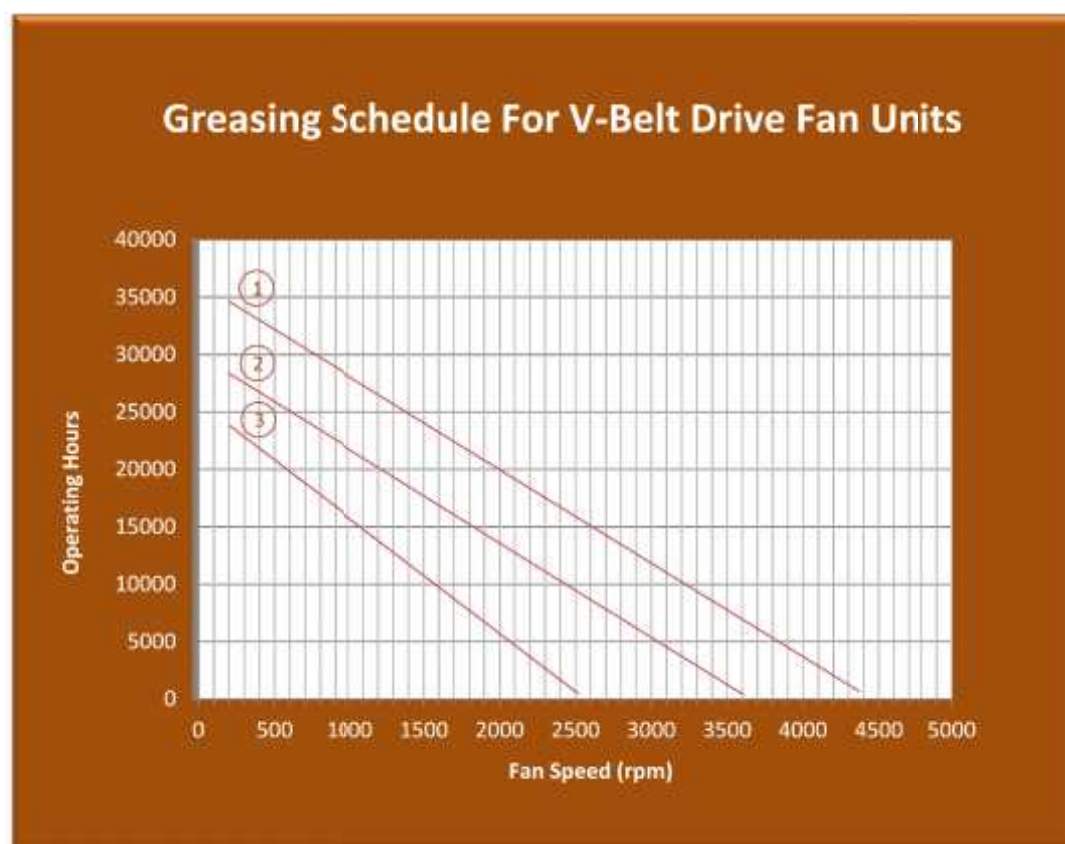
Introduction

Bearings fitted to this fan unit will be either grease lubricated or “sealed for life”, grease lubricated bearings should be re-greased in accordance with the intervals listed on the greasing schedule on page 15 of this manual. When re-greasing bearings the following procedures should be followed.

1. Isolate the fan unit from the power supply.
2. Remove shaft guard, in some cases the drive guard may have to be removed.
3. Remove housing assembly bolts from one bearing only and lift off top section, see assembly drawing below.
4. Remove as much of the old grease as possible using a non metallic scoop, wipe around the area with a cloth to remove small deposits, then add fresh grease in the quantity stated on the greasing schedule. Take care not to allow any foreign matter or liquid into the housing as this will cause premature bearing failure.
5. Replace housing top section and bolts and re-tighten.
6. Repeat for second housing.
7. Replace all guards and check fixing bolts are tight.
8. Operate as normal, check bearing temperature as per section 4.7.



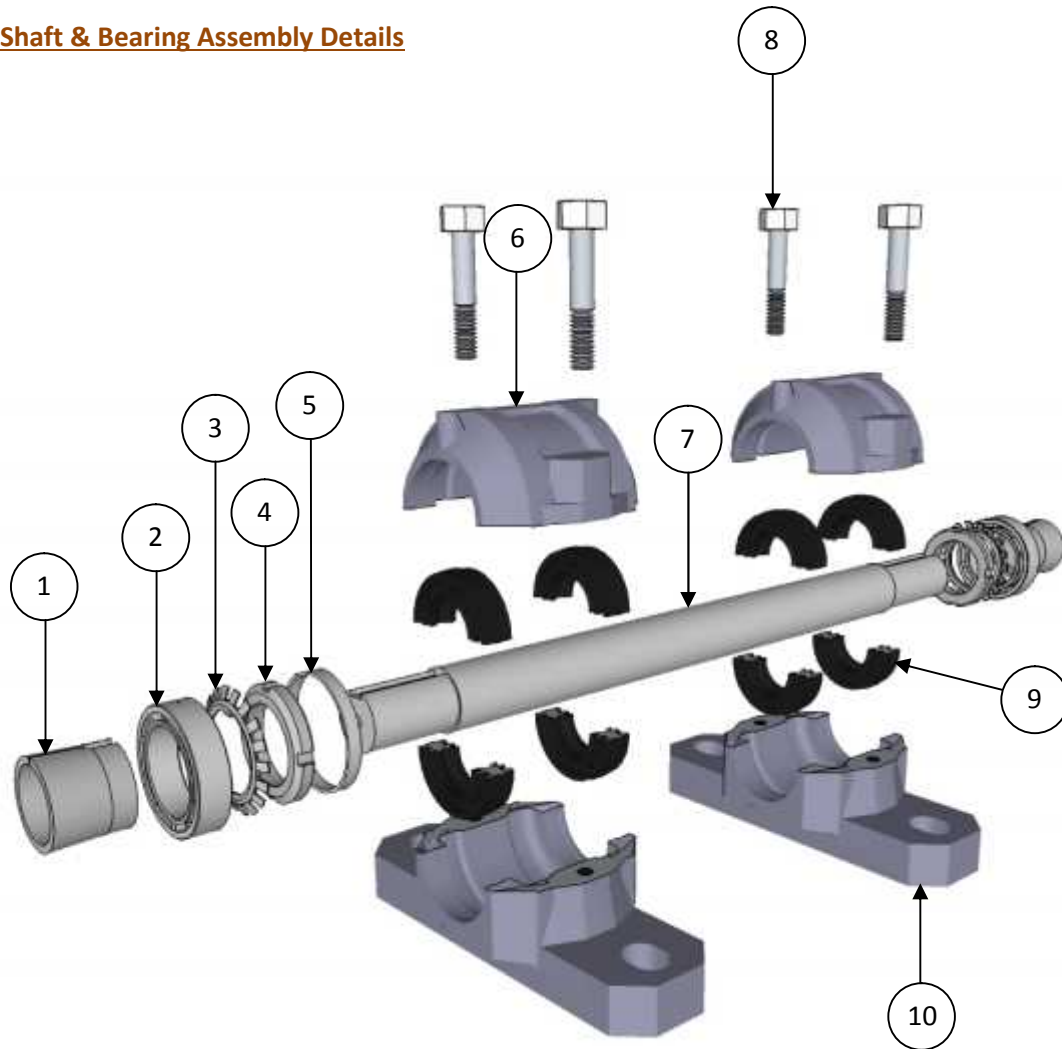
6. Maintenance – Bearings



Fan Size / Range	Curve No	Grease Quantity (g)
CMVeco range	Sealed for life bearing assembly	
BI range	Sealed for life bearing assembly	
FC range	Sealed for life bearing assembly	
BCV range	Sealed for life bearing assembly	
CHVK range	Sealed for life bearing assembly	
CMV450	Sealed for life bearing assembly	
CMV500 – 630	2	15
CMV710 – 1000	2	18
CMV1120 – 1250	3	23
CMHV450	1	10
CMHV500 – 630	2	15
CMHV710 – 1000	2	18
CMHV1120 – 1250	3	23
CPV630 – 800	2	18
CPV1000 – 1250	3	32
CHVS range	1	10
CHVN315 – 450	2	15
CHVN500 – 630	2	18
CHVN710 – 900	3	23
CHVN1000 – 1120	3	32

6. Maintenance – Bearings

Shaft & Bearing Assembly Details



Part No	Description	No Required
1	Bearing adaptor sleeve	2
2	Spherical self aligning roller bearing	2
3	Tab washer	2
4	Adaptor sleeve locking nut	2
5	Bearing locating ring(s)	1 – 3
6	Upper bearing housing shell	2
7	Fan shaft	1
8	Bearing housing assembly bolts	4 – 8
9	Bearing housing shaft seals	2 sets
10	Lower bearing housing shell	2

6. Maintenance – Bearings

Plummer Block Bearing Replacement

Should it become necessary to replace a bearing on this fan unit due to failure, both bearings must be replaced at the same time.

NOTE! This procedure may require two persons to carry this out safely.

1. Isolate fan unit from power supply.
2. Remove shaft and drive guards.
3. Loosen motor fixing bolts and adjust motor towards the fan shaft using the slide rail adjusting bolts, adjust until the fan belts can be removed without damage. (see section 5, page 10).
4. Remove fan pulley, bush and key.
5. Remove bearing housing assembly bolts (see section 6, page 16) from the housing closest to the fan impeller first, then while holding down the fan shaft remove the bolts from the other housing.

NOTE! On large fan units the impeller weight may cause the fan shaft to lift out of the housing, this must be prevented or damage to the impeller or casing may occur.

6. Remove excess grease from around the bearing and mark its position on the fan shaft, then lever up the tab washer from the slot on the locking nut (see section 6, page 16), then loosen the locking nut by unscrewing until approx 6mm from the face of the bearing, gently tap the bearing towards the centre of the shaft until the bearing releases from the adaptor sleeve.
7. Remove locking nut, adaptor sleeve, tab washer and bearing from the fan shaft, on certain sizes the lower bearing housing may require removal.
8. Clean housing and shaft thoroughly before fitting new bearings.
9. Repeat procedure for the second bearing.
10. After fitting new bearings assemble in reverse order to above, ensure that the bearings are located in the same position as the original, rotate the fan shaft by hand to check if the impeller is fouling the fan inlet or casing, if this happens it could cause serious damage or injury.
11. Operate as normal, check bearings after 30 mins running (see section 4.7, page 8).

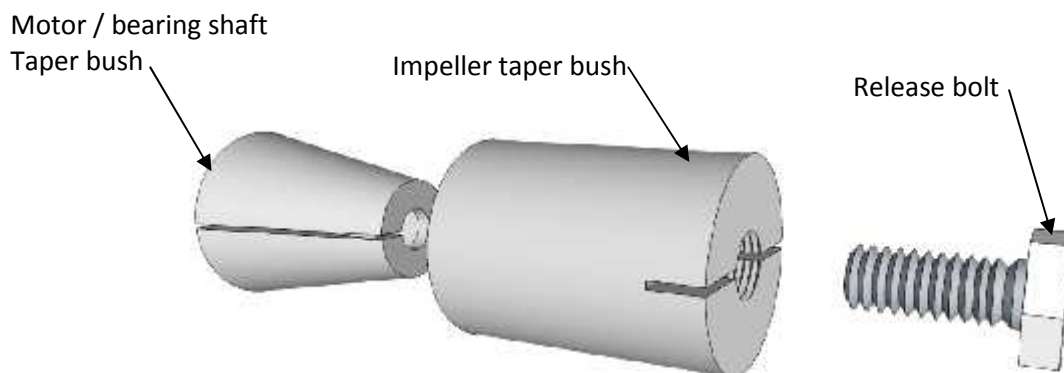
6. Maintenance – Bearings

Cartridge Bearing Replacement

Fan units supplied with “Sealed for life” cartridge bearings do not require any maintenance, should the bearing fail then the bearing assembly will require replacement following the procedure below.

