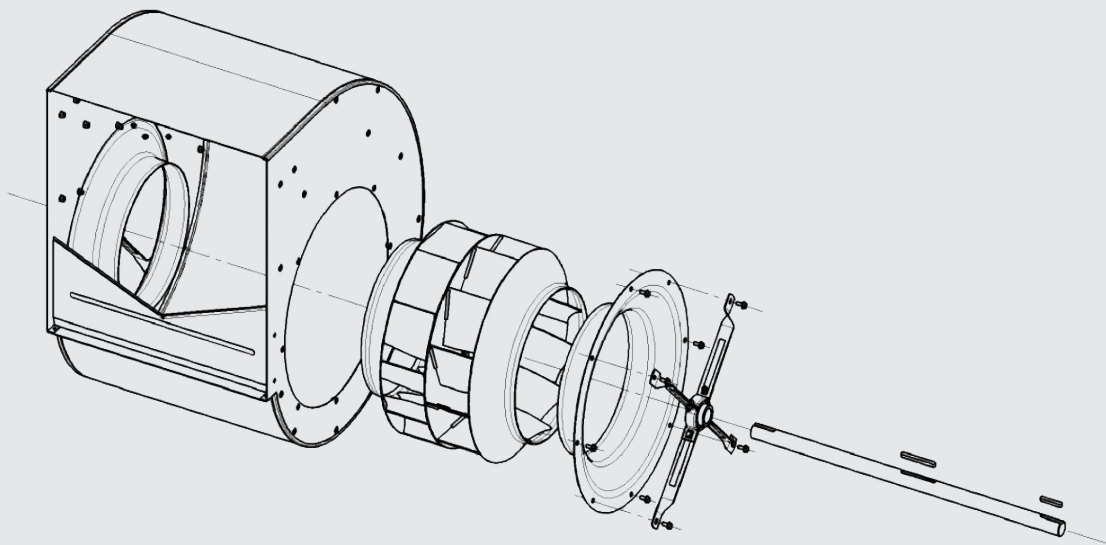




FDA, BDB, ADA, BSB, FSA



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INTRODUCTION

This manual provides information instructions for the correct installation, use and maintenance of the fans listed on the cover page. For characteristics specific to each model, see the respective product catalogue. The instructions and recommendations contained in this manual are of a general character and apply to a number of models in the range of fans produced by Soler & Palau, S.A.

The purchaser and/or user is responsible for ensuring that the fan is installed, operated and serviced by qualified personnel, acting in accordance with all safety precautions necessary and as required by the law, regulations and applicable standards of the country in which the appliance is installed.

Further instructions for the correct use of the machinery addressed in this manual can be found in the individual product catalogues for each model and in the Selector program.

RECEPTION AND INSPECTION

All Soler & Palau products are carefully checked before leaving the factory to ensure the highest standards of quality.

Recipients must check that the units they receive are in conformity with their orders and have not been damaged during transit. Any damage should be immediately reported to the delivery agent and the appropriate written notification procedure launched.

Once the recipient has formally accepted the goods, the liability of Soler & Palau shall be limited to the conditions stated in the guarantee.

We recommend performing the following checks:

- Check that components correspond in number and type/description to those indicated in the order and those listed on the delivery slip.
- Check that all parts are present and that none are damaged.
- Check that the screw and flange are not dented.
- Check that there are no moving parts except those designed as such.
- Check that the fan wheel rotates freely without touching other parts of the fan and without displaying obvious signs of imbalance, and that it is correctly attached to the driveshaft in such a way that it cannot move along its axis of rotation.
- Check that the fixing bolts are correctly tightened.
- Check that the parts securing the bearings to the driveshaft (nuts, sleeves, etc) are correctly tightened.
- Check that driveshafts and chassis have not been deformed due to e.g. violent impact during transit.
- For fans equipped with connection joints, check the correct alignment of the driveshafts.

Note: in the event of uncertainty always refer to the respective drawings and catalogues, or contact a Soler & Palau technician.

1.1 PRODUCT WEIGHTS

Standard fan weights, not including packaging, are listed in the attached tables. Values are approximate (+/-10%). For more accurate values consult the drawings.

1.2 HANDLING

Fans should be handled correctly and by skilled personnel. Incorrect transport or handling can cause damage, of which the most frequent types are:

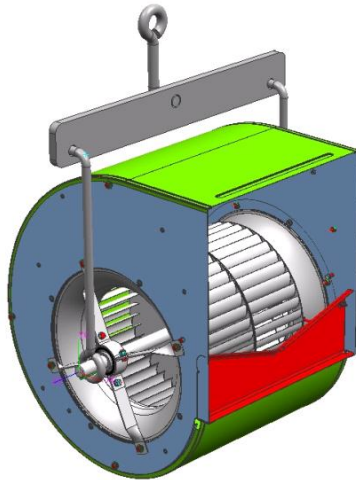
- Movement of fan wheel on driveshaft due to loosening of screws securing the fan wheel/hub to the driveshaft
- Buckling or disalignment of driveshafts
- Deformation of chassis
- Denting of screw
- Damage to bearings, and in particular loosening of the mechanisms locking bearings to driveshaft.

