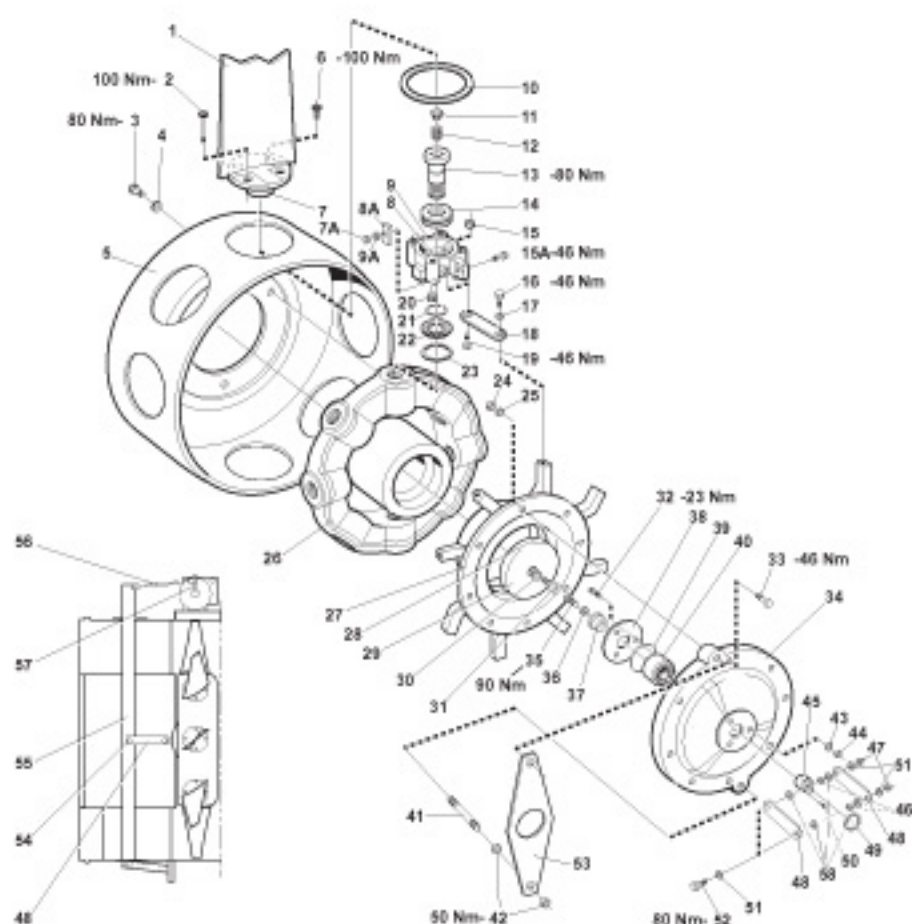


Axico Anti-Stall - FPMC



Safety, Installation, Operation and Maintenance Instructions

Part No. 419701

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Safety regulations

This instruction includes warnings. These indicate the risk of accidents, which cause or can cause personal injuries. Accident risks are arranged into three categories depending upon their probability and the severity of the results of an accident.

Technical warnings indicate the risk of failure or malfunction.

◆DANGER!

DANGER indicates that an accident will occur if the regulations are not followed. The subsequent accident can lead to serious personal injury, possibly fatal, or serious damage to property.

Caution!

CAUTION indicates that an accident may possibly occur if the regulations are not followed. The accident can lead to serious personal injury, possibly fatal, or serious damage to property.

Important!

IMPORTANT indicates that an accident may possibly occur if the regulations are not followed. The accident can lead to personal injury, or damage to property.

NOTE!

NOTE indicates the risk of an accident or malfunction if the regulations are not followed.

Sound

The EG Machinery Directives 98/37/EC require the maximum sound pressure level, measured at a distance of 1 m from the source, and the sound power level to be specified. Maximum sound pressure will be measured straight in front of the inlet or outlet of the fan.

The levels applicable to the FPMC series of fans see table below.

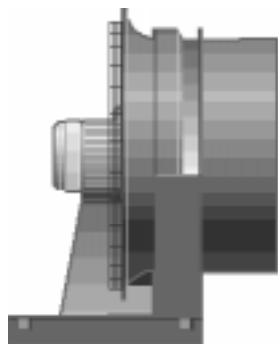
The sound power level was determined by means of the AMCA 300, ISO 3744, ISO 9614-1 and BS 848 measuring methods.

Sound power level dB(A)	Sound pressure level dB(A)	Sound pressure level dB(C)
138	133	134

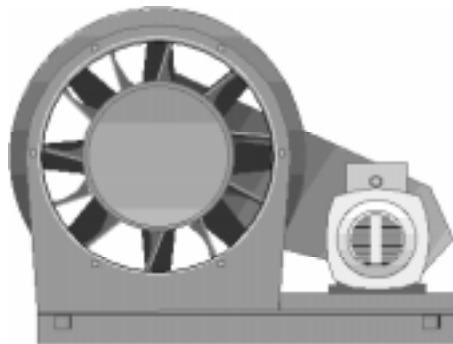
Qualification

All personnel carrying out work and service on this fan must have read and understood the instructions applicable.

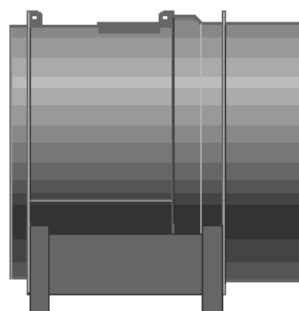
Installation and maintenance



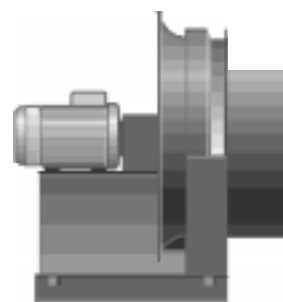
Arrangement 1



Arrangement 3



Arrangement 6, horizontal



Arrangement 7

Fig. 1

General

The fan is available in five different versions, as shown in Fig. 1

Arrangement 1: Open suction. The fan impeller is mounted direct on the end of the motor shaft.