NOTE! In some cases the bearing assembly can be refurbished, but not all.

1. Isolate fan unit from power supply.
2. Remove inlet section of fan case.
3. Remove impeller nose cap, this will be a push fit on the CMVeco range and can be levered off with care using a screw driver; all other types normally have a screwed fitting.
4. Remove retaining bolt from centre of impeller and remove impeller from shaft, on certain ranges of our fans the impeller will be fitted with a double taper bush, (see below) to remove this device insert a bolt (various sizes) into the exposed thread at the end of the bush and gently tighten it until the two parts of the bush separate, if you damage the thread when carrying out this procedure the fan will very likely require an engineer from Central Fans to attend site to rectify, this may require further part replacement and costs.



5. Remove fan case fixing bolts and remove the fan casing from the steelwork.
6. Remove drive guard.
7. Loosen motor plate locking nuts (see diagram page 11) and lift motor plate towards the fan shaft and remove belts.
8. Remove fan pulley.
9. Remove bearing assembly from steelwork.
10. When fitting new bearing assembly to steelwork leave fixing bolts hand tight only until you have re-fitted the fan case and impeller to the bearing shaft to ensure the all components are aligned with each other.
11. Assemble all other parts in reverse order; check impeller will rotate freely by hand before starting.
12. Start fan at least 5 times in short succession and then recheck impeller centre bolt is tight before replacing the nose cap.

7. Maintenance – Motors

- Before any motor is connected to a power supply it must be checked for any damage that may have occurred during transportation, particular attention should be made to the fan cowl, terminal box and cooling fins, if there is any damage contact our Technical department for advice.
- After the above visual checks have been made then the motor can be connected to the appropriate power supply, details of the voltage/phase/frequency can be found on the motor rating plate and fan label.
- All cable terminations should be tightly secured, mains lead terminal lugs should be in face to face contact, there should be no nuts, washers fitted between the mains and motor lugs.
- Wiring should be carried out or checked by a qualified electrician and must be earthed in accordance with current regulations.
- All motors must be correctly fused and isolated with terminal covers in place before running the fan.
- Terminal covers should never be left off while unattended, otherwise water or other foreign objects may get into the motor windings.
- The motor must be operated within its limit of design voltage and frequency, standard motors for use within the UK will operate without damage between 90 & 110% of rated motor voltage.
- Ensure all control gear any associated metering or protection devices have been checked.
- Motors should not be placed with their cowls closer than 50mm from any wall or obstruction as this may lead to overheating or burnout of the motor.
- When several motors / fans are installed in close proximity care should be taken to ensure that there is adequate ventilation and that there is no recirculation of exhausted warm air.
- Check that the motor runs up smoothly and within the permitted start-up time, repeated starting in quick succession may lead to a thermal overload of the motor, if this occurs leave motor to cool before attempting restart.

7. Maintenance – Motors (cont'd)

- All motors supplied with our fans are weatherproofed to IP55 (minimum), all connections made to the motor must be to this minimum standard or water ingress may occur.
- If AC heaters are fitted then these should be checked for continuity prior to connection to the control circuit.
- If Thermistors are fitted it is recommended that they be connected to the control circuit as they provide good thermal overload protection.
- If ATEX rated motors are fitted only fully qualified personnel are allowed to carry out any work on these machines.
- Induction motors by their very nature require very little maintenance, however regular inspections are recommended to ensure minor problems do not escalate to breakdowns, typical intervals would be 2000 hours of operation or 3 months, whichever is the sooner.

Check List – Isolate motor before carrying out any routine maintenance or cleaning

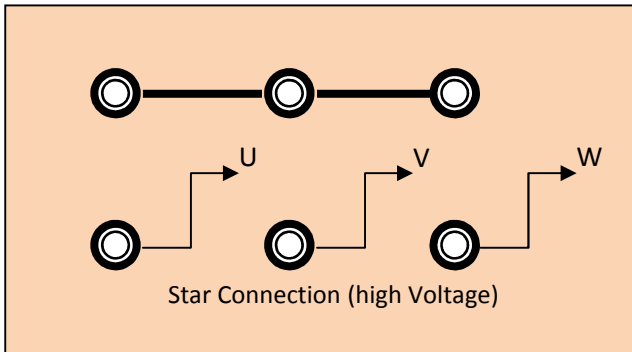
- No visible signs of damage.
- No accumulation of dust, fibres or foreign matter on the frame or around the cowl.
- No excessive vibration.
- Excessive heat.
- No loose fixings.
- Cables and earths are sound.
- Sealing of motor and glands are in good order.
- Insulation resistance adequate, imperative this is checked if motor has been shut down for long periods, should be above 10mΩ.
- Bearing condition should be checked.

Remember: - ISOLATE BEFORE COMMENCING ANY MAINTENANCE

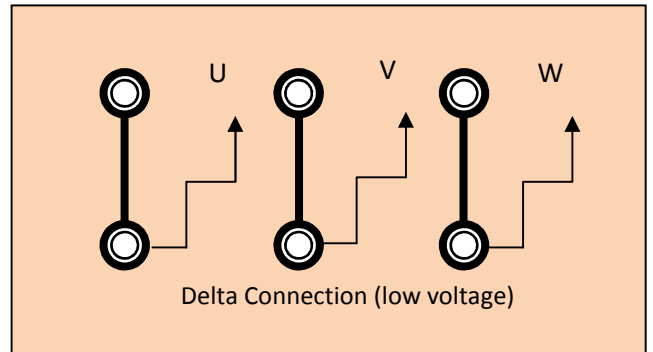
If any spares for the motor are required, then these can be ordered either directly from the motor manufacturer or Central Fans – Colasit Ltd, in either case the motor serial number or part name must be quoted.

7. Maintenance – Motors (Wiring diagrams) Typical

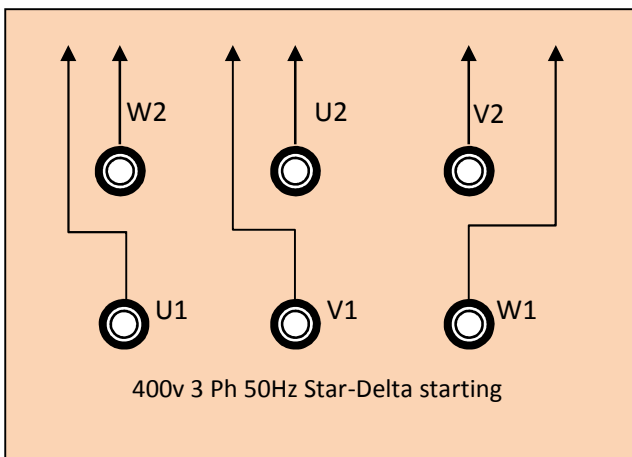
THREE PHASE DIAGRAMS



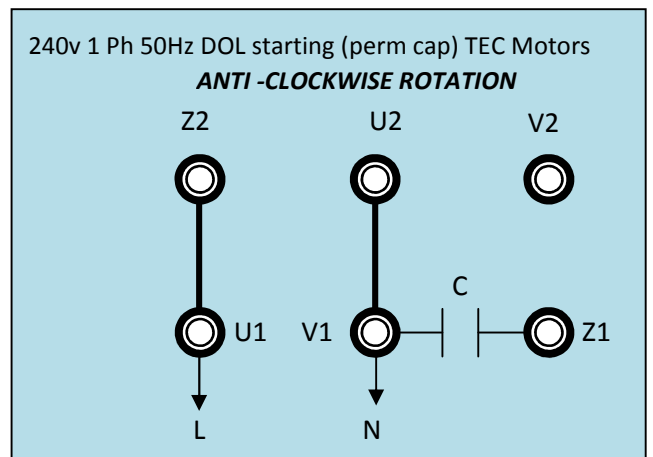
THREE PHASE DIAGRAMS



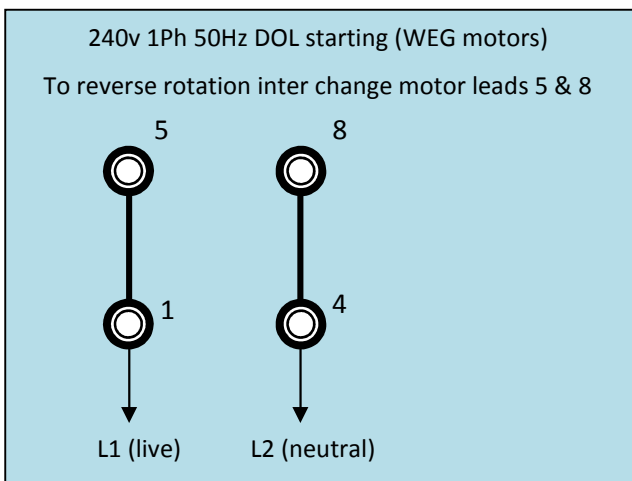
THREE PHASE DIAGRAMS



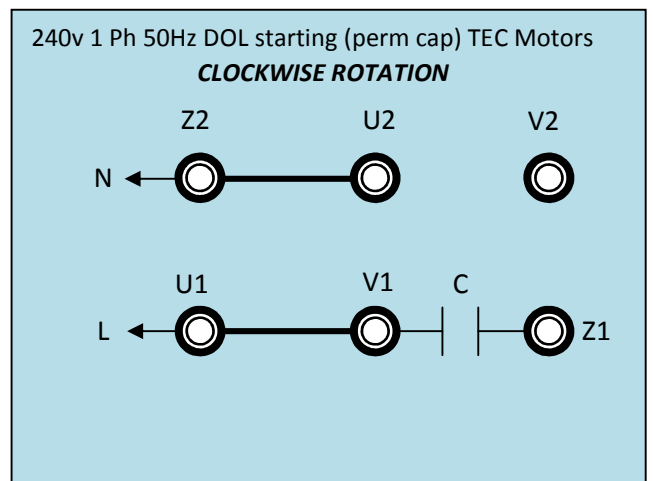
SINGLE PHASE DIAGRAMS



SINGLE PHASE DIAGRAMS



SINGLE PHASE DIAGRAMS



8. Storage

Important – failure to follow these recommendations will invalidate your warranty

If the fan unit is to be stored or installed for any length of time before being put into operation then special notice must be taken of the following:-

- Turn all rotating parts (by hand if necessary) at least once per month to redistribute the lubricant making sure that the impeller finishes approx 180° to its former position, this helps to eliminate possible vibration at a later time caused by the impeller, shaft and bearings settling in one position which could cause flat spotting of the bearings.
- Never position the fan unit next to other machinery for even a short period of time as any vibration from this equipment can cause serious damage to the fan / motor bearings, which may cause vibration problems in the future.
- Always cover both the fan inlet and outlet to prevent foreign objects falling or being placed within the fan casing, when the fan is required for use **CHECK** the fan casing for any objects that may be inside and remove, if the fan is started with objects inside the casing complete destruction of the fan will occur causing serious injury to any person close by.
- Most of our fans are supplied with drain points which should be checked before installing as they may have become blocked.
- Please note that the motor is supplied with temporary glands only to prevent foreign objects from entering the terminal box, before they leave our factory the motors are wrapped with cling film to prevent water ingress, ensure this is in place before storage / use, motors are labelled as such.
- Although all our fans are fitted with an IP55 motor (minimum) as standard if the fan is stored where temperature changes are severe then condensation may occur inside the motor itself, this will cause premature failure upon start-up, therefore ensure fan is stored where this doesn't occur.
- If you have a spare motor ensure that it is stored in the vertical position to prevent bearing damage.
- If the fan unit is a V-Belt Drive version the belt tension must be released before storing otherwise bearing and belt damage will cause failure after a short time of running, **DO NOT** forget to re-tension the V-Belt Drive using the procedures in section 5 of this manual.

