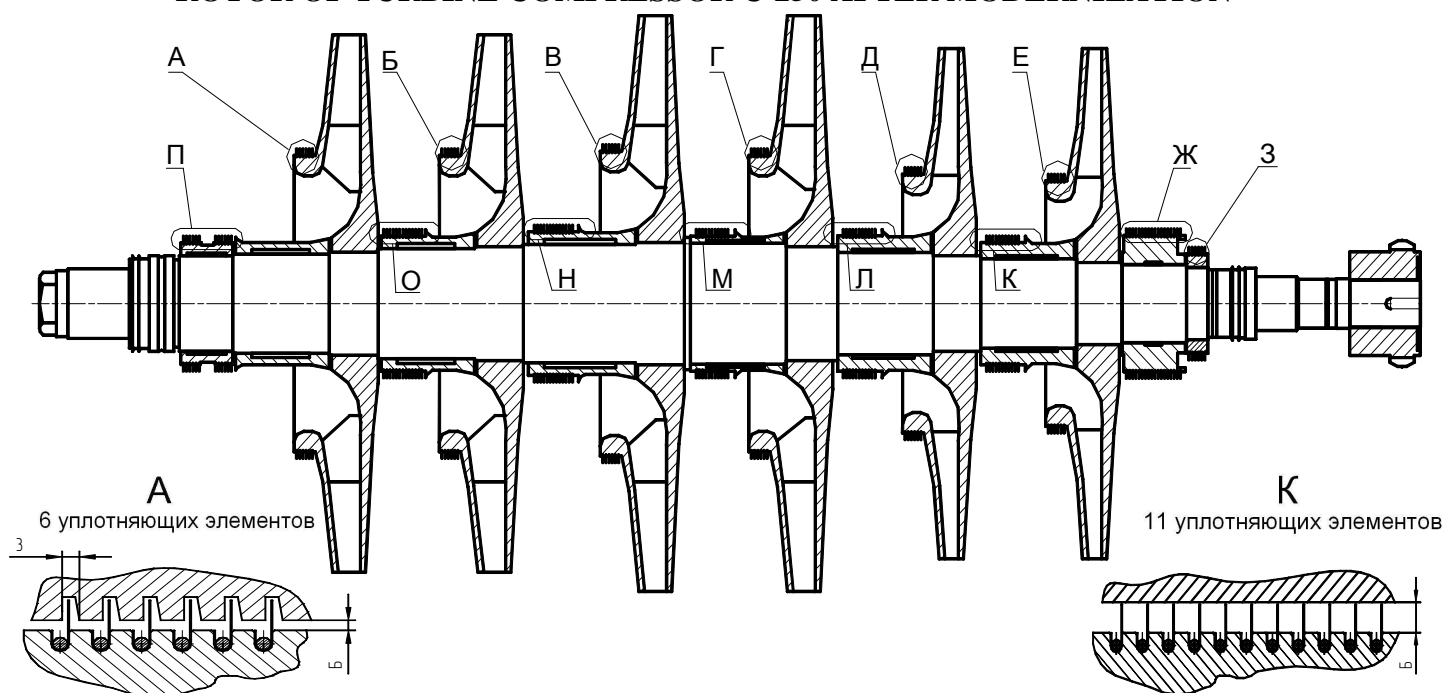


COMPRESSOR MODERNIZATION

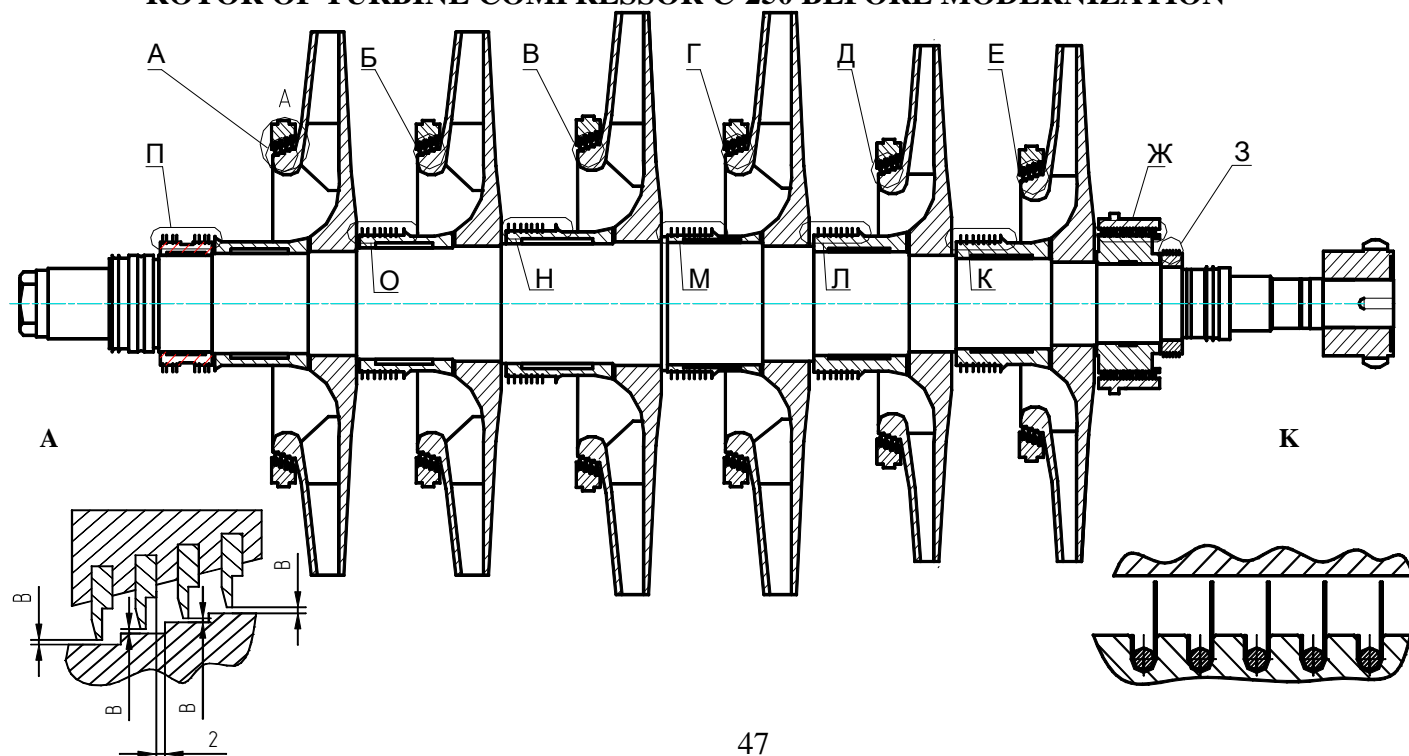
A new direction in our company is upgrading and repair of compressors in order to ensure performance is not below the project and increase efficiency (1-1.5%), while reducing energy costs, increase turnaround time and reliability. Modernization of the equipment is on a production basis NE "Energomash" Co. Ltd., repair to the customer premises. This volume is recommended that you work for compressor, which has substantial developments. Modernization provides improved compressor parameters and their stable maintenance, and includes: redesign of the rotor, replacement diffusers and diaphragm, constructive change tubes in tube bundles terminal and intermediate coolers, changing the gear ratio gearbox couples to change the speed compressor, replacement bearings.