Arrangement 3: Open suction. Designed for belt drive. Motor and fan are mounted on a common base frame.

Arrangement 6: Designed for duct connection on both sides, either horizontally or vertically. The impeller is mounted direct on the end of the motor shaft.

Arrangement 7: Open suction. The impeller is mounted on a separate intermediate shaft connected to the motor shaft by means of a flexible coupling.

All fans are factory tested with regard to control function, bearings, vibration level and power consumption.

The FPMC type of fans have a pneumatic single-acting actuator incorporated in the impeller. The blade angle is controlled by an externally mounted positioner.

Lifting instructions

Caution!

- Arrangement 1: Lifting hooks in the base frame.
- Arrangement 3: Lifting hooks in the base frame.
- Arrangement 6, horizontal: Lifting eyes on top of the fan.
- Arrangement 7: Lifting hooks in the base frame.

Installation and connection

Important!

Each fan is delivered with antivibration mountings and fixing bolts for attachment of the mountings to the fan. These are either temporarily attached to the fan at each mounting point, or packaged in a carton together with the sleeve coupling. The fan shall be bolted to the floor/foundation with 2 or 4 bolts, respectively, per antivibration mounting. These bolts are not included in the delivery.

The fan must be carefully aligned and connected to the duct system by means of the flexible sleeve coupling. Ensure that the fan outlet is positioned 40-140 mm from the connecting duct.

All fans are delivered with antivibration rubber mountings. Two different types of rubber hardness is used - A and B. The bottom plate of the antivibration mountings is marked, e.g. RA 350 EM B where 'B' indicates the rubber hardness.

In certain arrangements the antivibration mountings may be of different hardness for the same fan and must then be fitted as shown in figure 2 and table 1, respectively, where 'A' and 'B' indicate the rubber hardness.

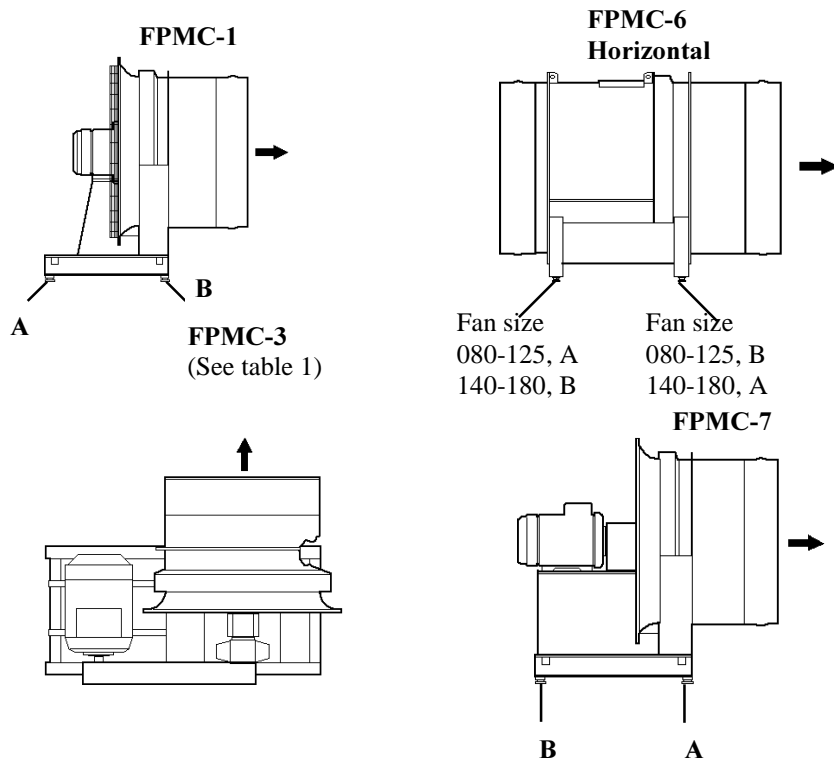


Fig. 2

FPMC-3

Fan size	Motor	1	2	3	4
080	180-250	A	A	A	B
090	180-200	A	A	A	B
	225-250	A	A	B	B
	280	B	A	B	B
100	200	A	A	A	B
	225-250	A	A	B	B
112	225	A	A	B	B

Table 1

N.B.
In all other arrangements the fan must be installed with anti-vibration mountings of the same hardness. Do not mix anti-vibration mountings from different fan deliveries.

Electrical connection

◆DANGER!

Arrangements 1, 3 and 7: Direct connection to the terminal box on the motor.

Arrangement 6: Connection either direct to the motor or to an external terminal box, if relevant.

Starting

NOTE!

1. Lubricate motor and shaft bearings before starting the fan. Shaft bearings are lubricated through grease nipples on the base frame. Quantities and grades of grease are specified on page 5 and 6, and on rating plates at the grease nipples. In arrangement 6 the grease nipples on the motor are connected to external grease nipples, as required.

◆DANGER!

2. Ensure that any blocking of the fan impeller has been removed, and that there are no loose objects in the fan room or ducts that can be drawn into the fan on start-up.

Use ear protection in the vicinity of an operating fan.

Note that a vacuum can be created in the fan room causing the doors of the room to be flung open or shut with great force.

