

Gardner

Denver

TAMROTOR Compressors

Enduro 75

Repair instructions

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To the user

Enduro air end is an oil injected single stage screw, which is designed for industrial air compressors.

Each Enduro air end is designed for its own capacity range.

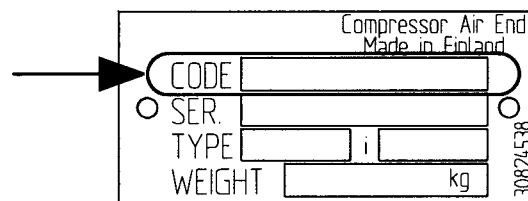
Don't exceed the max. pressure, power and rotation speed and don't use lower than the minimum rotation speed given in the technical data. The warranty of the air end is not valid if these values are exceeded.

Only the use of original spare parts guarantees long and reliable lifetime.

This instruction makes you acquainted with the repair of Enduro air end.

Read these instructions carefully before starting the repair work.

When ordering spare parts, please, give the codenumber from the plate connected to the air end.



Safety

Read always the safety instructions of the equipment, where the air end is used!

The cleanness in all repair work is of great importance. All the foreign particles in the air end shorten the life time of the bearings and the rotors.

Before starting the repair work

1. Disconnect the electric supply.
(in diesel driven compressors take care that the motor cannot be started)
2. Make sure that there is no pressure in the oil receiver and close the valve between the compressor and the air line.
3. The air end and oil is hot immediately after the compressor has been stopped. Give time for cooling.

Before starting the compressor

1. Assure that the oil used is correct (see oil recommendation), and that the oil level is correct.
2. Make sure that the rotation direction is correct by starting the compressor momentarily.
Max starting time 2 seconds.



Running the compressor unit in the wrong direction causes damage.

Technical data

Rotor size		
- male ϕ	mm	225
- female ϕ	mm	178,3
Lobe combination		4/5
Male rotor driven		
Displacement volume	l/rev	7,5013
Male rotor speed		
- min	rpm	850
- max	rpm	4300
Tip speed (male)		
- min	m/s	10
- max	m/s	50
Input power		
- max	kW	200
Working pressure		
- min	bar	3
- max	bar	13
Oil injection quantity	l/min	120 - 250
Weight	kg	about 308

On the repairing of the compressor air end use always special tools.

Disassembly

1. Clean the outside surfaces of the compressor unit from all dirt.
2. Place the compressor unit on a steady surface where the repair work can be carried out.
3. Remove the screws(23) and the shaft seal cover(5).
4. Mount a special tool to the drive shaft and lock it to the compressor unit body.
5. Remove the output end cover(3) mounting screws (22), and remove the cover.
6. Open the shaft nuts(14 and 15) and make sure that the special tool prevents the shaft from turning. Use the special tool for the shaft nuts.
7. Remove the tool mounted to the drive shaft.
8. Remove the pressure flange(2) mounting screws(20).
9. Remove the pressure flange by using the threads in the flange.
(Note! Do not use a screw driver to pry off the flange.)
10. Remove the rotors from the body.
Note! Handle the rotors with care.
11. Remove the screws(21) and the intake cover(4) from the body(1).
12. Remove the securing ring(31) of the bearing(9).
13. Remove the outer bearing races (tap out with a drift) from the bearing housings.
14. Use a puller to remove the inner bearing races.
Note! Take care not to damage the shaft when you remove the shaft seal inner ring(16).
15. Remove the shaft seal from its housing.
16. Remove the remains of the sealings from the covers, and wash all parts clean.

17. Check the parts:

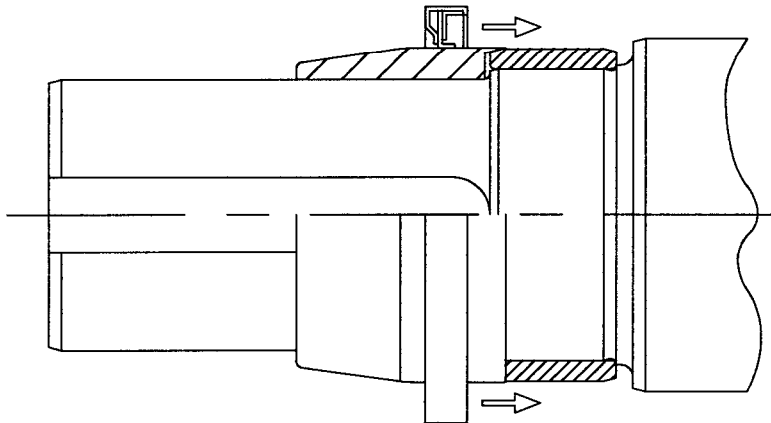
Part	Do not reuse if
Rotors	- ends have seizure marks
	- contact surface marks are uneven
	- rotors have scratches or dents
	- bearing seats are worn
	- rotors have touched body or end flanges
Body	- rotors have touched body
	- body shows signs of overheating (blue colour)
Discharge flange	- flange shows signs of overheating (blue colour)
	- rotors have touched flange
	- O-ring groove is damaged