Finally, general checks of all parts for any damage that may have taken place in storage, remember safety first.

INSTALLATION, OPERATION & MAINTENANCE MANUAL

Central Fans – Colasit Ltd

9. Spares

When ordering spare parts for your fan unit it is important that the Fan Serial Number located on the fan casing is stated, together with the part description or number, these can be found on the appropriate assembly drawing in section 10 of this manual.

If the Fan serial Number has been removed or lost then contact our Technical Department giving as much information as possible, i.e original purchaser (Company), date of supply etc, photos can also be of help and can be emailed to mail@central-fans.co.uk.

Below is a table showing the recommended spares for your fan unit, items such as fan belts, bearings and motors can be ordered from the manufacturer or direct from Central Fans – Colasit Ltd, other items such as impellers, casings, cartridge bearing assemblies and steelworks can only be purchased from Central Fans – Colasit Ltd:-

Central Fans – Colasit Ltd
Unit 12A, Palmers Road,
East Moons Moat,
Redditch,
WORCS.
B98 0RF

Tel: 01527-517200
Fax: 01527-517195
Email: mail@central-fans.co.uk

Other email addresses can be found on our contacts page on our web site www.central-fans.co.uk

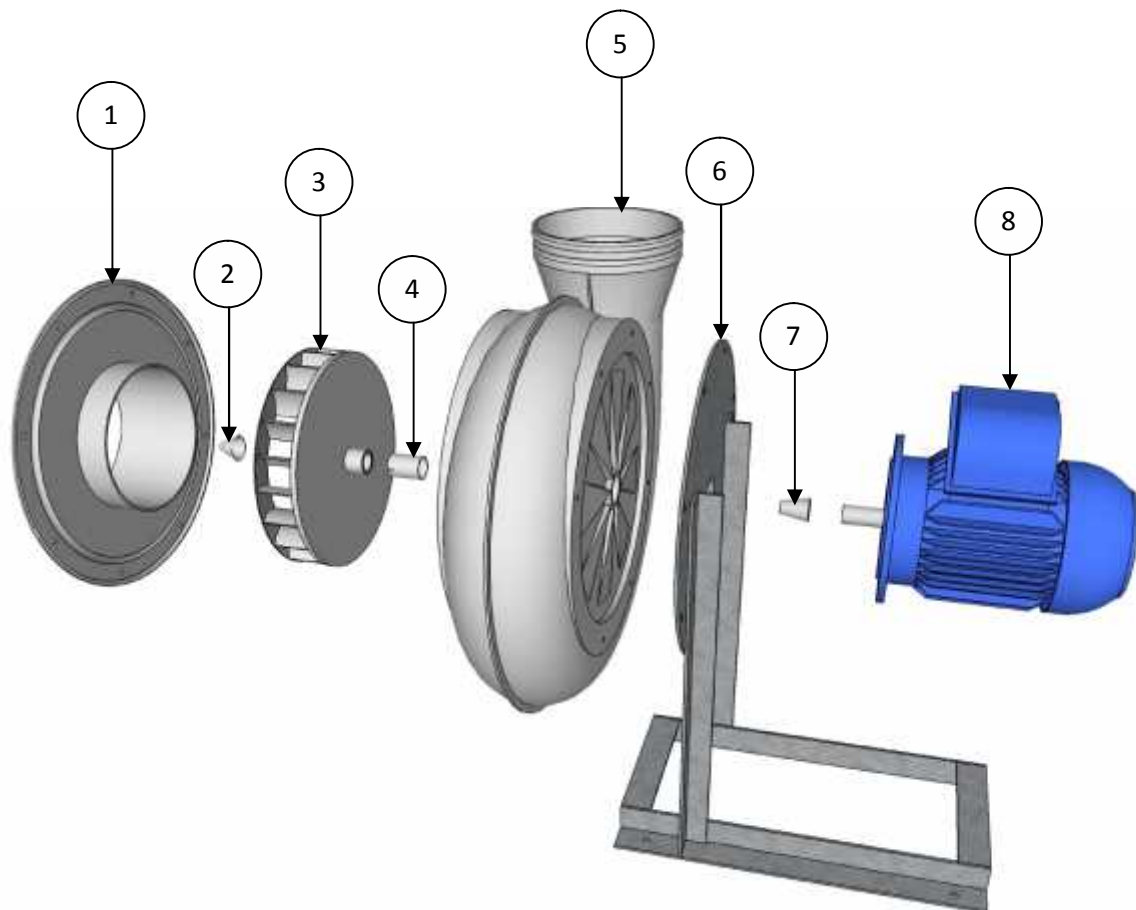
Although our fans are designed to last for a minimum of 20 years to keep your fan unit working to its optimum condition and reduce shutdown periods the table below lists the parts that will require periodic maintenance, items such as casings, impellers and steelworks should last the life time of the unit.

R = replace
C = check
MNR = may need replacement

Part Ref	Time Schedule (years)					
	1	2	3	4	5	10
V-belts	R	R	R	R	R	R
Bearings	C	C	C	C	C	R
Impeller	C	C	C	C	C	C
Motor	C	C	C	C	C	MNR

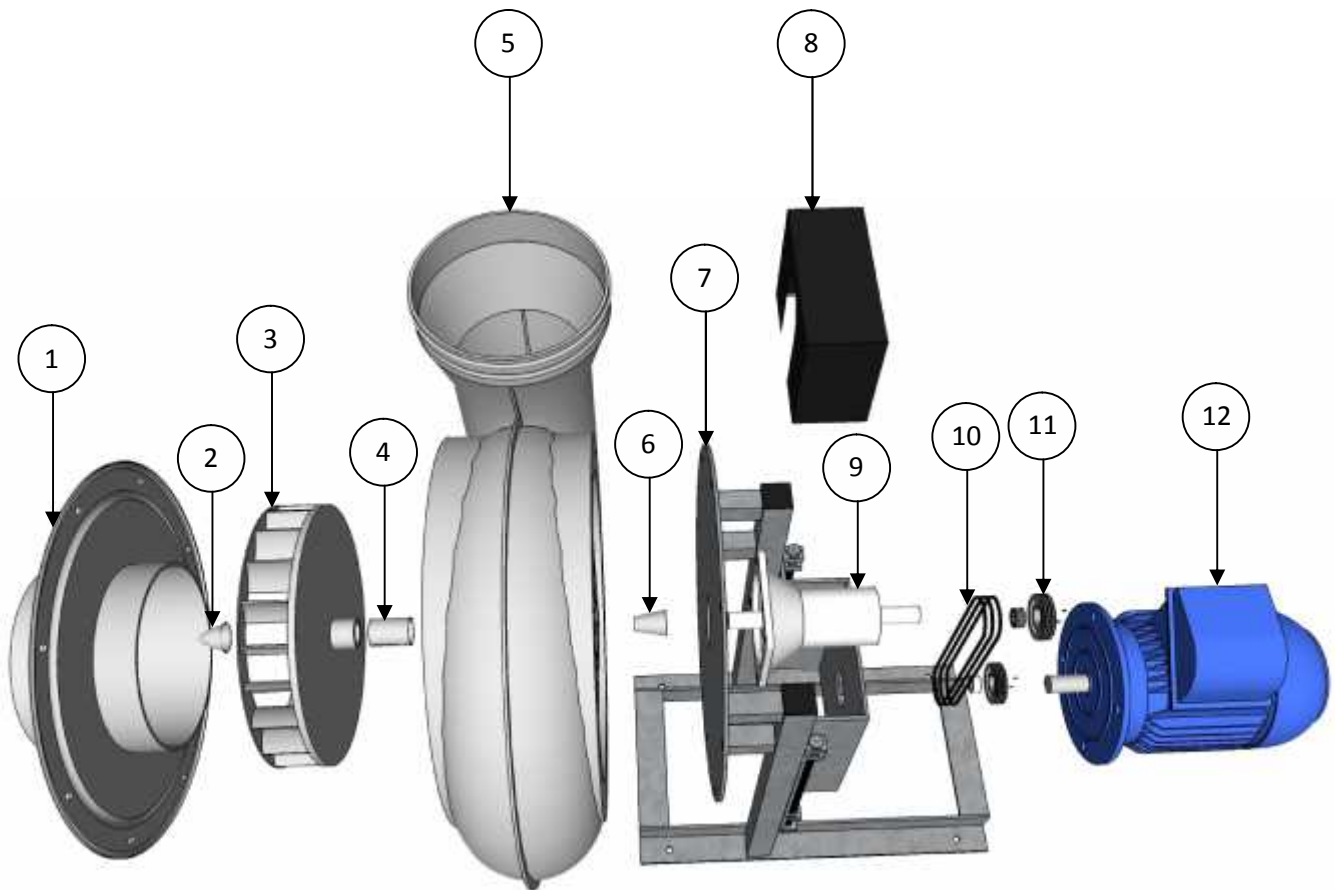
Spares for the CMVeco fan range are normally ex-stock, as for bearing assemblies, bearings, belts these are normally 2-3 days all other items are normally 2-4 weeks depending on size and number required.

10. CMVeco125 – CMVeco400 - Direct Drive - Main Components



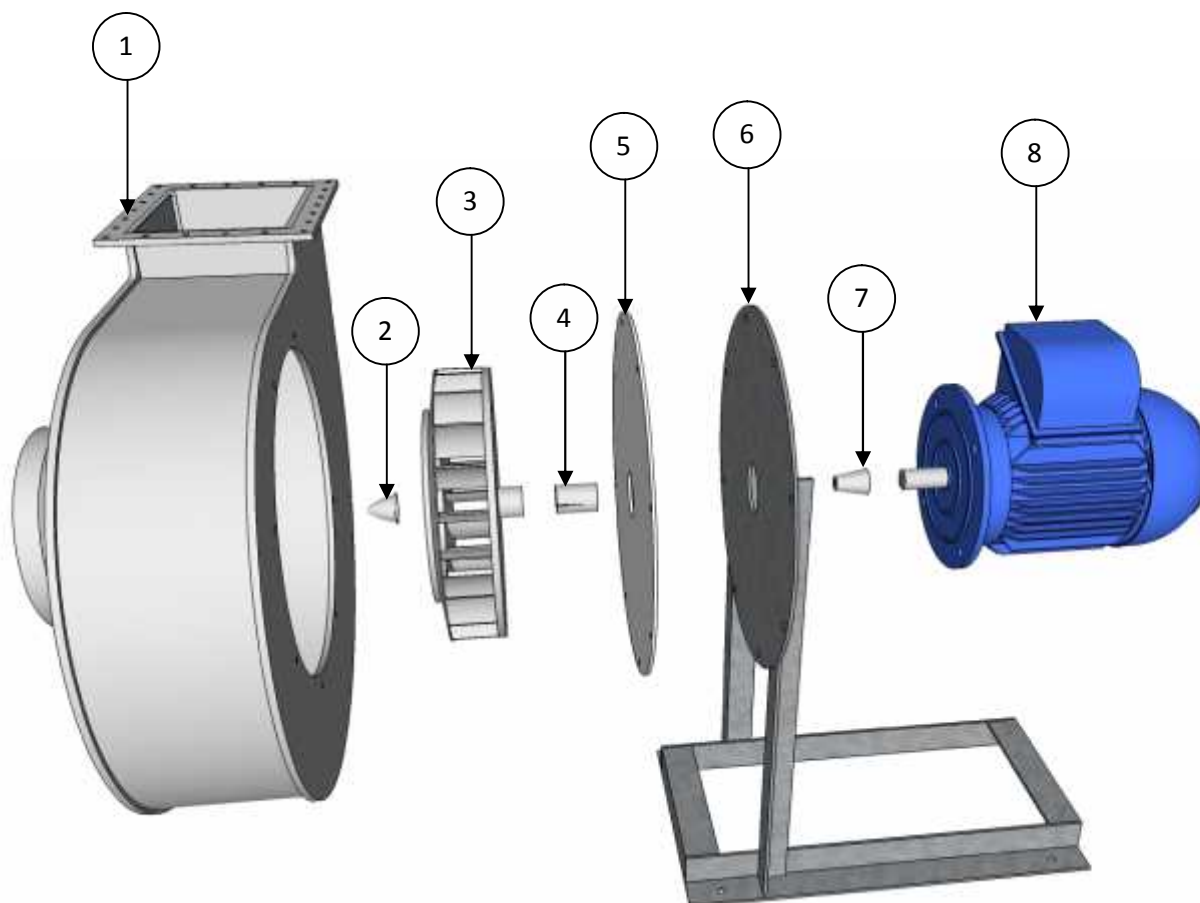
Part No	Description	Material	No Required
1	Inlet section	PPs, PPs-el, PVC, PVDF	1
2	Impeller nose cap	PP, PVDF, PVC	1
3	Impeller	PPs, PPs-el, PVC, PVDF	1
4	Impeller bush	Alloy	1
5	Fan case	PPs, PPs-el, PVC, PVDF	1
6	Steelwork	Galvanised, S/S	1
7	Motor bush	Alloy	1
8	Motor	Aluminium, cast iron	1

