



C-Bush

Bronze bearings acc. to DIN ISO 4379

Stepping forward together with our customers

For more than 50 years, **SANKYO OILLESS** has been one of the leading manufacturers of maintenance-free sliding elements. As a leading supplier and pioneer in the production of stamping and press tool components for the automotive industry, **SANKYO OILLESS** supplies an products for many other applications such as mold making, engineering, packaging, heavy industry, aerospace and many more.

The technologies developed by **SANKYO OILLESS** have reduced or eliminated friction, wear and tear. In addition, **SANKYO OILLESS** provides services and quality products to offer you the best possible solutions for your requirements at all times.

The benefits of slide bearings versus roller bearings

In a variety of applications, designers are increasingly replacing roller bearings with slide bearings. In addition to ease of installation and cost effectiveness, slide bearings offer a number of distinct advantages. Slide bearings require less installation space, have a larger load bearing capacity, are maintenance-free or require little maintenance, are easier to assemble and are less susceptible to noise and vibration.

The following list gives an overview of the general advantages of bearings compared to bearings.

Slide bearing

- Higher load bearing capacity and reduced footprint
- Higher resistance to vibration and increased lifetime
- Easier installation
- Lower installation costs
- Increased shaft tolerances possible
- Compensates misalignment and reduces the edge load

Roller bearing

- sensitive to shock, vibration and edge load
- high costs for bearings, housings, counterfaces and - fixing materials
- large space required
- is prone to noise development

Technologies for top performance

SANKYO products are manufactured in our own plants and distributed worldwide.

We offer high quality maintenance-free sliding elements acc. to international standards and standards for use in

- pressing tools
- injection molds
- general engineering

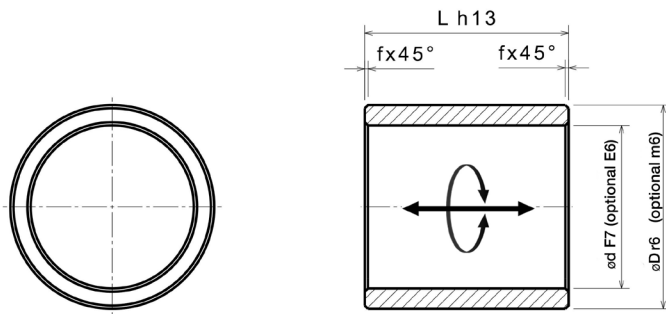
As an experienced specialist, we have the appropriate know-how in tribology to always offer the best solutions for your needs. We supply a large portfolio of lubrication-free sliding elements and also offer custom products acc. to customer drawing.

Quality and performance are our constant commitment!

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Article informationen



Properties:

Base material	Hard bronze
Self-lubricating	No
Max. surface pressure P	80 N/mm ²
Max. sliding speed v	20 m/min
Operating temperature	-50°C / +200°C (max. 300°C)
Friction coefficient	0,16

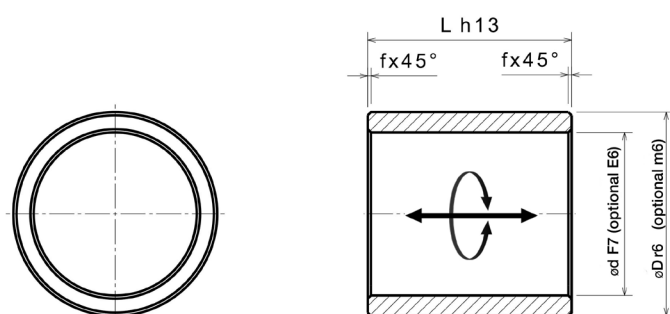
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9970080061	C 8-14-6		14				
9970080080	C 8-12-8		12	8			
9970080100	C 8-12-10		12	10			
9970080101	C 8-14-10		14				
9970080120	C 8-12-12		12	12			
9970080150	C 8-12-15		12	15			
9970080151	C 8-14-15		14				
9970080200	C 8-12-20		12	20			
9970080201	C 8-14-20		14				
9970090140	C 9-12-14	9	12	14			
9970100060	C 10-14-6	10	14	6		0,3	
9970100062	C 10-16-6		16				
9970100080	C 10-14-8		14	8			
9970100082	C 10-16-8		16				
997010010	C 10-12-10		12	10			
9970100100	C 10-14-10		14				
9970100102	C 10-16-10		16	14			
9970100140	C 10-14-14		14				
9970100150	C 10-14-15		14	15			
9970100152	C 10-16-15		16				
9970100200	C 10-14-20	14	20				
9970100202	C 10-16-20	16					
9970120100	C 12-16-10	12	16	10	0,5		
9970120101	C 12-18-10		18				
9970120150	C 12-16-15		16	15			
9970120151	C 12-18-15		18				
9970120200	C 12-16-20		16	20			
9970120201	C 12-18-20		18				
9970120202	C 12-14-20		14				
9970140100	C 14-18-10	14	18	10			0,5
9970140101	C 14-20-10		20				
9970140150	C 14-18-15		18	15			
9970140151	C 14-20-15		20				
9970140200	C 14-18-20		18	20			
9970140201	C 14-20-20		20				
9970150100	C 15-19-10	15	19	10			
9970150101	C 15-21-10		21				