3. Start the fan with the blade pitch setting at a minimum. Do not start the fan with closed damper.

4. Check the fan control function by altering the speed control between min. and max. a few times.

Maintenance

Caution!

Measures before any work is carried out on the fan

To prevent injury to personnel and damage to machinery all fan fuses must be removed and the safety switch turned off **before** any work on the fan is commenced.

When work is carried out on the fan the impeller shall be blocked with a piece of wood or similar item to prevent rotation as a result of air blowing through the fan blades.

Note that there is risk of injury if hands or fingers get squeezed in the fan control mechanism when the impeller is being removed or fitted.

General

Important!

Follow the maintenance instructions of the motor supplier. The V-belt drive in arrangement 3 should be inspected and maintained in accordance with ABB Ventilation Products AB instructions No. 95-09 -V-Belt Drives - 3:2.

If any of the joints below has been loosened, the joint must be retightened in accordance with the torque specified in table 2 and 3, respectively.

1. Bolts securing the motor to the base frame.
2. Bolts securing the bearing housing of the intermediate shaft to the base frame.
3. Screws retaining the taper bush in the shaft coupling.

Screw size	Tightening torque (Nm)
M10	46 ± 2
M12	80 ± 4
M16	195 ± 10
M20	350 ± 15
M24	520 ± 20

Table 2

Tightening torques specified apply to unlubricated screws of strength class 8.8 tightened by means of a torque wrench. Pre-tightening by means of a nut runner may be carried out to about 75% of the torque specified.

Tightening torque for TAPER-LOCK® bushes.
Each bush is marked with its number.

Bush no. no.	Tightening torque (Nm)	Bush no.	Tightening torque (Nm)	Bush no.	Tightening (Nm)
1008	5,5	2012	32	3535	11
1108	5,5	2517	48	4040	169
1210	19,5	2525	48	4545	191
1310	19,5	3020	90	5050	245
1610	19,5	3030	90		

Table 3

Every month

Important!

Arrangement 3: Lubricate the shaft bearings through the grease nipples on the base frame.

Grease quantity/Bearing

Size 080-090 25 g
Size 100-112 45 g

Every third month

Important!

1. Verify proper operation of the fan control mechanism by changing a few times between min. and max. positions.
2. **Arrangement 3:** Lubricate the adjustment bearing via the grease nipple on the guide vane/CD diffusor. Grease quantity 10 g.
3. **Arrangement 7:** Lubricate the shaft bearings through the grease nipples on the base frame.

Grease quantity/bearings

Size 080-125	25 g
Size 140-180	45 g

Every third month (continued)

Important!

3. Check the fan for vibration and noise from bearings. If vibration levels exceed 7 mm/s measured on the bearing housing, the cause should be established and remedial measures taken.

Every sixth month

Important!

Lubricate the adjustment bearing via the grease nipple on the guide vane/CD diffusor. Grease quantity 10 g. Applies to arrangement 1, 6 and 7.

Lubrication intervals specified apply to bearings with a temperature of max. 70°C.

Grease qualities recommended:

Shell	Alvania Grease G3	Mobil	Mobilgrease HPM
	Alvania EP Grease 2	Castrol	Spheerol 2 EP
Statoil	Uniway EP 2 N	Texaco	Multifak EP 2
BP	Energrease LS 2	SKF	LGEP 2 LGMT 3

Remark: See also ABB Ventilation Product AB:s instructions No. 94-09 - Roller Bearings - 1:2.

Every other year (from the date of delivery from ABB Ventilation Products AB)

Inspection and lubrication of impeller

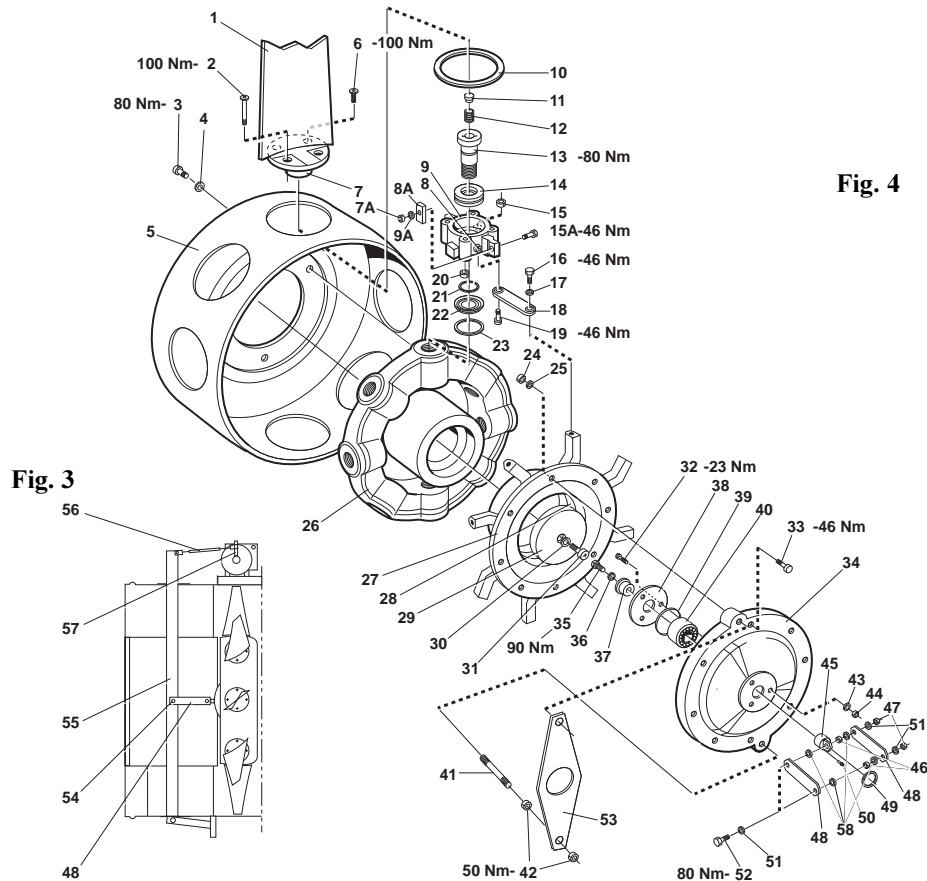
Important!