10. CMVeco125 – CMVeco400 - V-Belt Drive - Main Components



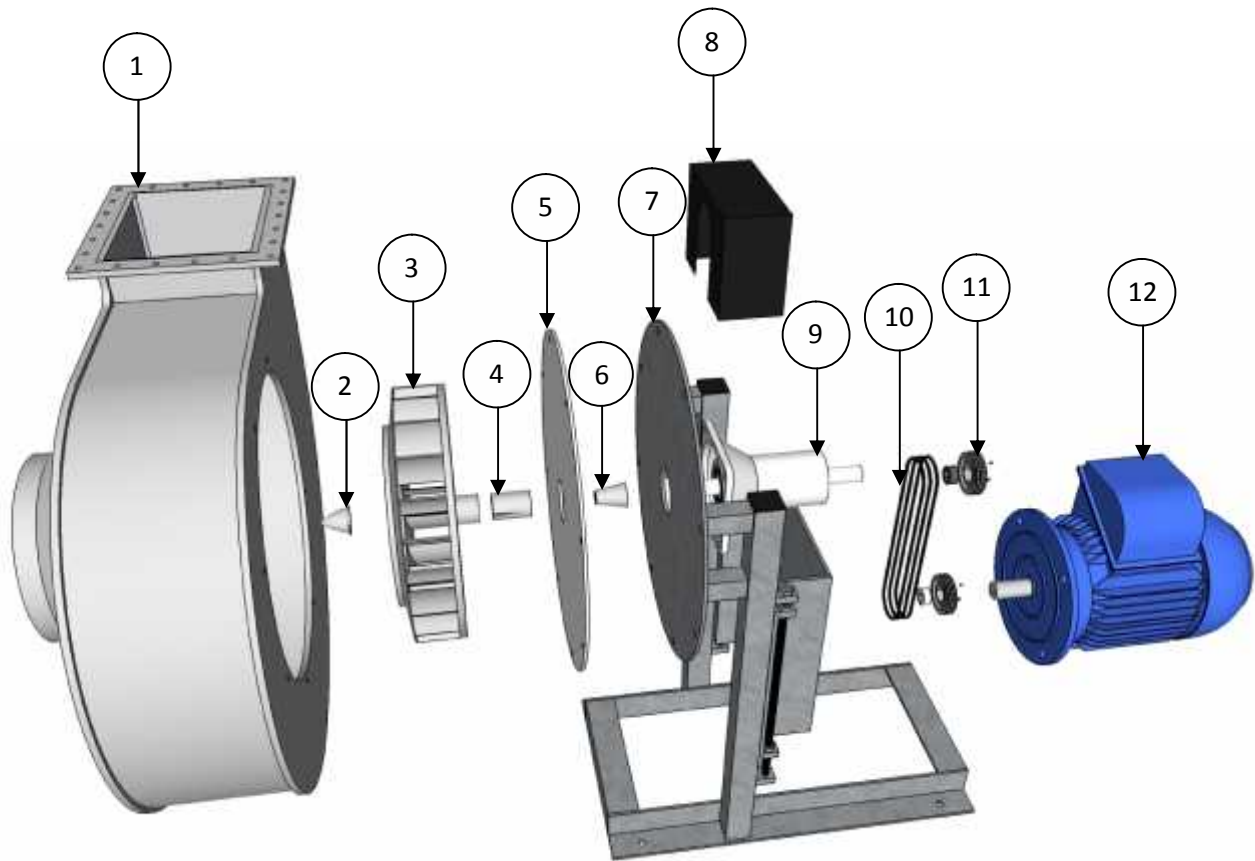
Part No	Description	Material	No Required
1	Inlet section	PPs, PPs-el, PVC, PVDF	1
2	Impeller nose cap	PP, PVDF, PVC	1
3	Impeller	PPs, PPs-el, PVC, PVDF	1
4	Impeller bush	Alloy	1
5	Fan case	PPs, PPs-el, PVC, PVDF	1
6	Bearing assembly bush	Alloy	1
7	Steelwork	Galvanised, S/S	1
8	Drive guard	Polypropylene	1
9	Bearing assembly	GFK, cast iron	1
10	Fan belts	Rubber	2-6
11	Pulleys	Cast iron	2
12	Motor	Aluminium, cast iron	1

10. BCV range & FC range – Direct Drive - Main Components



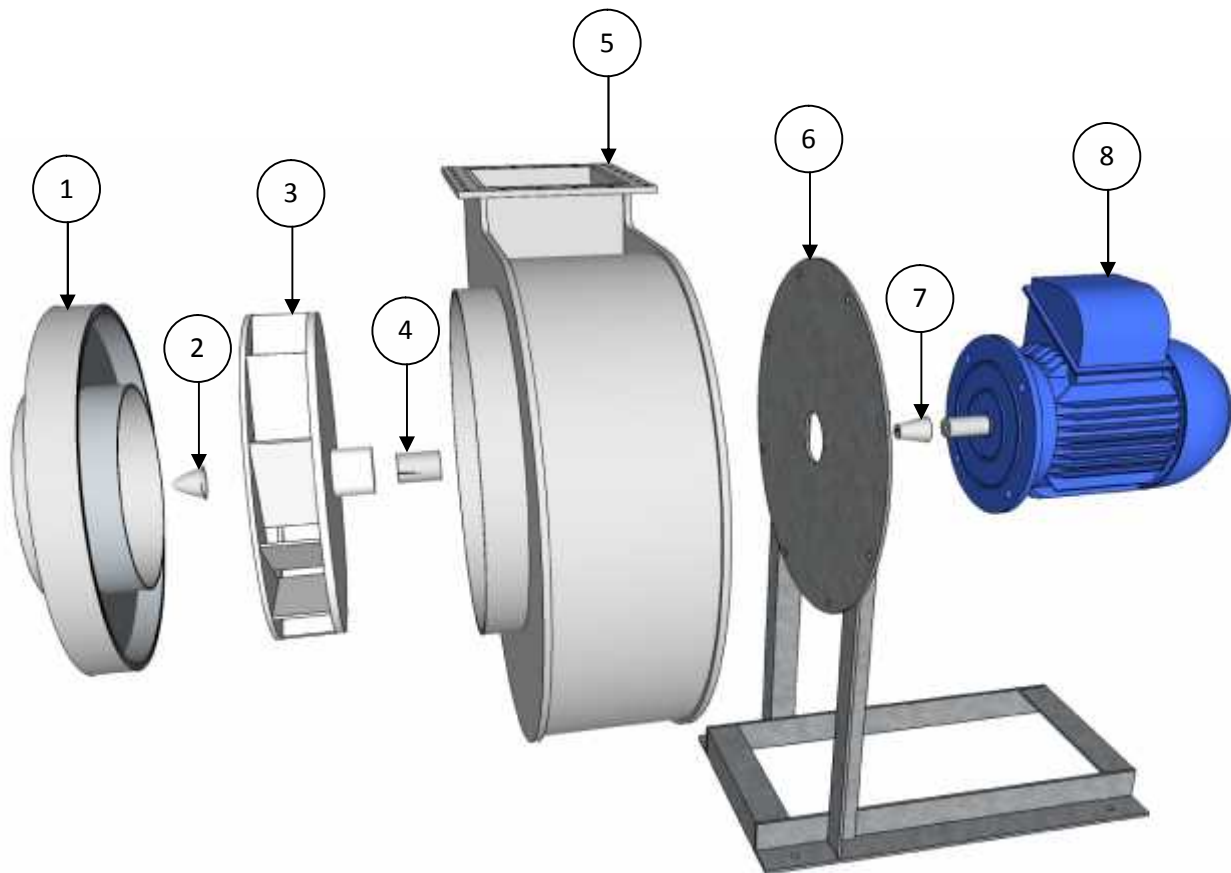
Part No	Description	Material	No Required
1	Fan case	PPs, PPs-el, PVC, PVDF	1
2	Impeller nose cap	PP, PVDF, PVC	1
3	Impeller	PPs, PPs-el, PVC, PVDF	1
4	Impeller bush	Alloy	1
5	Fan case seal plate	PPs, PPs-el, PVC, PVDF	1
6	Steelwork	Galvanised, S/S	1
7	Motor bush	Alloy	1
8	Motor	Aluminium, cast iron	1