MODERNIZATION OF TURBINE COMPRESSOR C-250

ROTOR OF TURBINE COMPRESSOR C-250 AFTER MODERNIZATION

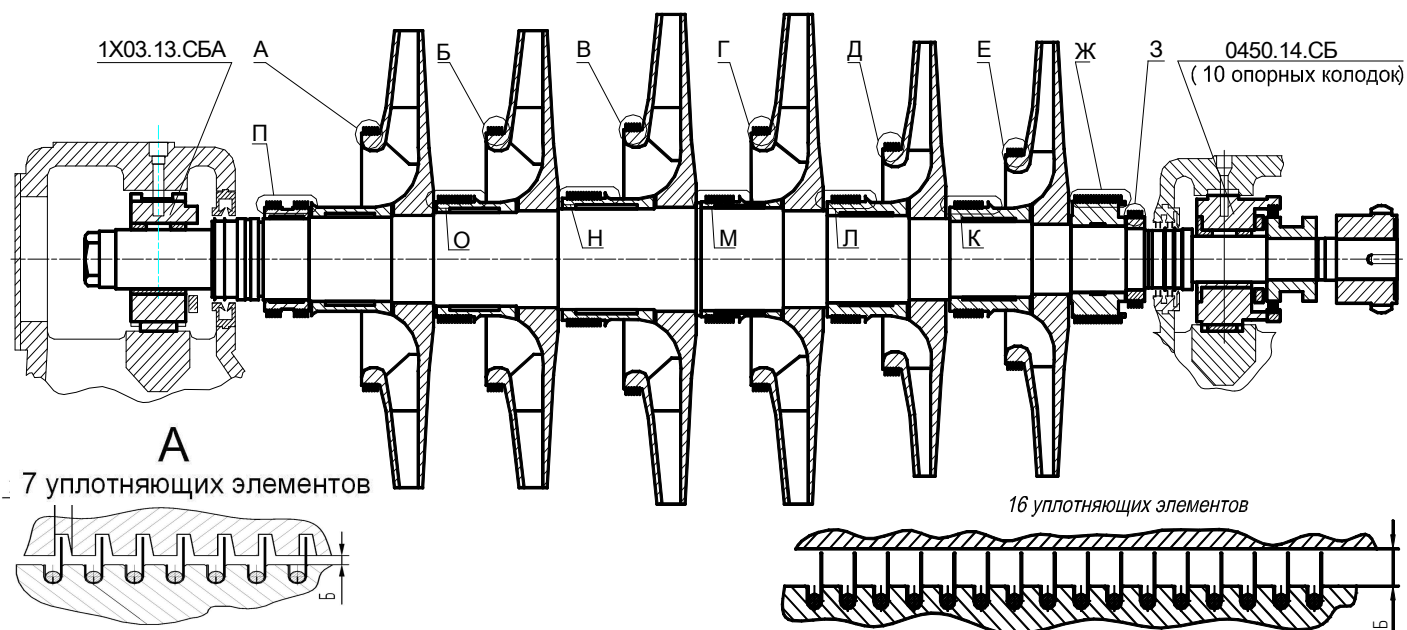


ROTOR OF TURBINE COMPRESSOR C-250 BEFORE MODERNIZATION

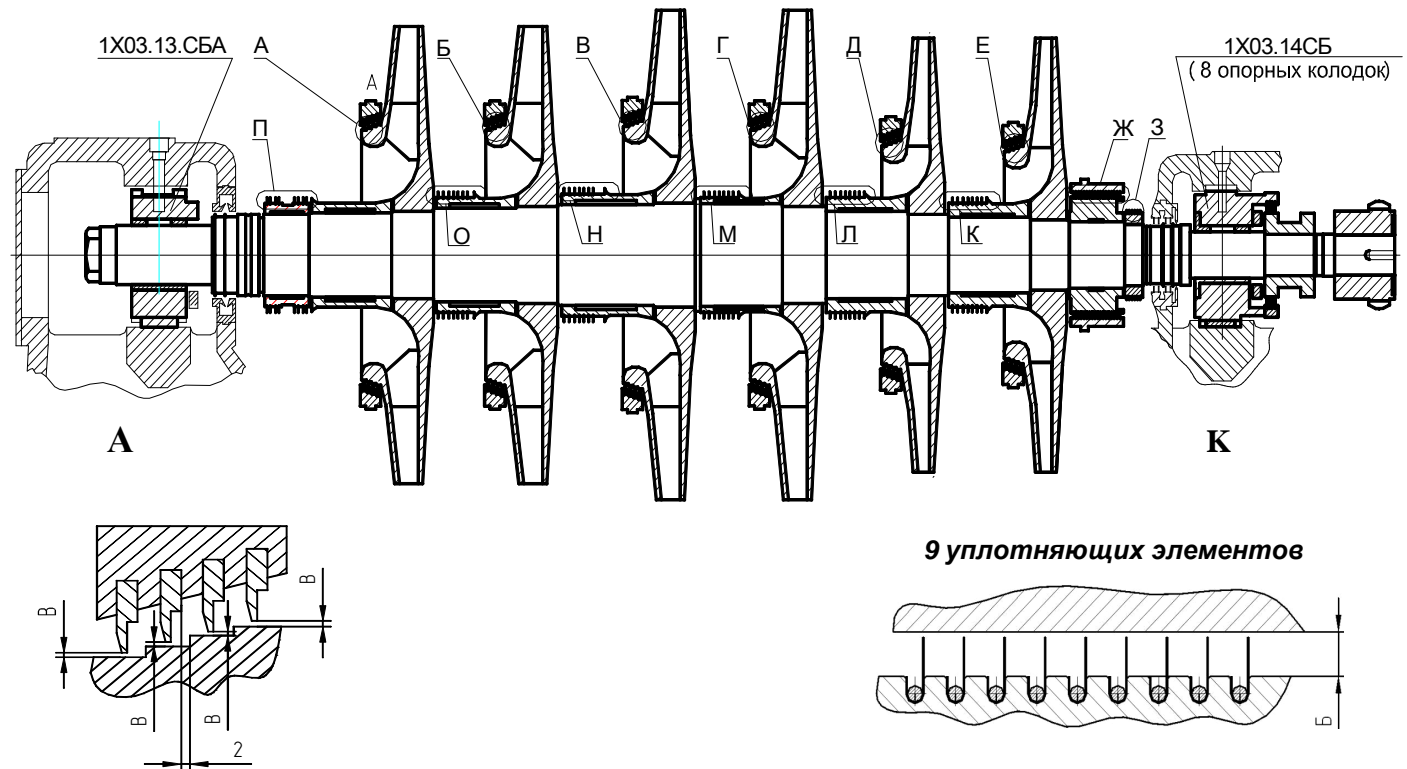


MODERNIZATION OF TURBINE COMPRESSOR C-500

ROTOR OF TURBINE COMPRESSOR C-500 AFTER MODERNIZATION



ROTOR OF TURBINE COMPRESSOR C-500 BEFORE MODERNIZATION



The purpose of Modernization: modernization of units is conducted to ensure project performance while lowering energy costs, improve maintainability and reliability, because:

1. Exploited at present on the objects Customer compressor K-250/500 work performance by 15 ... 25% of the project.
 2. Causes of low productivity are:
 3. Pollution of running compressors and coolers, the deposition of salts on the inner walls of the air coolers due to poor air and water purification in the operation, due to inefficient operation of air filters;
 4. Poor soldering fins to tubes of air coolers;
 5. Late replacement of spare parts;
 6. The thorny removal of impurities of the tube bundles coolers.
- Bearing shells.

Upgraded compressor C-250-61-1 (2 and 5)

Allows for a daily stop

List of main components of the kit to upgrade the compressor C-250-61-1 (2 and 5)

	designation	Position	quantity
1	0831.025.000СП	<i>Rotor</i>	<i>1</i>
2	0834.025.000СП(-01)	<i>Shaft and wheel</i>	<i>1</i>
3	0834.025.001СП	<i>Pinion shaft</i>	<i>1</i>
4	280H.13.СП-02	<i>insert reference</i>	<i>1</i>
5	280H.14.СП-02	<i>The liner support-hard</i>	<i>1</i>
6	353.13СП	<i>insert reference</i>	<i>2</i>
7	515.13СП1 or 353.13СП1	<i>insert reference</i>	<i>1</i>
8	0816.014.001СП or 515.14СП or 353.14СП	<i>The liner support-hard</i>	<i>1</i>
9	280H.08СП1-01	<i>sealing of an oil</i>	<i>1</i>
10	280H.08СП5a-01	<i>sealing of an oil</i>	<i>1</i>