Fans are supplied in boxes, loose (off the pallet) or in purpose-built crates.

The equipment used for handling and moving the fans should be suited to their weight and type (shape, type of packaging, etc).

Fan units incorporating a chassis have 4 holes for hoisting. All 4 of these holes should be strung when hoisting.

Fans not incorporating a chassis should be secured at either extremity of their driveshaft using a yoke/ spacer assembly that keeps the unit balanced while being lifted, with the driveshaft always parallel to the ground.



Twin and trio units should be moved in such a way that their chassis and driveshafts are not deformed or misaligned. They should therefore be placed on a pallet at least as long as they are.

When they cannot be moved manually, fans delivered in boxes should be moved using harnesses and spacers which prevent damage to the package and its contents.

Units delivered on pallet should be lifted using a fork lift.

Do not secure units at the following points:

- intake
- fan wheel cone
- fan blades

- one extremity of the driveshaft only
- motors (ready-assembled units)
- bearings and their attachment arms or beams
- baffles

1.3 STORAGE

All Soler & Palau fans are built to withstand a maximum of 6 months storage in the following conditions:

- Storage temperature range: $-25^{\circ}\text{C} \div +65^{\circ}\text{C}$
- Relative humidity: under 60%
- Fans should be suitably protected against atmospheric agents (rain, snow, etc) and kept in a well-ventilated, heated place to prevent the formation of condensation or excessive humidity.
- Rotate the fan wheel regularly (at least once a week) to redistribute the grease inside the bearings (this prevents corrosion)
- Insulate units against external loads and vibrations
- Avoid exposure to sunlight and UV radiation
- Avoid exposure to corrosive substances

CHARACTERISTICS OF THE FAN

1.4 OPERATING CONDITIONS

The standard operating specifications for the Soler & Palau fan models indicated on the cover page can be found in the respective product catalogues.

Generally speaking, the fan units are built for operation with “clean” air.

For use in special conditions (temperatures above or below the catalogue range, atmospheres containing corrosive substances, high humidity etc), special applications or operations outside specified limit conditions, please contact Soler & Palau technical offices for details.

1.5 LIMIT CONDITIONS

1.5.1 Maximum power

The tables contained in each product catalogue indicate maximum admissible power ratings for belt transmission units and minimum recommended sheave diameters.

Belt tension when the fan is running should not exceed the values indicated in the “Selector” program. Tensioning values at initial installation are given later in this manual.

1.5.2 Maximum speed

Each product catalogue contains a table indicating maximum admissible speeds.

1.5.3 Air temperature

Each product catalogue contains a table indicating permitted air temperature ranges.

The fan may be used at temperatures below those indicated in the tables for short periods. For use at temperatures above the specified maximum, however, the limit depends on the dropping point of the grease in the bearings; see “Maintenance”.

1.6 BALANCING REQUIREMENTS

The fans are balanced to ISO 1940 G 2.5.

1.7 BEARINGS

The “Maintenance” section describes the various types of bearings used in Soler & Palau fans.

1.7.1 Service life of bearings

All Soler & Palau fans contain bearings selected to guarantee a service life of **L_{10h} = 75.000 (M and X bearings)** hours of operation as determined under ISO **L_{10h} = 40.000 hours with L bearings**).

These values are calculated in the most unfavorable conditions for the bearings, i.e. with maximum admissible radial load.

In the operating conditions generally experienced by most fans, average service life is much higher.

The service life of bearings depends on the loads to which they are subjected, and these loads vary according to many factors, of which the most important is the belt tension necessary for transmitting the power input.

This in turn depends on the diameters and number of grooves in the sheaves.

Minimum sheave diameters and belt tensioning values should never exceed the figures indicated in the Soler & Palau “Selector” program; the recommended maximum number of grooves in each sheave should not be exceeded.

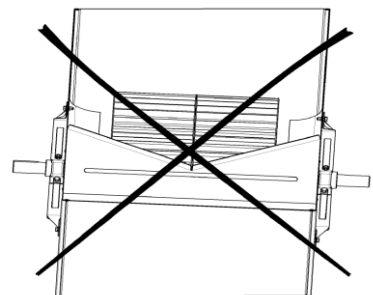
INSTALLATION

Correct installation of the fan prevents the appearance of problems at a later stage.

1.8 MOUNTING THE FAN

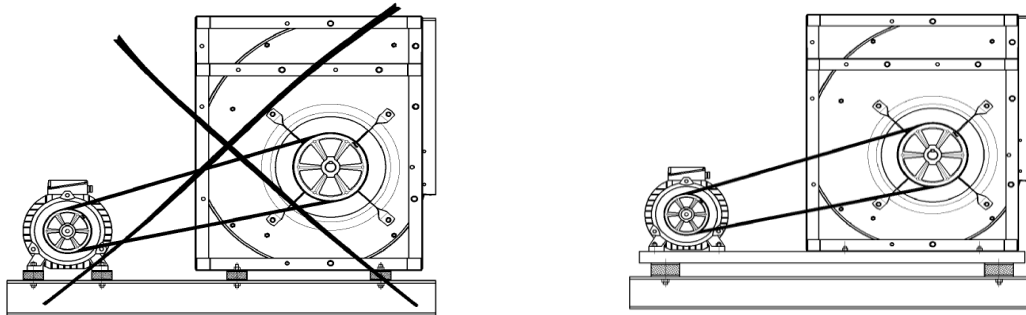
Follow these instructions carefully:

