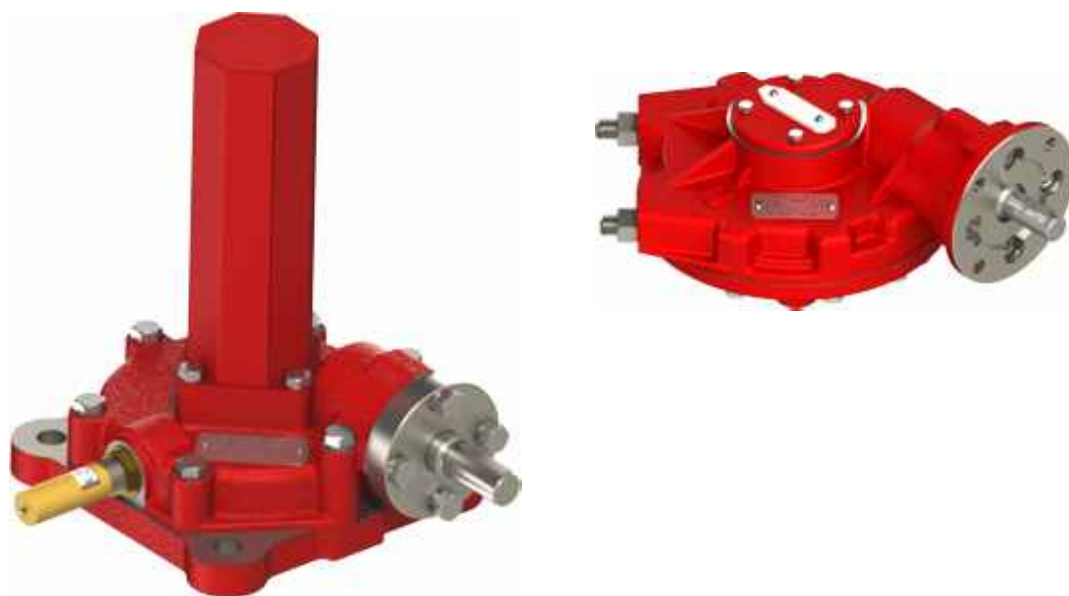


ООО "МЕХАНИК"

Mechanic Ltd

КАТАЛОГ ПРОДУКЦИИ

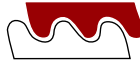
**Спироидные редукторы
приводов трубопроводной
арматуры**



PRODUCTION CATALOG

**Spiroid gearboxes for
pipeline valve drives**

2017



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Dear colleagues!

The scientific-production enterprise "Mechanic" Ltd is created on the basis of the Institute of Mechanics of Izhevsk State Technical University (ISTU), which has been one of the leading Russian scientific schools in the field of gears for many years; and it is the recognized leader in our country and abroad in the field of studying, designing and implementation of spiroid gears and gearboxes into various engineering branches.

The basis of industrial engineering of spiroid gearboxes is the long-term investigation of spiroid gears, cooperation with industrial enterprises and execution of Federal and International scientific and technical programs and projects, many of them being headed by the Institute of Mechanics. Each production item is the result of profound investigations and serious science, allowing to create the advanced samples of gearbox engineering.

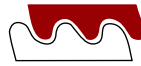
Beginning from the middle 90th, our efforts have been focused on development and manufacturing implementation of a new generation of gearboxes for pipeline valve drives. By nowadays a rather wide range of these gearboxes has been created and is serially produced with application of a spiroid gear, allowing to increase the reliability and load-carrying capacity of drives, to reduce their mass and dimension characteristics and cost, and to improve their performance criteria. Each of the developed and produced gearboxes is science-intensive and competitive. The process of their enhancement and creation of new progressive samples is being permanently continued.

Today our partners are such large valve engineering enterprises as JSC "Penzyazhpromarmatura", "Samaravolgomash Ltd", JSC "Saratov Valve Plant" and other. We are sure, that we can be useful to you and hope for the favorable and mutually beneficial cooperation.

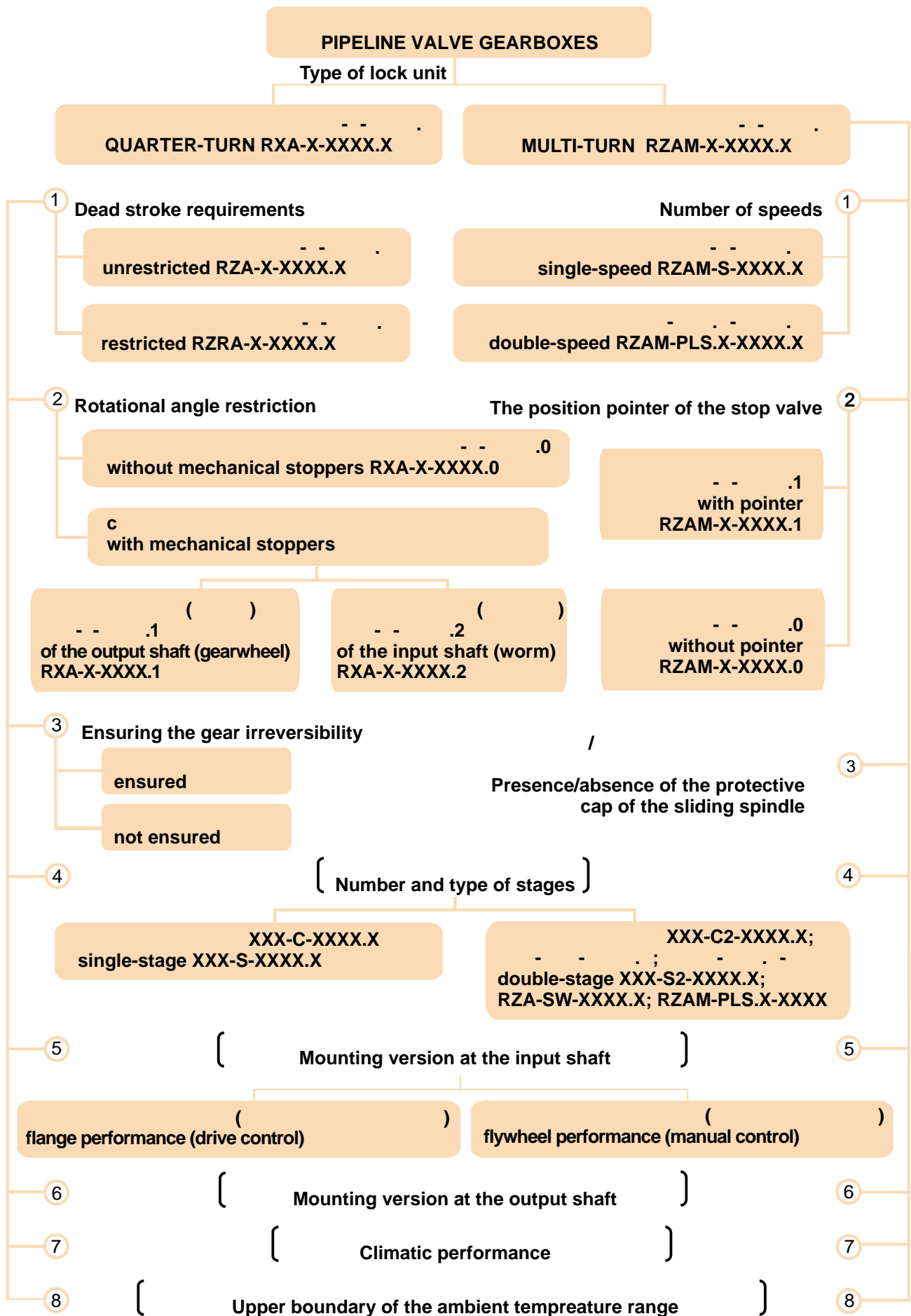
Sincerely,
Director of "Mechanic" Ltd,
Director of Institute of Mechanics of ISTU,
Honored scientist of Russian Federation,
Doctor of Technical Sciences, Professor
Veniamin I. Goldfarb

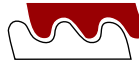
Spiroid gear is one of the progressive types of skew-axes gears. Due to the number of advantages of geometry and kinematics of engagement – the increased overlap ratio, favorable contact conditions – spiroid gears are featured by the high loading and, in particular, overloading capacity, the increased smoothness of operation and less sensitivity to manufacturing and assembly errors, high reliability and durability.

One of the most progressive applications of spiroid gears is various-purpose pipeline valve drives, featured in operation by: high loading and overloading torques, acting at opening and closing of the valve; low rotational frequencies; necessity to keep the guaranteed workability during a long period of time; wide range of operating temperatures. The accumulated practical experience showed that the best decision for the pointed features is the application of gearboxes with spiroid gears.



CLASSIFICATION OF GEARBOXES FOR PIPELINE VALVE DRIVES





CLASSIFICATION OF GEARBOXES FOR PIPELINE VALVE DRIVES

The classification of gearboxes for pipeline valve drives has been developed in order to describe completely all the features, related to the functional purpose of gearboxes, their layout features and performance capabilities.

The main classification feature of the gearbox shows its attribute to this or that valve type: **quarter-turn**, mounted on rotary-type stop units – ball valves or disk shutters, where the operating stop element is rotated to the angle, close or equal to 90°, and **multi-turn**, applied to control the linear-type stop units - wedge and sliding shutters.

Quarter-turn gearboxes

The output shaft of such a gearbox is directly connected (through the keyed or prismatic joint) to the rod of the stop unit, its opening/closing is executed per 1/2 of the gearbox output shaft revolution (as for hermetic valves the angle of rotation can reach 120° due to their layout features). Duration of opening/closing usually does not exceed 2 min for drive performance of the gearbox.

The first of classification feature of quarter-turn gearboxes is the *valve purpose*, it specifies the requirements to the value of the output shaft backlash (dead stroke). The dead stroke value is not intentionally specified for stop valves and in case of drive performance it is compensated by the initial and periodical adjustment of its automatics. As for stop and regulating valves, its response speed and/or probability of vibrations appearance depends directly on the dead stroke value, specified by the customer within the pre-assigned limits (as a rule, under 1°).

The presence/absence of mechanical restrictions of the stop valve motion is the second classification feature. The gearbox is provided with such stoppers if it is necessary to eliminate errors when setting the stop unit shutter, gate, ball) to the terminal positions "open" and "close" and if there are no such stoppers at the valve itself. In case of electric drive control with switches and position gauges according to which the terminal positions of the stop unit are adjusted, mechanical stoppers available in the gearbox or stop unit design are duplicating.

Two layout versions (and corresponding sub-features) of the gearbox mechanical stoppers are possible. The first version involves two rigid thrusts, directly limiting the terminal positions "open" and "close" of the sector gearwheel (its hub is the output shaft). The second version has a screw-type stopper, connected with the gearbox input shaft. Both versions allow regulating the rotational angle of the gearbox output shaft: for the first version within the range from 80 up to 120, for the second one within the range from 40 up to 130.

Irreversibility (self-locking) of the gear (feature 3) is the property, preventing the uncontrolled displacement of the stop unit, which can appear in operation of certain types of stop valves (disk shutters, hermetic valves), when the flow and/or pressure of the environment, acting on the stop unit, create the torque.

Self-locking can be implemented in mechanisms containing screw elements – worm-type gears, crank and screw mechanisms and so on. The irreversibility requirement for worm-type gears is provided at the condition:

$$f_r > \tan(\alpha) \cos(\alpha_n), \quad (1)$$

where α - thread helix angle; α_n is the thread normal pressure angle. Therefore, when designing the self-locking gear it is necessary to check the fulfillment of this condition. The crucial question here is the assignment of a true value of the friction factor in the engagement. This value is influenced by a great number of factors: sliding speed (in the extreme case, that is, the absence of sliding, we may talk only about the static friction), material of links, lubrication type, presence or absence of vibrations and some other. Note, that it is the most reliable to determine the friction conditions experimentally under specific operation conditions of the valve and drive.

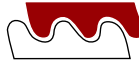
Taking into account, that operation conditions are practically always not stationary, the following types of irreversibility can be singled out:

– unconditional irreversibility – when the irreversibility is provided at any combination of external factors, and the condition (1) is true for both static friction and sliding friction;

– conditional irreversibility – when the irreversibility is provided only when certain conditions are fulfilled, for instance, the absence of jerks, impacts and/or vibrations, and the condition (1) is true only for the static friction here.

Since the main parameter, influencing the angle, is the gear ratio, exactly this parameter is often used by a consumer to estimate quickly the irreversibility of a worm gear. Thus, for instance, the unconditional irreversibility can be provided at values of the gear ratio from 35 and higher, and for the gear ratios less than 20 the irreversibility is, as a rule, impossible. However, the following should be kept in mind, that one and the same gear ratio can be implemented at various combinations of gear parameters. That is why, note once again, that in responsible situations the gear irreversibility should be proved by the condition (1) and checked in tests under conditions corresponding to or close to the real ones.

The number of gearbox stages (classification feature 4) is determined mainly by the value of the maximum torque and the



(1)			
(1)			
	20,	35	
	50	500	
		8000	
		4000...8000	
1)	5	6-	
1.1.			ISO 5210;
c			26-07-763-73;
1.2.			
2)			ISO 5211:2001;
			7)
			15150-69.
1.	-60°C ...+50°C	-40°C ...+50°C	
2.	-60°C ...+120°C	-40°C ...+120°C	
3.	-60°C ...+200°C	-40°C ...+200°C	
			DN
			25 90
			15
			1
			i_i
			i_i

necessity to reduce it to values from 50 to 500 Nm, corresponding to torques created by means of electric drives with common dimension types or flywheels with acceptable dimensions. The reduction is, as a rule, not reasonable or even impossible to implement in one stage of worm-type gears when torques at the valve exceed 8000 Nm, that is why double-stage layouts of gearboxes are applied here. Note also, that for one and the same maximum torque the single-stage gearbox is obviously cheaper than the double-stage one, but the latter allows to apply the electric drive of smaller dimensions or the flywheel of smaller dimensions. Taking into account these contradictory requirements, the application of single-stage gearboxes is recommended at torques of valve control under 4000...8000 Nm, and at greater values double-stage layouts of spiroid gearboxes are reasonable.

The practice of spiroid gearbox application for various manufacturers of stop valve defined the wide range of mounting versions at the input and output shafts (classification features 5 and 6 – see the scheme):

- 1) at the input shaft:
 - 1.1. flange performance (drive control)
 - a) with the flange and shaft according to the standard ISO 5210;
 - b) with the flange and shaft according to the standard S 26-07-763-73;
 - c) with special parameters of the flange and/or shaft;
 - 1.2. flywheel performance (manual control)
 - a) with the flywheel;
 - b) without the flywheel, with the shaft for the flywheel;
- 2) at the output shaft:
 - a) with the flange and shaft according to the standard ISO 5211:2001;
 - b) with special parameters of the flange and/or shaft.

As for the climatic performance (classification feature 7), spiroid gearboxes of pipeline valve drives are classified similarly, as the applied valve – U (moderate), UHL (moderate and cold) and (tropical) according to the standard GOST 15150-69.

According to the temperature mode, spiroid gearboxes have the following performances:

	UHL1	U1, 1
1.	-60°C ...+50°C	-40°C ...+50°C
2.	-60°C ...+120°C	-40°C ...+120°C
3.	-60°C ...+200°C	-40°C ...+200°C

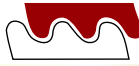
Multi-turn gearboxes

The output shaft of the multi-turn gearbox is connected to the lead nut, providing the progressive displacement of the spindle and the wedge connected to it (or gate valve). Here, as it is known, the length of the spindle lead is determined by the diameter of the conditional passage DN and the value of the screw thread pitch. In most cases, in order to close or open the valve completely, the amount of 25 to 90 full revolutions of the lead nut and, correspondingly, the output shaft of the gearbox is required. It results to the fact, that in comparison with quarter-turn gearboxes, multi-turn ones are under more rigid operation conditions – the duration of opening/closing for the drive performance may reach 15 min, and for the manual (flywheel) performance – 1 hour, which, in its turn, leads to contradictory requirements to the choice of gear ratios of multi-turn gearboxes: on the one hand it is necessary to choose greater values of i in order to provide lower torques at the input shaft (which allows choosing a smaller and cheaper electric drive or a flywheel with less diameter, more comfortable in operation), and on the other hand – smaller values of i in order to provide shorter time of valve handling.

As for the drive performance, the shorter time of handling can be also achieved by application of a faster drive. In case of a manual performance, the only way to meet both specified above requirements is the application of a double-speed gearbox, where two versions of a gear ratio are implemented, the greater of them is applied for starting (beginning of opening) or shutting the wedge, the smaller one is applied at the most part of the total operation time (usually less than 4/5), when the load at the spindle is low and constitutes not more than 1/5 of the maximum load. According to this fact the classification feature 1 is determined for multi-turn gearboxes.

One of requirements to stop units is the presence of the position pointer "open" and "close" (regulating documents PB 08624-03, PB 03-585-03, PB 10-573-03 and other). In cases, when it is impossible to place the pointer, connected directly to the spindle, within the wedge layouts, applied in manual control, the gearbox should be provided with a special pointer of the stop unit (wedge or gate valve) position. It determines the classification feature 2.

The third feature – the presence or absence of the protective cap – determines the possibility to apply the valve gearbox with the feed-out or non-sliding spindle or the necessity to protect the feed-out spindle or the absence of such necessity.



Classification features from 4 to 8 have the same meaning, as for quarter-turn gearboxes, with the following specifications, reflecting their application area:

- 1) the double-speed version of the gearbox is double-stage;
- 2) mounting versions at the output shaft differ from their determinative regulating documents:
 - a) with the flange and shaft according to the standard ISO 5210;
 - b) with the flange and shaft according to the standard S 26-07-763-73;
 - c) with special parameters of the flange and/or shaft.

_____ ,
 (_____)
 (_____ 4/5),
 1/5

1.

_____ « _____ » « _____ » (_____)
 08624-03, 03-585-03, 10-573-03 _____).

(_____)
2.