11	У04.27СБ	<i>Clutch gear coupling</i>	<i>1</i>
12	295.27СП-01 or 295.28СП or 371.28СБ	<i>Clutch gear coupling</i>	<i>1</i>
13	У250.70СПА-01	<i>The oil pump gear</i>	<i>1</i>
14	У150.72СП10	<i>The oil pump gear</i>	<i>1</i>
15	УН10.79СБ	<i>oil cooler</i>	<i>2</i>
16	371.84СП1 or 395.84.3ИП СБ2	<i>The beam pipe</i>	<i>3/2</i>
17	371.83СП11 or 395.84.3ИП СБ5	<i>The beam pipe</i>	<i>1/1</i>
18	0831.008.000СБ	<i>Set air compressor seals of the 14 clips</i>	<i>1</i>
19		<i>Set of 4 CDs 5 diaphragms and diffusers</i>	<i>1</i>
20	0837.074.000СП or 0838.074.000СП	<i>Kit mounting parts lubrication</i>	<i>1</i>
21	0837.090.000СП(-01)	<i>Group sets of tools to perform the upgrade</i>	<i>1</i>

List of main components of the kit to upgrade the compressor C-500-61-1 (2 and 5)

	designation	Position	quantity
1	0839.025.000СП	<i>Rotor</i>	<i>1</i>
2	252.25СП	<i>Gear assembly</i>	<i>1</i>
3	252.25СБ2(СБ1); 252.25.08	<i>Shaft and wheel, pinion shaft</i>	<i>1</i>
4	1Х03.13СПА-02	<i>insert reference</i>	<i>1</i>
5	0450.14СП-02	<i>The liner support-hard</i>	<i>1</i>
6	252.13СП1	<i>insert reference</i>	<i>2</i>
7	252.13СП2	<i>insert reference</i>	<i>1</i>
8	252.14СП	<i>The liner support-hard</i>	<i>1</i>
9	1317.08СП1	<i>sealing of an oil</i>	<i>1</i>
10	1317.08СП1Б	<i>sealing of an oil</i>	<i>1</i>

11	Y07.27CB1-01	Clutch gear coupling	1
12	252.27СП or 252.28СП3А	Clutch gear coupling	1
13	Y300.70СП	The oil pump gear	1
14	Y150.72СП10	The oil pump gear	1
15	YH16.79СП	oil cooler	2
16	213.83СП7-01 or 371.83СП11	The beam pipe	2/1
17	213.084.019СП or 371.84СП1	The beam pipe	4
18		Set air compressor seals of 7 clips	1
19	0839.074.000СП or 0839.174.000СП	Kit mounting parts lubrication system	
20	0839.090.000СП	The group set a device to perform the upgrade	1

Repair Kits Compressor C-250-61-1 (2 and 5).