- The fan should be fixed to a rigid base or chassis built in such a way that it does not cause excessive vibration or resonance.
- Secure the fan using all mounting holes and ensure that chassis and support legs rest evenly on their entire surface.
- When tightening fixing bolts, be careful not to bend or dent the chassis, support legs or side of the fan. Avoid strains which may affect the correct operation of the fan.
- Fix the fan to a flat surface. The driveshaft should always be in the horizontal position so as to prevent the appearance of axial loads on the bearings and abnormal structural vibration. Do not use the fan with the driveshaft in an oblique or vertical position.



We recommend using a shock absorption/ anti-vibration system to isolate the base-motor-fan assembly from the machine’s structure.

Fan and motor should never be dampened separately, but should always be fixed to a common rigid base and rest on shared shock absorbers. This prevents movement of one component relative to the other, which can throw the pulleys out of alignment.



Where the fan is to be fitted to a duct, we recommend using an elastic flange to correct any misalignment between duct and outlet and prevent the transmission of excessive vibration. Always ensure in any case that outlet and duct are as perfectly aligned as possible. Fit washers to the flanges to avoid losses due to poor coupling.

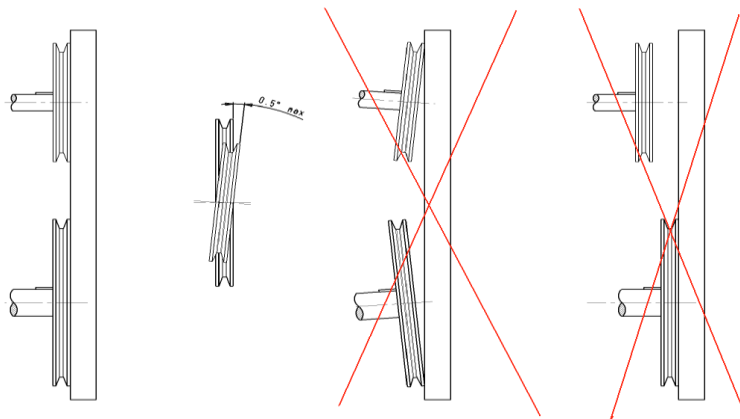
1.9 INSTALLATION OF TRANSMISSION

To dimension the transmission correctly (type and diameter of sheaves, belt tensioning values, etc..), we recommend using the Soler & Palau “Selector” program.

Pulleys, belts and motor should be selected in accordance with the limit values given in the table contained in each product catalogue. We recommend using pulleys balanced to ISO 1940 G=4 or higher.

Install the transmission as follows:

- Mount the sheaves on the motor and fan driveshafts.
- Check that motor and fan sheaves are aligned: this is easily done by resting a straight rod or bar against the sheaves.
- Make sure the grooves are clean.
- Fit the transmission belts, slackening the tensioning system so they are not stretched, which can damage them.
- Tension the belts gradually.



The amount of tension to be applied to the belts depends on many factors, including motor power, number of revolutions, type and size of belts and pulleys, etc.. Belt tension should be determined and applied as accurately as possible, as it is a decisive factor for the correct operation of the fan. See the values given in the “Selector” program.

1.9.1 Problems due to insufficient belt tension

- Belt slippage and accelerated belt wear due to friction on pulley groove
- Noise due to rubbing
- Increased vibration
- Abnormal load on components

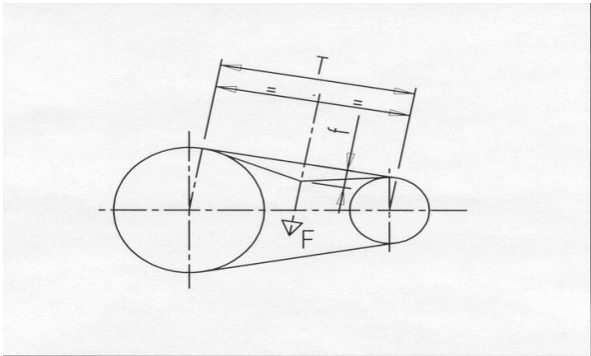
1.9.2 Problems due to excessive belt tension

- Excessive loads on bearings and fan and motor driveshafts, reducing their service life
- Abnormal loads on other components
- Increased noise and vibration

1.9.3 Measuring belt tension

If no special instruments for measuring belt tension are available, the following method is reliably approximate.

To determine the correct tension: for each belt, measure length T and use a dynamometer to measure the perpendicular force at the midway point on T necessary for making an indentation f of 1.5 mm for every 100 mm of T; check the F value given by the dynamometer against the F' and F'' values given in the table.