_____ - _____

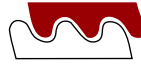
4 8

1)

2)

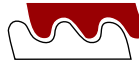
}
}
}

ISO 5210;
26-07-763-73; /



QUARTER-TURN SPIROID AND NON-ORTOGONAL WORM GEARBOXES

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.....33	



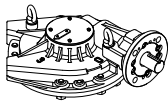
MODIFICATIONS OF QUARTER-TURN GEARBOXES

1 Dead stroke requirements

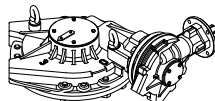
() - without mechanical stoppers (for stop valves) - RZA
 () - with mechanical stoppers on demand of the customer (for regulating valves) - RZRA

2 Number and type of stages

() - single-stage
 RXA-S, RXA-W



() - 2, () - double-stage
 RXA-S2, RXA-SW



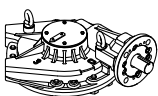
3 По наибольшему моменту на выходном валу (момент запираения/страгивания) Maximum loading torque at the output shaft (the torque of starting/shutting)

() - see dimension row (see p.12)

4 По ограничению угла поворота выходного вала Rotational angle of the output shaft restriction

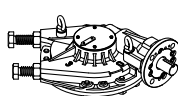
without mechanical stoppers

() - RXA-X-XXXX.0

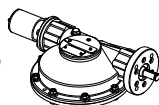


with mechanical stoppers

() - output shaft (gearwheel) - RXA-X-XXXX.1



() - input shaft (worm) - RXA-X-XXXX.2



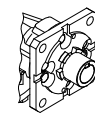
Note: the symbol "X" defines variable data

5 By gear ratio

() - see Table 3. Gear ratios (see p.14)

6 By attachment variant at an input shaft

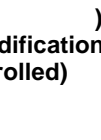
() - flange-type modification (drive-controlled)



26-07-763-73
 By OST
 26-07-763-73

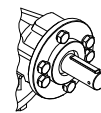


ISO 5210
 By ISO 5210

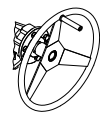


Special

() - flywheel-type modification (manually controlled)

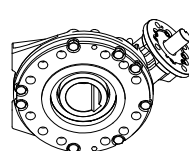


for flywheel

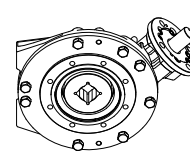


with flywheel

7 By attachment variant at an output shaft



/By ISO 5211:2001



Special

8 By climatic modification

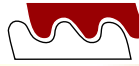
1 (-60°) 1 (-40°) 15150
 UHL1 (-60°) or U1 (-40°) by GOST 15150

9 By upper level of operating temperature range

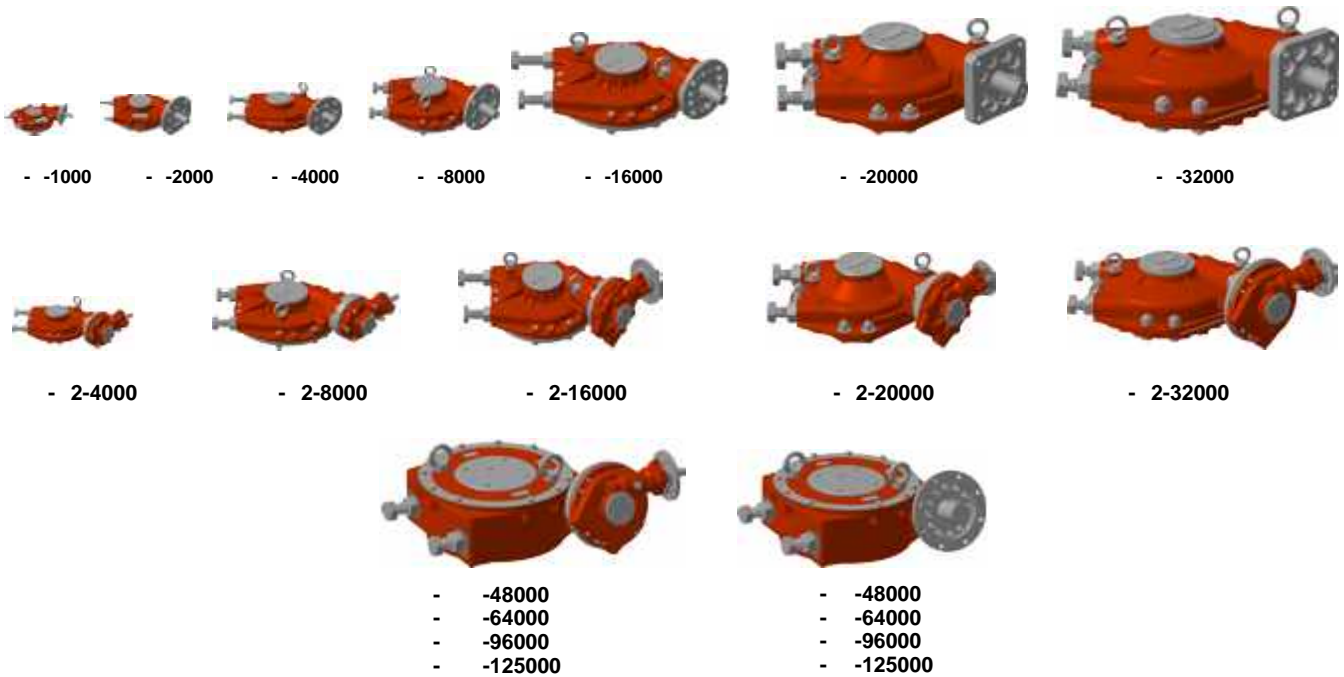
+50°

+120°C

+200°



DIMENSION ROW OF QUARTER-TURN SPIROID GEARBOXES



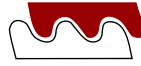
1.1.

Table 1.1. Main performance characteristics of quarter-turn single-stage gearboxes

	Parameter	Gearbox dimension type							
		-300 RZA-S-300	-1000 RZA-S-1000	-2000 RZA-S-2000	-4000 RZA-S-4000	-8000 RZA-S-8000	-16000 RZA-S-16000	-20000 RZA-S-20000	-32000 RZA-S-32000
*	Maximum torque at the output shaft, $T_{out max}$, Nm*	300/ 380	1000/ 1300	2000/ 2500	4000/ 5000	9000/ 10000	16000/ 20000	20000/ 22000	32000/ 32000
,	Limiting static torque at the output shaft, $T_{out lim}$, Nm	600	2000	4000	8000	16000	32000	40000	64000
,	Maximum torque of the idle run at the input shaft, $T_{in ir}$, Nm	1.0	1.2	1.4	1.6	2.0	2.2	2.4	2.6
	Gear ratios	3 / See table 3							
	Mounting versions at the input shaft and flange	8.1, 8.2, 8.3 See tables 8.1, 8.2 and fig. 3							
	Mounting versions at the output shaft and flange	5.1, 5.2, 5.3 See tables 5.1, 5.2 and fig. 1							
	Other conditions of application	2 / See table 2							
,	Mass, under, kg	4	11	18	29	53	92	105	137

* corresponds to the torque of starting/shutting on the rod of the stop unit

Above slash - drive performance, below slash - manual (handwheel) performance



QUARTER-TURN SPIROID GEARBOXES

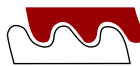
1.2.

Table 1.2. Main performance characteristics of quarter-turn double-stage gearboxes

	Parameter	Gearbox dimension type					
		- 2-4000 RZA-S2-4000	- 2-8000 RZA-S2-8000	- 2-11200 RZA-S2-11200	- 2-16000 RZA-S2-16000	- 2-20000 RZA-S2-20000	- 2-32000 RZA-S2-32000
	Maximum torque at the output shaft, T_{OUTMAX} , Nm	4300/ 5000	9000/ 10000	11200/ 11200	16000/ 20000	20000/ 22000	32000/ 32000
	Limiting static torque at the output shaft, T_{OUTLIM} , Nm	8000	16000	15650	32000	30000	36000
	Maximum torque of the idle run at the input shaft, T_{INir} , Nm	2.0	2.2	2.2	3.0	3.0	3.4
	Gear ratios	3 See table 3					
	Mounting versions at the input shaft and flange	8.3 .3 See table 8.3 and fig. 3					
	Mounting versions at the output shaft and flange	7.1, 7.2 .2 See tables 7.1, 7.2 and fig. 2					
	Other conditions of application	2 See table 2					
	Mass*, under, kg	30	61	74	105	125	165

* ()

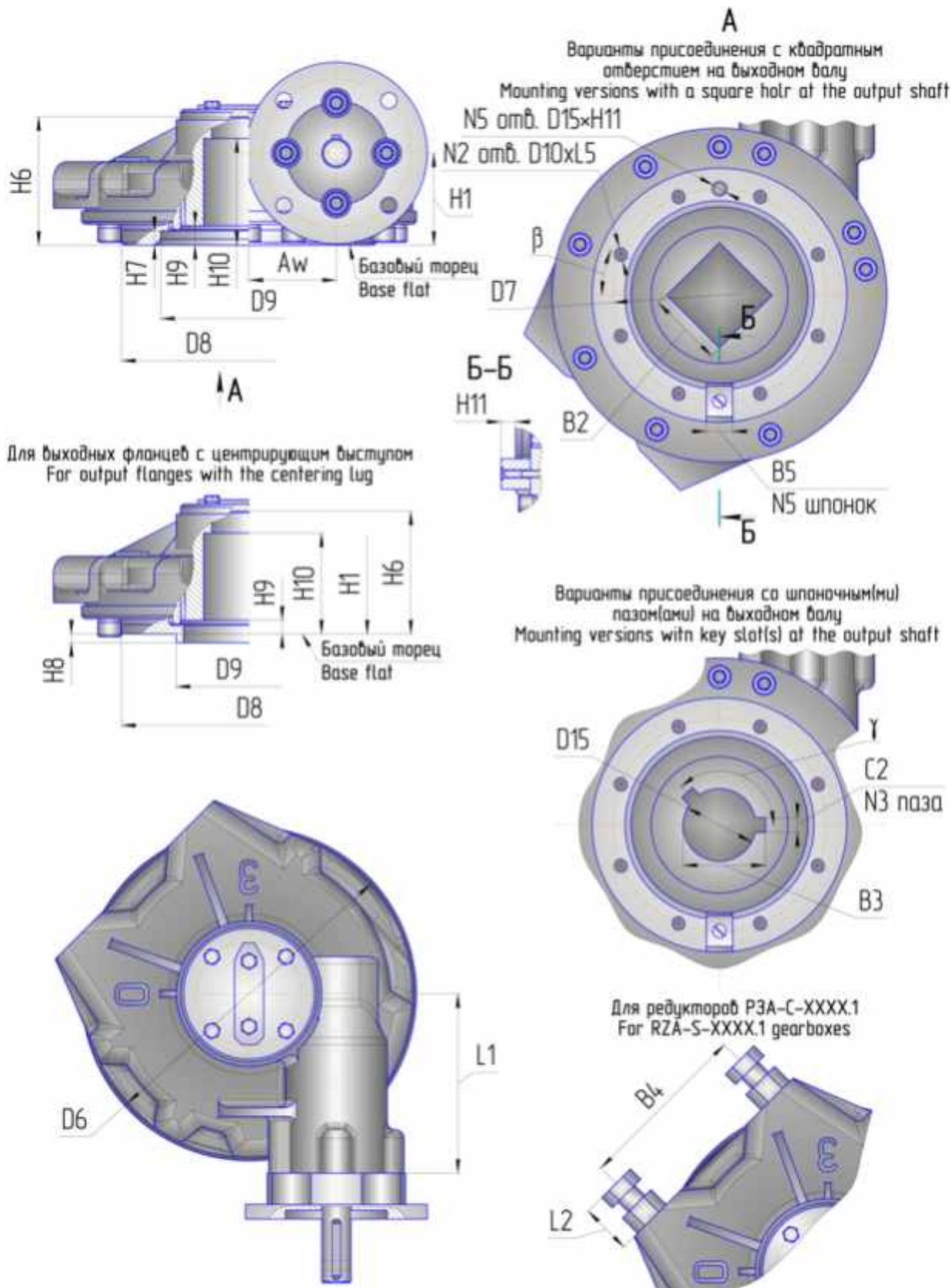
*Above slash - drive performance, below slash - manual (handwheel) performance



QUARTER-TURN SPIROID GEARBOXES

1.

Figure 1. Overall and mounting dimensions of RZA-S-XXXX gearboxes output shaft and flange



4.

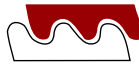
Table 4. Overall dimensions of gearboxes RZA-S-

Dimension	/ Symbolic designation of the model								
	-300 RZA-S-300	-1000 RZA-S-1000	-2000 RZA-S-2000	-4000 RZA-S-4000	-8000 RZA-S-8000	-11200 RZA-S-11200	-16000 RZA-S-16000	-20000 RZA-S-20000	-32000 RZA-S-32000
	. 1 3/ Fig. 1 and 3								
H1*	39	53...63	66...67.5	76...79	93...112	101...139	91...119	110...160	138...178
H6*	61	75.5...85.5	93...119	103.5...115	133...159	164...230	139...171	185...230	190...230
L1	80.1	114	130.5	177	200	220	235	260	285
D6	134	194	228	284	357	400	435...464	490	530
L2	15.5±5	33±10	40±6	43±16	96±9	61±10	116±9	75±15	75±15
B4	60	90	120	150	180	220	220	260	280
Aw (single-stage)	30.5	50	60	70	90	93	110	108	130
See tables 5.1 and 5.2 for the rest dimensions									

5.1.

Table 5.1. Mounting dimensions of RZA-S-XXXX gearboxes output flange (see fig.1 on p.15).

Gearbox model	Symbolic designation of the mounting version	Mounting type at the input shaft and flange	H1	6 max	Dimensions of the output flange												
					7	8	D7	D8	D9	D10	L5	N2	b	Face key			
														11	N5	B5	
RZA-S-300.	XX. 11	F10 /by ISO 5211	59	61	—	3	102	134	70f8	M10	15	4	45°	—	—	—	
	XX. 11	F10 /by ISO 5211	53	75.5	—	3	102	185	70f8	M10	20.5	4	45°	—	—	—	
	.12	F12 /by ISO 5211	53	75.5	—	3	125	185	85f8	M12	20.5	4	45°	—	—	—	
	.13	F14 /by ISO 5211	63	85.5	—	4	140	185	100f8	M16	26	4	45°	—	—	—	
RZA-S-1000.	.33	/ special	59	82	10	—	146	185	121.34 ^{±0.12}	M10	22	8	22.5°	—	—	—	
	.12	F12 /by ISO 5211	60.5	85.1	10 ^{+0.2}	3	125	175	85f8	M12	—	4	45°	—	—	—	
	.13	F14 /by ISO 5211	60.5	96.5	—	3	140	175	100f8	M16	—	4	45°	—	—	—	
	.14	F16 /by ISO 5211	65.5	101.5	—	5	165	210	130f8	M20	—	4	45°	—	—	—	
	.35	/ special	65.5	101.5	—	5	165	210	130f8	M20	23.5	4	45°	—	—	—	
	.36	/ special	65.5	129.5	—	5	165	210	130f8	M20	23.5	4	45°	—	—	—	
	.37	/ special	64	100	—	—	180	210	140H10	M16	22	4	45°	—	—	—	
	.38	/ special	64.5	100.5	10	—	165	210	108	M20	22.5	4	45°	—	—	—	
RZA-S-2000.	.39	/ special	63.5	99.5	13.5	—	146.5	175	121.34±0.12	M10	28	8	22.5°	—	—	—	

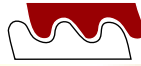


QUARTER-TURN SPIROID GEARBOXES

5.1

Table 5.1. Continuation

Gearbox model	Symbolic designation of the mounting version	Mounting type at the input shaft and flange	H1	H6 max	Dimensions of the output flange												
					7	8	D7	D8	D9	D10	L5	N2	b	Face key			
														D17	H11	N5	B5
-4000. RZA-S-4000.X-XX	.14	F16	77	103.5	-	5	165	223	130f8	20	32	4	45	-	-	-	-
	.15	F25	78	115	-	5	254	300	200f8	M16	28	8	22.5	-	-	-	-
	XX.31	/special	79	105.5	10 ^{+0.2}	-	203.2	223	178.5 ^{+0.24}	10	29	016	0	-	-	-	-
-8000. RZA-S-8000.	.14	F16	112	152	-	5	165	210	130f8	20	32	4	45	-	-	-	-
	.15	F25	93	133	-	5	254	295	200f8	M16	28	8	22.5	-	-	-	-
	.16	F30	93	133	-	5	298	357	230f8	20	32	8	22.5	-	-	-	-
	XX.31	/special	93	158	10 _{0.4}	-	263.5	293	232.46 ^{+0.1}	12	38	16	0	-	-	-	-
-11200. RZA-S-11200.	.15	F25	102	164	-	5	254	350	200f8	M16	37	8	22.5	-	-	-	-
	.16	F30	102	164	-	5	298	350	230f8	20	37	8	22.5	-	-	-	-
	XX.35	/special	102	164	-	5	298	350	230f8	20	37	8	22.5	-	-	-	-
	XX.48	/special	102	164	-	5	254	350	200f8	M16	37	8	22.5	-	-	-	-
	XX.60	/special	102	164	-	5	298	350	230f8	20	37	8	22.5	20D9	20	2	-
-160000. RZA-S-16000.	.15	F25	99	139	-	5	254	295	200f8	M16	28	8	22.5	-	-	-	-
	.16	F30	99	139	-	5	298	357	230f8	20	32	8	22.5	-	-	-	-
	XX.31	/special	99	139	-	5	298	357	230f8	20	32	8	22.5	-	-	-	-
	.32	F35	110	156	-	5	356	415	260f8	M30	36	8	22.5	-	-	-	-
	XX.33	/special	119	171	9.6 _{0.7}	-	438.2	464	413.41 \pm 0.1	12	20	16	0	-	-	-	-
-20000. RZA-S-20000.	.15	F25	110	185	-	5	254	295	200f8	M16	28	8	22.5	-	-	-	-
	.16	F30	110	185	-	5	298	350	230f8	20	32	8	22.5	-	-	-	-
	.17	F35	110	185	-	5	356	415	260f8	M30	36	8	22.5	-	-	-	-
	.32	/special	110	185	-	5	298	350	230f8	20	32	8	22.5	-	-	-	-
	.33	/special	110	185	-	5	356	415	260f8	M30	36	8	22.5	-	-	-	-
	.35	/special	160	235	45	-	310	350	240 10	20	30	4	45	-	12	2	25h10
	.36	/special	122	190	10	-	438.2	470	413.41 \pm 0.1	12	20	16	0	-	-	-	-
	.37	/special	110	185	-	5	298	350	230f8	20	32	8	22.5	-	-	-	-
	.51	/special	110	185	-	5	356	415	260f8	M30	36	8	22.5	20D9	20	2	-
-32000. RZA-S-32000.	.11	/special	138	190	-	5	356	415	260f8	M30	36	8	22.5	-	-	-	-
	.32	/special	138	204	-	5	356	415	260f8	M30	36	8	22.5	-	-	-	-
	.34	/special	153	205	-	8	406	475	300 f8	M36	63	8	22.5	-	-	-	-
	.41	/special	138	190	-	5	356	415	260f8	M30	36	8	22.5	20D9	20	2	-

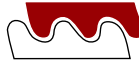


5.2.

- - (. .1 .15).

Table 5.2. Mounting dimensions of RZA-S-XXXX gearboxes output shaft (see fig. 1 on p.15).