Compressor repair using a set of parameters provides restoration to its original level.

List of main components of the kit to repair compressor K-250-61-1 (2 and 5).

	designation	Position	quantity
1	280H.25СП-01	Rotor	1
2	371.25.СПН / 239.25СБН	Gear assembly	1
3	375.25.01Н / 371.25СБН	Shaft and wheel, pinion shaft	1
4	280H.13СП-02	insert reference	1
5	280H.14СП-02	The liner support-hard	1
6	353.13СП	insert reference	2
7	515.13СП1 or 353.13СП1	insert reference	1
8	515.14СП or 353.14СП	The liner support-hard	1
9	280H.08СП1-01	sealing of an oil	1
10	280H.08СП5А-01	sealing of an oil	1
11	Y04.27СП-01	Clutch gear coupling	1
12	295.27СП-01 or 371.28СП	Clutch gear coupling	1
13	Y250.70СПА-01	The oil pump gear	1
14	Y150.72СП10	The oil pump gear	1
15	YH10.79СПА	oil cooler	2
16	371.84СП1 or	The beam pipe	3
	395.84.3ИП СП5	The beam pipe	2
17	371.83СП	air cooler end BOK-79,2	1
18		Set air compressor seals of 9 clips	1
19		Set of 4 CDs 5 diaphragms and diffusers (only for C-250-61-1)	1
20		Group sets of tools to perform the upgrade	1

NE "Energomash" Co. Ltd. proposes to modernize Compressor C-1500 with the achievement of project performance, and increase it to 10-12% with the implementation of the next work package:

1. Upgrading of existing rotor replacement of the two impellers, sealing rings, gear coupling and balancing of the rotor. Upgrading gear with high speed.
2. Upgrading of existing compressor bearings (support-thrust and support - 2 pcs.)
3. Upgrading of existing compressor bearings - 4 pcs. Upgrading gear couplings (compressor, gear and motor-compressor) Upgrade kit seal of the compressor rotor.
4. Modernization of existing tube bundles with intermediate water chamber with integral copper finned tube Ø 28 - 4 pcs.
5. Modernization of existing tube bundles with a water chamber end air cooler with solid copper finned tube Ø 28 - 3pc. Upgrading an existing set of cones, diaphragms, guide vanes.
6. Execution of the installation kit upgrade for the object "customer" with the erection, supervision and commissioning, commissioning and commissioning of the unit will be in operation.
7. Modernization of existing coolers with the replacement tube bundles.

The total cost to upgrade the compressor C-1500 with an increase in design capacity by 10%.

To perform the upgrade compressor "Customer" transfer company *NE "Energomash" Co. Ltd.* the following equipment:

1. The rotor assembly - 1pc.
2. Gear assembly - 1pc.
3. Rotor bearings - 2 pcs.
4. Gear bearings - 4 pcs.
5. Gear couplings - 2k-ta.
6. Seal kit - 1k-m.
7. Diffusers, diaphragm, guide vanes - 1k-m.
8. Tube bundles in the intermediate / o - 4 pcs.
9. Tube bundles end in / on - 3pcs.
10. Coolers in the collection - 3pc.

I. After performing a set of modernization *NE "Energomash" Co. Ltd* transfers "Customer" the following equipment:

1. The rotor assembly - 1pc.
2. Gear assembly - 1pc.
3. Rotor bearings - 2 pcs.
4. Gear bearings - 4 pcs.
5. Gear couplings - 2k-ta.
6. Seal kit - 1k-m.
7. Diffusers, diaphragm, guide vanes - 1k-m.
8. Tube bundles in the intermediate / o - 4 pcs.
9. Tube bundles end in / on - 3pcs.
10. Coolers in the collection - 3pc.

Warranty 12 months after the modernization of compressor operation, but no more than 18 months after shipment.

NE" Energomash " Co.Ltd repairs of synchronous and asynchronous motors

Motor type	Power, kW
СТД	630, 800, 1 000
	1 250, 1 600, 2 000
	2 500, 3 150, 4 000
4APK 4A3M	630, 1 000
	1 250....2 000
	2 500....4 000



*and other motors, including capacity from 90 kW to 630 kW,
regardless of the number of revolutions.*

NE" Energomash ""Co. Ltd. produces and offers a shaft turning device for compressors
C-250, C- 500, C-1500 C-1700, CC-115 CC-135, CTC-7/14, CTC-12, 5 / 35

The use of shaft turning device allows:

1. Translate motor of continuous operation mode reconnection.
2. Reduce the starting current of 2 ÷ 3 times rms surge current effect on the ballast, power cables, busbar, which increases the service life of electrical power supply of electric vehicles by 30 ÷ 40%.
3. Reduce energy consumption by 30 ÷ 50% during start-up.
4. Create conditions for soft-start turbocharger.
 - 4.1. Start the compressor to prevent dry friction.
 - 4.2. Reduce shock loads on the compressor rotor, a gear reducer, gear couplings, electric motor rotor, thus eliminating the possibility of chipping teeth, reduce the production of babbitt in bearings, reduce vibration of the rotor, and the possibility of loss of rivets and damage the blades of the rotor wheel.
5. The use of shaft turning the device makes it possible to start the compressor motor at least once a day.
 - 5.1. Can increase overhaul life of the unit is 1.5 ... 2 times.
 - 5.2. Reduce the cost of spare parts.
 - 5.3. Extend the life of the rotor, gear, bearings (8 pcs.) Gear coupling (2 sets) 30 ÷ 40%.
 - 5.4. To increase the service life of turbine 30 ÷ 40%.