10. BCV range & FC range – V-Belt Drive - Main Components



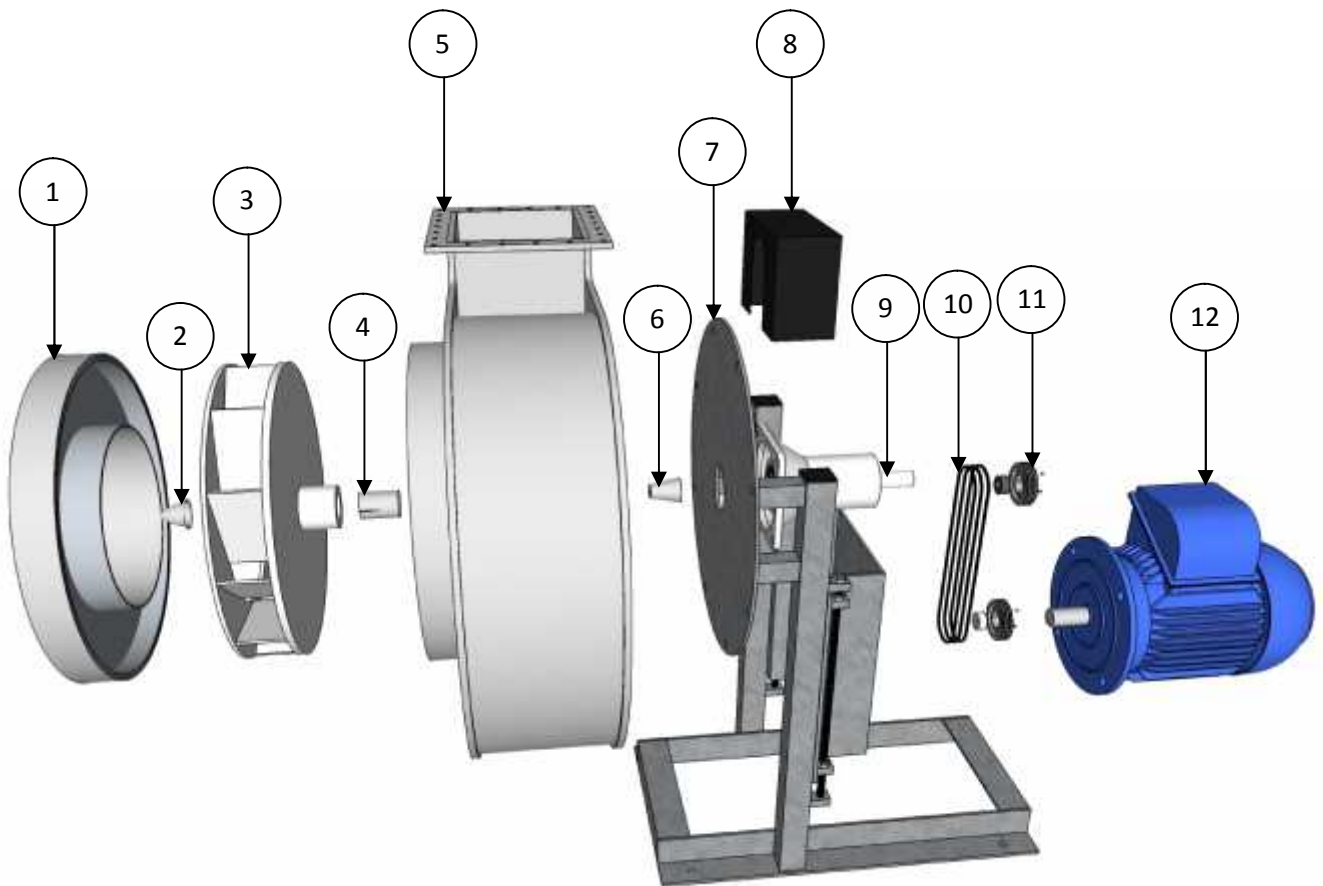
Part No	Description	Material	No Required
1	Fan case	PPs, PPs-el, PVC, PVDF	1
2	Impeller nose cap	PP, PVDF, PVC	1
3	Impeller	PPs, PPs-el, PVC, PVDF	1
4	Impeller bush	Alloy	1
5	Fan case seal plate	PPs, PPs-el, PVC, PVDF	1
6	Bearing assembly bush	Alloy	1
7	Steelwork	Galvanised, S/S	1
8	Drive guard	Polypropylene	1
9	Bearing assembly	GFK, cast iron	1
10	Fan belts	Rubber	2-6
11	Pulleys	Cast iron	2
12	Motor	Aluminium, cast iron	1

10. BI range – Direct Drive - Main Components



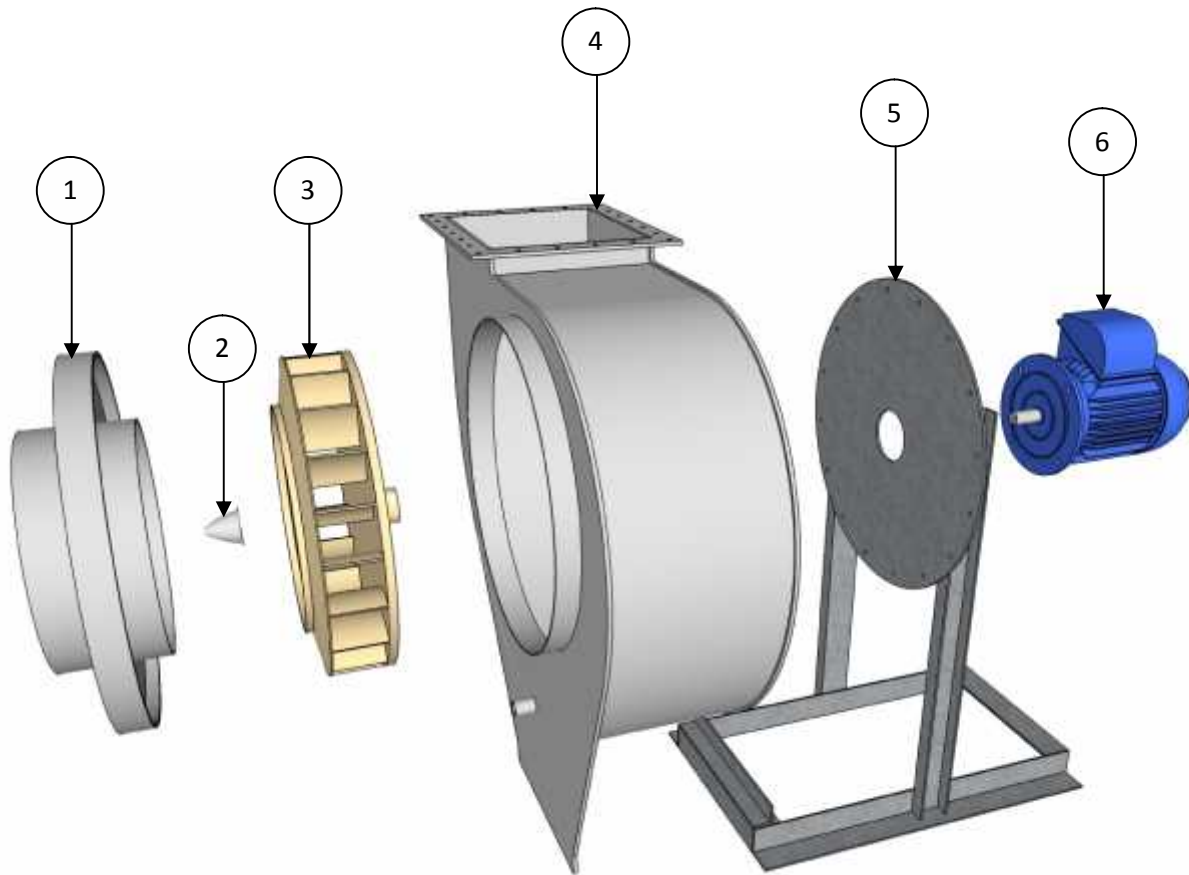
Part No	Description	Material	No Required
1	Inlet section	PPs, PPs-el, PVC, PVDF	1
2	Impeller nose cap	PP, PVDF, PVC	1
3	Impeller	PPs, PPs-el, PVC, PVDF	1
4	Impeller bush	Alloy	1
5	Fan case	PPs, PPs-el, PVC, PVDF	1
6	Steelwork	Galvanised, S/S	1
7	Motor bush	Alloy	1
8	Motor	Aluminium, cast iron	1

10. BI range – V-Belt Drive - Main Components



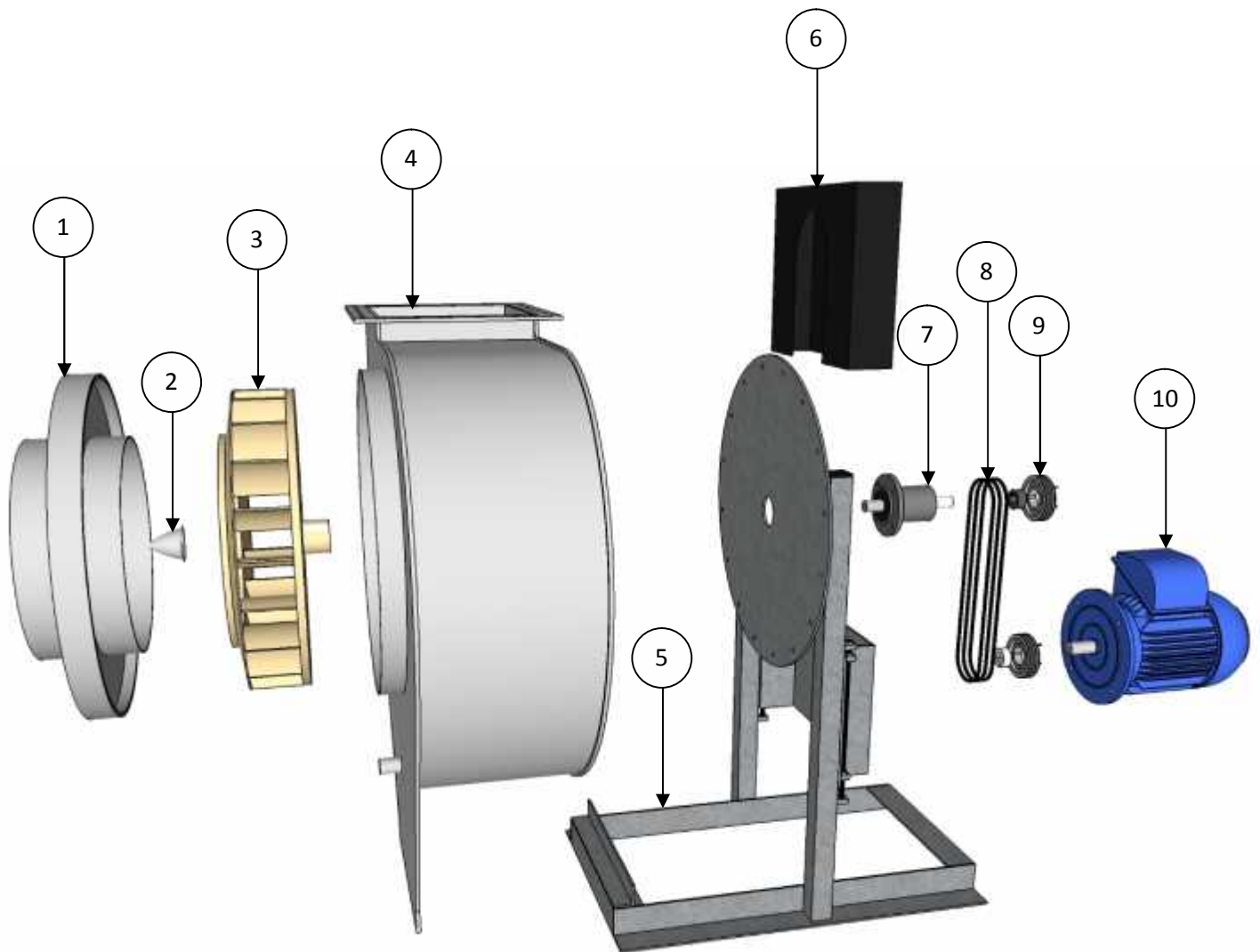
Part No	Description	Material	No Required
1	Inlet section	PPs, PPs-el, PVC, PVDF	1
2	Impeller nose cap	PP, PVDF, PVC	1
3	Impeller	PPs, PPs-el, PVC, PVDF	1
4	Impeller bush	Alloy	1
5	Fan case	PPs, PPs-el, PVC, PVDF	1
6	Bearing assembly bush	Alloy	1
7	Steelwork	Galvanised, S/S	1
8	Drive guard	Polypropylene	1
9	Bearing assembly	GFK, cast iron	1
10	Fan belts	Rubber	2-6
11	Pulleys	Cast iron	2
12	Motor	Aluminium, cast iron	1