Gearbox model	Symbolic designation of the mounting version	Mounting type at the input shaft and flange	Dimensions of the output shaft hole							
			2 prismatic hole	9	10	Keyed joint				
						D15		2	N3	
- - -300. - - - RZA-S-300. - - -	XX. 11	F10 /by ISO 5211	—	3	59	28 9	31.3 ^{+0.2}	8D10	1	—
- - -1000. - - - RZA-S-1000. - - -	XX. 11	F10 /by ISO 5211	—	3	72.5	28 9	31.3 ^{+0.2}	8D10	1	—
	.12	F12 /by ISO 5211	—	3	72.5	36 9	39.3 ^{+0.2}	10D10	1	—
	.13	F14 /by ISO 5211	—	5	82.5	48 9	51.8 ^{+0.2}	14D10	1	—
	.33	/ special	38.4 ^{+0.15}	12	55	—	—	—	—	—
- - -2000. - - - RZA-S-2000. - - -	.12	F12 /by ISO 5211	—	0	55	36 9	39.3 ^{+0.2}	10D10	1	—
	.13	F14 /by ISO 5211	—	0	65	48 9	51.8 ^{+0.2}	14D10	1	—
	.14	F16 /by ISO 5211	—	5	91	60 9	64.4 ^{+0.2}	18D10	1	—
	.38	/ special	51.1 ^{+0.15}	10	76	—	—	—	—	—
- - -2-4000. - - - RZA-S2-4000.X.XX-	.14	F16	-	5	83	60H9	64,4 ^{+0.2}	18D10	1	-
	.15	F25	-	5	115	72H9	76,9 ^{+0.2}	20D10	1	-
	XX.31	/ special	63,9 ^{+0.15}	11	70	-	-	-	-	-
- - -2-8000. - - - RZAS2-8000. - - -	.14	F16	-	3	90	60H9	64,4 ^{+0.2}	18D10	1	-
	.15	F25	-	4	115	72H9	76,9 ^{+0.2}	20D10	1	-
	.16	F30	-	4	133	98H9	104,4 ^{+0.2}	28D10	1	-
	XX.31	/ special	-	13	158	70,13H9	77.5 ^{+0.3}	16D10	1	-

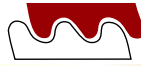


QUARTER-TURN SPIROID GEARBOXES

5.2.

Table 5.2. Continuation

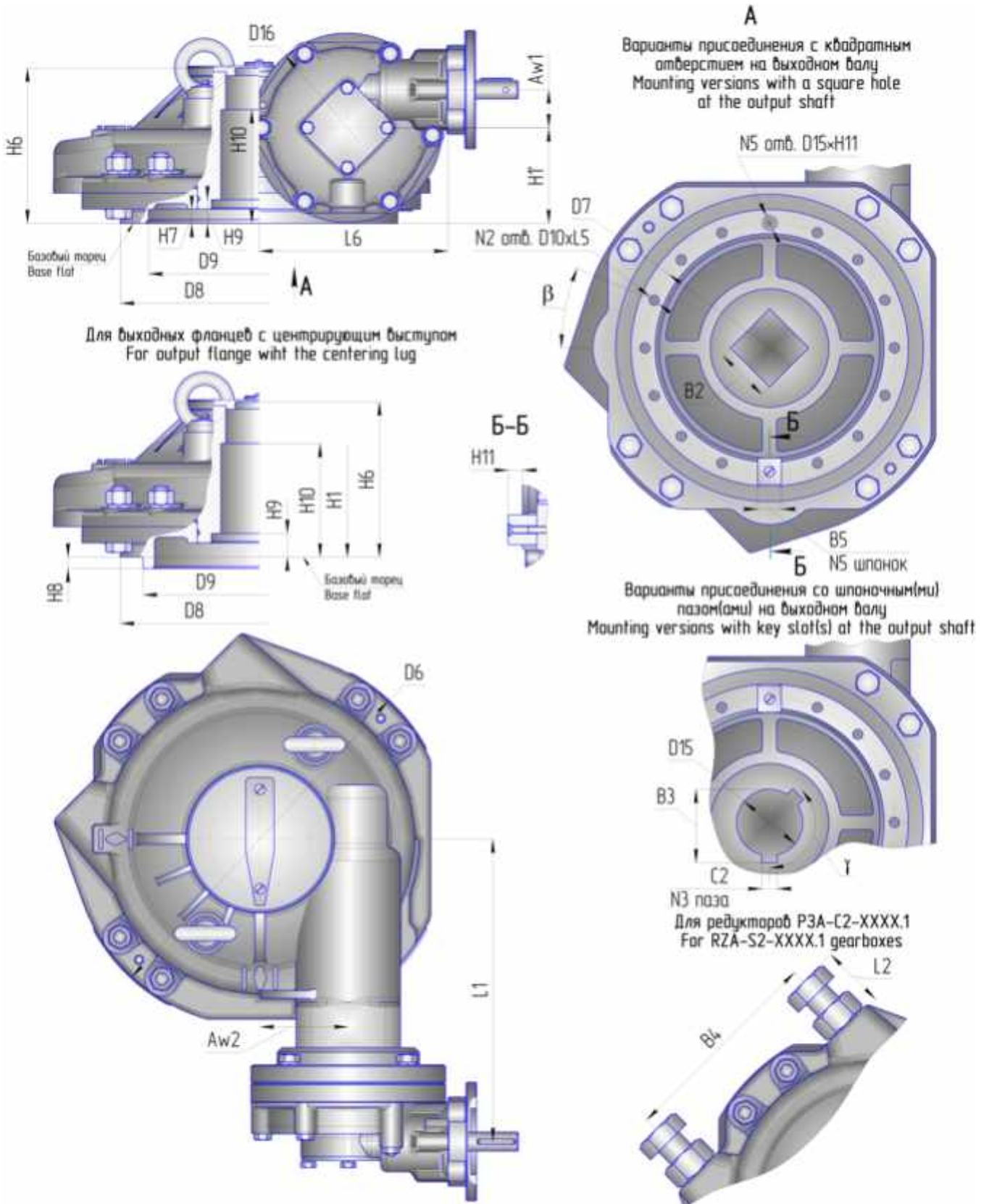
Gearbox model	Symbolic designation of the mounting version	Mounting type at the input shaft and flange	Dimensions of the output shaft hole							
			2 prismatic hole	9	10	Keyed joint				
						D15	2	N3		
- 2-11200. RZA-S2-11200.	.15	F25	-	5.5	130	72H9	76.9 ^{+0.2}	20D10	1	-
	.16	F30	-	5.5	157	98H9	104.4 ^{+0.2}	28D10	1	-
	XX.35	/ special	-	5.5	157	82.83 ^{+0.1}	92.5 ^{+0.3}	19.22 ^{+0.05}	1	-
	XX.48	/ special	-	5.5	130	75H10	79.9 ^{+0.2}	20D10	2	180
	XX.60	/ special	-	5.5	157	90H9	99.4 ^{+0.2}	25D10	1	-
- -160000. RZA-S-16000.	.15	F25	-	4	111	72H9	76.9 ^{+0.2}	20D10	1	-
	.16	F30	-	4	131	98H9	104.4 ^{+0.2}	28D10	1	-
	XX.31	/ special	-	4	131	90H9	95.4 ^{+0.2}	25D10	1	-
	.32	F35	-	4	156	110H9	117.4 ^{+0.2}	32D10	1	-
	XX.33	/ special	-	13	137	82.83 ^{+0.1}	92.5 ^{+0.3}	19.22+0.05	1	-
- 2-20000. RZA-S2-20000.	.15	F25	-	19	170	72H9	76.9 ^{+0.2}	20D10	1	-
	.16	F30	-	19	170	98H9	104.4 ^{+0.2}	28D10	1	-
	.17	F35	-	19	170	110H9	117.4 ^{+0.2}	32D10	1	-
	.32	/ special	-	19	170	82.83 ^{+0.1}	92.5 ^{+0.3}	19.22 ^{+0.05}	1	-
	.33	/ special	-	19	170	82.83 ^{+0.1}	92.5 ^{+0.3}	19.22 ^{+0.05}	1	-
	.35	/ special	-	68	220	110H9	117.4 ^{+0.2}	32D10	1	-
	.36	/ special	-	24	170	82.83 ^{+0.1}	92.5 ^{+0.3}	19.22 ^{+0.05}	1	-
	.37	/ special	-	19	175	100 10	106.4 ^{+0.3}	28D10	1	-
	.51	/ special	-	19	170	110H9	117.4 ^{+0.2}	32D10	1	-
- 2-32000. RZA-S2-32000.	.11	/ special	-	35	190	120H9	127.4 ^{+0.2}	32D10	2	90
	.32	/ special	-	35	190	114.58+0.1	130.5 ^{+0.2}	31.93 ^{+0.05}	1	-
	.34	/ special	-	50	205	114.58 ^{+0.1}	130.5 ^{+0.2}	31.93 ^{+0.05}	1	-
	.41	/ special	-	35	190	110H9	127.4 ^{+0.2}	32D10	1	-

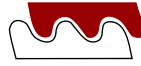


2.

- 2-

Figure 2. Overall and mounting dimensions of RZA-S2-XXXX gearboxes output shaft and flange





QUARTER-TURN SPIROID GEARBOXES

6. - 2-
Table 6. Overall dimensions of gearboxes RZA-S2-

Dimension	/ Symbolic designation of the model					
	- 2-4000 RZA-S2-4000	- 2-8000 RZA-S2-8000	- 2-11200 RZA-S2-11200	- 2-16000 RZA-S2-16000	- 2-20000 RZA-S2-20000	- 2-32000 RZA-S2-32000
	. 2 3 / Fig. 2 and 3					
H1*	76...79	93...112	101...139	91...119	110...160	138...178
H6*	103.5...115	133...159	173...210	139...171	185...230	190...230
D6	284	357	400	435...464	490	530
L2	43±16	96±9	61±10	116±9	75±15	75±15
B4*	150	180	220	220	260	280
Aw2	70	90	93	110	108	130
. 7.1 7.2 See tables 7.1 and 7.2 for the rest dimensions						

* depending on the layout (see fig. 2, 3 and table 7, 8)

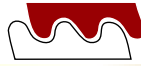
7.1.

- 2- (. . 2 . 20)

Table 7.1. Mounting dimensions of RZA-S2-XXXX gearboxes output flange (see fig. 2 on p.20)

Gearbox model	Symbolic designation of the mounting version	Mounting type at the input shaft and flange	H1'	H6 max	Dimensions of the output flange												
					7	8	D7	D8	D9	D10	L5	N2	b	D17	Face key		
					H11	N5	B5										
- 2-4000 . . . RZA-S2-4000-X-XX-	.14	F16	77	103.5	-	5	165	223	130f8	20	32	4	45	-	-	-	-
	.15	F25	78	115	-	5	254	300	200f8	M16	28	8	22.5	-	-	-	-
	XX.31	/special	79	105.5	10 ^{+0.2}	-	203.2	223	178.5 ^{+0.24}	10	29	016	0	-	-	-	-
- 2-8000 . . . RZA-S2-8000 . . .	.14	F16	112	152	-	5	165	210	130f8	20	32	4	45	-	-	-	-
	.15	F25	93	133	-	5	254	295	200f8	M16	28	8	22.5	-	-	-	-
	.16	F30	93	133	-	5	298	357	230f8	20	32	8	22.5	-	-	-	-
	XX.31	/special	93	158	10 _{0.4}	-	263.5	293	232.46+0.1	12	38	16	0	-	-	-	-

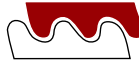
* FXX ISO 5211 / Designation FXX according to ISO 5211



7.1.

Table 7.1. Continuation

Gearbox model	Symbolic designation of the mounting version	Mounting type at the input shaft and flange	H1'	H6 max	Dimensions of the output flange												
					7	8	D7	D8	D9	D10	L5	N2	b	D17	Face key		
															H11	N5	B5
- 2-11200. - - - RZA-S2-11200. - - -	.15	F25	102	164	-	5	254	350	200f8	M16	37	8	22.5	-	-	-	-
	.16	F30	102	164	-	5	298	350	230f8	20	37	8	22.5	-	-	-	-
	XX.35	/special	102	164	-	5	298	350	230f8	20	37	8	22.5	-	-	-	-
	XX.48	/special	102	164	-	5	254	350	200f8	M16	37	8	22.5	-	-	-	-
	XX.60	/special	102	164	-	5	298	350	230f8	20	37	8	22.5	20D9	20	2	-
- 2-160000. - - - RZA-S2-16000. - - -	.15	F25	99	139	-	5	254	295	200f8	M16	28	8	22.5	-	-	-	-
	.16	F30	99	139	-	5	298	357	230f8	20	32	8	22.5	-	-	-	-
	XX.31	/special	99	139	-	5	298	357	230f8	20	32	8	22.5	-	-	-	-
	.32	F35 /special	110	156	-	5	356	415	260f8	M30	36	8	22.5	-	-	-	-
	XX.33	/special	119	171	9.6 _{0,7}	-	438.2	464	413.41±0.1	12	20	16	0	-	-	-	-
- 2-20000. - - - RZA-S2-20000. - - -	.15	F25	110	185	-	5	254	295	200f8	M16	28	8	22.5	-	-	-	-
	.16	F30	110	185	-	5	298	350	230f8	20	32	8	22.5	-	-	-	-
	.17	F35	110	185	-	5	356	415	260f8	M30	36	8	22.5	-	-	-	-
	.32	/special	110	185	-	5	298	350	230f8	20	32	8	22.5	-	-	-	-
	.33	/special	110	185	-	5	356	415	260f8	M30	36	8	22.5	-	-	-	-
	.35	/special	160	235	45	-	310	350	240 10	20	30	4	45	-	12	2	25h10
	.36	/special	122	190	10	-	438.2	470	413.41±0.1	12	20	16	0	-	-	-	-
	.37	/special	110	185	-	5	298	350	230f8	20	32	8	22.5	-	-	-	-
	.51	/special	110	185	-	5	356	415	260f8	M30	36	8	22.5	20D9	20	2	-
- 2-32000. - - - RZA-S2-32000. - - -	.11	/special	138	190	-	5	356	415	260f8	M30	36	8	22.5	-	-	-	-
	.32	/special	138	204	-	5	356	415	260f8	M30	36	8	22.5	-	-	-	-
	.34	/special	153	205	-	8	406	475	300 f8	M36	63	8	22.5	-	-	-	-
	.41	/special	138	190	-	5	356	415	260f8	M30	36	8	22.5	20D9	20	2	-



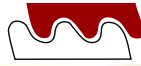
QUARTER-TURN SPIROID GEARBOXES

7.2.

- 2- (. . 2 .20)

Table 7.2. Mounting dimensions of RZA-S2-XXXX gearboxes output shaft (see fig.2on p.20).

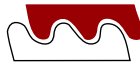
Gearbox model	Symbolic designation of the mounting version	Mounting type at the input shaft and flange	Dimensions of the output shaft hole							
			2 prismatic hole	9	10	Keyed joint				
						D15		2	N3	
- 2-4000. - - RZA-S2-4000. - -	.14	F16	-	5	83	60H9	64.4 ^{+0.2}	18D10	1	-
	.15	F25	-	5	115	72H9	76.9 ^{+0.2}	20D10	1	-
	XX.31	/special	63.9 ^{+0.15}	11	70	-	-	-	-	-
- 2-8000. - - RZA-S2-8000. - -	.14	F16	-	3	90	60H9	64.4 ^{+0.2}	18D10	1	-
	.15	F25	-	4	115	72H9	76.9 ^{+0.2}	20D10	1	-
	.16	F30	-	4	133	98H9	104.4 ^{+0.2}	28D10	1	-
	XX.31	/special	-	13	158	70.13H9	77.5 ^{+0.3}	16D10	1	-
- 2-11200. - - RZA-S2-11200. - -	.15	F25	-	5.5	130	72H9	76.9 ^{+0.2}	20D10	1	-
	.16	F30	-	5.5	157	98H9	104.4 ^{+0.2}	28D10	1	-
	XX.35	/special	-	5.5	157	82.83 ^{+0.1}	92.5 ^{+0.3}	19.22 ^{+0.05}	1	-
	XX.48	/special	-	5.5	130	75H10	79.9 ^{+0.2}	20D10	2	180
	XX.60	/special	-	5.5	157	90H9	99.4 ^{+0.2}	25D10	1	-



7.2.