1. Undo the strap and detach the flexible sleeve from the outlet end of the fan.
2. Open the bolted joint holding the inspection part of the guide vane/CD diffuser section and remove the inspection part.
3. Disconnect the link arms (48). See Fig. 3 and 4.
4. Measure the positions of the lock-nuts (Fig.4, item 42) from the end of the respective driver (41). Remove the nuts (42) and the driver guide (53).
5. Remove the bolted joint (24, 25, 33) and lift away the end cover (34) with the adjustment bearing (40).
6. Lubricate the blade bearings through the grease nipple (8). Fill until grease appears at the sealing (22). Use the same grease as for the shaft bearings.
7. Replace the bearing unit for the control mechanism by removing the bolted joints (32,43,44) and press out the entire unit. Ensure that the new adjustment bearing is properly filled with bearing grease. Replace the articulation bearing (54) in the control rod. Place a few drops of oil on the 2 articulation bearings (54) and link arm bracket (45).
Note the V-ring at the outside of the end cover.
8. Check the link arm (18) bearings for wear and play. Replace as required.
9. Fit the end cover (34) with the adjustment bearing (40) and tighten the bolted joint (24,25,33).
10. Fit the nuts (42) and the driver guide (53).
11. Verify that the lock-nuts are in the same positions as before removal.
12. Check the radial throw of the link arm bracket (45). Max. permissible throw is 0.6 mm.
13. Fit the link arms (48).
14. Operate the actuator between its end positions to verify that these tally with the mechanical max. and min. limits of the blade angle. This shall be carried out with the adjustment rod (55) disconnected. Any adjustment required shall be carried out by means of the turn-buckle (56) and the crank arm (57) of the actuator, see Fig. 3.

NOTE!

The actuator shall be set so that the limit switches are activated before the mechanical stops are reached.

15. Fit the inspection parts of the guide vane/CD diffuser section. Fit the sleeve coupling onto the outlet end of the fan and secure with the strap.



- | | | |
|--------------------|-------------------------|--|
| 1. Blade | 18. Link arm | 39. O-ring |
| 2. Screw | 19. Screw | 40. Adjustment bearing |
| 3. Screw | 20. Nut | 41. Driver |
| 4. Washer | 21. Safety ring | 42. Nut |
| 5. Shield | 22. Sealing ring | 43. Washer |
| 6. Screw | 23. O-ring | 44. Nut |
| 7. O-ring | 24. Nut | 45. Link arm bracket with articulation bearing |
| 8. Grease nipple | 25. Washer | 46. Articulation bearing |
| 9. Balde seat | 26. Hub | 47. Nut |
| 10. Sealing ring | 27. Control disc | 48. Link arm |
| 11. Peg | 28. Slide bush (Teflon) | 49. V-ring |
| 12. Spring | 29. End disc | 50. Grease nipple |
| 13. Blade spindle | 30. Washer | 51. Washer |
| 14. Thrust bearing | 31. Screw | 52. Screw |
| 15. Nut | 32. Screw | 53. Driver guide * |
| 16. Screw | 33. Screw | 54. Articulation bearing |
| 17. Washer | 34. End cover | 55. Adjustment rod with articulation bearing |
| | 35. Screw | |
| | 36. Washer | |
| | 37. Bush | |
| | 38. Cover | |

*Omitted in some versions

Important!

Flexible couplings - arrangement 7

Check the flexible couplings of arrangement 7 for cracks in the rubber tyre. Also check that the bolts of the TAPER-LOCK® bushes and clamping rings are properly tightened. See page 7.

When fitting the coupling or its rubber tyre the instructions specified below shall be followed.

1. Clean all components with special attention to the protective film in the shaft opening and the tapered seat for the TAPER-LOCK® bush.
2. Fit the clamping rings onto the shaft, then fit the flanges onto the shaft. Clean the TAPER-LOCK® bush thoroughly and lubricate with machine oil on the bolt threads and underside of the bolt heads. Position the flanges so that measurement M is attained (see step 3).
3. Ensure that there is sufficient space between the shaft ends to allow for axial play.
4. Align the coupling acc. to Fig. 5.
5. Open the tyre and fit it over the flanges. Ensure that the tyre is properly located in its seat. It may be necessary to stretch the external diameter of the tyre by means of a mallet in order to seat the tyre correctly. There shall be a gap between the ends of the tyre as specified in Table 4 when the tyre is seated correctly.
6. Tighten the screws of the clamping ring alternately (half a turn at the time). Work around each flange until the required torque is attained (Table 5).