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9970150102	C 15-17-10	15	17	10	0,5
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9970150151	C 15-21-15		21		
9970150152	C 15-17-15		17	20	
9970150200	C 15-19-20		19		
9970150201	C 15-21-20		21		
9970160120	C 16-20-12	16	20	12	
9970160121	C 16-22-12		22	15	
9970160150	C 16-20-15		20		
9970160151	C 16-22-15		22	20	
9970160200	C 16-20-20		20		
9970160201	C 16-22-20		22		
9970180120	C 18-22-12	18	22	12	
9970180121	C 18-24-12		24	15	
9970180150	C 18-22-15		22		
9970180151	C 18-24-15		24	20	
9970180200	C 18-22-20		22		
9970180201	C 18-24-20		24	30	
9970180300	C 18-22-30		22		
9970180301	C 18-24-30		24		
9970200100	C 20-24-10		20	24	
9970200150	C 20-24-15	24		15	
9970200151	C 20-26-15	26			
9970200200	C 20-24-20	24		20	
9970200201	C 20-26-20	26			
9970200202	C 20-30-20	30		25	
99702002500	C 20-23-25	23			
9970200300	C 20-24-30	24		30	
9970200301	C 20-26-30	26			
9970220150	C 22-26-15	22	26	15	
9970220151	C 22-28-15		28		
9970220198	C 22-25-20		25	20	
9970220200	C 22-26-20		26		
9970220201	C 22-28-20		28	30	
9970220300	C 22-26-30		26		
9970220301	C 22-28-30		28	46	
9970220460	C 22-32-46		32		
9970240150	C 24-28-15	24	28	15	
9970240151	C 24-30-15		30		
9970240200	C 24-28-20		28	20	
9970240201	C 24-30-20		30		
9970240300	C 24-28-30		28	30	
9970240301	C 24-30-30		30		
9970250200	C 25-30-20	25	30	20	
9970250201	C 25-32-20		32		
9970250300	C 25-30-30		30	30	
9970250301	C 25-32-30		32		
9970250400	C 25-30-40		30	40	
9970250401	C 25-32-40		32		
9970250402	C 25-28-40		28		

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Properties:

Base material	Hard bronze
Self-lubricating	No
Max. surface pressure P	80 N/mm ²
Max. sliding speed v	20 m/min
Operating temperature	-50°C / +200°C (max. 300°C)
Friction coefficient	0,16

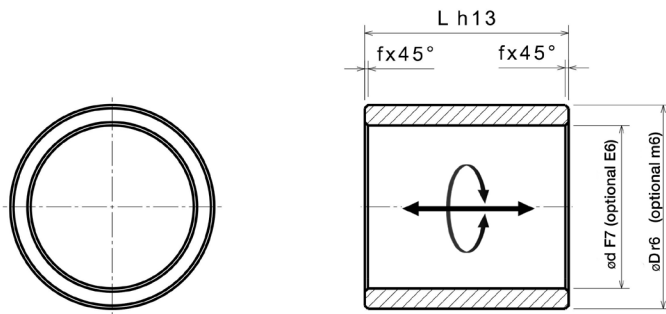
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9970270200	C 27-32-20	27	32	20	0,5
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9970270300	C 27-32-30		32	30	
9970270301	C 27-34-30		34		
9970270400	C 27-32-40		32	40	
9970270401	C 27-34-40		34		
9970280200	C 28-32-20	28	32	20	
9970280201	C 28-36-20		36		
9970280202	C 28-34-20		34		
9970280300	C 28-32-30		32	30	
9970280301	C 28-36-30		36		
9970280400	C 28-32-40		32	40	
9970280401	C 28-36-40		36		
9970280402	C 28-34-40		34		
9970300200	C 30-34-20	30	34	20	
9970300201	C 30-38-20		38		
9970300300	C 30-34-30		34	30	
99703003000	C 30-36-30		36		
9970300301	C 30-38-30		38		
9970300400	C 30-34-40		34	40	
9970300401	C 30-38-40		38		
9970320200	C 32-36-20	32	36	20	
99703202000	C 32-38-20		38		
9970320201	C 32-40-20		40		
9970320300	C 32-36-30		36	30	
9970320301	C 32-40-30		40		
9970320302	C 32-38-30		38		
9970320400	C 32-36-40		36	40	
9970320401	C 32-40-40		40		
9970330200	C 33-37-20	33	37	20	
9970330201	C 33-42-20		42		
9970330300	C 33-37-30		37	30	
9970330301	C 33-42-30		42		
9970330400	C 33-37-40		37	40	
9970330401	C 33-42-40		42		
9970350300	C 35-39-30	35	39	30	
9970350301	C 35-45-30		45		
9970350302	C 35-41-30		41		