Type of belt	Diameter of Smaller sheave (mm)	Rotation speed of smaller sheave (RPM)	Min. F' (Newton)	Max. F'' (Newton)
SPZ	50÷90	1200÷5000	10	15
	100÷150	900÷1800	20	30
	155÷180	600÷1200	25	35
SPA	90÷145	900÷1800	25	35
	150÷195	600÷1200	30	45
	200÷250	400÷900	35	50
SPB	170÷235	900÷1800	35	45
	250÷320	600÷1500	40	60
	330÷400	400÷900	45	65
SPC	250÷320	900÷1800	70	100
	330÷400	600÷1200	80	115
	440÷520	400÷900	90	130

N.B. 1) This table refers to transmissions with ratio 2:4. If $F < F'$ the belt needs to be tightened. If $F > F''$ the belt needs to be loosened.

2) Belt tension will decrease significantly during running-in of the transmission. Therefore, during initial installation the belts should be tightened such that the force F generated by arrow f is 1-3 times higher than the value given in the table.

1.9.4 Table maximum number of throats recommended for pulleys

	SL-SM-CL-CM	TL-TM-XM	TX-XX
N° of grooves	2	3	4

1.10 SAFETY ACCESSORIES

Some safety features are incorporated in the fan as standard, while others are available on an optional basis. The client/user is responsible for ensuring that the plant or machinery in which the unit supplied by Soler & Palau is installed observes the safety regulations applicable to the type of equipment and the country in which it is used.

1.10.1 Protection of moving parts

All fans have moving parts, and these must be suitably protected to prevent contact, even accidental, with them.

Centrifugal fans are normally connected to ventilation ducts with prevent contact with internal moving parts. In installations where outlets or intakes are left exposed, these should be fitted with suitable protective grilles. In addition to this protection, the transmission shaft, wheels, belts and other external moving parts of the fan should also be suitably shielded. (ref. UNI 9219)

1.10.2 Power cutoff

All fans should feature a switch enabling interruption of the power supply.

Many fans are operated by remote or automated control systems. To prevent risks with these fans, a means of interrupting the power supply should be installed near the fan, allowing maintenance personnel to switch off the fan independently of the principal control system.

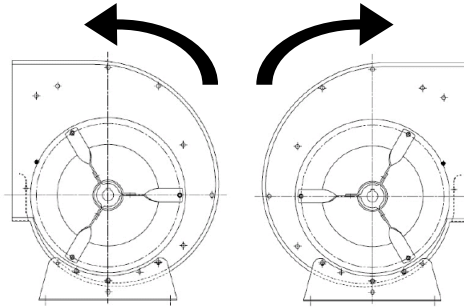
1.11 PRE-INSTALLATION SAFETY CHECKS

Make sure there are no foreign bodies inside the screw or fan wheel which may interfere with the rotation of the latter or be expelled during operation (e.g. screws lost during assembly etc.)

- Make sure the driveshaft is not bent or misaligned in twinned fans.
- Rotate the driveshaft to check that the fan wheel turns freely without rubbing against the intake.
- Check that all bolts and screws are properly tightened.
- In fans with bearings secured by an eccentric collar, check that the clamp ring is properly tightened.
- Check that the fanwheel does not move axially along the driveshaft. Check that the hub pins are properly tightened.

1.12 STARTING THE FAN

- Connect the motor to the power supply as shown in the wiring diagram.
- Start the fan.
- Check that the fan wheel is turning in the direction indicated by the arrow displayed on the fan.



- Check that noise and vibration levels are normal.
- Check that voltage and current requirement are correct and within the ratings range indicated on the motor.

MAINTENANCE

Maintenance of the fan should only be performed by qualified and experienced personnel.

Disconnect the fan before all maintenance and servicing operations and wait for all moving parts to come to a stop.

CLOSE ALL DAMPERS UPSTREAM AND DOWNSTREAM FROM THE FAN TO PREVENT ACCIDENTAL ROTATION OF THE FAN WHEEL DUE TO AIR CURRENTS.

In the first two hours of operation

After installation, the fan unit should be monitored for at least two hours to ensure that no abnormal noise or vibration is being produced and that voltage and current requirement are normal, i.e. not higher than the rating plate values on the motor.

If necessary, readjust belt tension to compensate for initial slackening.

After 24 hours of operation

Perform the following checks:

- Check and if necessary realign the sheaves and retension the belts.
- Check that all bolts and screws are correctly tightened.
- Check that bearings are securely fitted to the driveshaft.
- Check that the fan wheel can rotate freely, without rubbing against the intake and without moving along the driveshaft.

During the initial hours of operation small spots of grease may emerge from the bearing: this is normal and no cause for alarm.

Tightening torque for bolts (Nm)			
Dimension	Type		
	8,8	10,9	12,9
M4	3,2	5	6
M5	6,4	9	11
M6	11	16	19
M8	27	39	46
M10	53	78	91

1.13 ROUTINE MAINTENANCE

To ensure the correct operation of the fan it should be maintained on a regular basis. As a general rule, and respecting limit and normal operating conditions, perform the following operations at least twice a year:

- Check noise and vibration: abnormal levels are a sign of malfunction.
- Check for the presence of corrosion in the unit, especially the rotary parts.
- Clean the fan paying especial attention to the impeller, to prevent the accumulation of particles which can cause misbalance of the fan wheel, leading to a reduction of the service life of the bearings and increased noise and vibration levels.

Some components may require more frequent maintenance. Maintenance checks to be performed on individual components are listed below.