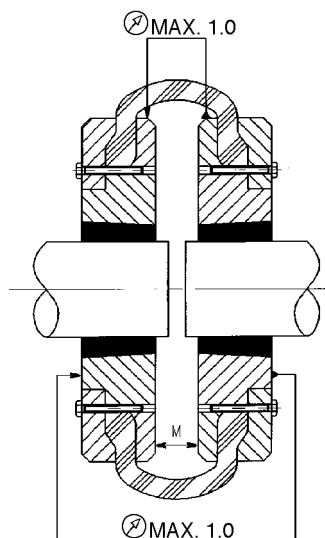


Fig. 5 Alignment requirements

Table 4

Size of couplings	F40 to F60	F70 to F120	F140 and F160	F180 to F250
Tyre gap mm	2	3	5	6

Table 5

Size of couplings	F40	F50	F60	F70	F80	F90	F100	F110	F120	F140	F160	F180	F200	F220	F250	
M mm	22	25	33	24	26	29	29	25	29	33	30	46	48	55	59	
Clamping ring torque	Nm	15	15	15	24	24	32	32	32	40	40	75	100	105	140	165

Removing the impeller (Fig. 3 and 4)

1. Undo the strap and detach the flexible sleeve from the outlet end of the fan.
2. Open the bolted joint holding the inspection part of the guide vane/CD diffuser section and remove the inspection part.
3. Remove the link arms (48) acc. to Fig. 3 on page 7.
4. Remove the bolts at both ends of the adjustment rod.
5. Open the bolted joint between the guide vane/CD diffuser section and hub cap and remove the guide vane/CD diffuser together with the adjustment rod.
6. Remove the lock-nuts (42 in Fig. 4) and the driver guide (53).
7. Open the bolted joint (24, 25, 33) and lift away the end cover (34) together with the bearing unit.
8. Remove the screw (31), washer (30) and disc (29).
9. Fit a wheel puller to the hub as shown in Fig. 6 for hub diameters 500 and 630 and Fig. 7 for hub diameter 800. Remove the impeller.

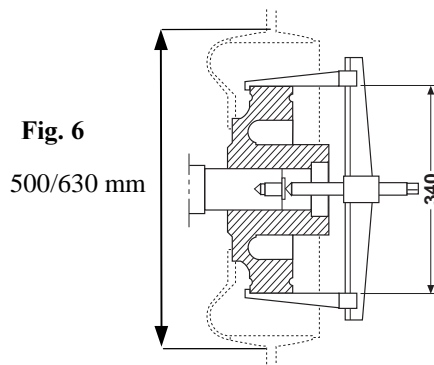


Fig. 6

500/630 mm

340

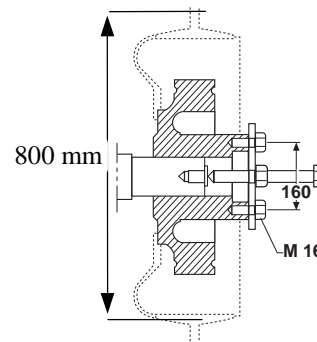


Fig. 7

800 mm

160

M 16

Fitting the impeller (Fig. 3 and 4)

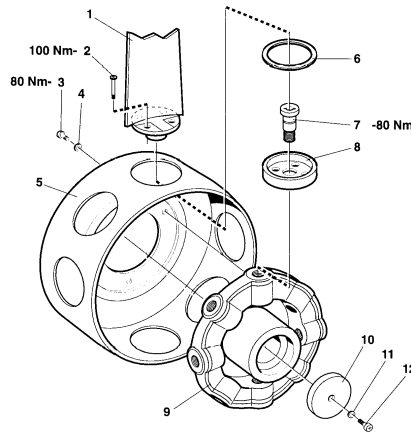
NOTE!

1. Remove the lock-nuts (42 in Fig. 4), driver guide (53).
2. Open the bolted joint (24, 25, 33) and lift away the end cover (34) together with the bearing unit.
3. Place a thin layer of molybdenum disulphide (MoS₂) or lubrication grease on the shaft journal and shaft hole of the fan hub.
4. Fit the impeller onto the shaft. Fit a puller in the threaded hole at the shaft end and pull the impeller onto the shaft.
5. Fit the end disc (29), washer (30) and screw (31).
6. Fit the end cover (34) together with the bearing unit and tighten the bolted joint (24, 25, 33).
7. Fit the lock-nuts (42) and driver guide (53). Verify that the lock-nut positions give the desired maximal blade pitch. See Fig. 3.
8. Check the radial throw of the link arm bracket (45). Max. permissible total throw is 0.6 mm.
9. Fit the large part of the guide vane/CD diffuser section together with the adjustment rod. Center the central body thoroughly against the impeller hub and tighten the bolted joint against the impeller casing.
10. Fit the bolts at both ends of the adjustment rod.
11. Fit the link arms (48).
12. Operate the actuator between its end positions to verify that these tally with the mechanical max. and min. limits of the blade angle. This shall be carried out with the adjustment rod (55) disconnected. Any adjustment required shall be carried out by means of the turn-buckle (56) and the crank arm (57) of the actuator, see Fig. 3.

NOTE!

The actuator shall be set so that the limit switches are activated before the mechanical stops are reached.

13. Fit the inspection part of the guide vane/CD diffuser section. Fit the sleeve coupling onto the outlet end of the fan and secure with the strap.



- 1. Blade
- 2. Screw
- 3. Screw
- 4. Washer
- 5. Shield
- 6. Sealing ring
- 7. Blade spindle
- 8. Blade seat
- 9. Hub
- 10. End disc
- 11. Washer
- 12. Screw

Fig. 8

NOTE!