10. CMV450 – Direct Drive - Main Components



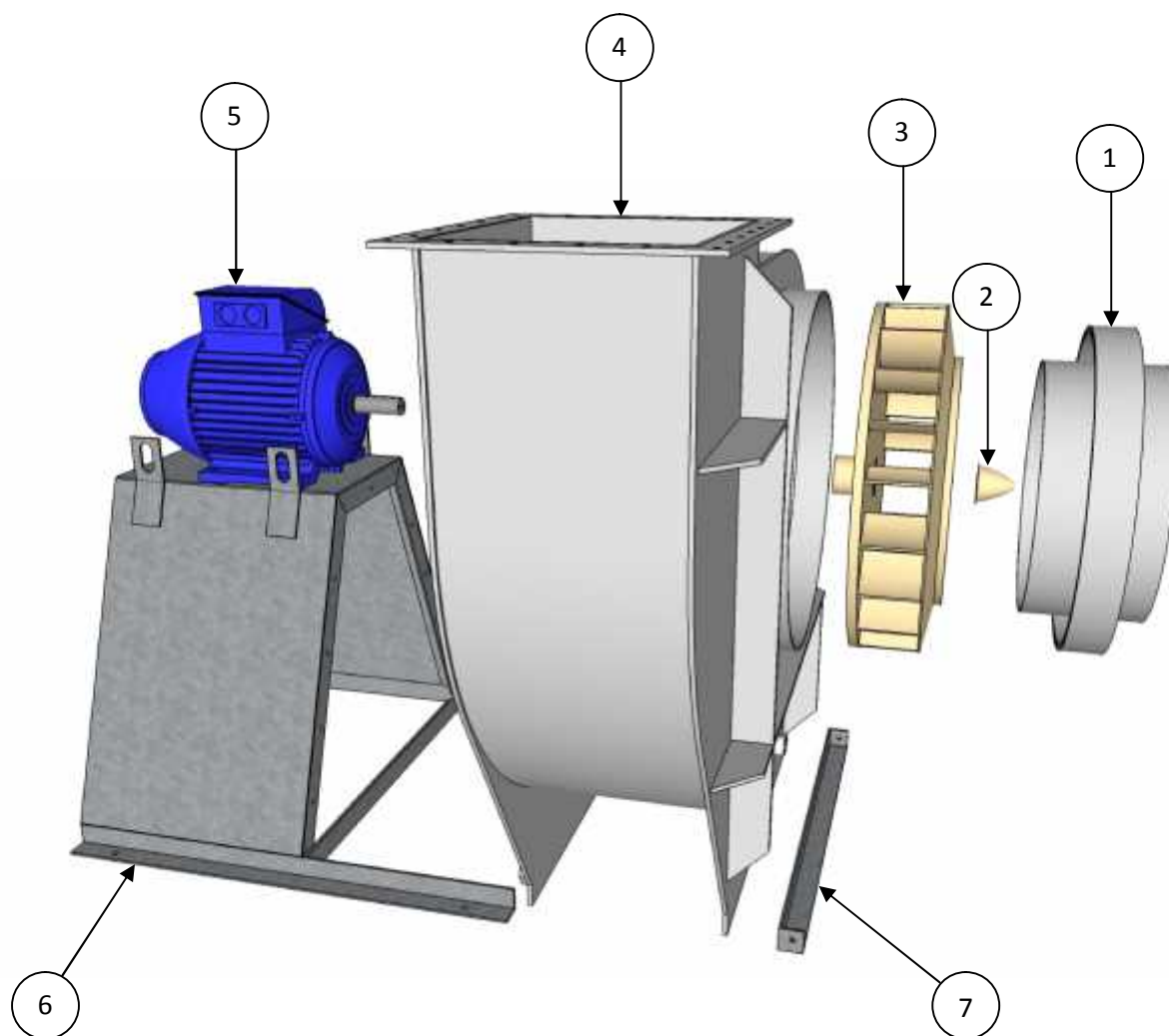
Part No	Description	Material	No Required
1	Inlet section	PPs, PPs-el, PVC, PVDF	1
2	Impeller nose cap	PP, PVDF, PVC	1
3	Impeller	PPs, PPs-el, PVC, PVDF	1
4	Fan case	PPs, PPs-el, PVC, PVDF	1
5	Steelwork	Galvanised, S/S	1
6	Motor	Aluminium, cast iron	1

10. CMV450 – V-Belt Drive - Main Components



Part No	Description	Material	No Required
1	Inlet section	PPs, PPs-el, PVC, PVDF	1
2	Impeller nose cap	PP, PVDF, PVC	1
3	Impeller	PPs, PPs-el, PVC, PVDF	1
4	Fan case	PPs, PPs-el, PVC, PVDF	1
5	Steelwork	Galvanised, S/S	1
6	Drive guard	Polypropylene	1
7	Bearing assembly	Cast iron	1
8	Fan belts	Rubber	2-8
9	Pulleys	Cast iron	2
10	Motor	Aluminium, cast iron	1

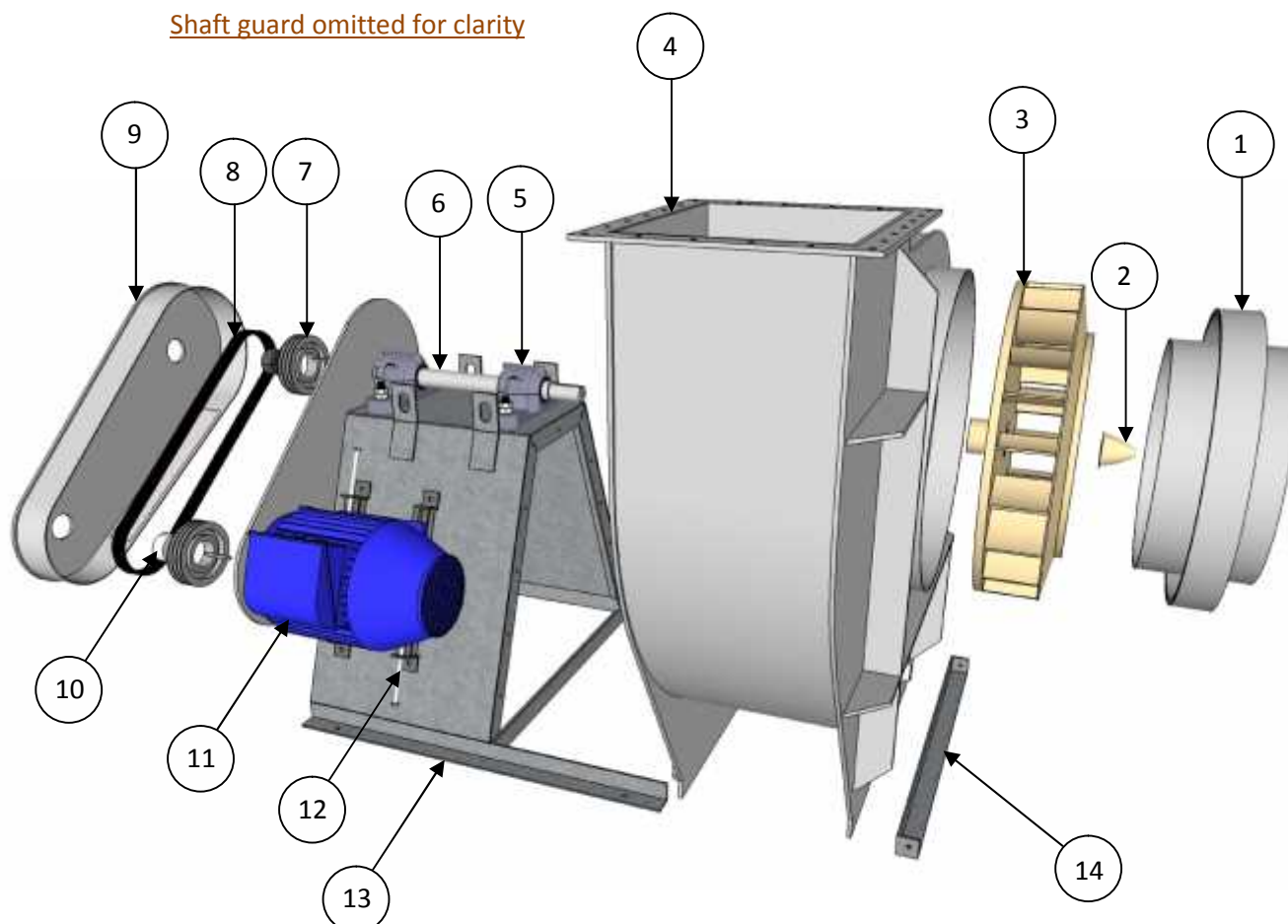
10. CMV500-CMV1250, CMHV450-CMHV1250 CPV630-CPV1250 & CHVN315-CHVN1250 Direct Drive - Main Components



Part No	Description	Material	No Required
1	Inlet section	PPs, PPs-el, PVC, PVDF	1
2	Impeller nose cap	PP, PVDF, PVC	1
3	Impeller	PPs, PPs-el, PVC, PVDF	1
4	Fan case	PPs, PPs-el, PVC, PVDF	1
5	Motor	Aluminium, cast iron	1
6	Steelwork	Galvanised, S/S	1
7	Fan case front support	Galvanised steel	1

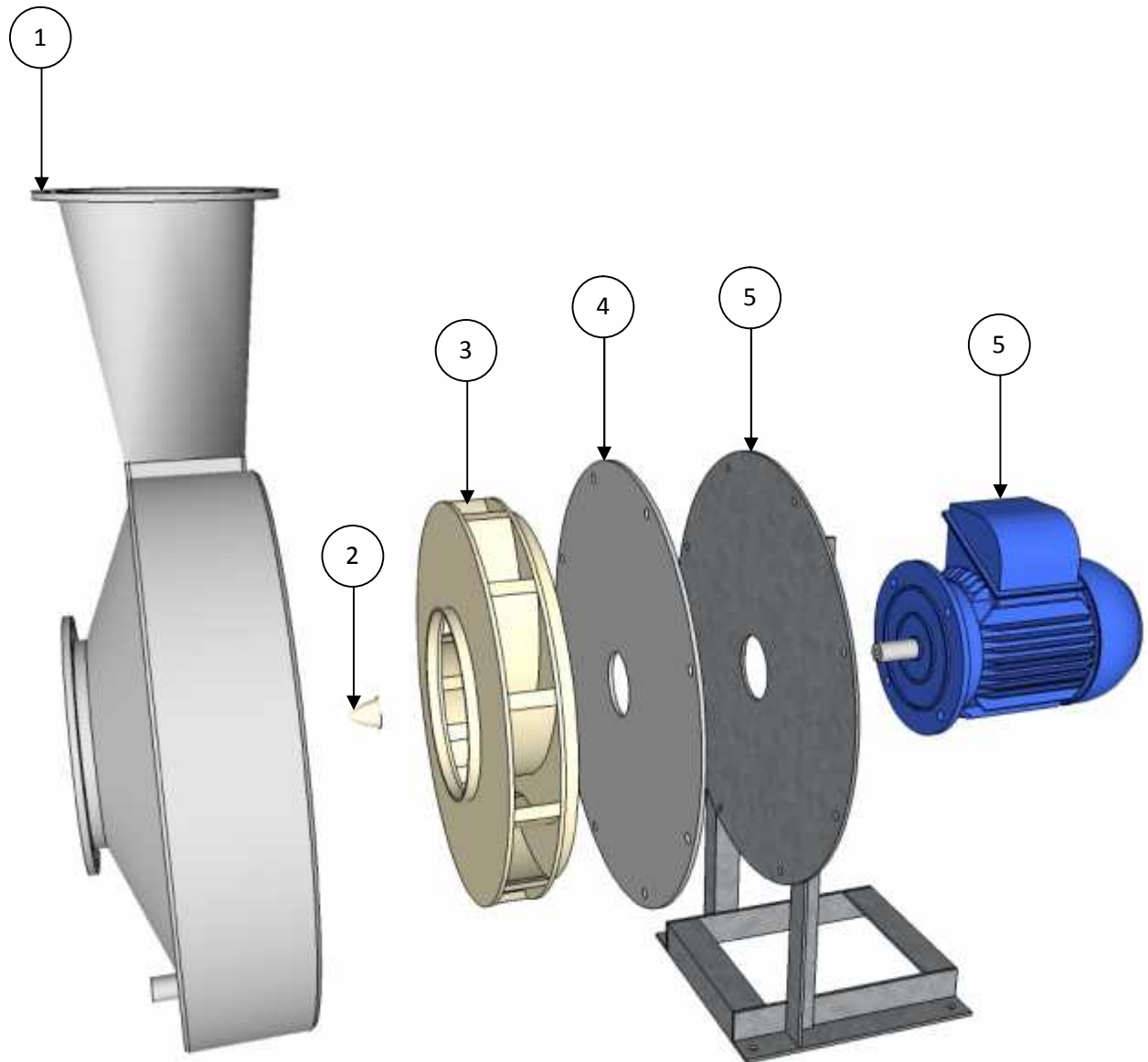
10. CMV500-CMV1250, CMHV450-CMHV1250 CPV630-CPV1250 & CHVN315-CHVN1250 V-Belt Drive - Main Components