1.13.1 Transmission

We recommend checking the transmission at least every 3 months.

In particular:

- Check that the belts are correctly tensioned and in good general condition; if frayed or ragged, replace.
- Check that the grooves of the sheaves are clean.

1.13.2 Bearings

All maintenance on bearings should be performed with the suitable tools.

The condition of the bearings can be effectively determined simply by listening to the noise they make. A bearing in good condition emits a steady noise. A defective bearing, on the other hand, makes a loud and / or irregular noise.

Bearings may also emit a slight metallic ticking, especially at low speed; this is perfectly normal and is a consequence of the play between the parts of the bearings.

Excessive vibration and temperature may also be symptoms of damaged bearings.

Periodically check the condition of seals and the locking system in the inner ring on the driveshaft.

Check that there is no excessive loss of grease.

As explained above, the bearings are dimensioned for a mechanical service life (L_{10h}) of 75.000 hours or (L_{10h}) 40.000 hours, depending on the type of bearing.

The grease contained in the bearings may not last as long as the bearings themselves.

Bearings mounted in shock-absorbent rubber do not need relubricating, while those in rigid housings must be relubricated when necessary to ensure the indicated mechanical service life of the bearing.

Therefore the amount and condition of the grease should be checked.

1.13.3 Lubrication of bearings

Frequency of lubrication of bearings depends on many factors, which are interconnected in a rather complex manner. These factors include the type and dimensions of the bearing, its speed of rotation, operating temperature, type of grease used and the environment in which the bearing operates. Recommendations on frequency of lubrication can therefore be approximate only.

Lubrication intervals vary according to the type and quality of the grease and operating conditions. Although difficult to establish a general rule, in normal operating conditions grease should be replaced before it reaches a third (1/3) of its rated service life.

For a standard bearing housing in normal environmental conditions, with operating temperature between -15 and +70°C, it is advisable to relubricate after 3000 hours of operation, or at intervals of 6-9 months. At higher temperatures we recommend halving the interval between lubrications for every 15°C of bearing operating temperature in excess of 70°C (the maximum operating temperature as given in the product catalogue should never be exceeded).

These indications are not valid in the event that water, moisture or solid impurities have penetrated the bearings. In such an event we recommend frequent relubrication to flush impurities from the bearings.

Never allow more that 20.000 hours of operation to pass between services.

The amount of grease consumed, and therefore the amount to be added during relubrication, can be calculated using the following equation:

$$(g/h) = 0.005 \times D \times B$$

where

g = quantity of grease

h = hours of operation

D = external diameter of bearing

B = total width of bearing

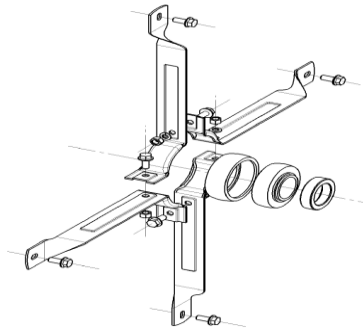
Bearings should always be relubricated with the same type of grease as originally applied.

Standard bearings are as a rule with lithium soap grease with a mineral base oil-consistency NLGI 2.

The performance of the bearing is significantly influenced by the quality of the grease. To avoid excessive grease replenishment, which may cause the bearing to overheat and damage sliding bearings, insert grease until it just begins to ooze out of the gap between the outer ring and the edge of the spacer- just a little grease should be visible.

1.14 REPLACEMENT OF BEARINGS

1.14.1 Dismantling bearings with eccentric collar.



- Unscrew the locking pin from the eccentric collar.
- Unscrew the eccentric ring (by turning it in the opposite direction to the direction of rotation of the driveshaft).
- On the driveshaft, mark the position of the bearing.
- Suspend the driveshaft between the bearing attachment arms and the fan wheel.
- Remove and unscrew the bearing support arms. (this operation is not necessary with fans in the CBP range).
- Using a file, remove the slime deposited on the driveshaft by the locking pin of the eccentric collar.
- Remove the bearing from the driveshaft using an extractor or by tapping the internal ring with a hammer.
- Replace the bearing and the rubber damper ring.

1.14.2 Assembling bearings with eccentric collar

- Mount the attachment arms around the bearing complete with damper ring. For fans in the CBP range, this operation can be performed with the arms already assembled and fixed to the side panel, after greasing the surface of the damper ring to make it easier to insert.
- Clean the driveshaft thoroughly. If the driveshaft is not new, make sure its dimensions and surface finish are the same as they were originally.
- Mount the bearing in the position indicated above.
- Fix the arms to the side panel.
- Insert the eccentric collar and turn it in the direction of rotation of the driveshaft until it locks.
- Tighten the pin without exceeding the maximum tightening torque.

Driveshaft diameter	Hexagon wrench key size	Recommended tightening torque	Max. Tightening torque
mm	mm	Nm	Nm
20	3	4	6
25	3	4	6
30	4	7	10
35	5	17	25
40	5	17	25
45	5	17	25
50	5	17	25
60	5	17	25

1.14.3 Dismantling housings with ball bearings and eccentric collar

- Rest the driveshaft on the bearing crossbeam and the fan wheel.
- Unscrew the locking pin from the eccentric collar.
- Unscrew the eccentric ring (by turning it in the opposite direction to the direction of rotation of the driveshaft).
- On the driveshaft, mark the position of the bearing.
- Loosen the housing bolts.
- Using a file, remove the slime deposited on the driveshaft by the locking pin of the eccentric collar.
- Remove the bearing from the driveshaft using an extractor or by tapping the inner ring with a hammer.
- Replace the housing.