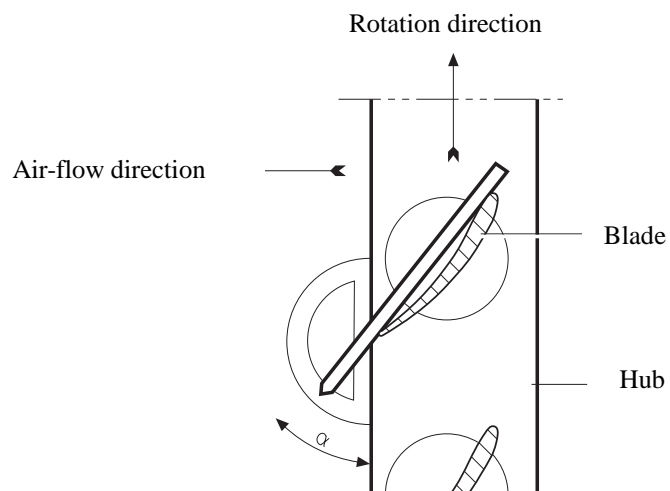
To adjust the blade pitch, proceed as follows:

1. Remove the sleeve coupling and inspection part of the guide vane/CD diffuser section.
2. Loosen the screws. See Fig. 9, item 2.
3. Set desired pitch. See Fig. 9.
4. Tighten the screws.
5. Fit the inspection part of the guide vane/CD diffuser section.
6. Fit the flexible sleeve.

The impeller does not normally need any special maintenance.

Fig. 9

Measuring the blade pitch



Actuators FPMZ-07, FPMZ-13

These actuators are available in two versions: -1 and -2.

Encapsulation class: IP 43. Permissible ambient temperature: -5°C to +45°C.

Adjusting time 120 s/180°.

Version -1: Mains power is connected to terminals 1 and 2 for clockwise rotation, and to terminals 1 and 3 for counter-clockwise rotation, as seen from the shaft end. Voltage 220-240 V, 50-60 Hz.

Version -2: The actuator has a built-in positioner which shall be controlled from a governor with analog output 2-10 VDC. The positioner has two potentiometers, U0 for the zero point and U3 for the range of adjustment.

Operating voltage 24 VAC, 50-60 Hz.

On delivery the U0 is set at 2 V and U3 at 8 V, which gives an adjustment range of 2-10 V. The switch S2 shall always be in position 1, and terminal S1 always in position Aut.

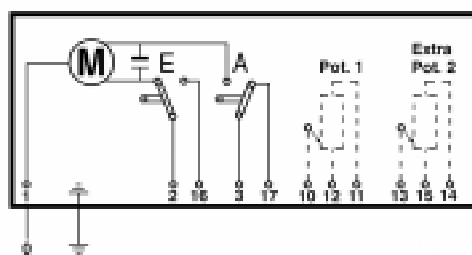
The following is applicable to all versions: If, for any reason, the positions of the limit switches need to be adjusted, proceed as follows:

1. Turn off the power supply and remove the cover.
2. Identify the limit switches with regard to the end positions they relate to. Adjust as required.
3. Turn on the power supply, operate the unit and verify the end positions.
4. Replace the cover.

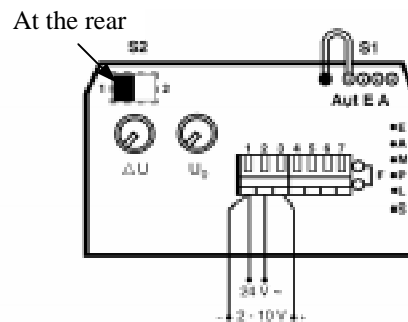
OBS!

The actuators shall be set so that the limit switches are activated before the mechanical stops are reached.

Fig. 10 Wiring diagram, actuators FPMZ-07, FPMZ-13



Wiring diagram FPMZ-07-1, FPMZ-13-1



Wiring diagram FPMZ-07-2, FPMZ-13-2

Actuator FPMZ-09-1

Encapsulation class: IP 65.

Permissible ambient temperature: -20°C to +70°C. Adjusting time 60 s/180°.

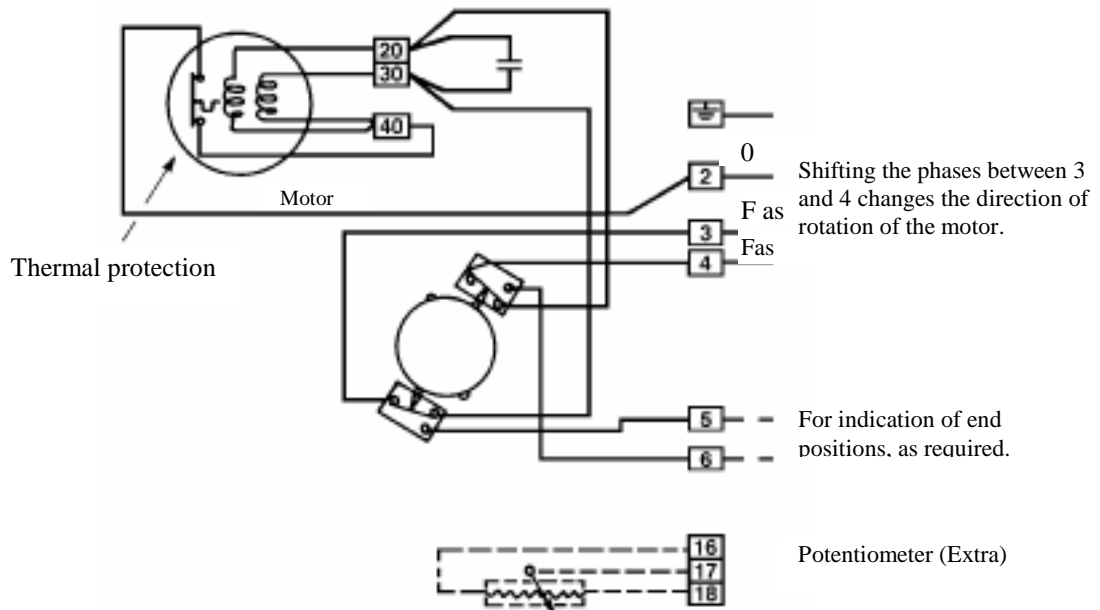
If, for any reason, the positions of the limit switches need to be adjusted, proceed as follows:

1. Turn off the power supply.
2. Remove the cover and identify the limit switches with regard to the end positions they relate to.
3. Use a screwdriver and press down the screw of the cam that controls the limit switch. Turn until the correct position is obtained. Let the screw return to its original position. The cam is secured in the new position when the screw returns. The respective screw and cam have the same colour marking.
4. Turn on the power supply, operate the unit and verify the end positions.