18. Always fit new bearings and sealings.
Use original spare parts.

Assembly

1. Install the bearings(9 and 11) to the body using special tools. Oil the bearings.
Lock the bearing(9) with the securing ring(31).
2. Install the O-rings(18 and 19) and mount the intake cover(4) to the body(1), tighten the intake cover M12 screws(21) to 77 Nm.
3. Heat up the inner races of the bearings(10, 11, and 9, 11) and install them to the rotors.
4. Install the rotors to the body.
5. Install the bearings(10 and 11) to the pressure flange. Lubricate the bearings.
6. Install the O-rings(4x18 and 19) to their grooves and install the pressure flange(2).
7. Using dowel pins(part 29, 2 pcs) install the pressure flange to the correct position.
8. Tighten the M24 screws(20) to 660 Nm in crosswise sequence.
9. Lock the driving shaft with a tool.
10. Install the pressure flange ball bearings(12 and 13). Use special tool.
Note! Thick side of inner race upwards.
11. Install the shaft nuts(14 and 15) with their own tools. Apply Molykote 1000 to the threads.
12. Adjust end float:
 - Tighten the shaft nuts lightly so that the clearance between the rotor ends and the pressure flange disappears. Do not overtighten.
 - Open the nuts so that the clearance between the rotor ends and the pressure flange is 0.07 to 0.09 mm. Move the rotors up and down to measure the clearance. Use a dial gauge. Note that the shaft nuts need no separate locking.

13. Install the output end cover(3) together with the O-ring(19) and tighten the M10 screws(22) to 45 Nm.
14. Install the shaft seal(17) into the housing(5) using Loctite 542 and an installing socket.
Note! The shaft seal lip should face inwards.
15. Use Loctite 601 and an installing socket to mount the shaft seal inner sleeve(16), with a left-hand thread finish.
16. Install the shaft seal mounting tool into the rotor axle against the shaft seal inner ring(16) and install the sealing housing carefully into its position (see drawing).
Remember also to install the sealing(7).
Note! The oil hole from the body to the sealing housing must be open.
Remove the shaft seal mounting tool carefully.
17. Tighten the M10 screws(23) of the shaft seal cover(5) to 45 Nm.
18. Pour in some oil through the intake and rotate the drive shaft a few times. Plug and seal all openings. Protect the drive shaft against corrosion.



Lubricants and tools that you need

Lubricants

Lubricating oil	SAE 10W
Grease	Molykote 1000

Cement

Cement	Loctite 601
Cement	Loctite 542

Mounting tool set

Mounting tool set for Enduro 75 compr. unit 308 539 18

bearing inner race mounting tools:

- inlet end, male rotor roller bearing
- inlet end, female rotor roller bearing
- discharge end, male rotor bearings
- discharge end, female rotor bearings

bearing mounting tools to body:

- inlet end, male rotor roller bearing
- inlet end, female rotor roller bearing

bearing mounting tools to pressure flange:

- male rotor roller bearing
- female rotor roller bearing

special tool for locking rotors

drift for pins

lock nut wrench:

- male rotor
- female rotor

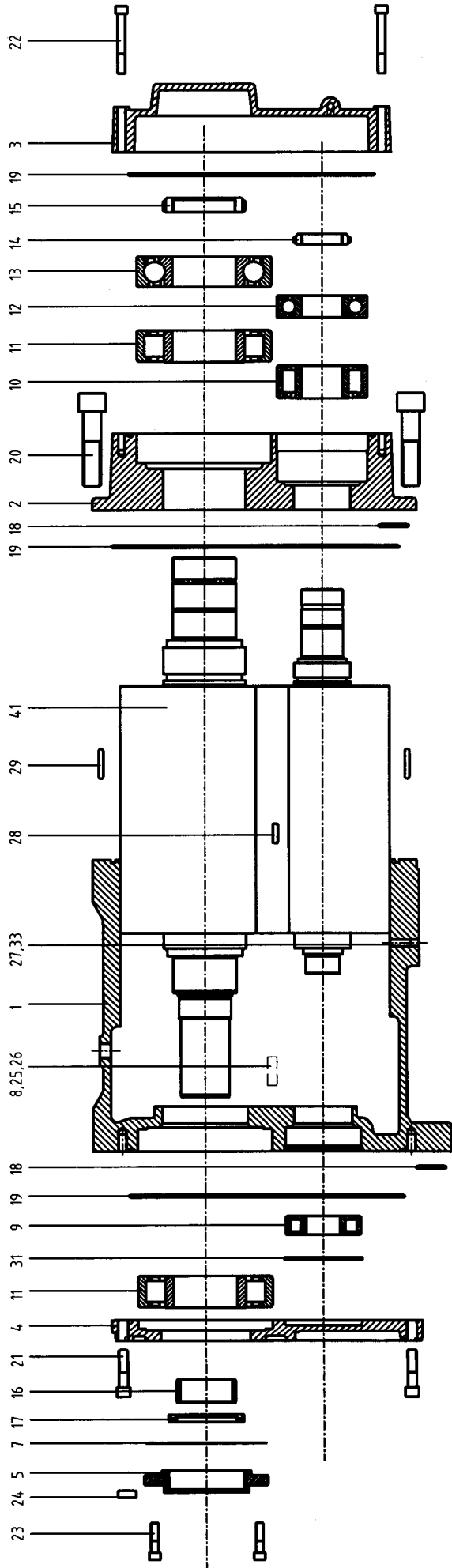
mounting tool for shaft seal inner ring	034 637 08
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shaft seal mounting socket	308 534 88
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shaft seal mounting tool	034 641 58
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**Varaosat
Reservdelar
Spare parts**

**Enduro 75
040 248**



Viite N:o Det.Nr Ref.No	Tilaus N:o Reservdel Nr Order No	Kpl Antal Qty	Nimitys	Benämning	15.04.1997 Description
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			KOMPRESSORI- YKSIKKÖ	KOMPRESSOR- ENHET	COMPRESSOR AIR END
			Yhteiset osat	Standard delar	Standard parts
1	040 249 58	1	Runko	Rotorhus	Rotor casing
2	040 250 18	1	Painelaippa	Avloppsgavel	Discharge cover
3	039 724 98	1	Lähtökansi	Avloppskupa	Outlet cover
4	039 725 18	1	Imukansi	Insugskupa	Inlet cover
5	037 996 48	1	Tiivistekansi	Tätningskupa	Seal cover
7	308 436 08	1	Tiiviste	Tätning	Gasket
8	308 099 31	2	Kuristin	Strypning	Orifice
9	801 075 99	1	Rullalaakeri	Rullager	Roller bearing
10	895 096 19	1	Rullalaakeri	Rullager	Roller bearing
11	804 037 39	2	Rullalaakeri	Rullager	Roller bearing
12	874 571 39	1	Kuulalaakeri	Kullager	Ball bearing
13	895 099 09	1	Kuulalaakeri	Kullager	Ball bearing
14	874 555 29	1	Lukitusmutteri	Axelmutter	Lock nut
15	895 097 49	1	Lukitusmutteri	Axelmutter	Lock nut
17	503 418 10	1	Akselitiiviste kok.p. sisältää osan 16	Axeltätning smst. innehåller delen 16	Shaft seal assy include part 16
18	856 464 49	5	O-rengas	O-ring	O-ring
19	895 105 39	3	O-rengasnauha	O-ring band	O-ring cord
20	895 129 69	4	Kuusiokoloruuvi	Sexkanthålskruv	Hex.socket screw
21	895 132 89	10	Kuusiokoloruuvi	Sexkanthålskruv	Hex.socket screw
22	895 131 59	10	Kuusiokoloruuvi	Sexkanthålskruv	Hex.socket screw
23	802 805 59	6	Kuusiokoloruuvi	Sexkanthålskruv	Hex.socket screw
24	870 898 99	1	Tulpparuuvi	Pluggskruv	Plug screw
25	872 198 19	2	Tulpparuuvi	Pluggskruv	Plug screw
26	870 899 19	6	Tulpparuuvi	Pluggskruv	Plug screw
27	895 128 39	3	Tulpparuuvi	Pluggskruv	Plug screw
28	807 047 79	1	Kuusiokolotulppa	Sexkanthålplugg	Hex.socket plug
29	471 322 00	2	Lieriösokka	Styrpinne	Cylindrical pin
31	422 293 30	1	Varmistinrengas	Låsring	Retaining ring
33	806 448 09	1	Kuusiokolotulppa	Sexkanthålplugg	Hex. socket plug
			Poikkeavat osat	Avvikande delar	Differing parts
040 248 21					
41	308 435 82	1	Roottoripari	Rotorpar	Rotor pair
040 248 22					
41	308 435 81	1	Roottoripari	Rotorpar	Rotor pair
*	503 402 47	1	Korjaussarja (sisältää osat / innehåller delar / include parts 7, 9-15, 17-19, 29, 31)	Reparationsssats	Repair kit