1.14.4 Assembling housings with ball bearings and eccentric collar

Clean the driveshaft thoroughly. Where the driveshaft is not new, make sure its dimensions and surface condition are as they were originally. Mount the housing in the position indicated above. Tighten the housing fixing bolts. Fit the eccentric collar, turning it in the direction of rotation of the driveshaft until it locks. Tighten the pin without exceeding the maximum tightening torque indicated in the previous paragraph.

1.14.5 Dismantling housings with ball bearing and adapter sleeve

- Rest the driveshaft on the bearing crossbeam and the fan wheel.
- Mark the position of the adapter sleeve on the driveshaft.
- Disengage the safety washer tab.
- Loosen the nut through several turns but leaving it in place on the adapter.
- Unscrew the fixing bolts of the housing.
- Hold a shim to the inner ring and strike with a hammer to release and remove the housing. Alternatively, an extractor can be used.
- Replace the housing.

1.14.6 Assembling housings with ball bearing and adapter sleeve

- Clean the driveshaft thoroughly. If the driveshaft is not new, make sure its dimensions and surface finish are the same as they were originally.
- Separate the nut and washer from the adapter sleeve (fig.2).
- Fit the adapter sleeve in the position previously marked on the driveshaft (fig.1,3).
- Position the housing on the adapter sleeve, inserting it from the wider side of the conical aperture.
- Replace the washer and nut, tightening the latter with a suitable key and observing the tightening torque indicated in the table (fig.4).
- Bend one of the washer tabs into one of the recesses of the nut (fig.5).
- Tighten the housing fixing bolts (fig.6).





Fig. 4



Fig. 5



Fig. 6

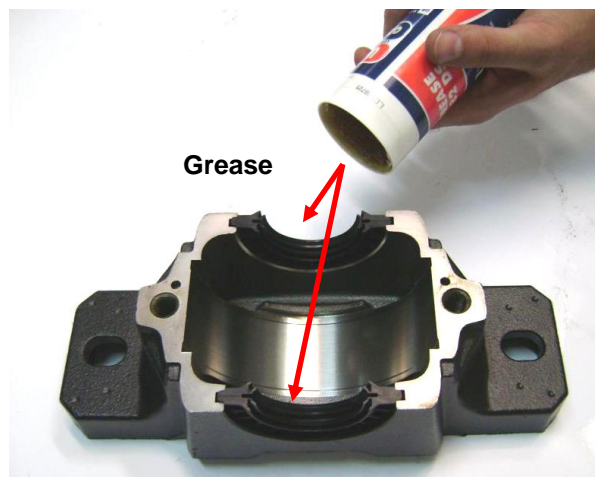
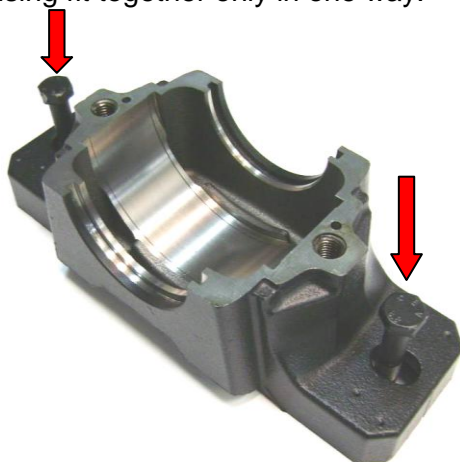
Driveshaft diameter	Hexagon wrench key size	Recommended tightening torque	Max. tightening torque
mm	mm	Nm	Nm
20	HN5	13	17
25	HN6	22	28
30	HN7	27	33
35	HN8	35	45
40	HN9	45	55
45	HN10	55	65
50	HN11	65	85
60	HN13	110	150

1.14.7 Dismantling SNL bearing housings with double ball bearings and adapter sleeve

- Check that the driveshaft and housing are suitably supported during dismantling.
- Remove the bolts from the cap and remove from the base.
- Lift the driveshaft together with bearing from the base of the housing.
- This can be made easier by tapping a hammer on a suitable shim placed against the nut an inner ring of the bearing.
- Mark the position of the adapter sleeve on the driveshaft so it can be re-mounted in the same position. Disengage the tab of the safety washer.
- Loosen the nut through several turns but leaving it in place on the adapter.
- Hold a shim to the inner ring and strike with a hammer to release and remove the housing. Alternatively, an extractor can be used.

1.14.8 Assembling SNL bearing housing with double ball bearing and adapter sleeve

If the bearing is to be mounted on an adapter sleeve, determine the housing position. The lubricator positioned laterally to the housing cap (for more effective lubrication) should always be positioned on the opposite side to that on which the nut is located. The base and cap of the housing fit together only in one way.