Table 7.2. Continuation

Gearbox model	Symbolic designation of the mounting version	Mounting type at the input shaft and flange	Dimensions of the output shaft hole							
			2 prismatic hole	9	10	Keyed joint				
						D15		2	N3	
- - -160000. RZA-S-16000.	.15	F25	-	4	111	72H9	76.9 ^{+0.2}	20D10	1	-
	.16	F30	-	4	131	98H9	104.4 ^{+0.2}	28D10	1	-
	XX.31	/special	-	4	131	90H9	95.4 ^{+0.2}	25D10	1	-
	.32	F35 /special	-	4	156	110H9	117.4 ^{+0.2}	32D10	1	-
	XX.33	/special	-	13	137	82.83 ^{+0.1}	92.5 ^{+0.3}	19.22 ^{+0.05}	1	-
- - -2-20000. RZA-S2-20000.	.15	F25	-	19	170	72H9	76.9 ^{+0.2}	20D10	1	-
	.16	F30	-	19	170	98H9	104.4 ^{+0.2}	28D10	1	-
	.17	F35	-	19	170	110H9	117.4 ^{+0.2}	32D10	1	-
	.32	/special	-	19	170	82.83 ^{+0.1}	92.5 ^{+0.3}	19.22 ^{+0.05}	1	-
	.33	/special	-	19	170	82.83 ^{+0.1}	92.5 ^{+0.3}	19.22 ^{+0.05}	1	-
	.35	/special	-	68	220	110H9	117.4 ^{+0.2}	32D10	1	-
	.36	/special	-	24	170	82.83 ^{+0.1}	92.5 ^{+0.3}	19.22 ^{+0.05}	1	-
	.37	/special	-	19	175	100 10	106.4 ^{+0.3}	28D10	1	-
	.51	/special	-	19	170	110H9	117.4 ^{+0.2}	32D10	1	-
- - -2-32000. RZA-S2-32000.	.11	/special	-	35	190	120H9	127.4 ^{+0.2}	32D10	2	90
	.32	/special	-	35	190	114.58 ^{+0.1}	130.5 ^{+0.2}	31.93 ^{+0.05}	1	-
	.34	/special	-	50	205	114.58 ^{+0.1}	130.5 ^{+0.2}	31.93 ^{+0.05}	1	-
	.41	/special	-	35	190	110H9	127.4 ^{+0.2}	32D10	1	-

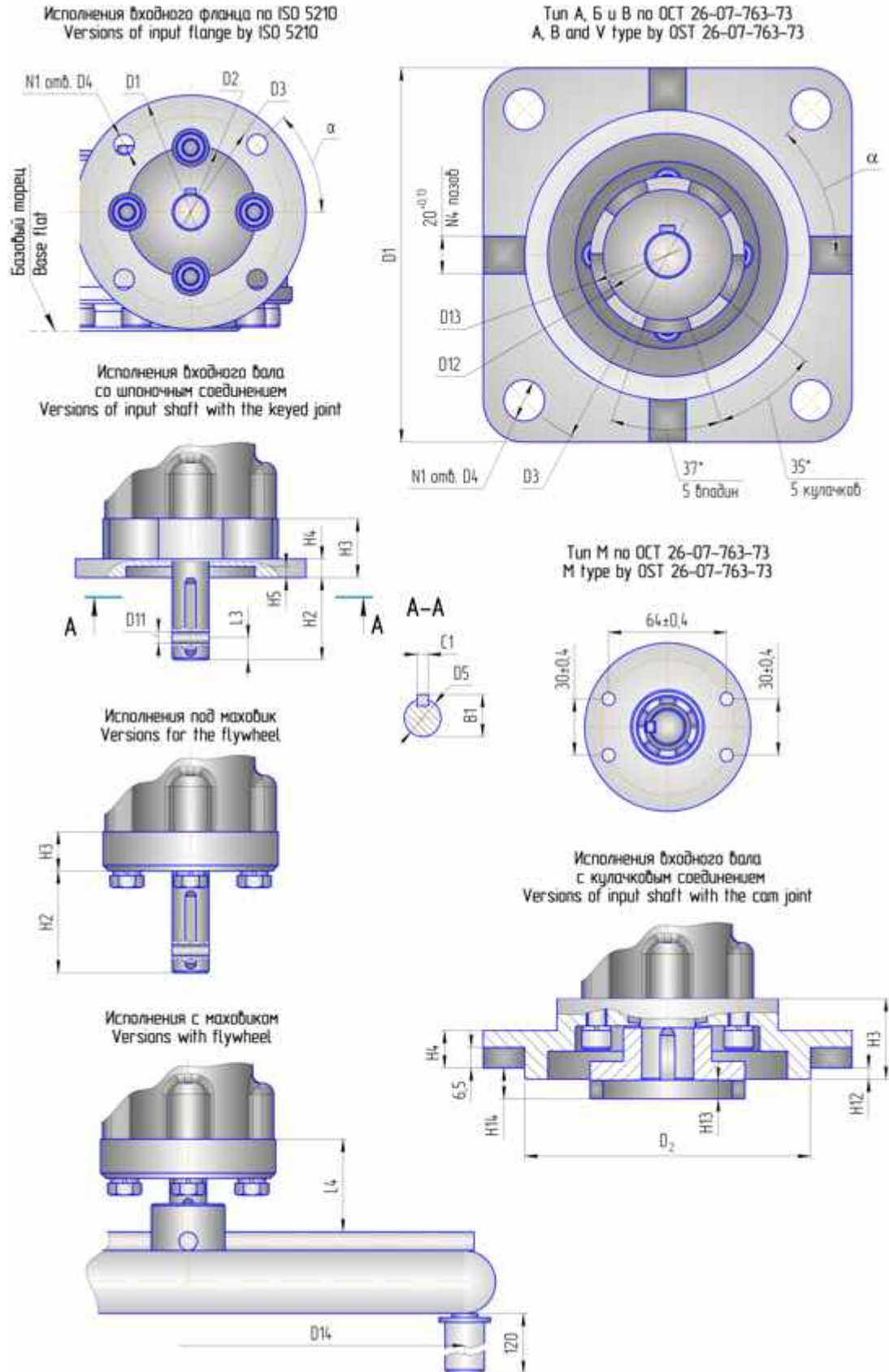


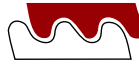
QUARTER-TURN SPIROID GEARBOXES

3.

- - - 2-

Figure 3. Mounting dimensions of RZA-S-XXXX and RZA-S2-XXXX gearboxes input shaft and flange





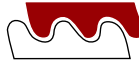
8.1.

- - (. . 3 . 25)

Table 8.1. Mounting dimensions of RZA-S-XXXX gearboxes input flange (see fig. 3 on p.25).

Gearbox model	Symbolic designation of the mounting version	Mounting type at the input shaft and flange*	/ Dimensions of the input flange										
			D1	D2	D3	D4	N1	a	H3	H4	5, H12	N4	
- - -300.X- RZA-S-300.X-XX	00.	/ for the flywheel	—	—	—	—	—	—	—	17	—	—	—
	3 .	/ with the flywheel	—	—	—	—	—	—	—	—	—	—	—
	5 .		—	—	—	—	—	—	—	—	—	—	
	10.	F07	90	55 8	70	9	4	45°	17	8	4	—	
	20.	/ M type	90	40d11	—	7	4	—	13	7	3 _{-0.12}	—	
	21.XX	/ A type	100	70d11	104	M12	4	45°	20	13	3 _{-0.12}	—	
- - -1000. - - RZA-S-1000. - -	01.	/ for the flywheel	—	—	—	—	—	—	15.5	—	—	—	
	02.	/ for the flywheel	—	—	—	—	—	—	15.5	—	—	—	
	.	/ with the flywheel	—	—	—	—	—	—	—	—	—	—	
	5 .	/ with the flywheel	—	—	—	—	—	—	—	—	—	—	
	11.XX	F10	125	70 8	102	11	4	45°	23.5	10	4	—	
	12.	F12	150	85 8	125	13	4	45°	23.5	10	4	—	
	13.XX	F14	175	100 8	140	18	4	45°	24.5	15	5	—	
	20.	/ M type	90	40d11	—	7	4	-	41	41	3 _{-0.12}	—	
	21.XX/210	/ A type	100	70d11	104	M12/14	4	45°	41	20	3 _{-0.12}	—	
22. /220	/ B type	122	108d11	135	M12/14	4	45°	41	20	6 _{-0.3}	—		
- - -2000. - - RZA-S-2000. - -	01.	/ for the flywheel	—	—	—	—	—	—	15	—	—	—	
	02.		—	—	—	—	—	—	15	—	—	—	
	03.XX		—	—	—	—	—	—	15	—	—	—	
	5 .	/ with the flywheel	—	—	—	—	—	—	—	—	—	—	
	6 .		—	—	—	—	—	—	—	—	—	—	
	11.XX	F10	125	70H8	102	11	4	45°	31	10	4	—	
	12.	F12	150	85H8	125	13	4	45°	31	10	4	—	
	13.	F14	175	100H8	140	18	4	45°	31	15	5	—	
	21. /210	/ A type	100	70d11	135	M12/14	4	45°	46	20	3 _{-0.12}	—	
	22. /220	/ B type	122	108d11	135	M12/14	4	45°	52	20	6 _{-0.3}	—	
31.	/ special	175	100H8	140	18	4	45°	31	15	5	—		
- - -4000. - - RZAm-S-4000. - -	01.XX	/ for the flywheel	—	—	—	—	—	—	9	—	—	—	
	02.XX	—	—	—	—	—	—	—	9	—	—	—	
	03.XX	—	—	—	—	—	—	—	9	—	—	—	
	6 .	/ with the flywheel	—	—	—	—	—	—	—	—	—	—	
	8 .	—	—	—	—	—	—	—	—	—	—	—	
	10 .	—	—	—	—	—	—	—	—	—	—	—	
	11.XX	F10	125	70 8	102	11	4	45°	30	10	4	—	
	12.	F12	150	85 8	125	13	4	45°	30	10	4	—	
	13.XX	F14	175	100 8	140	18	4	45°	30	15	5	—	
	22. /220	/ B type	122	108d11	135	M12/? 14	4	45°	25.5	20	6 _{-0.3}	—	
	23.XX	/ V type	200	155d11	220	22	4	45°	25.5	20	10 _{-0.5}	4	

* FXX ISO 5210, , , , 26-07-763-73
 *Designation FXX according to ISO 5210, type , , , V according to Standard C 26-07-763-73

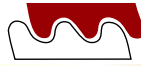


QUARTER-TURN SPIROID GEARBOXES

8.1.

Table 8.1. Continuation

Gearbox model	Symbolic designation of the mounting version	Mounting type at the input shaft and flange	Dimensions of the input flange										
			D1	D2	D3	D4	N1	a	H3	H4	5/ H12	D1	
- - -8000. RZA-S-80000.- - -	03.		-	-	-	-	-	-	-	13	-	-	-
	04.		-	-	-	-	-	-	-	13	-	-	-
	6.		-	-	-	-	-	-	-	-	-	-	-
	8.		-	-	-	-	-	-	-	-	-	-	-
	10.		-	-	-	-	-	-	-	-	-	-	-
	13.	F14	175	100 9	140	18	4	45	35	15	5	-	-
	14.	F16	210	130 9	165	22	4	45	35	18	6	-	-
	15.	F25	300	200 9	254	18	8	22.5	35	15	6	-	-
	22.	/ B type	122	108d11	135	M12	4	45	22	28	6 _{0.3}	-	-
23.	/ type V	200	155d11	220	22	4	45	31	20	10 _{0.5}	4	-	
24.	/ type G	285	240d11	330	22	4	45	34	22	10 _{0.5}	4	-	
11200.- - RZA-S- 112000.- -	14.	F16	210	130 9	165	22	4	45	28	18	6	-	-
	15.	F25	300	200 9	254	18	8	22.5	28	15	6	-	-
	23.	/ type V	200	155d11	220	22	4	45	28	20	10 _{0.5}	4	-
16000.- - RZA-S- 16000.- -	14.	F16	210	130 9	165	22	4	45	40.5	18	6	-	-
	15.	F25	300	200 9	254	18	8	22.5	35	15	6	-	-
	23.	/ type V	200	155d11	220	22	4	45	35.5	20	10 _{0.5}	4	-
	24.	/ type G	285	240d11	330	22	4	45	35.5	22	10 _{0.5}	4	-
- - -20000.- - RZA-S-20000.- -	14.	F16	210	130 9	165	22	4	45	42	18	6	-	-
	15.	F25	300	200 9	254	18	8	22.5	42	15	6	-	-
	23.	/ type V	200	155d11	220	22	4	45	48	33	10 _{0.5}	4	-
	24.	/ type G	285	240d11	330	22	4	45	48	22	10 _{0.5}	4	-
	14.	F16	210	130 9	165	22	4	45	37	18	6	-	-
	15.	F25	300	200 9	254	18	8	22.5	37	15	6	-	-
	23.	/ type	200	155d11	220	22	4	45	43	33	10 _{0.5}	4	-
	24.	/ type	285	240d11	330	22	4	45	44	22	10 _{0.5}	4	-
	15.	F25	300	200 9	254	18	8	22.5	35	15	6	-	-
	22.	/ type B	122	108d11	135	M12	4	45	22	28	6 _{0.3}	-	-
	23.	/ type V	200	155d11	220	22	4	45	31	20	10 _{0.5}	4	-
24.	/ type G	285	240d11	330	22	4	45	34	22	10 _{0.5}	4	-	
11200.- - RZA-S- 112000.- -	14.	F16	210	130 9	165	22	4	45	28	18	6	-	-
	15.	F25	300	200 9	254	18	8	22.5	28	15	6	-	-
	23.	/ type V	200	155d11	220	22	4	45	28	20	10 _{0.5}	4	-
16000.- - RZA-S- 16000.- -	14.	F16	210	130 9	165	22	4	45	40.5	18	6	-	-
	15.	F25	300	200 9	254	18	8	22.5	35	15	6	-	-
	23.	/ type V	200	155d11	220	22	4	45	35.5	20	10 _{0.5}	4	-
	24.	/ type G	285	240d11	330	22	4	45	35.5	22	10 _{0.5}	4	-
20000.- - RZA-S- 20000.- -	14.	F16	210	130 9	165	22	4	45	42	18	6	-	-
	15.	F25	300	200 9	254	18	8	22.5	42	15	6	-	-
	23.	/ type V	200	155d11	220	22	4	45	48	33	10 _{0.5}	4	-
	24.	/ type	285	240d11	330	22	4	45	48	22	10 _{0.5}	4	-
32000.- - RZA-S- 32000.- -	14.	F16	210	130 9	165	22	4	45	37	18	6	-	-
	15.	F25	300	200 9	254	18	8	22.5	37	15	6	-	-
	23.	/ type V	200	155d11	220	22	4	45	43	33	10 _{0.5}	4	-
	24.	/ type G	285	240d11	330	22	4	45	44	22	10 _{0.5}	4	-



8.2.

- - (. . 3 . 25)

Table 8.2. Mounting dimensions of RZA-S-XXXX gearboxes input shaft (see fig. 3 on p.25).

Gearbox model	Symbolic designation of the mounting version	Mounting type at the input shaft and flange	Dimensions of the input shaft									Flywheel dimensions		
			Co									L4	D14	
			With the keyed joint					With the cam joint						
D5	B1	C1	H2	L3	D11	D12	D13	H14	H13, minimum					
-300.X- RZA-S-300.X-XX	00.	/ for the flywheel	15h8	17.5	5h9	34	5	4	—	—	—	—	—	—
	3	/	—	—	—	—	—	—	—	—	—	—	84.5	300
	5	with the flywheel	—	—	—	—	—	—	—	—	—	—	84.5	470
	10.	F07	16h8	18	5h9	34	8	4	—	—	—	—	—	—
	20.	/ M type	—	—	—	—	—	—	25	32	7±0.3	4	—	—
	21.XX	/ A type	—	—	—	—	—	—	32	46	7±0.3	4	—	—
	01.	/	20h8	22.5	6h9	44	12	6	—	—	—	—	—	—
	02.	/ for the flywheel	25h8	28	8h9	62	12	6	—	—	—	—	—	—
	5	/	—	—	—	—	—	—	—	—	—	—	30.5	300
	11.XX	with the flywheel	—	—	—	—	—	—	—	—	—	—	30.5	470
-1000.- RZA-S-1000.-	11.XX	F10	20h8	22.5	6h9	44	12	6	—	—	—	—	—	—
	12.	F12	25h8	28	8h9	54	12	6	—	—	—	—	—	—
	13.XX	F14	30h8	33	8h9	64	12	6	—	—	—	—	—	—
	20.	/ M type	—	—	—	—	—	—	25	32	7±0.3	4	—	—
	21.XX	/ A type	—	—	—	—	—	—	32	46	7±0.3	4	—	—
	22.	/ B type	—	—	—	—	—	—	45	59	14.5±0.3	8	—	—
	01.	/	20h8	22.5	6h9	48	12	6	—	—	—	—	—	—
	02.	/ for the flywheel	25h8	28	8h9	58	12	6	—	—	—	—	—	—
	03.XX	/	30h8	33	8h9	69	12	6	—	—	—	—	—	—
	5	/	—	—	—	—	—	—	—	—	—	—	103.5	470
-2000.- RZA-S-2000.-	6	with the flywheel	—	—	—	—	—	—	—	—	—	—	103.5	600
	11.XX	F10	20h8	22.5	6h9	44	12	6	—	—	—	—	—	—
	12.	F12	25h8	28	8h9	54	12	6	—	—	—	—	—	—
	13.	F14	30h8	33	8h9	64	12	6	—	—	—	—	—	—
	21.	/ A type	—	—	—	—	—	—	32	46	7±0.3	4	—	—
	22.	/ B type	—	—	—	—	—	—	45	59	6±0.3	8	—	—
	31.	/ special	20h8	22.5	6h9	8	14	6	—	—	—	—	—	—
	01.	/	20h8	22.5	6h9	44	12	6	—	—	—	—	—	—
	02.	/ for the flywheel	25h8	28	8h9	54	12	6	—	—	—	—	—	—
	03.XX	/	30h8	33	8h9	69	12	6	—	—	—	—	—	—
-4000.- RZA-S-4000.-	6	with the flywheel	—	—	—	—	—	—	—	—	—	—	84.5	600
	8		—	—	—	—	—	—	—	—	—	—	84.5	800
	10		—	—	—	—	—	—	—	—	—	—	84.5	1000
	11.XX	F10	20h8	22.5	6h9	44	12	6	—	—	—	—	—	—
	12.	F12	25h8	28	8h9	54	12	6	—	—	—	—	—	—
	13.XX	F14	30h8	33	8h9	64	12	6	—	—	—	—	—	—
	22.	/ B type	—	—	—	—	—	—	45	59	14.5±0.3	8	—	—
	23.XX	/ V type	—	—	—	—	—	—	70	84	20±0.3	10	—	—
	01.XX	/ for the flywheel	20h8	22.5	6h9	54	12	6	—	—	—	—	—	—
	02.		25h8	28	8h9	64	12	6	—	—	—	—	—	—
-6000.- RZA-S-6000.-	03.XX		30h8	33	8h9	74	12	6	—	—	—	—	—	—
	5	with the flywheel	—	—	—	—	—	—	—	—	—	—	84.5	470
	6		—	—	—	—	—	—	—	—	—	—	84.5	600
	8		—	—	—	—	—	—	—	—	—	—	84.5	800
	10		—	—	—	—	—	—	—	—	—	—	84.5	1000
	11.XX	F10	20h8	22.5	6h9	44	12	6	—	—	—	—	—	—
	12.	F12	25h8	28	8h9	54	12	6	—	—	—	—	—	—
	13.XX	F14	30h8	33	8h9	64	12	6	—	—	—	—	—	—
	22.	/ B type	—	—	—	—	—	—	45	59	14.5±0.3	8	—	—
	23.XX	/ V type	—	—	—	—	—	—	70	84	20±0.3	10	—	—

QUARTER-TURN SPIROID GEARBOXES

8.2.