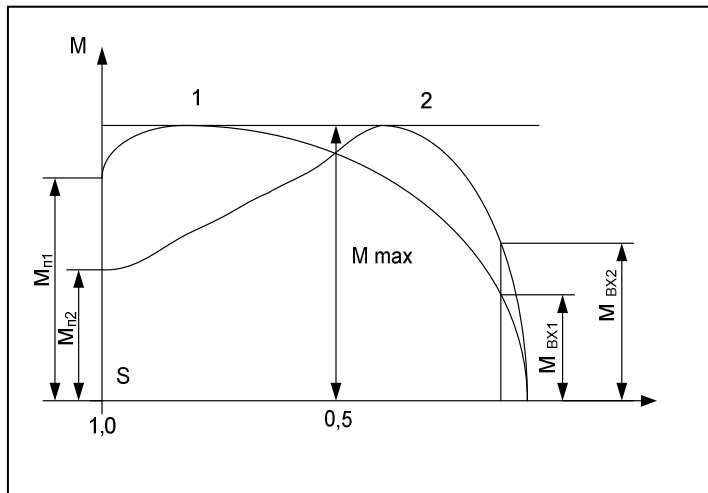
Currently under direct launches turbine (electric motor - compressor - reducer), the current load increases from 5 to 10 times the rated power.

Example: The lifespan of the compressor rotor at 80 000 hours of direct missile service life is reduced by 30-50% during the period of repairs carried out when implementing BARRING device. The service life of equipment is increased by 30-40%.

The use of shaft turning the device during a stop in the reserve and putting turbochargers

1. WHEN YOU STOP THE MACHINE AT THE TIME OF FINDING IT IN RESERVE THE MOST APPROPRIATE USE OF THE SHAFT TURNING THE DEVICE. THE AUTOMATIC CONTROL SYSTEM (ACS) MAINTAINS THE OPTIMAL TEMPERATURE OF THE OIL AND PERIODICALLY, FOR A GIVEN PROGRAM, WHEN THE REQUIRED PRESSURE IN THE SYSTEM PRODUCES A SPINNING SHAFT AT AN ANGLE OF 90 ° (ANGLE OF ROTATION OF THE COMPRESSOR ROTOR). THIS OPERATION ALLOWS TO OVERCOME THE STATIC FRICTION IN BEARINGS AT LOW ANGULAR VELOCITIES WITH MINIMAL EFFORT AND SIGNIFICANTLY REDUCE SLIDING FRICTION DUE TO THE INCLINATION ON THE LUBRICATED SURFACES OF THE OIL FILM.
2. BESIDES CRANKING PERIODIC SYSTEM AVOIDS DEFLECTION OF THE ROTOR SHAFT AND A TURBOCHARGER TURBO, PLASTIC DEFORMATION OF THE SURFACE OF THE LOWER SUPPORTING BABBITT BEARINGS, FILLING IN THE SHEETS CONDENSATE BEARING SHAFT ON BEARINGS, AND, CONSEQUENTLY, THE CORROSION OF THE CONTACT SURFACES.

Start a turbocharger and turbo with BARRING device.



If necessary, start the machine automated control system includes the usual cycle for the rotors to turn, heating oil, oil pump start-up inrush pressure control system. The exception is the inclusion of shaft turning the device at the end of the cycle for continuous operation. Obligatory condition of starting the machine with the shaft turning the device is the coincidence of the direction of rotation and turbo shaft turning the device with the working direction of rotation turbo.

Start turbo made in the usual manner. Barring device, with some of his excess speed over rotor speed compressor is turned off and is further machine. The figure shows the starting input torque synchronous motor.

Curve - one for normal starting conditions. Curve - 2 to start using the shaft turning the device. Shaft turning device for the starting conditions to select gaps in the gearing up to launch turbo, can virtually eliminate shock loads at start-up, lower torque, providing smooth acceleration of a car, reduce the starting current (load on the launcher equipment) and provide a more reliable output turbo on speed, further input in synchronism.

The force on the power bus are determined by the formula.

i_y – peak current /kA/

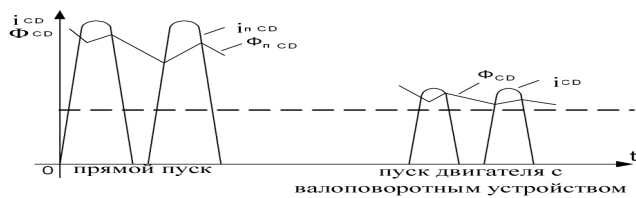
l – the distance between the supporting insulators / along the bus /cm.

a – the distance between the axes of phase change of tires /cm/.

$$F = 0,172 \frac{i_y^2 l}{a}$$

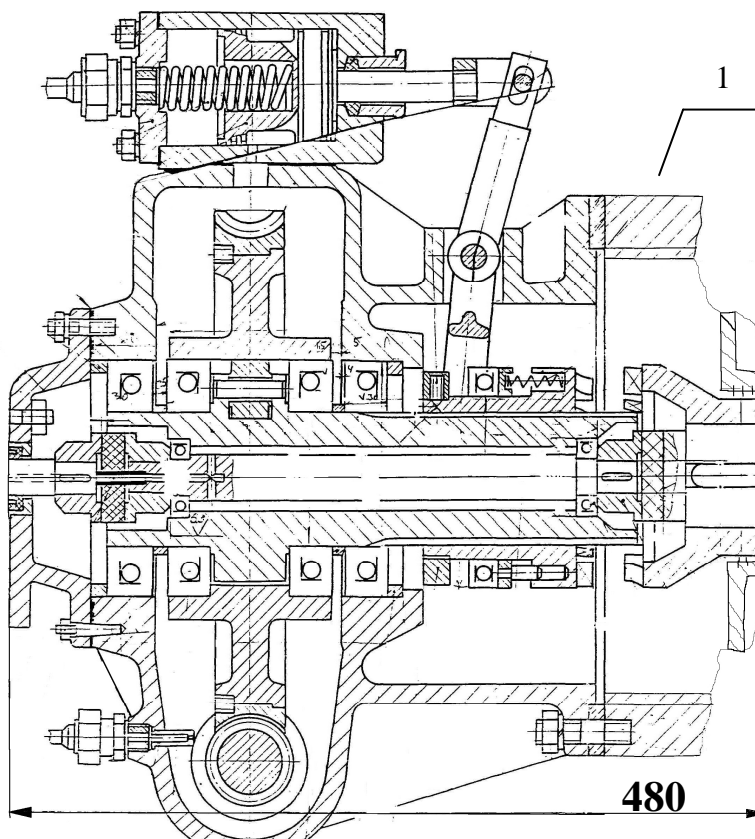
From this formula it is clear that the standard high-voltage fixtures, you can really only reduce the starting current thrust of the motor.