Article no.:	Article name:	Inner Ø d:	Outer Ø D:	Length L:	f:
9970350400	C 35-39-40	35	39	40	0,8
9970350401	C 35-45-40		45		
9970350500	C 35-39-50		39	50	
9970350501	C 35-45-50		45		
9970350502	C 35-41-50		41		
9970360300	C 36-40-30	36	40	30	
9970360301	C 36-46-30		46		
9970360400	C 36-40-40		40	40	
9970360401	C 36-46-40		46		
9970360500	C 36-40-50		40	50	
9970360501	C 36-46-50		46		
9970380300	C 38-42-30	38	42	30	
9970380301	C 38-48-30		48		
9970380400	C 38-42-40		42	40	
9970380401	C 38-48-40		48		
9970380500	C 38-42-50		42	50	
99703805000	C 38-45-50		45		
9970380501	C 38-48-50		48		
9970400300	C 40-44-30	40	44	30	
99704003005	C 40-48-30		48		
9970400301	C 40-50-30		50		
9970400400	C 40-44-40		44	40	
9970400401	C 40-50-40		50		
9970400402	C 40-48-40		48		
9970400500	C 40-44-50		44	50	
9970400501	C 40-50-50		50		
9970400600	C 40-44-60		44	60	
9970400601	C 40-50-60		50		
9970400602	C 40-48-60		48		
9970420300	C 42-46-30	42	46	30	
9970420301	C 42-52-30		52		
9970420302	C 42-50-30		50		
9970420400	C 42-46-40		46	40	
9970420401	C 42-52-40		52		
9970420500	C 42-46-50		46	50	
9970420501	C 42-52-50		52		
9970420600	C 42-46-60		46	60	
9970420601	C 42-52-60		52		
9970450300	C 45-50-30	45	50	30	
9970450301	C 45-55-30		55		
9970450400	C 45-50-40		50	40	
9970450401	C 45-55-40		55		
9970450500	C 45-50-50		50	50	
9970450501	C 45-55-50		55		
9970450600	C 45-50-60		50	60	
9970450601	C 45-55-60		55		
9970480400	C 48-53-40	48	53	40	
9970480401	C 48-58-40		58		
9970480500	C 48-53-50		53	50	
9970480501	C 48-58-50		58		

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Properties:

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Self-lubricating	No
Max. surface pressure P	80 N/mm ²
Max. sliding speed v	20 m/min
Operating temperature	-50°C / +200°C (max. 300°C)
Friction coefficient	0,16