Table 8.2. Continuation

Gearbox model	Symbolic designation of the mounting version	Mounting type at the input shaft and flange	/ Dimensions of the input shaft											Flywheel dimensions	
			Co With the keyed joint						With the cam joint						
			D5	B1	1	H2	L3	D11	D12	D13	H14	H13. minimum	L4	D14	
-8000. RZA-S-8000.	01.	for the flywheel /	20h8	22.5	6h9	54	12	6	—	—	—	—	—	—	—
	02.		25h8	28	8h9	64	12	6	—	—	—	—	—	—	
	03.XX		30h8	33	8h9	74	12	6	—	—	—	—	—	—	
	6.	with the flywheel /	—	—	—	—	—	—	—	—	—	—	84.5	600	
	8.		—	—	—	—	—	—	—	—	—	—	84.5	800	
	10.		—	—	—	—	—	—	—	—	—	—	84.5	1000	
	11.XX		F10	20h8	22.5	6h9	44	12	6	—	—	—	—	—	
	12.	F12	25h8	28	8h9	54	12	6	—	—	—	—	—		
	13.XX	F14	30h8	33	8h9	64	12	6	—	—	—	—	—		
	22.	/ B type	—	—	—	—	—	—	45	59	14.5±0.3	8	—	—	
23.XX	/ V type	—	—	—	—	—	—	70	84	20±0.3	10	—	—		
-8000. RZA-S-8000.	03.		30h8	33	8h9	85	12	6	-	-	-	-	-	-	
	04.		40h8	43	12h9	100	19	6	-	-	-	-	-	-	
	6.		-	-	-	-	-	-	-	-	-	-	93	600	
	8.		-	-	-	-	-	-	-	-	-	-	93	800	
	10.		-	-	-	-	-	-	-	-	-	-	93	1000	
	13.	F14	30h8	33	8h9	64	12	6	-	-	-	-	-	-	
	14.	F16	40h8	43	12h9	79	19	6	-	-	-	-	-	-	
	15.	F25	50h8	53.5	14h9	109	19	6	-	-	-	-	-	-	
	22.		-	-	-	-	-	-	45	59	14.5+0.3	8	-	-	
	23.		-	-	-	-	-	-	70	84	20.0.3	10	-	-	
112000. RZA-S-112000.	14.	F16	40h8	43	12h9	79	19	6	-	-	-	-	-	-	
	15.	F25	50h8	53.5	14h9	109	19	6	-	-	-	-	-	-	
	23.		-	-	-	-	-	70	84	20.0.3	10	-	-		
	24.		-	-	-	-	-	120	148	22.0.3	12	-	-		
16000. RZA-S-16000.	14.	F16	40h8	43	12h9	79	19	6	-	-	-	-	-	-	
	15.	F25	50h8	53.5	14h9	109	19	6	-	-	-	-	-	-	
	23.		-	-	-	-	-	70	84	20.0.3	10	-	-		
	24.		-	-	-	-	-	120	148	22.0.3	12	-	-		
20000. RZA-S-20000.	14.	F16	40h8	43	12h9	79	19	6	-	-	-	-	-	-	
	15.	F25	50h8	53.5	14h9	109	19	6	-	-	-	-	-	-	
	23.		-	-	-	-	-	70	84	20.0.3	10	-	-		
	24.		-	-	-	-	-	120	148	22.0.3	12	-	-		
32000. RZA-S-32000.	14.	F16	40h8	43	12h9	79	19	6	-	-	-	-	-	-	
	15.	F25	50h8	53.5	14h9	109	19	6	-	-	-	-	-	-	
	23.		-	-	-	-	-	70	84	20.0.3	10	-	-		
	24.		-	-	-	-	-	120	148	22.0.3	12	-	-		

8.3.

- 2-

Table 8.3. Dimensions of the input flange and shaft for gearboxes RZA-S2-XXXX

Gearbox	Gearbox of the first stage	A _{w1}	A _{w2}	L1	L6	D16
- 2-4000	- -500	28	70	257	124	169
- 2-8000	- -500	28	90	274.5	196.5	169
	- -1000	40	90	289	195	200
- 2-11200	- -500	28	93	320	196.5	169
	- -1000	40	93	321	198	200
- 2-16000	- -1000	40	110	325	212	200
	- -2000	60	110	343	240.5	230
- 2-20000	- -1000	40	108	359.5	213	200
	- -2000	60	108	363	238.5	230
- 2-32000	- -2000	60	130	388.5	2600.5	230
	- -4000	70	130	400	307	300

* 23, 24 See dimensions of the input flange and shaft in the Tables 23, 24

** 1.1 1.2 See dimensions of the input flange and shaft in the Table 1.1 and 1.2

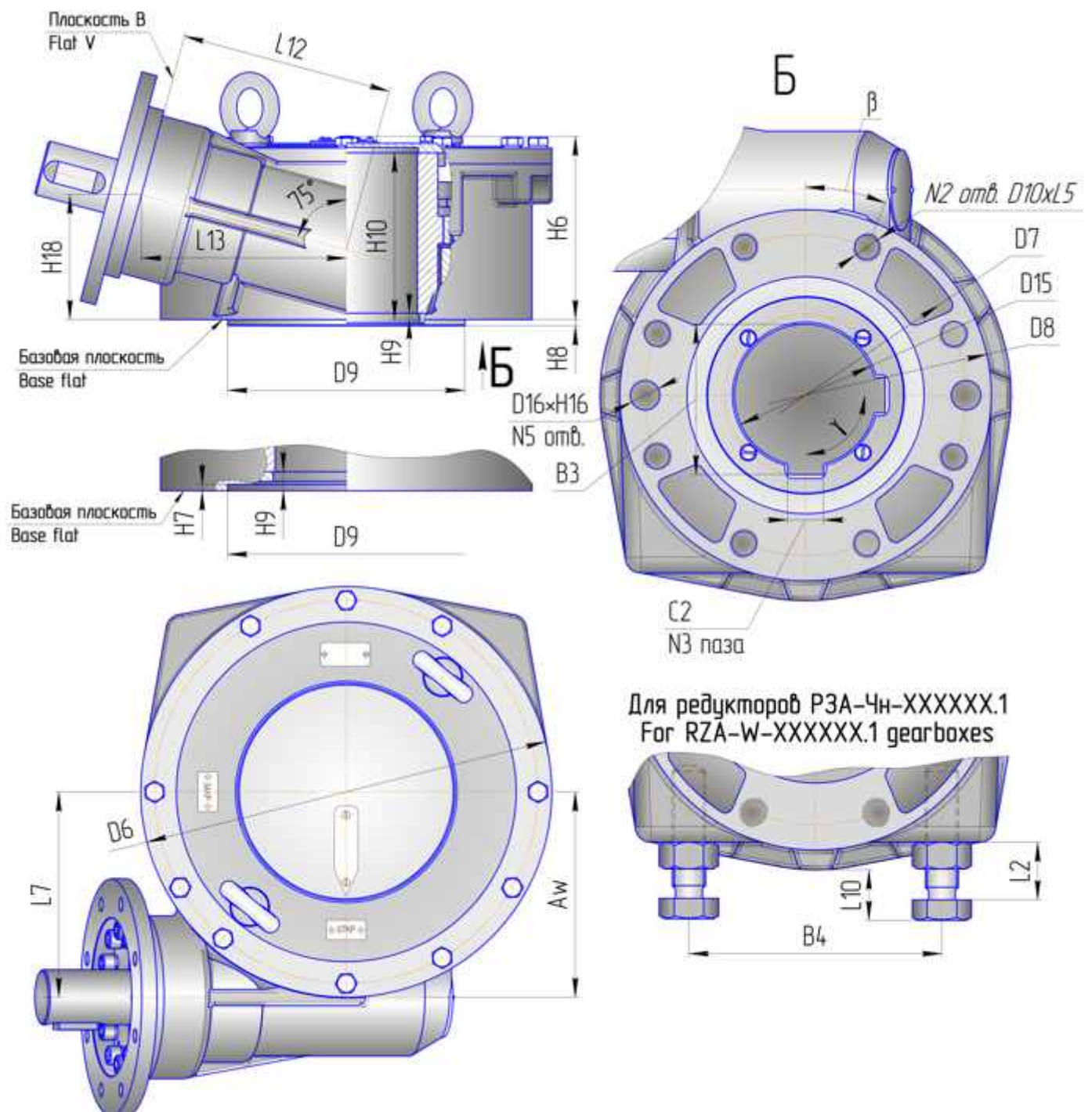
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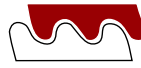
Gearboxes of the first stage RZAm-S-XXXX.0 correspond to RZA-S-XXXX.0, being manufactured according to TC 3790-001-77124830-2011

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QUARTER-TURN WORM (NON-ORTHOGONAL) GEARBOX RZA-W-

4.

Figure 4. Overall and mounting dimensions of RZA-W-XXXX gearboxes output shaft and flange

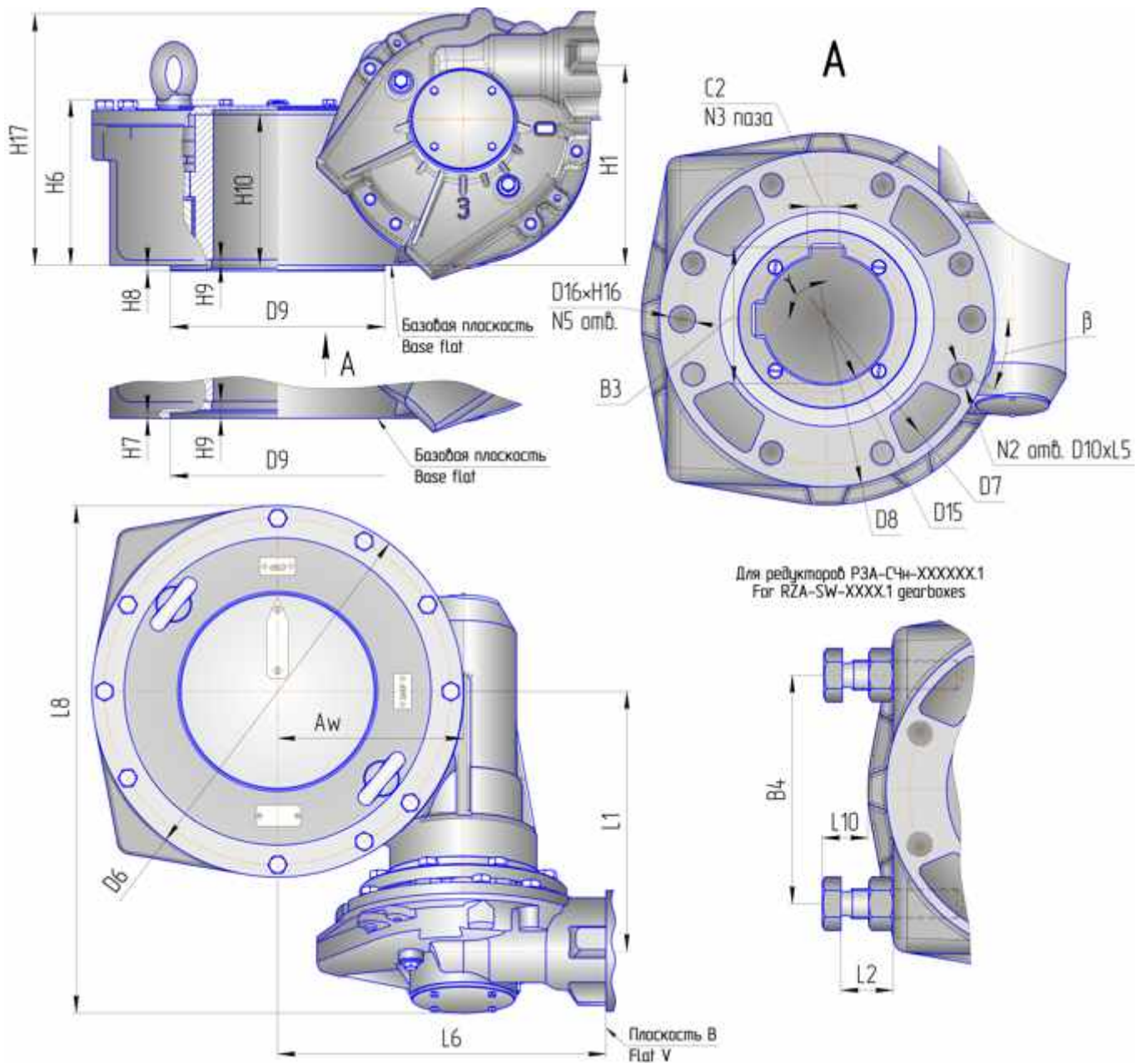




QUARTER-TURN SPIROID WORM (NON-ORTHOGONAL) GEARBOX RZA-SW-

5.

Figure 5. Overall and mounting dimensions of RZA-SW-XXXX gearboxes output shaft and flange



9.

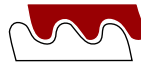
Table 9. Main performance characteristics of quarter-turn worm and spiroid worm (non-orthogonal) gearboxes (see fig. 4,5 on p. 30,31)

	Parameter	Dimension type		
		RZA-W-XXXXXX	RZA-SW-XXXXXX	
T_{max}	Maximum torque at the output shaft, $T_{out max}$ Nm	11 See table 11		
T_{lim}	Limiting torque at the output shaft, $T_{out lim}$ Nm	12 See table 12		
	Gear ratios	10 See table 10		
	Maximum torque of the idle run at the input shaft, $T_{in id}$ Nm	3,0	4,0	
	Nominal angle of the output shaft rotation, deg.	90		
« »	Regulating range of the output shaft rotation, deg in «OPEN» position	-10...+5		
« »	in «CLOSE» position	-5...+10		
n /	Maximum allowable rotational frequency of the input shaft, rev/min	180		
	Running regime	bidirectional, intermittent cycle		
	Mounting versions at the input shaft	3, 15.1 15.2 See fig.3, table 15.1 and 15.2		
	Mounting versions at the output shaft	4 5, 14.1, 14.2 See fig. 4 and 5 and tables 14.1, 14.2		
	Mass, not more than, kg	13 See table 13		
14254-96	Level of sealing protection according to Standard 14254-96 according to MEK 70-1 and DIN EN 60034	IP 66		
15150-69	Range of operating temperatures, ° depending on the version according to GOST 15150-69	Climatic performance	1 / U1 (temperate)	1 / UHL 1 (cold-temperate)
		Nominal	-40...+50	-60...+50
		Increased «P1»	-40...+120	-60...+120
		Increased «P»	-40...+200	-60...+200

10.

Table 10. Gear ratios

Gearbox of the first stage	Gear ratio of the stage	Dimension type					
		RZA-SW-48000					
/	first /second	19.67	26	30	45	53	73
		Gear ratio of the gearbox (Efficiency)					
-	-	20(0.54)	26(0.49)	30(0.46)	45(0.37)	53(0.34)	73(0.28)
- -2000.0* RZAm-S-2000.0	11	216(0.38)	286(0.35)	330(0.33)	495(0.26)	583(0.24)	803(0.2)
	14	275(0.35)	364(0.32)	420(0.3)	630(0.24)	742(0.22)	1022(0.18)
	16.33	321(0.33)	425(0.3)	490(0.29)	735(0.23)	865(0.21)	1192(0.17)
	24	472(0.29)	624(0.26)	720(0.25)	1080(0.2)	1272(0.18)	1752(0.15)
M- -2500.0* RZAm-S-2500.0	7.75	152(0.36)	202(0.33)	233(0.31)	349(0.25)	411(0.23)	566(0.19)
	10	197(0.35)	260(0.31)	300(0.29)	450(0.24)	530(0.22)	730(0.18)
	12.66	249(0.32)	329(0.29)	380(0.28)	570(0.22)	671(0.2)	924(0.17)
	18.5	364(0.28)	481(0.25)	555(0.24)	833(0.19)	981(0.18)	1351(0.15)
	26	511(0.23)	676(0.21)	780(0.2)	1170(0.16)	1378(0.15)	1898(0.12)
- -4000.0* RZAm-C-4000.0	35	688(0.24)	910(0.22)	1050(0.2)	1575(0.16)	1855(0.15)	2555(0.12)
	12.25	241(0.34)	319(0.31)	368(0.29)	551(0.23)	649(0.21)	894(0.18)
	16.33	321(0.32)	425(0.29)	490(0.28)	735(0.22)	865(0.2)	1192(0.17)
	19.5	384(0.3)	507(0.27)	585(0.25)	878(0.2)	1034(0.19)	1424(0.15)



QUARTER-TURN WORM GEARBOXES

10.

Table 10. Continuation

Gearbox of the first stage	Gear ratio of the stage / first /second	Dimension type			
		- -64000 RZA-SW-64000			
		34	40.5	57	70
		() Gear ratio of the gearbox (Efficiency)			
-	-	34(0.46)	41(0.4)	57(0.33)	70(0.32)
- -2000.0* RZAm-S-2000.0	7.75	264(0.31)	314(0.27)	442(0.22)	543(0.21)
	10	340(0.29)	405(0.26)	570(0.21)	700(0.2)
	12.66	430(0.28)	513(0.24)	722(0.2)	886(0.19)
	18.5	629(0.24)	749(0.21)	1055(0.17)	1295(0.17)
	26	884(0.2)	1053(0.17)	1482(0.14)	1820(0.14)
	35	1190(0.2)	1418(0.18)	1995(0.15)	2450(0.14)
- -4000.0* RZAm-C-4000.0	12.25	417(0.29)	496(0.25)	698(0.21)	858(0.2)
	16.33	555(0.28)	661(0.24)	931(0.2)	1143(0.19)
	19.5	663(0.25)	790(0.22)	1112(0.18)	1365(0.18)
- -8000.0* RZAm-C-8000.0	13.3	452(0.29)	539(0.26)	758(0.21)	931(0.2)
	17	578(0.28)	689(0.24)	969(0.2)	1190(0.2)
	20.5	697(0.26)	830(0.23)	1169(0.19)	1435(0.18)
	24.5	833(0.24)	992(0.21)	1397(0.17)	1715(0.17)
	39	1326(0.19)	1580(0.17)	2223(0.14)	2730(0.13)
- -16000.0* RZAm-S-16000.0	736	544(0.29)	648(0.25)	912(0.21)	1120(0.2)
	1127	833(0.25)	992(0.22)	1397(0.18)	1715(0.17)

* Gearboxes of the first stage RZAm-S-XXXX.0 correspond to RZA-S-XXXX.0, being manufactured according to TC 3790-001-77124830-2011.

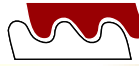
11.

Table 11. Maximum torque at the output shaft with the gearbox of the first stage, Nm

Dimension type	Gear ratio of the first stage	Gearbox of the first stage				
		2000.0 RZAm-S-2000.0	M- 2500.0 RZAm-S-2500.0	4000.0 RZAm-S-4000.0	8000.0 RZAm-S-8000.0	16000.0 RZAm-S-16000.0
48000 RZA-SW-48000	19,7	-	-	44800(35400)	-	-
	26	-	41300	53000(42400)	-	-
	30	-	44800(34300)	57600(45900)	-	-
	45	-	54000(41300)	60000(48000)	-	-
	53	37800	58800(44800)	60000(48000)	-	-
64000 RZA-SW-64000	73	42500	60000(48000)	60000(48000)	-	-
	34	-	45600(38520)	656000(52800)	75000(64000)	-
	40,5	-	48400(39900)	67500(54900)	75000(64000)	-
	57	-	55600(45600)	75000(63330)	75000(64000)	-
	70	-	65000(54900)	75000(64000)	75000(64000)	-

* Gearboxes of the first stage RZAm-S-XXXX.0 correspond to RZA-S-XXXX.0, being manufactured according to TC 3790-001-77124830-2011.

Drive control version is given in paranthesis



12.