Reduction currents 3-fold leads to a reduction of the deforming force on the busbar 9 times.

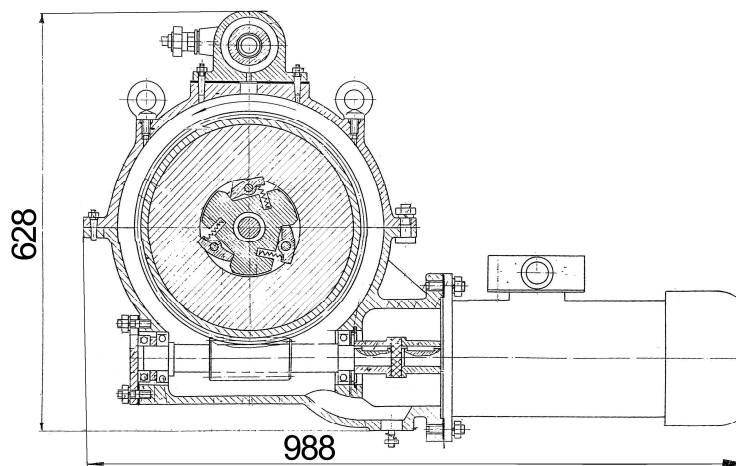
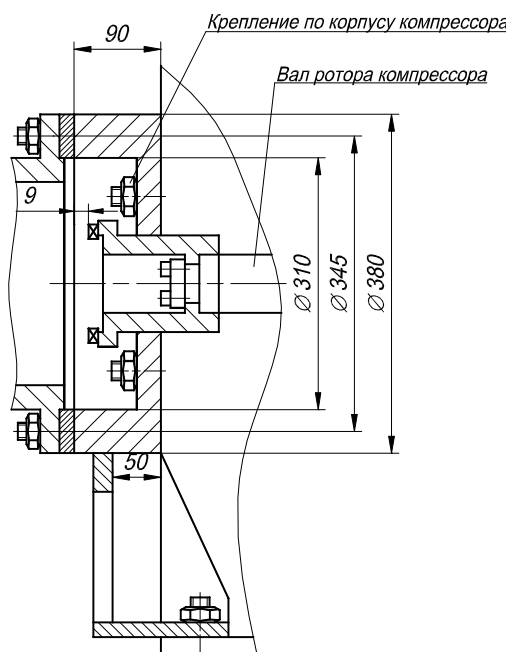


Reduced inrush current extends the life of ballast valves in 2 - 2.5-fold increases require repairs.

BARRING device for compressors C-250, C-500



Элемент I

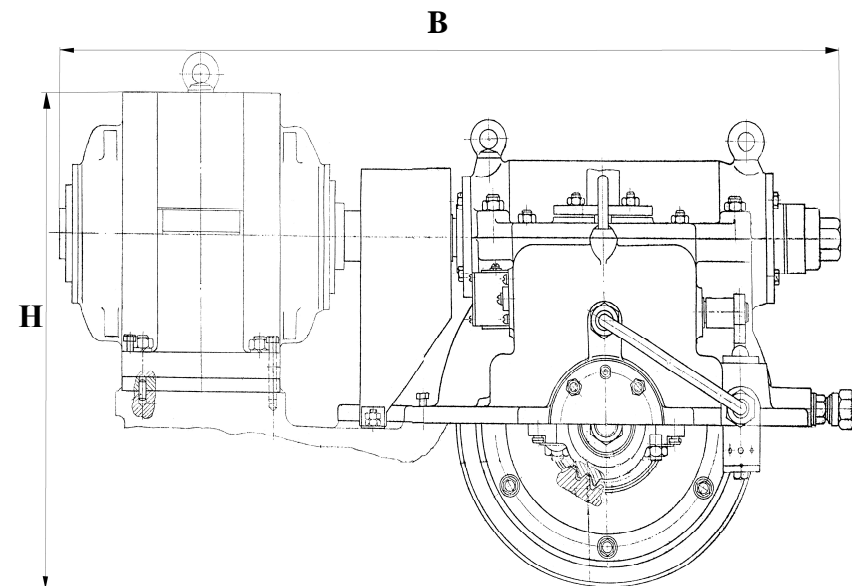
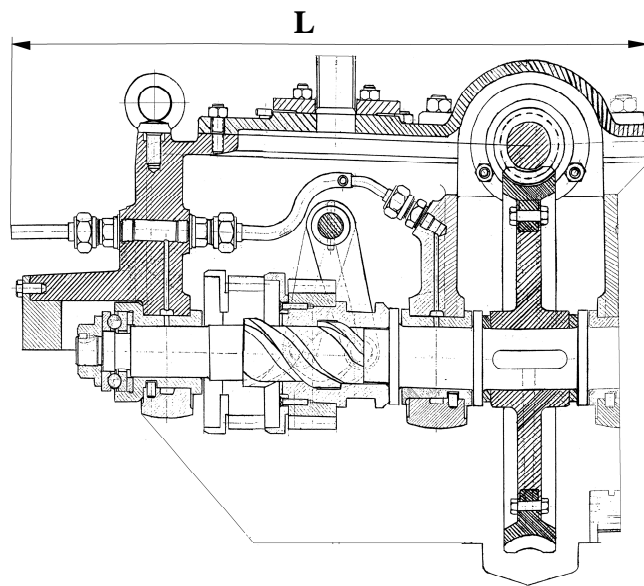


Refinement shaft turning devices on compressors C-250, C-500

technical data:

- | | |
|--|--------------|
| 1. <i>type of transmission</i> | – worm; |
| 2. <i>Module</i> | – 5; |
| 3. <i>Number of revolutions of the drive / min</i> | – 1500; |
| 4. <i>Power to high-speed shaft kW</i> | – 3; |
| 5. <i>Dimensions LxBxH, mm</i> – | 480x988x628; |
| 6. <i>Weight, kg</i> | – 223. |