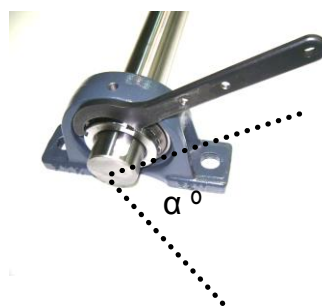
- Rest the base on a suitable surface. Insert the fixing bolts but do not tighten them
- Rest the bearings in their respective grooves in the housing and fill the space between the lips with grease
- Remove the protective covering from the surface of the aperture, the surface of the external diameter of the bearing and the surfaces of the sleeve adapter



- Slide the sleeve adapter onto the driveshaft
- Position the bearing on the sleeve adapter



- Tighten the nut with its bevelled face against the bearing but do not mount the washer yet
- Manually tighten the nut until bearing, sleeve adapter and driveshaft are in contact with one another
- Position a pin wrench at an angle of 75° and tighten the nut



- Now position the wrench at 180° relative to its original position and tighten the nut a few degrees more, lightly tapping the shaft of the wrench with a hammer. In this way the bearing can be straightened in the event that it was at an oblique angle.



- Unscrew the nut. The bearing remains in place. Position the washer.



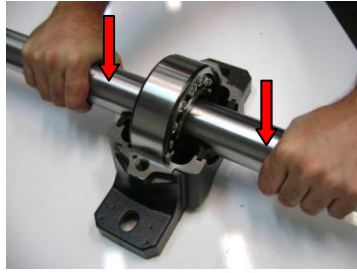
- Tighten the nut firmly, but without making the bearing slip along the driveshaft. Secure the nut by bending one of the washer tabs into one of the recesses on the nut, without closing it completely.



- Check that the driveshaft and outer ring rotate without difficulty



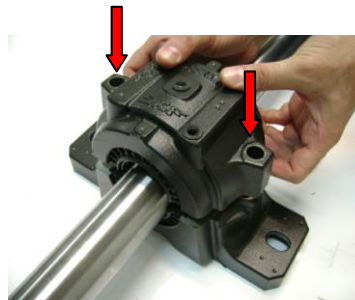
- Grease the bearing
- Only about 30-50% of the housing cavity should be filled. For grease quantities, see the table
- Place the driveshaft and bearing in the base of the housing



- Position the locking ring on either side of one of the two bearings, preferably the one on the transmission side.
- Make sure the housing base is correctly aligned. The vertical signs on the various surfaces and on the extremities of the housing base make this easier. Gently tighten the fixing bolts.



- Fit the other halves of the bearings into the cap piece and fill the space between the lips with grease.
- Place the cap on the base and tighten the bolts to secure both halves (see table). The caps and bases of one housing are not interchangeable with those of another. Check that cap and base bear the same identificatory markings.



- Fully tighten the fixing bolts to the base plate (see table).



Type of housing	Quantity of grease		Cap bolts	Base bolts	
	First fill	Relubrication	Tightening torque	Type	Tightening torque
	g	g	Nm		Nm
SNL 506-605	40	5	50	M12	90
SNL 507-606	50	10	50	M12	90
SNL 508-607	60	10	50	M12	90
SNL 510-608	75	10	50	M12	90
SNL 511-609	100	15	80	M12	220
SNL 512-610	150	15	80	M16	220
SNL 513-611	180	20	80	M16	220
SNL 516-613	250	25	80	M20	430
SNL 518-615	430	40	150	M20	430

For relubrication interval refers to the information in the previous chapter.

Operational Limits - "FDA"

			160	180	200	225	250	280	315	355	400	450	500	560	630	710	800	900	1000
Maximum Absorbed Power	S-C	kW	2	2	2.5	3	3	4	5.5	5.5	7.5	7.5	11	11	15	18.5			
	T	kW					7.5	11	11	15	15	18.5	18.5	22	22	25	25	30	37
	X	kW												37	37	45	45	75	75
	S2-C2	kW					6	8	8	11	11	13	13						
	T2	kW								20	20	22	24	28	28				
Maximum Fan Speed	S-C	rpm	4200	3700	3300	2900	2700	2400	2100	1800	1600	1400	1200	1100	900	800			
	T	rpm					3000	2700	2200	2000	1800	1600	1300	1200	1000	900	750	650	600
	X	rpm											1300	1100	1000	800	700	650	
	S2-C2	rpm					2200	2000	1600	1500	1200	1000	900						
	T2	rpm								1700	1400	1200	1000	900	750				
Temperature Range Min. -20oC	S-C	Max.°C	85	85	85	85	85	85	85	85	85	85	85	85	85	85			
	T-X	Max.°C					100	100	100	100	100	100	100	100	100	100	100	100	100
	S2-C2	Max.°C					85	85	85	85	85	85	85						
	T2	Max.°C								100	100	100	100	100	100				
Wheel	Diameter	mm	160	180	200	225	250	280	315	355	400	450	500	560	630	710	800	900	1000
	Weight	kg	1.4	1.6	1.7	1.9	2.8	3.6	4.8	5.7	9.7	11.7	18.5	24.5	33	41.5	65	76	92
	$J = PD^2/4$	kgm ²	0.01	0.011	0.014	0.02	0.04	0.06	0.1	0.15	0.33	0.5	0.95	1.6	2.7	4.4	8.7	13.1	19.4
Fan weight	S	kg	7	8	9	10.6	12	17	22	28	37	48	69	81	101	118			
	C	kg		9.5	10.5	12	15	20	24	32	41	51	74	93	104	127			
	T	kg					21	27	30	45	55	61	81	110	140	192	240	293	340
	X	kg											138	175	227	281	326	384	
	S2	kg					25	35	45	59	77	100	142						
	C2	kg					32	43	52	69	88	108	155						
	T2	kg								116	145	166	207	273	334				