Table 12. Limiting static torque at the output shaft, Nm

Dimension type	Gear ratio of the first stage	Gearbox of the first stage				
		- -2000.0 RZAm-S-2000.0	M- -2500.0 RZAM-S-2500.0	- -4000.0 RZAm-S-4000.0	- -8000.0 RZAm-S-8000.0	- -16000.0 RZAm-S-16000.0
48000 RZA-SW-48000	19,7	-	-	67200(53100)	-	-
	26	-	61950	72000(63600)	-	-
	30	-	67200(51450)	72000(68850)	-	-
	45	-	72000(61950)	72000(72000)	-	-
	53	56700	72000(67200)	72000(72000)	-	-
64000 RZA-SW-64000	73	63750	72000(72000)	72000(72000)	-	-
	34	-	68400(57780)	96000(79200)	96000(96000)	-
	40,5	-	72600(59850)	96000(82350)	96000(96000)	-
	57	-	83400(68400)	96000(94995)	96000(96000)	-
	70	-	96000(82350)	96000(96000)	96000(96000)	-

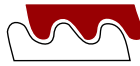
* Gearboxes of the first stage RZAm-S-XXXX.0 correspond to RZA-S-XXXX.0, being manufactured according to TC 3790-001-77124830-2011.

Drive control version is given in paranthesis

13.

Table 13. Overall dimensions of gearboxes RZA-W-XXXXXX and RZA-SW-XXXXXX

Gearbox of the first stage	Dimension type							
	- -48000 RZA-SW-48000				- -64000 RZA-SW-64000			
	- -2000.0 RZAM-S-2000.0	- -2500.0 RZAM-S-2500.0	- -4000.0 RZAM-S-4000.0	- -2500.0 RZAM-S-2500.0	- -4000.0 RZAM-S-4000.0	- -8000.0 RZAM-S-8000.0		
	230	255	260	260	300	340	340	375
Aw	220				260			
B4**	280				320			
L1	-	330	334	344	-	355.1	354.7	364
L6	-	350	368	397	-	408	437	460
L8	-	635	650	640	-	690	680	710
L10**	55...79							
L2	66...90							
L12	259	-	-	-	268	-	-	-
L13	250	-	-	-	258.9	-	-	-
H1	-	239	243	248	-	251.4	256.5	279.1
H17	-	290	311	310	-	319	318	358
H18	150	-	-	-	158.4	-	-	-
D6	480				520			



QUARTER-TURN WORM GEARBOXES

Таблица 14.1. Присоединительные размеры выходного фланца редукторов P3A-Чн-XXXXXX и P3A-СЧн-XXXXXX (см. рис. 4,5 на стр. 30,31)

Table 14.1. Mounting dimensions of RZA-W-XXXXXX and RZA-SW-XXXXXX gearboxes output flange (see fig. 4, 5 on p. 30,31)

Модель редуктора Gearbox model	Условное обозначение варианта присоединения Symbolic designation of the mounting version	Тип присоединения на выходном валу и фланце Mounting type at the input shaft and flange	Размеры выходного фланца Dimensions of the output flange										
			H7	H8	D7	D8	D9	D10	L5	N2	β	N5	D16× H16
P3A-Чн-48000.X-XX. P3A-СЧн-48000.X-XX. RZA-W-48000.X-XX. RZA-SW-48000.X-XX.	XX.17	EN ISO 5211-F35-Y-V-160	-	8	356	415	260f8	M30	40	8	22.5°	-	-
	XX.18	EN ISO 5211-F40-Y-V-180	-	8	406	475	300f8	M36	40	8	22.5°	-	-
P3A-Чн-64000.X-XX. P3A-СЧн-64000.X-XX. RZA-W-64000.X-XX. RZA-SW-64000.X-XX.	XX.17	EN ISO 5211-F35-Y-V-160	-	8	356	415	260f8	M30	40	8	22.5°	-	-
	XX.18	EN ISO 5211-F40-Y-V-180	-	8	406	475	300f8	M36	40	8	22.5°	-	-

Таблица 14.2. Присоединительные размеры выходного вала редукторов P3A-Чн-XXXXXX и P3A-СЧн-XXXXXX (см. рис. 4,5 на стр. 30,31)

Table 14.2. Mounting dimensions of RZA-W-XXXXXX and RZA-SW-XXXXXX gearboxes output shaft (see fig. 4, 5 on p.30,31)

Модель редуктора Gearbox model	Условное обозначение варианта присоединения Symbolic designation of the mounting version	Тип присоединения на выходном валу и фланце Mounting type at the input shaft and flange	H6 max	Размеры отверстия выходного вала Dimensions of the output shaft hole						
				H9	H10	Шпоночное соединение Keyed joint				
						D15	B3	C2	N3	γ
P3A-Чн-48000.X-XX. P3A-СЧн-48000.X-XX. RZA-W-48000.X-XX. RZA-SW-48000.X-XX.	XX.17	EN ISO 5211-F35-Y-V-160	230	8	210	160H9	169.4 ^{+0.3}	40D10	1	-
	XX.18	EN ISO 5211-F40-Y-V-180	230	8	210	180H9	190.4 ^{+0.3}	45D10	1	-
P3A-Чн-64000.X-XX. P3A-СЧн-64000.X-XX. RZA-W-64000.X-XX. RZA-SW-64000.X-XX.	XX.17	EN ISO 5211-F35-Y-V-160	232	8	211	160H9	169.4 ^{+0.3}	40D10	1	-
	XX.18	EN ISO 5211-F40-Y-V-180	232	8	211	180H9	190.4 ^{+0.3}	45D10	1	-

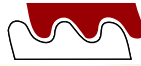
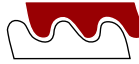


Таблица 15.1. Присоединительные размеры входного фланца редукторов РЗАЧн-XXXXXX и РЗА-СЧн-XXXXXX (см. рис. 3,4 на стр. 25,30)
Table 15.1. Mounting dimensions of RZA-W-XXXXXX and RZA-SW-XXXXXX gearboxes input flange (see fig. 3,4 on p.25,30)

Gearbox model	Symbolic designation of the mounting version	Mounting type at the input shaft and flange*	Dimensions of the output flange											
			D1	D2	D3	D4	N1	a	H3	H4	H5/ H12	N4	C3	
48000. RZA-W- 48000.X -XX	14.XX	F16	210	130H8	165	22	4	45°	35	18	6	-	-	
	15.XX	F25	300	200H8	254	18	8	22.5°	35	15	6	-	-	
-48000. RZA-SW-48000.X-XX with model of a gearbox of the first stage	-2000,0 RZAm-S-2000,0	03.XX ⁽³⁰⁾ for the flywheel (30)	-	-	-	-	-	-	26.5	-	-	-	-	
		6M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	-	
		8M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	-	-
		10M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	-	-
		12M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	-	-
	-2500,0 RZAM-S-2500,0	03.XX ⁽³⁰⁾ for the flywheel (30)	-	-	-	-	-	-	-	-	-	-	-	-
		6M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	-	-
		8M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	-	-
		10M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	-	-
		12M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	-	-
		22.XX /B type	122	108d11	135	M12 14	4	45°	26	20	6 _{0.3}	-	-	-
		23.XX /V type	200	155d11	220	22	4	45°	40	20	10 _{0.5}	4	20H11	-
	-4000,0 RZAm-S-4000,0	03.XX ⁽³⁰⁾ for the flywheel (30)	-	-	-	-	-	-	-	-	-	-	-	-
		6M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	-	-
		8M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	-	-
		10M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	-	-
		12M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	-	-
		13M.XX F14	175	100H8	140	18	4	45°	30	15	5	-	-	-
		22.XX /B type	122	108d11	135	M12	4	45°	29.5	20	6 _{0.3}	-	-	-
		22o.XX /B type	122	108d11	135	M12	4	45°	29.5	20	6 _{0.3}	-	-	-
		23.XX /V type	200	155d11	220	22	4	45°	40	33	10 _{0.5}	4	20H11	-
	64000. RZA-W- 64000.	14.XX	F16	210	130H8	165	22	4	45°	40	18	6	-	-
		15.XX	F25	300	200H8	254	18	8	22.5°	40	23	6	-	-
		16.XX	F30	350	230H8	298	22	8	22.5°	40	18	6	-	-
31.XX		/special	300	200H8	254	18	8	22.5°	40	23	6	-	-	

* FXX ISO 5210, 26-07-763-73

* Designation FXX according to ISO 5210, type B, V according to Standard 26-07-763-73



QUARTER-TURN WORM GEARBOXES

15.1. ?

Table 15.1. Continuation

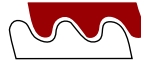
Gearbox model		Symbolic designation of the mounting version	* Mounting type at the input shaft and flange*	Dimensions of the output flange										
				D1	D2	D3	D4	N1	a	H3	H4	H5/H12	N4	C3
-64000. - RZA-SW-64000.X-XX with model of a gearbox of the first stage	- -2500,0 RZAm-S-2500.0	03.XX	(30) for the flywheel (30)	-	-	-	-	-	-	5	-	-	-	-
		6M.XX	with the flywheel	-	-	-	-	-	-	-	-	-	-	-
		8M.XX	with the flywheel	-	-	-	-	-	-	-	-	-	-	-
		10M.XX	with the flywheel	-	-	-	-	-	-	-	-	-	-	-
		12M.XX	with the flywheel	-	-	-	-	-	-	-	-	-	-	-
		22.XX	/B type	122	108d11	135	M12	4	45°	26	20	6 _{0.3}	-	-
		22o.XX	/B type				14							
	23.XX	/V type	200	155d11	220	22	4	45°	40	20	10 _{0.5}	4	20H11	
	- -4000,0 RZAM-S-4000.0	03.XX	(30) for the flywheel (30)	-	-	-	-	-	-	9	-	-	-	-
		6M.XX	with the flywheel	-	-	-	-	-	-	-	-	-	-	-
		8M.XX	with the flywheel	-	-	-	-	-	-	-	-	-	-	-
		10M.XX	with the flywheel	-	-	-	-	-	-	-	-	-	-	-
		12M.XX	with the flywheel	-	-	-	-	-	-	-	-	-	-	-
		13M.XX	F14	175	100H8	140	18	4	45°	30	15	5	-	-
		22.XX	/B type	122	108d11	135	M12	4	45°	26	20	6 _{0.3}	-	-
		22o.XX	/B type				14							
	23.XX	/V type	200	155d11	220	22	4	45°	40	20	10 _{0.5}	4	20H11	
	- -8000,0 RZAm-S-8000.0	03.XX	(30) for the flywheel (30)	-	-	-	-	-	-	13	-	-	-	-
		6M.XX	with the flywheel	-	-	-	-	-	-	-	-	-	-	-
		8M.XX	with the flywheel	-	-	-	-	-	-	-	-	-	-	-
		10M.XX	with the flywheel	-	-	-	-	-	-	-	-	-	-	-
		12M.XX	with the flywheel	-	-	-	-	-	-	-	-	-	-	-
		13M.XX	F14	175	100H8	140	18	4	45°	67.5	15	5	-	-
		22.XX	/B type	122	108d11	135	M12	4	45°	31	28	6 _{0.3}	-	-
		23.XX	/V type	200	155d11	220	22	4	45°	40	22	10 _{0.5}	4	20H11

15.2.

(. .3 .25)

Table 15.2. Mounting dimensions of gearboxes RZA-W-XXXXXX and RZA-SW-XXXXXX input shaft (see fig. 3 on p.25)

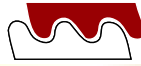
Gearbox model	Symbolic designation of the mounting version	* Mounting type at the input shaft and flange*	Dimensions of the output shaft										Flywheel dimensions	
			With the keyed joint					With the cam joint						
			D5	B1	C1	H2	L3	D11	D12	D13	H14	H13	H15	L4	D14
-48000.- RZA-W-48000.X-XX	14.XX	F16	40h8	43	12h9	79	-	-	-	-	-	-	-	-
	15.XX	F25	50h8	53.5	14h9	109	-	-	-	-	-	-	-	-
-48000.- RZA-SW-48000.X-XX with model of a gearbox of the first stage	-2000,0 RZAm-S-2000.0	03.XX (30) for the flywheel (30)	30h8	33	8h9	69	12	6	-	-	-	-	-	-
		6M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	129.5	600
		8M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	129.5	800
		10M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	129.5	1000
		12M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	129.5	1200
	-2500,0 RZAM-S-2500.0	03.XX (30) for the flywheel (30)	30h8	33	8h9	89	12	6	-	-	-	-	-	-
		6M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	129.5	600
		8M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	129.5	800
		10M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	129.5	1000
		12M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	129.5	1200
		22.XX /B type	-	-	-	-	-	-	45	59	14.5±0.3	8min	-	-
	23.XX /V type	-	-	-	-	-	-	70	84	20 _{0.3}	10min	6.5	-	-
	-4000,0 RZAm-S-4000.0	03.XX (30) for the flywheel (30)	30h8	33	8h9	85	12	6	-	-	-	-	-	-
		6M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	129.5	600
		8M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	129.5	800
		10M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	129.5	1000
		12M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	129.5	1200
		13M.XX F14	30h8	33	8h9	64	12	6	-	-	-	-	-	-
22.XX /B type		-	-	-	-	-	-	45	59	14.5±0.3	8min	-	-	-
22o.XX /B type		-	-	-	-	-	-	45	59	14.5±0.3	8min	-	-	-
23.XX /V type		-	-	-	-	-	-	70	84	20 _{0.3}	10min	6.5	-	-
-64000.- RZA-W-64000.-	14.XX	F16	40h8	43	12h9	79	-	-	-	-	-	-	-	
	15.XX	F25	50h8	53.5	14h9	109	-	-	-	-	-	-	-	
	16.XX	F30	60h8	64.4	18h9	109	-	-	-	-	-	-	-	
	31.XX	/special	70h8	64	28h9	100	-	-	-	-	-	-	-	



QUARTER-TURN WORM GEARBOXES

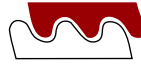
Таблица 15.2. Продолжение
Table 15.2. Continuation

Gearbox model	Symbolic designation of the mounting version	* Mounting type at the input shaft and flange*	Dimensions of the output shaft											Flywheel dimensions	
			With the keyed joint						With the cam joint						
			D5	B1	C1	H2	L3	D11	D12	D13	H14	H13	H15	L4	D14
-64000.- RZA-SW-64000.X-XX with model of a gearbox of the first stage	-2500.0 RZAm-S-2500.0	(30) for the flywheel (30)	30h8	33	8h9	89	12	6	-	-	-	-	-	-	-
		6M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	-	129.5	600
		8M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	-	129.5	800
		10M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	-	129.5	1000
		12M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	-	129.5	1200
		22.XX /B type	-	-	-	-	-	-	45	59	14.5±0.3	8min	-	-	-
		23.XX /V type	-	-	-	-	-	-	70	84	20 _{0.3}	10min	65	-	-
	-4000.0 RZAM-S-4000.0	(30) for the flywheel (30)	30h8	33	8h9	85	12	6	-	-	-	-	-	-	-
		6M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	-	129.5	600
		8M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	-	129.5	800
		10M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	-	129.5	1000
		12M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	-	129.5	1200
		13M.XX F14	30h8	33	8h9	64	12	6	-	-	-	-	-	-	-
		22.XX /B type	-	-	-	-	-	-	45	59	14.5±0.3	8min	-	-	-
		23.XX /V type	-	-	-	-	-	-	70	84	20 _{0.3}	10min	65	-	-
	-8000.0 RZAm-S-8000.0	(30) for the flywheel (30)	30h8	33	8h9	85	12	6	-	-	-	-	-	-	-
		6M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	-	129.5	600
		8M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	-	129.5	800
		10M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	-	129.5	1000
		12M.XX with the flywheel	-	-	-	-	-	-	-	-	-	-	-	129.5	1200
		13M.XX F14	30h8	33	8h9	64	12	6	-	-	-	-	-	-	-
		22.XX /B type	-	-	-	-	-	-	45	59	14.5±0.3	8min	-	-	-
	23.XX /V type	-	-	-	-	-	-	70	84	20 _{0.3}	10min	65	-	-	



MULTI-TURN SPIROID GEARBOXES

.....	39	Multi-turn gearboxes	39
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MULTI-TURN SPIROID GEARBOXES

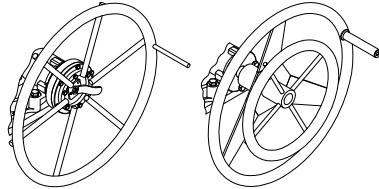
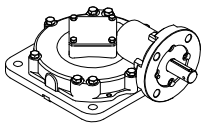
MODIFICATIONS OF MULTI-TURN GEARBOXES

1

Number of speeds

single-speed

double-speed



with 2 flywheels

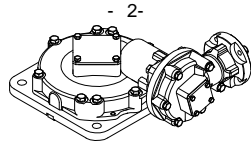
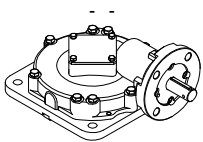
-.2- .1-
-.4- .3-

2

Number and type of stages

single-stage

double-stage



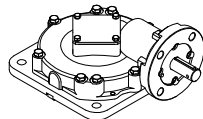
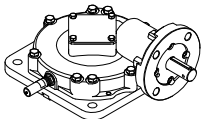
3

По наибольшему моменту на выходном валу (момент запирания/страгивания)
Maximum loading torque at the output shaft (the torque of starting/shutting)

(. . .12)
see dimension row (see p.12)

4

Pointer of the stopper position



-.1- .0

5

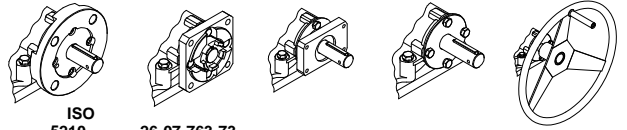
By gear ratio

3. (. . .14)
see Table 3. Gear ratios (see p.14)

6

By attachment variant at an input shaft

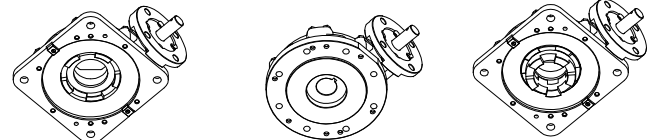
(flange-type modification (drive-controlled)) (flywheel-type modification (manually controlled))



ISO 5210 26-07-763-73

7

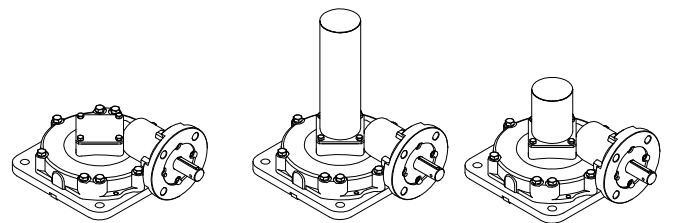
By attachment variant at an output shaft