BARRING device for compressors C-1500, C-1700



technical data:

1. type of transmission – worm
2. Module – 5
3. Number of revolutions of the drive / min – 1500
4. Power to high-speed shaft kW – 7,5
5. Dimensions, mm:
 $L \times B \times H = 850 \times 1013 \times 1408$
6. Weight, kg – 320

BARRING devices for the next compressors:

№	Designation	№	Designation	№	Designation
1	ЦТК-275	21	K-400	41	H-360
2	K-525	22	K-270	42	H-750
3	K-350	23	K-210	43	Э-200
4	K-345	24	K-605	44	ЦНВ-200/3
5	K-420	25	K-160	45	ЦНВ-310
6	K-390	26	K-104	46	ЦНВ-375
7	K-384	27	K-88	47	H-670
8	K-1000	28	K-65	48	ЦНВ-800
9	K-905	29	K-70	49	ЦНК-1270
10	K-3000	30	K-60	50	H-280
11	H-12000	31	K-175	51	H-270
12	H-7700	32	K-133	52	H-370
13	H-7500	33	K-95	53	H-1200
14	H-9000	34	K-83	54	ЦНК-1270
15	H-6700	35	K-81	55	ЦНК-1900
16	H-3500	36	K-50	56	ЦНС-1870
17	H-7600	37	K-45	57	СЦН-1250
18	БК-700	38	H-1050	58	СЦН-2500
19	КТК 12,5/35	39	КТК-7/14	59	H-400
20	ЦК-135/8	40	ЦК-115/8 ЦК 100/6,5	60	H-700

Compressors:

№	Designation	№	Designation	№	Designation
1	52ВЦ-100/9	20	4ГЦ1-250/5	39	543ЦК-450/35
2	43ВЦ-160/9	21	543 ГЦ1-400/40	40	3ЦКО-103/33
3	ЦКОН-43-117	22	3ГЦ3-108	41	5ГЦ1-400
4	ЦКОН-125/9	23	55ГЦ1-326	42	5ЦД-43/50
5	ЦКОН-43-160	24	32ГЦ1-110/21	43	3ГЦ2-36/132
6	ЦКОН-320/0,8	25	3ЦКК-160/6	44	4ГЦ2-115/5
7	3ЦКК-100/3,5	26	2ЦЦК-10/300	45	4ГЦ2-109/18
8	КТК-9,6/26	27	2ЦЦК-10/350	46	КЦКУ-4000
9	4ГЦ1-200/3,5	28	22ЦКО-42/8	47	211ГЦ2-72/5,6
10	ГЦ-215/0,15	29	10ТХМВ-2000	48	2ГЦ2-47/35
11	5ГЦ1-400/0,3	30	10ТХМВ-2000-2Т	49	20ТХМВ-2000
12	30ТХМВ-2000	31	10ТХМВ-4000	50	2ТХНВ-2000-2Т
13	10ТХМВ-4000-2Т	32	20ТХНВ-4000-2	51	10ТХМВ-4000-2
14	30ТХМВ-4000-2	33	10ТХМВ-8000-2	52	20ТХМВ-4000-2Т
15	20ТХМВ-8000-2	34	1АЦ4.1-2-7	53	10ТХМВ-8000-2Т
16	АЦ44.2-2-5	35	АТКА-545-4000	54	АЦ44.2-2-5
17	АТКА-445-6000	36	АТКА-445-8000	55	АТКА-545-4000
18	1АТКП-335-2000	37	1АТКП-435-1600	56	1АТКП-235-4000
19	АЦ3.1-02-3	38	АТП5-5/3	57	АЦ3.1-02-1

C-250-61-1(2) (5)

№	Designation	№ drawing	quantity	The increase in service life by 20% when using the device BARRING	Reduced service life by 20% in direct launches e / engine
1	<i>The rotor assembly</i>	395.25.СБА/Э or 280H.25.СБ	1	24 670	24 670
2	<i>Gear assembly</i>	371.25.СБН	1		
3	<i>Clutch gear assembly compressor / gearbox</i>	Y04.27.СБ	1 set (3)		
4	<i>Clutch gear assembly electric motor - reducer</i>	295.27.СБ	1 set (3)		
5	<i>Seals in the collection C-250-61-1(2)(5)</i>	280H.08.СБ or 395.08.СБ	1 set		
6	<i>The bearings of compressor:</i>				
	<i>a) support-hard</i>	280H.14.СБ	1		
	<i>b) bearing</i>	280H.13.СБ	1		
7	<i>Gear bearings:</i>				
	<i>a) support-hard</i>	353.14.СБ	1		
	<i>b) bearing Ø80</i>	353.13.СБ1	2		
	<i>c) bearing Ø120</i>	353.13.СБ	1		
8	<i>Block op / thrust bearing</i>	280H.14.СБ2	8		
9	<i>bearing motor CTД-1600</i>	ВЖ263.14	2		
10	<i>Motor CTД-1600 1600kW, 6000/10000 B</i>		1		

C-500, C-525.

№	Designation	№ drawing	quantity	The increase in service life by 20% when using the device BARRING	Reduced service life by 20% in direct launches e / engine
1	<i>The rotor assembly</i>	1317.25СБА	1	53 850	53 850
2	<i>Gear assembly</i>	252.25СБ/Э	1		
3	<i>Clutch gear assembly compressor / gearbox</i>	Y07.27СБ	1 set (3)		
4	<i>Clutch gear assembly electric motor - reducer</i>	252.28.СБ3А	1 set (3)		
5	<i>Seals in the collection C-500</i>	1317.08СББ	1 set		
6	<i>The bearings of compressor:</i>				
	<i>a) support-hard</i>	1X03.14СББ	1		
	<i>b) bearing</i>	1X03.13.СБА	1		
7	<i>Gear bearings:</i>				
	<i>a) support-hard Ø145</i>	252.14.СБ	1		
	<i>b) bearing Ø110</i>	252.13.СБ1	2		
	<i>c) bearing Ø145</i>	252.13.СБ2	1		
8	<i>Block op / thrust bearing (8)</i>	1317.14.СБ2/Э	8		
9	<i>bearing motor CTД-3150</i>		2		
10	<i>Motor CTД-3150 3150kW, 6000/10000 kW.</i>		1		