Operational Limits - “BDB”

			200	225	250	280
Maximum Absorbed Power	S-C	kW	2	2,2	2,5	2
	T	kW	-	-	6	7
Maximum Fan Speed	S-C	rpm	5200	4500	4000	3500
	T	rpm	-	-	5200	4600
Temperature Range Min. -20°C	S	Max.°C	85	85	85	85
	C	Max.°C	85	85	85	85
	T	Max.°C	-	-	100	100
Fan weight	S	kg	8	10	11	17
	C	kg	9,5	11,5	14	20
	T	kg	-	-	20	27

			315	355	400	450	500	560	630	710	800	900	1000	1120	1250	1400	
Maximum Absorbed Power	S-C	kW	4	5	6	8	10	12	14	18							
	T	kW	8	11	14	18	20	25	30	40	22	30	35	45	50	70	
	X	kW	16	22	28	35	45	50	60	80	50	60	80	100	120	160	
	Z	kW										100	120	160	180	200	250
	S2-C2	kW	5	6.5	6.5	7.5	7.5										
	T2	kW		15	15	18	22	22	25								
Maximum Fan Speed	S-C	rpm	3100	2700	2500	2200	1900	1700	1500	1350							
	T	rpm	4100	3500	3200	2900	2500	2200	2000	1800	1200	1050	1000	850	780	680	
	X	rpm	5100	4500	4100	3600	3200	2800	2500	2200	1600	1400	1300	1100	1000	900	
	Z	rpm										2000	1750	1600	1400	1250	1100
	S2-C2	rpm	2400	2200	1800	1600	1200										
	T2	rpm		2800	2400	2200	2000	1550	1300								
Temperature Range Min. -20°C	S-C	Max.oC	85	85	85	85	85	85	85	85							
	T-X	Max.oC	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
	S2-C2	Max.oC	85	85	85	85	85										
	T2	Max.oC		100	100	100	100	100	100								
Fan weight	S	kg	26	37	42	58	74	95	118	174							
	C	kg	27	41	45	62	81	110	141	199							
	T	kg	40	53	67	89	118	158	197	251	299	368	474	687	967	1362	
	X	kg	49	65	82	94	124	166	212	271	323	397	512	755	1064	1430	
	S2	kg	46	66	76	103	129										
	C2	kg	53	76	91	117	148										
	T2	kg		106	132	147	182	235	296								

Operational Limits - “ADA”

			315	355	400	450	500	560	630	710	800	900	1000	1120	1250	1400
Maximum Absorbed Power	S-C	kW	4	4.5	6	8	9	11	14	16						
	T	kW	8	10	13	17	20	25	30	40	22	28	35	45	50	70
	X	kW	16	20	25	35	40	50	60	75	45	63	70	100	110	160
	Z	kW									90	125	150	160	220	300
	S2-C2	kW	5	6.5	6.5	7.5	7.5									
	T2	kW		15	15	22	24	25	25							
Maximum Fan Speed	S-C	rpm	3150	2700	2500	2250	1900	1700	1500	1350						
	T	rpm	4100	3500	3300	2900	2500	2200	2000	1800	1200	1100	950	900	800	700
	X	rpm	5100	4500	4100	3700	3200	2800	2450	2250	1550	1400	1250	1150	1000	900
	Z	rpm									1950	1800	1600	1450	1300	1150
	S2-C2	rpm	2400	2200	1800	1700	1250									
	T2	rpm		3000	2500	2400	2150	1600	1350							
Temperature Range Min. -20°C	S-C	Max.°C	85	85	85	85	85	85	85	85						
	T-X	Max.°C	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	S2-C2	Max.°C	85	85	85	85	85									
	T2	Max.°C		100	100	100	100	100	100							
Fan weight	S	kg	27	36	42	57	71	94	120	170						
	C	kg	28	40	45	61	78	109	143	195						
	T	kg	40	52	66	86	114	156	198	246	294	374	464	672	974	1370
	X	kg	48	63	80	90	119	166	214	267	319	405	505	744	1074	1444
	S2	kg	46	65	75	100	128									
	C2	kg	53	75	90	114	147									
	T2	kg		104	131	144	175	236	300							

Although every care has been taken to ensure the accuracy of the information provided in this manual, Soler & Palau, S.A. cannot accept responsibility for any errors or omissions.



S&P SISTEMAS DE VENTILACIÓN, SL

C. Llevant, 4
Polígono Industrial Llevant
08150 Parets del Vallès
Barcelona - España

Tel. +34 93 571 93 00
Fax +34 93 571 93 01
www.solerpalau.com



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