26-07-763-73 ISO 5210

8

По наличию/отсутствию защитного колпака для выдвигного шпинделя
Absence/presence of the protection cap of the movable spindle



9

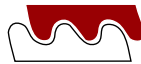
By climatic modification

1 (-60°) 1 (-40°) 15150

10

By upper level of operating temperature range

+50° +120°C +200°



ACCEPTED SYMBOLIC DESIGNATIONS

1 -XX-XXXXX.X-XX/ 2 -XX/ .X -XXX-X-X-X 3 4 5 6 7 8 91011 RZAM-XX-XXXXX.X-XX/ -XX/ .X -XXX-X-X-X 1 2 3 4 5 6 7 8 91011

pos.		Versions of the gearbox configuration
1	-	Multi-turn gearbox of the stop valve
2	- 2- .1- , - , (-), .2- , - , (-), .3-), .4-),	Number and type of stages S – single-stage spiroid S2 – double-stage spiroid PLS.1 – double-speed, planetary-spiroid, (gearbox-gearbox), with two flywheels PLS.2 – double-speed, planetary-spiroid, (gearbox-gearbox), with the switch PLS.3 – double-speed, planetary-spiroid, (multiplier-gearbox), with two flywheels PLS.4 – double-speed, planetary-spiroid, (multiplier-gearbox), with the switch
3	()	Maximum loading torque at the output shaft (Nm)
4	• 0- • 1-	Presence of the position pointer of the operating element of the stop unit 0 – the pointer is absent, 1 – the pointer is present
5	, (, 2) - (. 16) / -	Gear ratio, rounded to the integer number (tabl. 16) For a single-speed-gearbox (S, S2) – total gear ratio of the gearbox For a double-speed gearbox – gear ratio in the accelerated mode/gear ratio in the force mode
6	• (. 23, 24) - , . / - / • , . 00...09 • ISO 5210 10...19 • 062-2009 (26-07-763-73) 20...29	Mounting version at the input shaft (tabl. 23, 24) • with the flywheel for a single-speed gearbox – flywheel diameter in dm rounded to the nearest whole number for a double-speed gearbox – flywheel diameter for the accelerated rotation / flywheel diameter for the force rotation, in dm • for the flywheel 00...09 • ISO 5210 10...19 • Standard ST TsKBA 062-2009 (OST 26-07-763-73) 20...29
7	• ISO 5210 (. 21, 22) 10...19 • 062-2009 (26-07-763-73) 20...29 • 30...99	Mounting versions at the output shaft • ISO 5210 10...19 • Standard ST TsKBA 062-2009 (ST 26-07-763-73) 20...29 • special 30...99
8	(. 18)	Gearbox height with the cap, mm
9	• 1- 15150-69 • - () • 1-	Climatic performance according to the standard 15150-69 • U1 - for temperate climate • UHL - for a cold-temperate climate (non-indicated) • T1 - for a tropical climate
10	(. 44254) () IP 66 67 IP 67 68 IP 67	IP rating by Russian State Standard 44254 (non-indicated) IP 66 67 IP 67 68 IP 67
11	3790-002-77124830-2012	Standard specification TU 3790-002-77124830-2012

1. -S-1000.1-12-5 .22-1500

() 062-2009 (26-07-763-73), - 12, - 1500 , 500 , 1000 - 1

2. -PLS.1-10000.1-13/54-6/10 .25-1105

- 13, - 54, 600 , - 1000 , - 1105 , - 1 () . 062-

2009 (26-07-763-73),

Examples of gearbox designation

1. RZ -S-1000.1-12-5 .22-1500

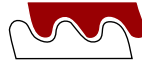
Multi-turn single-stage spiroid gearbox of the stop valve, nominal loading torque at the output shaft 1000 Nm, the pointer of the position is present, gear ratio – 12, mounting at the input shaft – for the flywheel diameter 500 mm, mounting at the output shaft – special according to the standard ST TsKBA 062-2009 (S 26-07-763-73), the gearbox height with the cap - 1500 mm, climatic performance - UHL1 (not indicated)

2. RZ -PLS.1-10000.1-13/54-6/10 .25-1105

Multi-turn double-stage double-speed planetary-spiroid gearbox, with two flywheels, nominal loading torque at the output shaft 10000 Nm, the pointer of the position is present, gear ratio in the accelerated mode – 13, gear ratio in the force mode 54, flywheel diameter for the accelerated rotation 600 mm, flywheel diameter for the force rotation 1000 mm, mounting at the output shaft – special according to the standard ST TsKBA 062-2009 (S 26-07-763-73), the gearbox height with the cap – 1105 mm, climatic performance - UHL1 (not indicated).

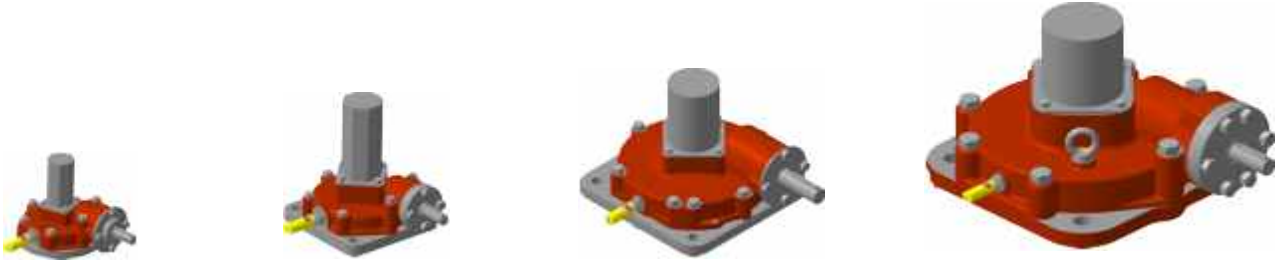
"

"



MULTI-TURN SPIROID GEARBOXES

DIMENSION ROW OF MULTI-TURN SPIROID GEARBOXES



P3AM-C-500

P3AM-C-1000

P3AM-C-2500

P3AM-C-10000



P3AM-C2-2500



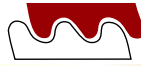
P3AM-C2-10000



P3AM-ПлС.3-500



P3AM-ПлС.3-2500



16.
Table 16. Gear ratios

Dimension type	Gear ratio i	Efficiency	$T_{in,max}$, N·m	F_{fwh} , N, at the diameter flywheel				
				300	470	600	800	1000
- 500 RZAM-S-500	6	0,75	111	370	236	—	—	—
	7	0,7	97	325	207	—	—	—
- 1000 RZAM-S-1000	8	0,73	171	571	364	—	—	—
	12	0,65	132	439	280	—	—	—
	17	0,54	112	374	239	—	—	—
	32	0,38	82	274	175	—	—	—
- 2500 RZAM-S-2500	8	0,72	448	—	—	747	560	448
	10	0,68	368	—	—	613	460	368
	13	0,66	299	—	—	498	374	299
	19	0,57	237	—	—	395	296	237
	35	0,41	174	—	—	290	218	174
- 10000 RZAM-S-10000	11	0,69	1318	—	—	2196	1647	1318
	21	0,54	882	—	—	1470	1102	882
	40	0,38	658	—	—	1096	822	658
- 2-2500 RZAM-S2-2500	47	0,54	100	332	212	—	—	—
	60	0,48	87	289	185	—	—	—
	76	0,48	69	228	146	—	—	—
	111	0,37	61	203	130	—	—	—
	210	0,22	54	180	115	—	—	—
	57	0,26	169	564	360	—	—	—
	73	0,39	87	292	186	—	—	—
	93	0,26	104	345	220	—	—	—
	136	0,36	51	171	109	—	—	—
	257	0,27	36	120	77	—	—	—
- 2-10000 RZAM-S2-10000	88	0,5	57	189	121	—	—	—
	115	0,09	243	809	517	—	—	—
	128	0,35	56	185	118	—	—	—
	167	0,27	55	185	118	—	—	—
	168	0,21	71	236	151	—	—	—
	182	0,21	66	219	140	—	—	—
	236	0,17	62	208	133	—	—	—
	245	0,35	29	97	62	—	—	—
	320	0,33	24	79	50	—	—	—
	347	0,24	30	100	64	—	—	—
	392	0,08	80	266	170	—	—	—
	459	0,1	55	182	116	—	—	—
	467	0,11	49	162	104	—	—	—
	572	0,08	55	182	116	—	—	—
	660	0,23	13	42	27	—	—	—
	672	0,28	24	80	51	—	—	—
	809	0,09	34	115	73	—	—	—
1400	0,14	13	43	27	—	—	—	
1568	0,09	18	59	38	—	—	—	

$T_{in,max}$ – torque at the input shaft, calculated by $T_{out,max}$;
 F_{fwh} – tangential load at the flywheel hand, calculated by $T_{in,max}$.

MULTI-TURN SPIROID GEARBOXES

17.
Table 17. Overall dimensions of RZAM-S- gearboxes

Dimension	/ Gearbox dimension type			
	- -500 RZAM-S-500	- -1000 RZAM-S-1000	- -2500 RZAM-S-2500	- -10000 RZAM-S-10000
H1	50...54	56...62	74,5...89	107...120
H6	65...	60...660	105...858	151...1105
L1	106,5	105	148	211,5
L7	84,5	102	142	190
L8	71	68	70	72
D6	144	170	260	354
Aw	28	40	65	93

18.
Table 18. Versions of gearbox height.

Dimension	/ Gearbox dimension type																			
	- -500/RZAM-S-500				- -1000/RZAM-S-1000					- -2500/RZAM-S-2500						- -10000/RZAM-S-10000				
H6*	0	180	280	380	0	230	375	550	660	0	276	366	456	588	708	858	0	285	515	1105
**	65	160	260	360	70	210	355	530	640	85	256	346	436	568	688	838	145	265	495	1085

* «0»

**

* Height "0" layout is applied in wedges with non-retractable spindle

** Useful height determines the allowable spindle extension above the basic face of the wedge flange

19.
Table 19. Main performance characteristics

	Parameter	\ Dimension type			
		- -500 RZAM-S-500	- -1000 RZAM-S-1000	- -2500 RZAM-S-2500	- -10000 RZAM-S-10000
T	Maximum torque at the output shaft, $T_{out\ max}$ Nm	500	1000	2500	10000
T	Limiting torque at the output shaft, $T_{out\ lim}$ Nm	750	1500	3750	15000
	Gear ratios	16 / See table 16			
	Mounting versions at the input shaft	23, 24 . 6 / See table 23, 24 and fig. 6			
	Mounting versions at the output shaft	21, 22 . 6 / See table 21, 22 and fig. 6			
	Versions of the gearbox height	18 / See table 18			
	Other conditions of application	20 / See table 20			
	Mass, kg	8...12	11...15	28...35	71...80

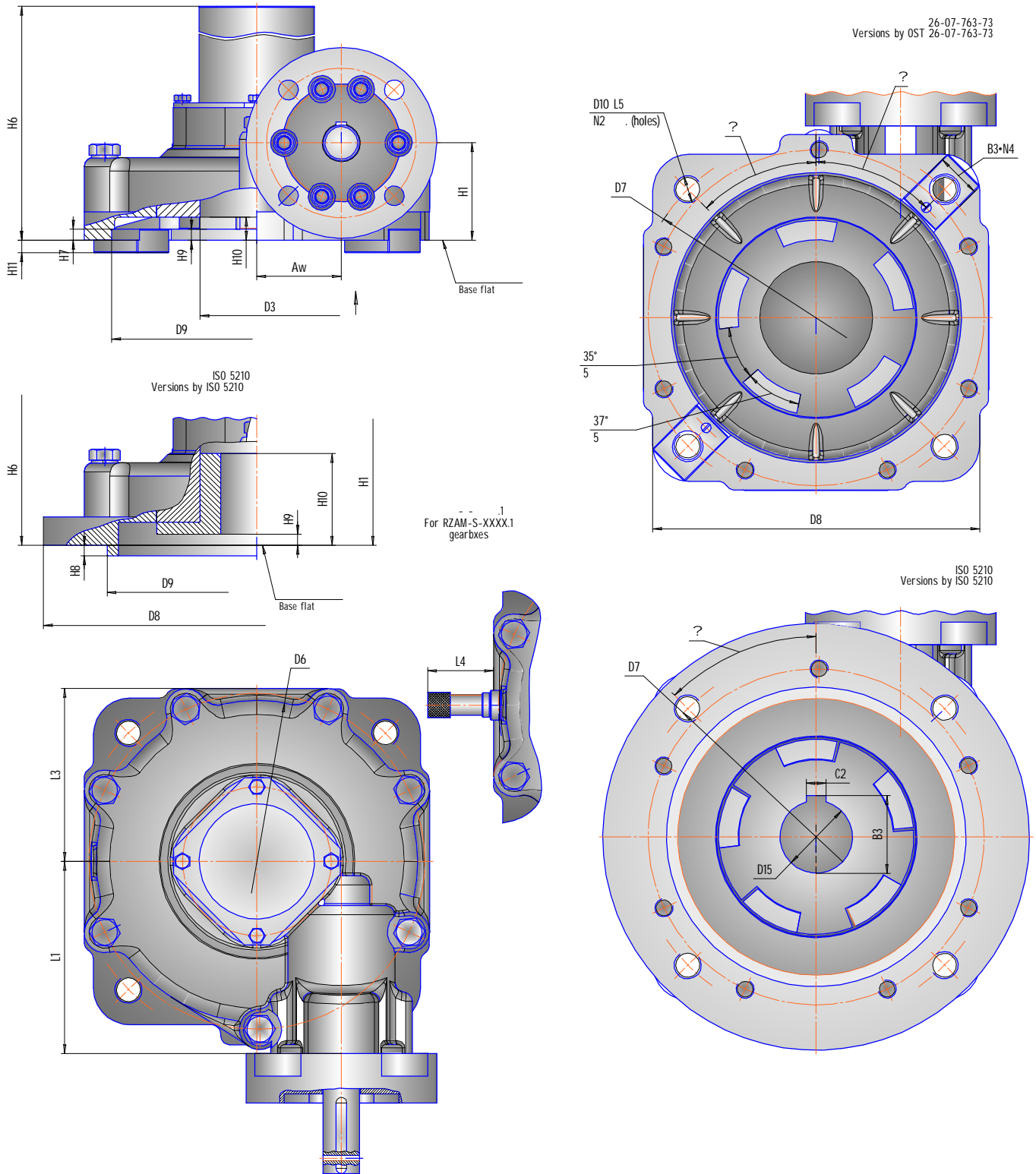
20.
Table 20. Additional terms of application

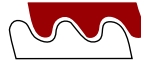
	Mode of operation	bidirectional, intermittent cycle
183-74, , %	Duty factor according to Standard 183-74, not more than, %	25
()	Lifetime, cycles	12000
14254-96, 70-1 DIN EN 60034	Level of sealing protection according to Standard 14254-96 according to 70-1 and DIN EN 60034	IP 66
, /	Maximum allowable rotational frequency of the input shaft, rev/min	150
15150-69	Climatic performance according to the Standard 15150-69	1 / UHL 1 (cold-temperate)
, °	Range of operating temperatures, °	-60 ...+50
, ,	Overall average lifetime, years, not less than	15
, .	Warranty period, months	24

6.

Figure 6. Overall and mounting dimensions of RZA -S-XXXX gearboxes output shaft and flange

Исполнения по OST 26-07-763-73
Versions by OST 26-07-763-73





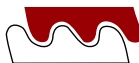
MULTI-TURN SPIROID GEARBOXES

21.

(. . . 6 . . . 46)

Table 21. Mounting dimensions of RZAM-S-XXXX gearboxes output flange (see fig.6 on p.46).

Gearbox model	Symbolic designation of the mounting version	Mounting type at the output shaft and flange	D9	D8	D7	D10	L5	N2	b	H7	H8	H1	B5	N5	H11	g	L8	L7
			RZAM-S-500-XX-	.10	F07	558	Ø90	70	8	12	4	45°	—	3	50	—	—	—
.11	F10	708		Ø125	102	10	15	4	45°	—	3	52	—	—	—	—	75	—
.12	F12	858		Ø150	125	12	18	4	45°	—	3	54	—	—	—	—	75	—
.27		108H11		Ø169	135	12	16	4	45°	8 ^{+0.4}	—	50.5	—	—	—	—	75	—
RZAM-S-1000-XX-	.11	F10	708	Ø125	102	10	15	4	45°	—	3	56	—	—	—	—	75	—
	.12	F12	858	Ø150	125	12	18	4	45°	—	3	58	—	—	—	—	75	—
	.13	F14	1008	Ø175	140	16	24	4	45°	—	4	62	—	—	—	—	75	—
	.23	/ B type	155H11	202	220	20	20	4	45°	12 ^{+0.5}	—	61	20	1	6	90°	75	—
RZAM-S-2500-XX-	.15	F25	2008	Ø300	254	16	26	8	22,5°	—	5	80	—	—	—	—	75	—
	.16	F30	2308	Ø350	298	20	35	8	22,5°	—	5	89	—	—	—	—	75	—
	.24	/ G type	240H11	285	330	20	20,5	4	45°	12 ^{+0.5}	—	74.5	20	2	6	90°	75	1425
RZAM-S-10000-XX-	.15	F25	2008	Ø300	254	16	26	8	22,5°	—	5	107	—	—	—	—	75	—
	.16	F30	2308	Ø350	298	20	35	8	22,5°	—	5	107	—	—	—	—	75	—
	.26	/ D type	320H11	380	400	30	30	4	45°	12 ^{+0.5}	—	107	50	2	14	90°	75	190



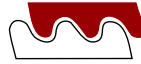
22.

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Table 22. Mounting dimensions of RZAM-S-XXXX gearboxes output shaft (see fig.6 on p.46).

Gearbox model	Symbolic designation of the mounting version	Mounting type at the output shaft and flange	D15	H9	H10	D16	D17	B3	C2
- -500- - - RZAM-S-500- - -	.10	F07	16	3	35	—	—	18,3	5
	.11	F10	20	3	45	—	—	22,8	6
	.12	F12	25	3	55	—	—	28,3	8
	.27	/ B type	45	8 ^{+0,2}	16	45	59	—	—
- -1000- - - RZAM-S-1000- - -	.11	F10	20	3	45	—	—	22,8	6
	.12	F12	25	3	55	—	—	21,3	8
	.13	F14	30	4	65	—	—	33,3	8
	.23	/ B type	63	12 ^{+0,2}	23	70	84	—	—
- -2500- - - RZAM-S-2500- - -	.15	F25	50	5	110	—	—	53,8	14
	.16	F30	60	5	130	—	—	64,4	18
	.24	/ G type	85	12 ^{+0,2}	25	120	148	—	—
- -10000- - - RZAM-S-10000- - -	.15	F25	50	—	15	—	—	53,8	14
	.16	F30	60	—	110	—	—	64,4	18
	.26	/ D type	125	12 ^{+0,2}	130	172	215	—	—



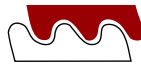
MULTI-TURN SPIROID GEARBOXES

23.