C-1500

№	Designation	№ drawing	quantity	The increase in service life by 20% when using the device BARRING	Reduced service life by 20% in direct launches e / engine
1	<i>The rotor assembly</i>	1300.25CB	1	182 807	182 807
2	<i>Gear assembly</i>	1464.25CB			
3	<i>Clutch gear assembly compressor / gearbox</i>	Y10.27CB1	1 set (3)		
4	<i>Clutch gear assembly electric motor - reducer</i>	1464.78CB	1 set (3)		
5	<i>Seals in the collection C-1500</i>	1300.08.CП	set		
6	<i>The bearings of compressor:</i>				
	a) <i>support-hard</i>	1300.14.CBA	1		
	b) <i>bearing</i>	Y18.013CП	1		
7	<i>Gear bearings:</i>				
	a) <i>support-hard Ø 180</i>	1464.14CB1	1		
	б) <i>bearing Ø 165 (2)</i>	1464.13CB	2		
	в) <i>bearing Ø 180</i>	1464.113CB-1	2		
8	<i>Block op / thrust bearing(8)</i>	1300.14CB3A	8		
9	<i>bearing motor CТД-10000 (2)</i>		2		
10	<i>Motor CТД-10000 10000kW, 6000/10000 6</i>		1		

C-1700

№	Designation	№ drawing	quantity	The increase in service life by 20% when using the device BARRING	Reduced service life by 20% in direct launches e / engine
1	<i>The rotor assembly</i>	3326.025CB20	1	183 150	183 150
2	<i>Gear assembly</i>	1540.425CB/Э	1		
3	<i>Clutch gear assembly compressor / gearbox</i>	Y8.127.CB	1 set (3)		
4	<i>Clutch gear assembly electric motor - reducer</i>	1540.127CB	1 set (3)		
5	<i>Seals in the collection C-1700</i>	1300.08CB	1 set		
6	<i>The bearings of compressor:</i>				
	a) <i>support-hard Ø 175</i>	Y8.014CB/Э	1		
	b) <i>bearing</i>	Y8.013CB/Э	1		
7	<i>Gear bearings:</i>				
	a) <i>support-hard Ø 200</i>	1509.114CB	1		
	б) <i>bearing Ø 180 (2)</i>	1507.113CB	2		
	в) <i>bearing Ø 200</i>	1509.113CB	1		
8	<i>Block op / thrust bearing(8)</i>	Y8.014	8		
9	<i>bearing motor CТД-10000 (2)</i>		2		
10	<i>Motor CТД-10000 (2) 10000kW, 6000/10000 B</i>		1		

OTC- 12,5/35

№	Designation	№ drawing	quantity	The increase in service life by 20% when using the device BARRING	Reduced service life by 20% in direct launches e / engine
1	<i>Rotor I housing</i>	3.600.014	1	116 158	116 158
2	<i>Rotor II housing</i>	3.600.015	1		
3	<i>Rotor III housing</i>	3.600.015	1		
4	<i>gear</i>				
a)	<i>Gear wheel to the shaft</i>	4.300.068	1		
б)	<i>Pinion shaft</i>	4.302.154	1		
5	<i>Intermediate shaft assembly</i>	3.213.010	1		
6	<i>Intermediate shaft assembly 2 set</i>	3.213.009	2		
7	<i>Clutch gear assembly</i>	3.244.022	1		
8	<i>bush damper</i>	3.285.058	1 set		
9	<i>bush damper</i>	3.285.058	1 set		
10	<i>Labyrinth seals, bushings in 3 cases</i>	в сборе	1 set		
11	<i>Bearing compressors (hard)</i>	3.280.015	3		
12	<i>Gear bearings (4 pcs.)</i>	3.280.016 3.280.017	4		
13	<i>Bearing compressor bearing</i>	3.280.011	3		
14	<i>Bearings motor CTД-3150</i>	БЖ	2		
15	<i>Motor CTД-1600 1600 kW, 6000/10000 B</i>	in collecting	1		

OTC-7/14

№	Designation	№ drawing	quantity	The increase in service life by 20% when using the device BARRING	Reduced service life by 20% in direct launches e / engine
1	<i>Pomop I housing</i>	3.600.010	1	55 950	55 950
2	<i>Pomop II housing</i>	3.600.011	1		
3	<i>gear</i>				
a)	<i>Gear wheel</i>	4.300.051	1		
б)	<i>Pinion shaft</i>	4.300.279	1		
4	<i>Intermediate shaft assembly</i>	3.213.008	2		
5	<i>Labyrinth seals in the collection</i>		1 set		
6	<i>Clutch gear assembly</i>	3.244.016	1 set		
7	<i>bush damper</i>	3.288.039	1		
8	<i>gear bearings</i>	комплект	4		
9	<i>Bearings 2 buildings compressor</i>	комплект	4		
10	<i>Bearings motor CTД-1250</i>		2		
11	<i>Motor CTД-1250 1250 kW, 6000/10000 B</i>		1		

CC-135/8; CC-115/8

№	Designation	№ drawing	quantity	The increase in service life by 20% when using the device BARRING	Reduced service life by 20% in direct launches e / engine
1	<i>Rotor I housing</i>	3.600.262	1	37 062	37 062
2	<i>Rotor II housing</i>	3.600.263	1		
3	<i>gear</i>				
a)	<i>Gear wheel</i>	3.360.093	1		
6)	<i>Pinion shaft</i>	4.302.241	1		
4	<i>Bearing compressor 2 stage</i>	in collecting	4		
5	<i>bearing gear</i>	in collecting	4		
6	<i>bush damper</i>	3.288.039	1		
7	<i>labyrinth seals</i>	in collecting	1 set		
8	<i>The gear coupling assembly</i>	3.244.022	1 set		
9	<i>Bearings motor</i>		2		
10	<i>Motor CTD-1250 1250 kW, 6000/10000 B</i>	in collecting	1		