Shaft guard omitted for clarity



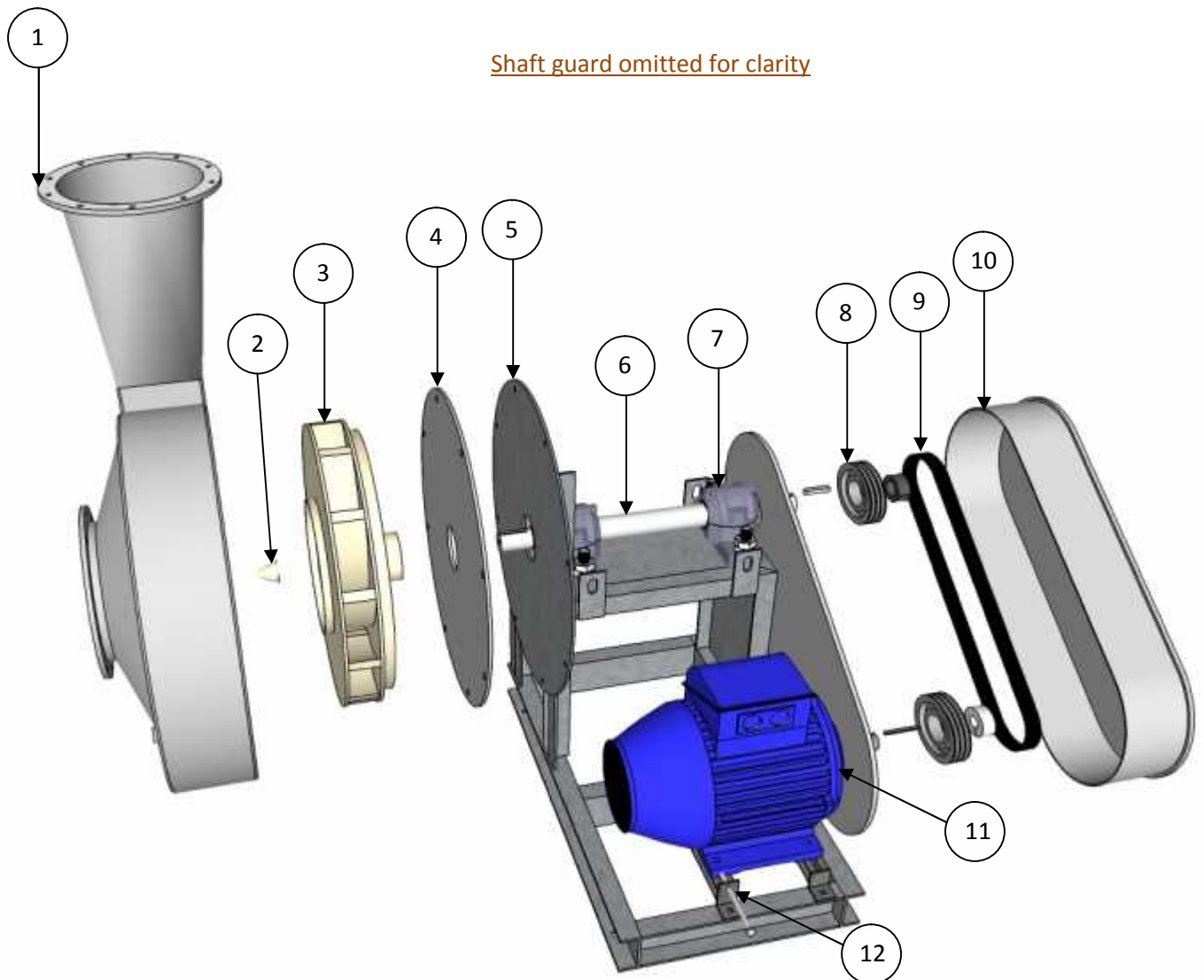
Part No	Description	Material	No Required
1	Inlet section	PPs, PPs-el, PVC, PVDF	1
2	Impeller nose cap	PP, PVDF, PVC	1
3	Impeller	PPs, PPs-el, PVC, PVDF	1
4	Fan case	PPs, PPs-el, PVC, PVDF	1
5	Bearing housings & bearings	Cast iron / steel	2 sets
6	Fan shaft	EN8	1
7	Pulleys	Cast iron	2
8	Fan belts	Rubber	2-6
9	Drive guard	Polypropylene	1
10	Pulley bushes	Cast iron	2
11	Motor	Aluminium, cast iron	1
12	Motor slide rails	Cast iron, galvanised	1 set
13	Steelwork	Galvanised, S/S	1
14	Fan case front support	Galvanised steel	1

10. CHVS63-CHVS250 & CHV range Direct Drive - Main Components



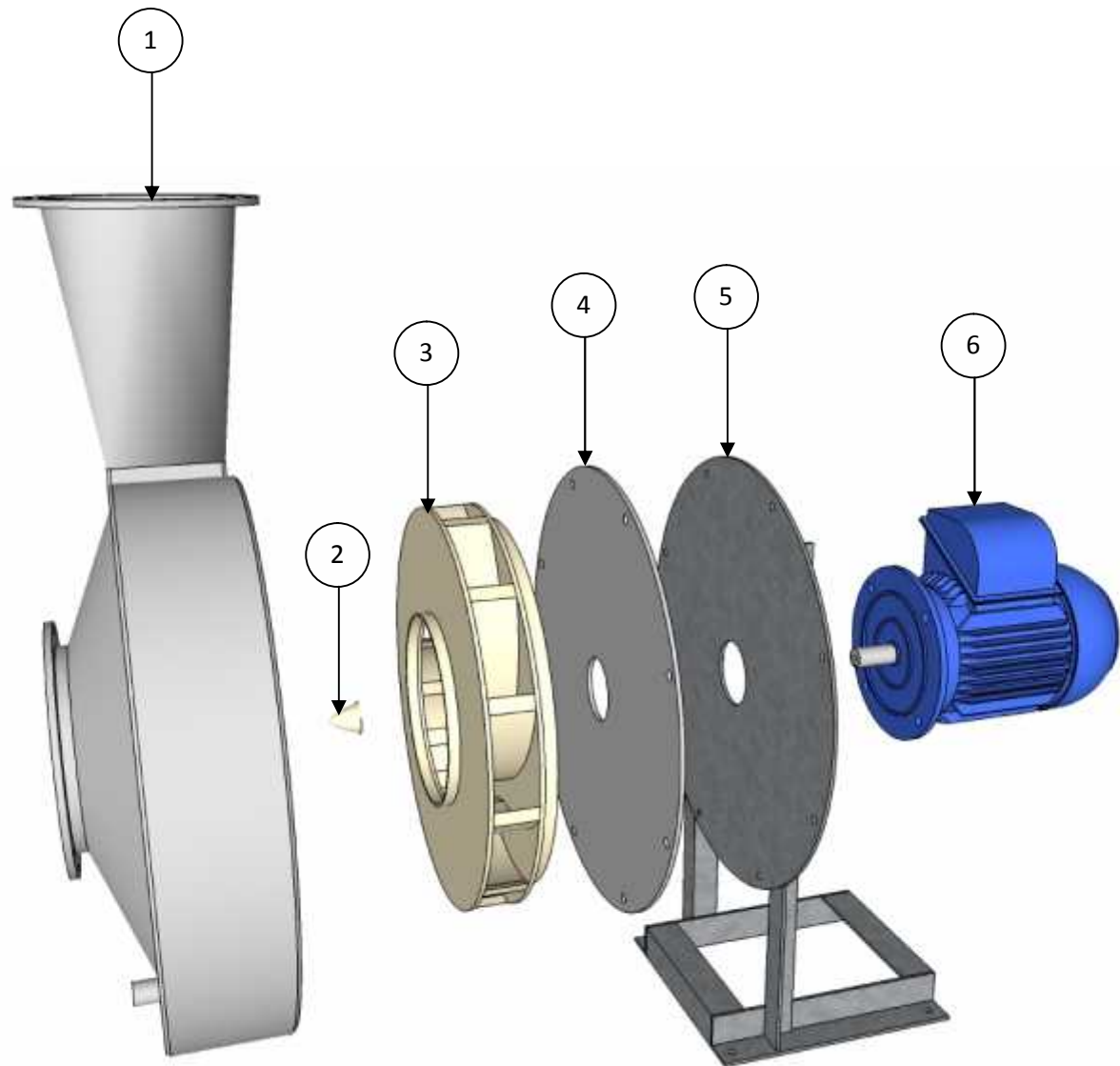
Part No	Description	Material	No Required
1	Fan case	PPs, PPs-el, PVC, PVDF	1
2	Impeller nose cap	PP, PVDF, PVC	1
3	Impeller	PPs, PPs-el, PVC, PVDF	1
4	Fan case seal plate	PPs, PPs-el, PVC, PVDF	1
5	Steelwork	Galvanised, S/S	1
6	Motor	Aluminium, cast iron	1