OBS!

The actuators shall be set so that the limit switches are activated before the mechanical stops are reached.

Fig. 11 Wiring diagram, actuator FPMZ-09-1



Actuator FPMZ-09-2

The actuator is connected to a positioner for a control signal of 4-20 mA. The positioner is placed in a separate box which may be fitted on the wall adjacent to the fan, though not on the fan. The electrical connections and associated adjustment required between the actuator and the positioner have been carried out at the factory.

Kapslingsklass IP 65.

Important!

Connection

1. Connection is done in the positioner.
2. Connect 220 V 50 Hz to terminal blocks L and N.
3. Connect control signal 4-20 mA to terminal blocks 70 (+) and 71 (-).

Readjustment

1. Adjusting the limit switches

1. Remove the cover of the actuator and identify the limit switches with regard to the end positions they relate to.
2. Use a screwdriver and press down the screw of the cam that controls the limit switch. Turn until the correct position is obtained. Let the screw return to its original position. The cam is secured in the new position when the screw returns. The respective screw and cam have the same colour marking.

NOTE!

The actuators shall be set so that the limit switches are activated before the mechanical stops are reached.

2. Adjusting to 0 %

1. Set the selector in position (MAN).
2. Turn the adjusting knob P1 to position 0 %.
3. The actuator starts in the direction of closing and the red diode is lit.
4. Open the cover of the actuator and loosen the screws holding the potentiometer.
5. Carefully turn the potentiometer so that the red diode goes out precisely when the actuator stops against the limit switch.
6. Tighten the screws holding the potentiometer.

3. Adjusting to 100 %.

1. Turn the adjusting knob to position 100 %. The actuator starts in the direction of opening and the green diode is lit.
2. If the actuator stops (the diode goes out) before the limit switch breaks: - Turn potentiometer P2 counter clock-wise until the actuator reaches the limit switch.
3. If the limit switch breaks before the diode goes out: - Turn potentiometer P2 clock-wise until the diode goes out (simultaneously with the limit switch breaking).
4. Connect the input signal and set the selector in position "AUTO".

Fig. 12

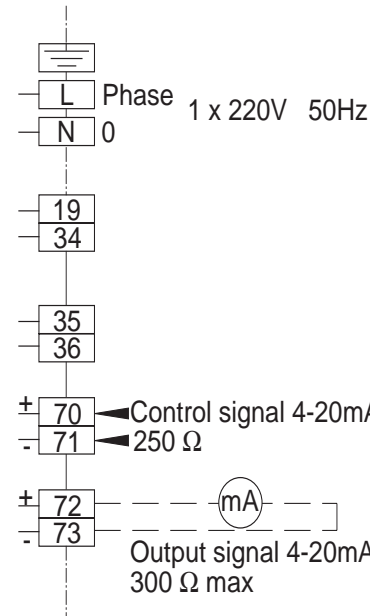
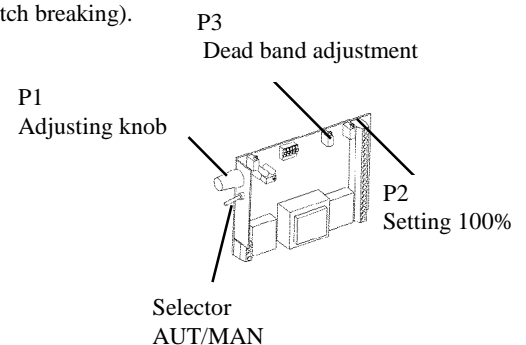


Fig. 13 Positioner for FPMZ-09-2



Recommended tools

The ABB Ventilation Products AB:s tool kit, ordering no. FPAC-99-25, is recommended for servicing the fan. The kit includes a suitable choice of tools (24), slide calipers, feeler gauges, a grease gun, 2 pressure gauges, 3 m plastic hose, nipples and Teflon tape.

Recommended spare parts

- 1 Adjustment coupling (FPMC-99-20) per fan.
- 1 set Link arms. Number = number of blades.
- 1 Rubber ring for shaft coupling, applicable to arrangement 7.

If the installation includes a large number of AXICO fans, it may be suitable to increase the number of spare parts with such items as impeller assemblies, motors, actuator motors, shaft bearings, shaft couplings etc.

Touching-up paint

The fan is delivered painted with alkyd-based fast-drying paint, International Primertäck 42 866HB.

Colour: NCS 3060-R80B. The same type of paint should be used for touching-up.