(. . 3 . . 25)

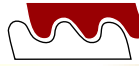
Table 23. Mounting dimensions of RZAM-S-XXXX gearboxes input flange (see fig. 3 on p.25).

Gearbox model	Symbolic designation of the mounting version	Mounting type at the input shaft and flange*	/ Dimensions of the input flange									
			D1	D2	D3	D4	N1	a	H3	H4	5, H12	N4
RZAM-S-500.X-XX-	00.	/ for the flywheel	—	—	—	—	—	—	17	—	—	—
	3 .	/ with the flywheel	—	—	—	—	—	—	—	—	—	—
	5 .		—	—	—	—	—	—	—	—	—	—
	10.	F07	90	55 8	70	9	4	45°	17	8	4	—
	20.	/ M type	90	40d11	—	7	4	—	13	7	3.0.12	—
	21.XX	/ A type	100	70d11	104	M12	4	45°	20	13	3.0.12	—
RZAM-S-1000.	01.	/ for the flywheel	—	—	—	—	—	—	15.5	—	—	—
	02.	/ for the flywheel	—	—	—	—	—	—	15.5	—	—	—
	.	/ with the flywheel	—	—	—	—	—	—	—	—	—	—
	5 .	/ with the flywheel	—	—	—	—	—	—	—	—	—	—
	11.XX	F10	125	70 8	102	11	4	45°	23.5	10	4	—
	12.	F12	150	85 8	125	13	4	45°	23.5	10	4	—
	13.XX	F14	175	100 8	140	18	4	45°	24.5	15	5	—
	20.	/ M type	90	40d11	—	7	4	-	41	41	3.0.12	—
	21.XX	/ A type	100	70d11	104	M12	4	45°	41	20	3.0.12	—
	22.	/ B type	122	108d11	135	M12	4	45°	41	20	6.0.3	—
RZAM-S-2500.	01.XX	/ for the flywheel	—	—	—	—	—	—	15	—	—	—
	02.		—	—	—	—	—	—	15	—	—	—
	03.XX		—	—	—	—	—	—	15	—	—	—
	5 .	/ with the flywheel	—	—	—	—	—	—	—	—	—	—
	6 .		—	—	—	—	—	—	—	—	—	—
	8 .		—	—	—	—	—	—	—	—	—	—
	10 .		—	—	—	—	—	—	—	—	—	—
	11.XX		F10	125	70 8	102	11	4	45°	35	10	4
	12.	F12	150	85 8	125	13	4	45°	35	10	4	—
	13.XX	F14	175	100 8	140	18	4	45°	35	15	5	—
22.	/ B type	122	108d11	135	M12	4	45°	37	37	6.0.3	—	
23.XX	/ V type	200	155d11	220	22	4	45°	43	20	10.0.5	4	
RZAM-S-10000.	01.XX	/ for the flywheel	—	—	—	—	—	—	24	—	—	—
	02.XX		—	—	—	—	—	—	24	—	—	—
	03.XX		—	—	—	—	—	—	24	—	—	—
	6 .	/ with the flywheel	—	—	—	—	—	—	—	—	—	—
	8 .		—	—	—	—	—	—	—	—	—	—
	10 .		—	—	—	—	—	—	—	—	—	—
	11.XX	F10	125	70 8	102	11	4	45°	34	10	4	—
	12.	F12	150	85 8	125	13	4	45°	34	10	4	—
	13.XX	F14	175	100 8	140	18	4	45°	34	15	5	—
	22.	/ B type	122	108d11	135	M12	4	45°	53	53	6.0.3	—
	23.XX	/ V type	200	155d11	220	22	4	45°	53	20	10.0.5	4
	31.	/special	175	100H8	140	18	4	45°	34	15	5	—



24. Table 24. Mounting dimensions of RZAM-S-XXXX gearboxes input shaft (see fig. 3 on p.25).

Gearbox model	Symbolic designation of the mounting version	Mounting type at the input shaft and flange	Dimensions of the input shaft										Flywheel dimensions	
			Co With the keyed joint					With the cam joint						
			D5	B1	C1	H2	L3	D11	D12	D13	H14	H13, minimum	L4	D14
RZAM-S-500.X-XX	00.	/ for the flywheel	15h8	17.5	5h9	34	5	4	—	—	—	—	—	—
	3 .	/ with the flywheel	—	—	—	—	—	—	—	—	—	—	84.5	300
	5 .		—	—	—	—	—	—	—	—	—	—	84.5	470
	10.	F07	16h8	18	5h9	34	8	4	—	—	—	—	—	—
	20.	/ M type	—	—	—	—	—	—	25	32	7±0.3	4	—	—
	21.XX	/ A type	—	—	—	—	—	—	32	46	7±0.3	4	—	—
RZAM-S-1000.	01.	/ for the flywheel	20h8	22.5	6h9	44	12	6	—	—	—	—	—	—
	02.		25h8	28	8h9	62	12	6	—	—	—	—	—	—
	5 .		—	—	—	—	—	—	—	—	—	—	30.5	300
	11.XX	F10	20h8	22.5	6h9	44	12	6	—	—	—	—	—	—
	12.	F12	25h8	28	8h9	54	12	6	—	—	—	—	—	—
	13.XX	F14	30h8	33	8h9	64	12	6	—	—	—	—	—	—
	20.	/ M type	—	—	—	—	—	—	25	32	7±0.3	4	—	—
	21.XX	/ A type	—	—	—	—	—	—	32	46	7±0.3	4	—	—
	22.	/ B type	—	—	—	—	—	—	45	59	14.5±0.3	8	—	—
	RZAM-S-2500.	01.XX	/ for the flywheel	20h8	22.5	6h9	48	12	6	—	—	—	—	—
02.		25h8		28	8h9	58	12	6	—	—	—	—	—	—
03.XX		30h8		33	8h9	69	12	6	—	—	—	—	—	—
5 .		/ with the flywheel	—	—	—	—	—	—	—	—	—	—	84.5	470
6 .			—	—	—	—	—	—	—	—	—	—	84.5	600
8 .			—	—	—	—	—	—	—	—	—	—	84.5	800
10 .			—	—	—	—	—	—	—	—	—	—	84.5	1000
11.XX		F10	20h8	22.5	6h9	54	12	6	—	—	—	—	—	—
12.		F12	25h8	28	8h9	54	12	6	—	—	—	—	—	—
13.XX		F14	30h8	33	8h9	64	12	6	—	—	—	—	—	—
22.		/ B type	—	—	—	—	—	—	45	59	14.5±0.3	8	—	—
23.XX		/ V type	20h8	22.5	6h9	45	13	6	—	—	—	—	—	—
RZAM-S-10000.		01.	/ for the flywheel	20h8	22.5	6h9	54	12	6	—	—	—	—	—
	02.	25h8		28	8h9	64	12	6	—	—	—	—	—	—
	03.XX	30h8		33	8h9	74	12	6	—	—	—	—	—	—
	6 .	/ with the flywheel	—	—	—	—	—	—	—	—	—	—	84.5	600
	8 .		—	—	—	—	—	—	—	—	—	—	84.5	800
	10 .		—	—	—	—	—	—	—	—	—	—	84.5	1000
	11.XX	F10	20h8	22.5	6h9	44	12	6	—	—	—	—	—	—
	12.	F12	25h8	28	8h9	54	12	6	—	—	—	—	—	—
	13.XX	F14	30h8	33	8h9	64	12	6	—	—	—	—	—	—
	22.	/ B type	—	—	—	—	—	—	45	59	14.5±0.3	8	—	—
	23.XX	/ V type	—	—	—	—	—	—	70	84	20±0.3	10	—	—



SERTIFICATES OF CONFORMITY



ТАМОЖЕННЫЙ СОЮЗ СЕРТИФИКАТ НА ТИП ПРОДУКЦИИ № TC RU C-RU.AB72.T.00043

ЗАЯВИТЕЛЬ Общество с ограниченной ответственностью «Механик»,

426057, Российская Федерация, город Ижевск, улица Красная, дом 122;
426069, Российская Федерация, город Ижевск, улица Студенческая, дом 7, корпус 4
(фактический)
ОГРН 1051802245956

ИЗГОТОВИТЕЛЬ Общество с ограниченной ответственностью «Механик»,

426057, Российская Федерация, город Ижевск, улица Красная, дом 122;
426069, Российская Федерация, город Ижевск, улица Студенческая, дом 7, корпус 4
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ТИПОВОЙ ОБРАЗЕЦ ПРОДУКЦИИ: Редуктор спиройдный четвертьоборотный двухступенчатый (P3A-C2) для трубопроводной арматуры, модели P3A-C2-32000.1-476-10M.41, заводской номер 466, изготовленный по ТУ 3790-001-77124830-2011

Код ТН ВЭД: 8483 40 900 0

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ

ТР ТС 010/2011 "О безопасности машин и оборудования"

СЕРТИФИКАТ ВЫДАН НА ОСНОВАНИИ

Протокола испытаний № 22-04 от 08.04.2014 г. испытательной лаборатории продукции машиностроения ООО "Сибирский центр экспертизы и оценки соответствия", аттестат аккредитации № РОСС RU.0001.21MP37 от 15.07.2011 до 15.07.2016 г.

ОРГАН ПО СЕРТИФИКАЦИИ Орган по сертификации продукции ООО "Научно-технический центр "Техно-стандарт", Адрес: Российская Федерация, 109428, г. Москва, Рязанский проспект, д. 24, корп. 2, тел. +74955179928, факс: +74959819068, e-mail: info@tehno-standart.ru, Аттестат пер. № РОСС RU.0001.11AB72, выдан 18.03.2013

ДАТА ВЫДАЧИ 09.04.2014 г.

Руководитель
(уполномоченное лицо)
органа по сертификации

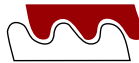
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Г.М. Буракшаева
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**ТАМОЖЕННЫЙ СОЮЗ
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№ ТС RU C-RU.AB72.T.00117**

ЗАЯВИТЕЛЬ Общество с ограниченной ответственностью «Механик»,

Адрес: 426057, Россия, Удмуртская Республика, город Ижевск, улица Красная, дом 122;
Фактический адрес: 426069, Россия, Удмуртская Республика, город Ижевск, улица
Студенческая, дом 7, корпус 4, ОГРН 1051802245956

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Фактический адрес: 426069, Россия, Удмуртская Республика, город Ижевск, улица
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ТИПОВОЙ ОБРАЗЕЦ ПРОДУКЦИИ: Редуктор четвертьоборотный неортогональный
спироидно-червячный двухступенчатый модель РЗА-СЧн-64000.1-760-22.41 для
трубопроводной арматуры, заводской номер 140, изготовленный по ТУ 3790-003-77124830-
2013

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ

ТР ТС 010/2011 "О безопасности машин и оборудования"

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Протокола испытаний № 26-04 от 03.04.2015 года, испытательной лаборатории Общества с
ограниченной ответственностью "Сибирский центр экспертизы и оценки соответствия",
аттестат аккредитации регистрационный номер № РОСС RU.0001.21MP37 от 30.10.2014 до
15.07.2016 года. Обоснование безопасности 3791.003.77124830.2015 ОБ

ОРГАН ПО СЕРТИФИКАЦИИ Орган по сертификации продукции Общество с
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109428, г. Москва, Рязанский проспект, д. 24, корп. 2, Фактический адрес: 109428, г.
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ДАТА ВЫДАЧИ 06.04.2015 г.

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органа по сертификации

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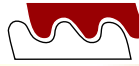
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СЕРТИФИКАТ НА ТИП ПРОДУКЦИИ
№ TC RU C-RU.AB72.T.00115**

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одноступенчатый модель РЗАМ-С-1000.0-12-5М.23 для трубопроводной арматуры,
заводской номер 991, изготовленный по ТУ 3790-002-77124830-2012

Код ТН ВЭД: 8483409000

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ

ТР ТС 010/2011 "О безопасности машин и оборудования"

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№ РОСС RU.0001.21MP37 от 30.10.2014 до 15.07.2016 года.
Обоснование безопасности 3791.00277124830.2015 ОБ

ОРГАН ПО СЕРТИФИКАЦИИ Орган по сертификации продукции Общество с
ограниченной ответственностью "Научно-технический центр "Техно-стандарт", Адрес:
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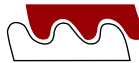
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ТАМОЖЕННЫЙ СОЮЗ ДЕКЛАРАЦИЯ О СООТВЕТСТВИИ

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в лице Заместителя директора Трубачева Евгения Семеновича

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соответствует требованиям

ТР ТС 010/2011 "О безопасности машин и оборудования"

Декларация о соответствии принята на основании

Протокола испытаний № 26-04 от 03.04.2015 года, испытательной лаборатории Общества с ограниченной ответственностью "Сибирский центр экспертизы и оценки соответствия", аттестат аккредитации регистрационный номер РОСС RU.0001.21MP37 от 30.10.2014 до 15.07.2016 года., Обоснования безопасности 3791.003.77124830.2015 ОБ.
Сертификата соответствия на тип продукции № TC RU C-RU.AB72.T.00117 от 06.04.2015 года.

Дополнительная информация

Маркировка единым знаком обращения продукции на рынке государств – членов Таможенного Союза наносится на изделие и в прилагаемые эксплуатационные документы. Условия и срок хранения, а также срок службы указаны в прилагаемых эксплуатационных документах.

Декларация о соответствии действительна с даты регистрации по 08.04.2020 включительно



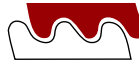
Е. С. Трубачев

(инициалы и фамилия руководителя организации-заявителя или физического лица, зарегистрированного в качестве индивидуального предпринимателя)

Сведения о регистрации декларации о соответствии:

Регистрационный номер декларации о соответствии: TC N RU Д-RU.AB72.B.02715

Дата регистрации декларации о соответствии: 09.04.2015



ТАМОЖЕННЫЙ СОЮЗ ДЕКЛАРАЦИЯ О СООТВЕТСТВИИ

Заявитель, Общество с ограниченной ответственностью «Механик», ОГРН: 1051802245956

Адрес: 426057, Россия, Удмуртская Республика, город Ижевск, улица Красная, дом 122,
Фактический адрес: 426069, Россия, Удмуртская Республика, город Ижевск,
улица Студенческая, дом 7, корпус 4, Телефон: +73412592503, Факс: +73412592503,
E-mail: truba@istu.ru

в лице Заместителя директора Трубачева Евгения Семеновича

заявляет, что Редукторы спироидные многооборотные одноступенчатые (РЗАМ-С) и двухступенчатые (РЗАМ-С2) для трубопроводной арматуры, изготавливаемые по ТУ 3790-002-77124830-2012

изготовитель Общество с ограниченной ответственностью «Механик», Адрес: 426057, Россия, Удмуртская Республика, город Ижевск, улица Красная, дом 122, Фактический адрес: 426069, Россия, Удмуртская Республика, город Ижевск, улица Студенческая, дом 7, корпус 4,
Код ТН ВЭД 8483409000,
Серийный выпуск

соответствует требованиям

ТР ТС 010/2011 "О безопасности машин и оборудования"

Декларация о соответствии принята на основании

Протокола испытаний № 100-03 от 17.03.2015 года, испытательной лаборатории Общества с ограниченной ответственностью "Сибирский центр экспертизы и оценки соответствия", рег. № РОСС RU.0001.21MP37 от 30.10.2014 до 15.07.2016 года.
Сертификата на тип продукции № TC RU C-RU.AB72.T.00115 от 18.03.2015 года.
Обоснования безопасности 3791.00277124830.2015 ОБ.

Дополнительная информация

Маркировка единым знаком обращения продукции на рынке государств – членов Таможенного Союза наносится на изделие и в прилагаемые эксплуатационные документы. Условия и срок хранения, а также срок службы указаны в прилагаемых эксплуатационных документах.

Декларация о соответствии действительна с даты регистрации по 22.03.2020 включительно



(подпись)

МЕХАНИК
М.П.

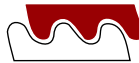
Е. С. Трубачев

(инициалы и фамилия руководителя организации-заявителя или физического лица, зарегистрированного в качестве индивидуального предпринимателя)

Сведения о регистрации декларации о соответствии:

Регистрационный номер декларации о соответствии: TC N RU Д-RU.AB72.B.02580

Дата регистрации декларации о соответствии: 23.03.2015



ТАМОЖЕННЫЙ СОЮЗ ДЕКЛАРАЦИЯ О СООТВЕТСТВИИ

Заявитель, Общество с ограниченной ответственностью «Механик»

Адрес: 426057, Россия, город Ижевск, улица Красная, дом 122, Фактический адрес: 426069, Россия, город Ижевск, улица Студенческая, дом 7, корпус 4, Телефон: +73412592503, Факс: +73412592503, E-mail: truba@istu.ru, ОГРН: 1051802245956

в лице Директора Гольдфарба Вениамина Иосифовича

заявляет, что Редукторы спирондные четвертьоборотные, одно- (РЗА-С) и двухступенчатые (РЗА-С2) для трубопроводной арматуры, изготавливаемые по ТУ 3790-001-77124830-2011

изготовитель Общество с ограниченной ответственностью «Механик», Адрес: 426057, Россия, город Ижевск, улица Красная, дом 122, Фактический адрес: 426069, Россия, город Ижевск, улица Студенческая, дом 7, корпус 4
Код ТН ВЭД 8483409000,
Серийный выпуск

соответствует требованиям

ТР ТС 010/2011 "О безопасности машин и оборудования"

Декларация о соответствии принята на основании

Сертификат на тип продукции №ТС RU C-RU.AB72.T.00043 от 09.04.2014 г.

Дополнительная информация

Маркировка единым знаком обращения продукции на рынке государств-членов Таможенного Союза наносится на изделие и в прилагаемые эксплуатационные документы. Условия и срок хранения, а также срок службы указываются в эксплуатационной документации на конкретное изделие.

Декларация о соответствии действительна с даты регистрации по 09.04.2019



В.И. Гольдфарб

(инициалы и фамилия руководителя организации-заявителя или физического лица, зарегистрированного в качестве индивидуального предпринимателя)

Сведения о регистрации декларации о соответствии:

Регистрационный номер декларации о соответствии: TC N RU Д-RU.AB72.B.01378

Дата регистрации декларации о соответствии: 10.04.2014



CONTACTS

We are glad to see you as our customers and are ready to cooperate with you.

If you need additional information on the whole range of produced gearboxes and on the terms of manufacture and delivery, please, address:

426069, Izhevsk,
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