10. CHVS63-CHVS250 V-Belt Drive - Main Components



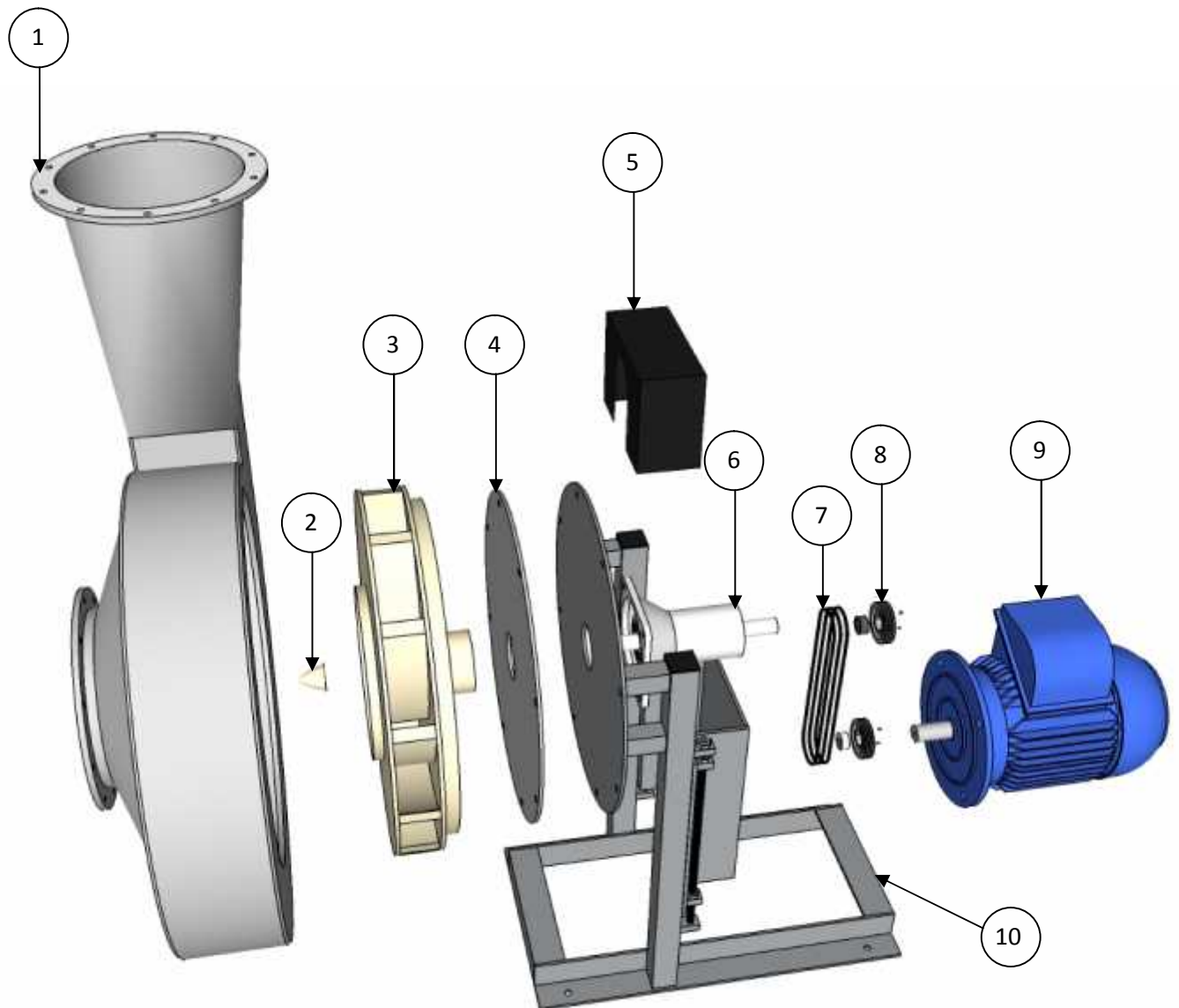
Part No	Description	Material	No Required
1	Fan case	PPs, PPs-el, PVC, PVDF	1
2	Impeller nose cap	PP, PVDF, PVC	1
3	Impeller	PPs, PPs-el, PVC, PVDF	1
4			
5	Steelwork	Galvanised, S/S	1
6	Fan shaft	EN8	1
7	Bearing housings & bearings	Cast iron / steel	2 sets
8	Pulleys	Cast iron	2
9	Fan belts	Rubber	2-4
10	Drive guard	Polypropylene	1
11	Motor	Aluminium, cast iron	1
12	Motor slide rails	Galvanised	1 set

10. CHVK63-CHVK160 Direct Drive - Main Components



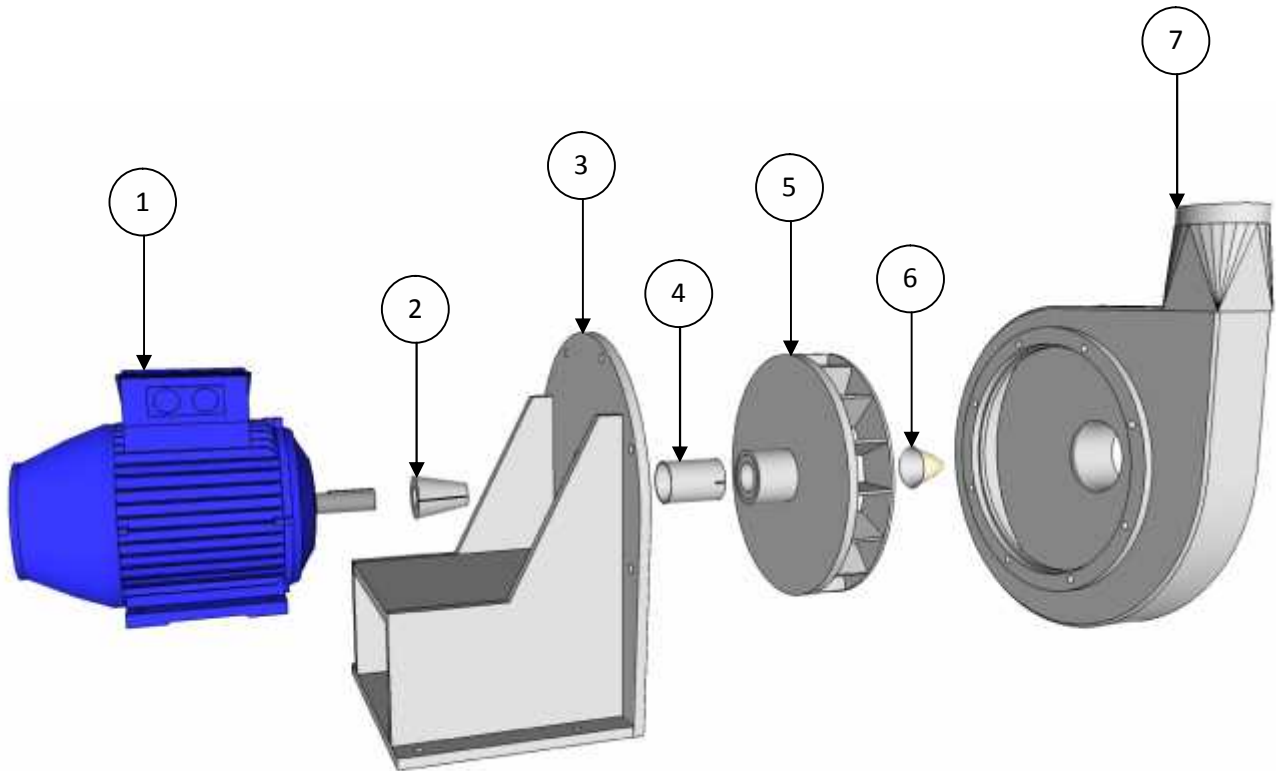
Part No	Description	Material	No Required
1	Fan case	PPs, PPs-el, PVC, PVDF	1
2	Impeller nose cap	PP, PVDF, PVC	1
3	Impeller	PPs, PPs-el, PVC, PVDF	1
4	Fan case seal plate	PPs, PPs-el, PVC, PVDF	1
5	Steelwork	Galvanised, S/S	1
6	Motor	Aluminium, cast iron	1

10. CHVK63-CHVK160 V-Belt Drive - Main Components



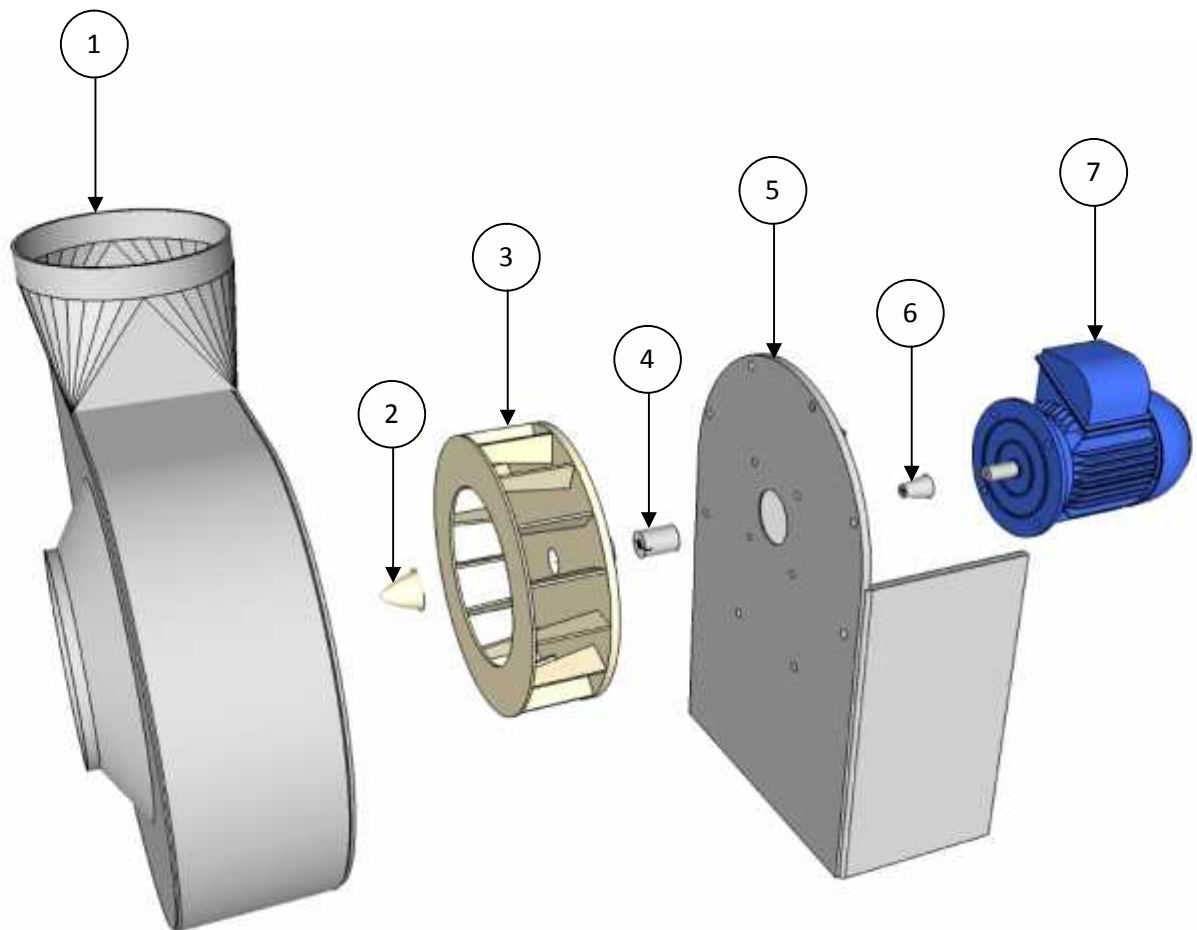
Part No	Description	Material	No Required
1	Fan case	PPs, PPs-el, PVC, PVDF	1
2	Impeller nose cap	PP, PVDF, PVC	1
3	Impeller	PPs, PPs-el, PVC, PVDF	1
4	Fan case seal plate	PPs, PPs-el, PVC, PVDF	1
5	Drive guard	Polypropylene	1
6	Bearing assembly	Cast Iron	1
7	Fan belts	Rubber	2-3
8	Pulleys	Cast iron	2
9	Motor	Cast iron, aluminium	1
10	Steelwork	Galvanised, S/S	1

10. CMV63-CMV90 Direct Drive - Main Components



Part No	Description	Material	No Required
1	Motor	Aluminium, cast iron	1
2	Motor bush	Alloy	1
3	Motor / fan support	PPs, PPs-el, PVC, PVDF	1
4	Impeller bush	Alloy	1
5	Impeller	PPs, PPs-el, PVC, PVDF	1
6	Impeller nose cap	PP, PVDF, PVC	1
7	Fan case	PPs, PPs-el, PVC, PVDF	1

10. SV Range Direct Drive - Main Components



Part No	Description	Material	No Required
1	Fan case	Polypropylene	1
2	Impeller nose cap	Polypropylene	1
3	Impeller	Polypropylene	1
4	Impeller bush	Alloy	1
5	Motor / fan support	Polypropylene	1
6	Motor bush	Alloy	1
7	Motor	Aluminium, cast iron	1