Specifications

		FPAC - a - bbb - c - d - e - f
Arrangement	1 = Impeller mounted on the motor shaft 3 = For V-belt drive 6 = Duct connection 7 = Impeller on intermediate shaft	
Size	080, 090, 100, 112, 125, 140, 160, 180	
Hub	5 = ø 500, 6 = ø 630, 8 = ø 800	
Number of blades	8 = 8 blades 9 = 9 blades	
Size of motor	0 = 132 S, M 5 = 250 M 1 = 160 M, L 6 = 280 S, M 2 = 180 M, L 7 = 315 S, M 3 = 200 L 8 = 315 L 4 = 225 S, M 9 = 355 S, M	
Design	2 = All except arr. 6 vertical 3 = Arr. 6 vertical, air direction upward 4 = Arr. 6 vertical, air direction downward	

Spare parts

Description	Intended for	Ordering key	Remarks		
Link	FPMC-a-(080-100)-5-8-e-f	FPAC-99-02-1	Qty.required = 1 per blade		
	FPMC-a-(090-112)-6-8-e-f				
	FPMC-a-(112-140)-8-9-e-f				
Sleeve coupling	FPMC-a-(112-180)-6-8-e-f	FPAC-99-02-2			
	FPMC-a-(160-180)-8-9-e-f				
	FPMC-a-(112-125)-5-8-e-f				
	FPMC-a-080-c-d-e-f			FPAC-99-06-1	
	-090-				-2-
	-100-				-3-
-112-	-4-				
-125-	-5-				
-140-	-6-				
-160-	-7-				
-180-	-8-				
Rubber ring for shaft coupling	FPMC-7-bbb-c-d-0-f	FPAC-99-07-1	F 60		
	-1-			-1	
	-2-			-2	
	-2-			-3	
	-4-			-3	
	-5-			-4	
	-6-			-4	
	-7-			-5	
	-8-			-5	
	-9-			-6	
Exception					
FPMC-7-112-c-d-1-f	FPAC-99-07-2	F 90			

Description	Indended for	Ordering key	Remarks
Adjustment coupling Replacement kit	FPMC-a-bbb-c-d-e-f	FPMC-99-20	Replacement kit for fans manufactured 1 June 1985 and later. Items incl. in the kit are: 32, 35-40 and 43-50.
Fitting for blades and link arms	FPMC-a-bbb-c-d-e-f	FPAC-99-21	Blades and links are not included.
Tool bag	FPMC-a-bbb-c-d-e-f	FPAC-99-25	24 pcs tools, slide calipers, feeler gauges, lubric. gun, 2 manometers, 3 m long plastic tubing, nipples and Teflon tape.

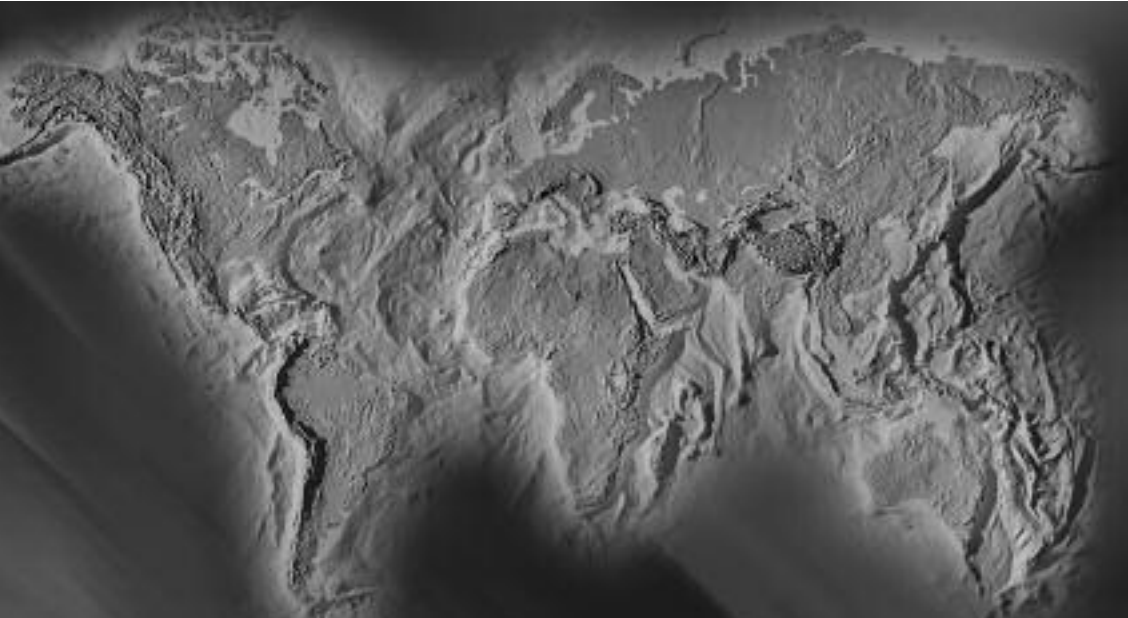
Spare parts recommended for purchase direct from the subcontractor

Description	Indended for	Ordering code	Remark
Bearings for shaft support	F(P,S)MC-3-(080-090)-5/6-d-e-f	SKF: 21313 CCK+H 313	2
	-3-(100-112)-6-d-e-f	SKF: 23218 CCK+H2318	2
	-7-(080-090)-c-d-e-f	SKF: 2309 K+H2309	1
		SKF: 21309 K+H309	1
	-7-(100-112)-c-d-e-f	SKF: 1311 K+H311	1
		SKF: 22311 CK+H2311	1
	-7-(125-180)-c-d-(2-6)-f	SKF: 1311 K+H311	1
		SKF: 22311 CK+H2311	1
-7-(125-180)-c-d-(7-9)-f	SKF: 1315 K+H315	1	
	SKF: 22315 CK+H2315	1	

Qty.

Normal clearance or C3 clearance can be selected.

We Bring Air to Life



Fläkt Woods Group provides a full range of products and solutions for buildings ventilation, air treatment and industrial air movement

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