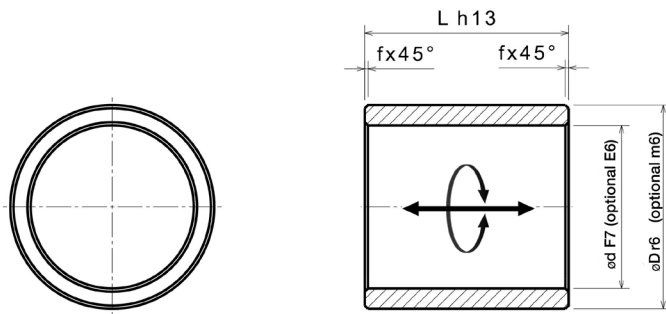
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9970480601	C 48-58-60		58		
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9970500401	C 50-60-40		60		
9970500500	C 50-55-50		55	50	
9970500501	C 50-60-50		60		
9970500600	C 50-55-60		55	60	
9970500601	C 50-60-60		60		
9970500602	C 50-58-60		58		
9970550400	C 55-60-40	55	60	40	
9970550401	C 55-65-40		65		
9970550500	C 55-60-50		60	50	
9970550501	C 55-65-50		65		
9970550600	C 55-60-60		60	60	
9970550601	C 55-65-60		65		
9970550700	C 55-60-70		60	70	
9970550700	C 55-60-70		60		
9970550701	C 55-65-70		65		
9970600400	C 60-65-40	60	65	40	
9970600401	C 60-75-40		75		
9970600500	C 60-70-50		70	50	
9970600600	C 60-65-60		65	60	
9970600601	C 60-75-60		75		
9970600700	C 60-70-60		70		
9970600751	C 60-75-75		75	75	
9970600800	C 60-65-80		65	80	
9970600801	C 60-75-80		75		
9970650500	C 65-70-50	65	70	50	
9970650501	C 65-80-50		80		
9970650502	C 65-75-50		75		
9970650600	C 65-70-60		70	60	
9970650601	C 65-80-60		80		
9970650800	C 65-70-80		70	80	
9970650801	C 65-80-80		80		
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9970700901	C 70-85-90		85		
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9970750501	C 75-90-50		90		
9970750502	C 75-85-50		85		
9970750700	C 75-80-70		80	70	
9970750701	C 75-90-70		90		
9970750900	C 75-80-90		80	90	
9970750901	C 75-90-90		90		
9970800600	C 80-85-60	80	85	60	
9970800601	C 80-95-60		95		
9970800602	C 80-90-60		90		
9970800800	C 80-85-80		85	80	
9970800801	C 80-95-80		95		
9970800802	C 80-90-80		90		
9970801000	C 80-85-100		85	100	
9970801001	C 80-95-100		95		
9970850600	C 85-90-60		85	90	
9970850601	C 85-100-60	100			
9970850800	C 85-90-80	90		80	
9970850801	C 85-100-80	100			
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9970851001	C 85-100-100	100			
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99709006000	C 90-105-60		105		
9970900601	C 90-110-60		110		
9970900800	C 90-100-80		100	80	
9970900801	C 90-110-80		110		
9970901000	C 90-100-100		100	100	
9970901001	C 90-110-100		110		
9970901200	C 90-100-120		100	120	
9970901201	C 90-110-120		110		
9970950600	C 95-105-60	95	105	60	
9970950601	C 95-115-60		115		
9970950800	C 95-105-80		105	80	
9970950801	C 95-115-80		115		
9970950900	C 95-105-90		105	90	
9970951000	C 95-105-100		105	100	
9970951001	C 95-115-100		115		
9970951200	C 95-105-120		105	120	
9970951201	C 95-115-120		115		
9971000300	C 100-110-30	100	110	30	
9971000301	C 100-120-30		120		
9971000800	C 100-110-80		110	80	
9971000801	C 100-120-80		120		
9971001000	C 100-110-100		110	100	
9971001001	C 100-120-100		120		
9971001200	C 100-110-120		110	120	
9971001201	C 100-120-120		120		

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Properties:

Base material	Hard bronze
Self-lubricating	No
Max. surface pressure P	80 N/mm ²
Max. sliding speed v	20 m/min
Operating temperature	-50°C / +200°C (max. 300°C)
Friction coefficient	0,16

Article no.:	Article name:	Inner Ø d:	Outer Ø D:	Length L:	f:
9971100800	C 110-125-80	110	125	80	1
9971100801	C 110-130-80		130		
9971101000	C 110-125-100		125	100	
9971101001	C 110-130-100		130		
9971101200	C 110-125-120		125	120	
9971101201	C 110-130-120		130		
9971201000	C 120-135-100	120	135	100	
9971201001	C 120-140-100		140		
9971201200	C 120-135-120		135	120	
9971201201	C 120-140-120		140		
9971201500	C 120-135-150		135	150	
9971201501	C 120-140-150		140		
9971301000	C 130-145-100	130	145	100	
9971301001	C 130-150-100		150		
9971301200	C 130-145-120		145	120	
9971301201	C 130-150-120		150		
9971301500	C 130-145-150		145	150	
9971301501	C 130-150-150		150		
9971401000	C 140-155-100	140	155	100	2
9971401001	C 140-160-100		160		
9971401500	C 140-155-150		155	150	
9971401501	C 140-160-150		160		
9971401800	C 140-155-180		155	180	
9971401801	C 140-160-180		160		
9971501200	C 150-165-120	150	165	120	
9971501201	C 150-170-120		170		
9971501500	C 150-165-150		165	150	
9971501501	C 150-170-150		170		
9971501800	C 150-165-180		165	180	
9971501801	C 150-170-180		170		
9971601200	C 160-180-120	160	180	120	
9971601201	C 160-185-120		185		
9971601500	C 160-180-150		180	150	
9971601501	C 160-185-150		185		
9971601800	C 160-180-180		180	180	
9971601801	C 160-185-180		185		
9971701900	C 170-190-120	170	190	120	
9971801500	C 180-200-150	180	200	150	

Article no.:	Article name:	Inner Ø d:	Outer Ø D:	Length L:	f:
9971801501	C 180-210-150	180	210	150	2
9971801800	C 180-200-180		200	180	2
9971801801	C 180-210-180		210		2
9971802500	C 180-200-250		200	250	2
9971802501	C 180-210-250		210		2
9972001800	C 200-220-180	200	220	180	2
9972001801	C 200-230-180		230		2
9972002000	C 200-220-200		220	200	2
9972002001	C 200-230-200		230		2
9972002500	C 200-220-250		220	250	2
9972002501	C 200-230-250		230		2

Finishing

SANKYO OILLESS - bronze is easy to machine. Basically, there is no great difference between the machining of our products and normal steel. No special tools are required but be sure to use sharp and preferably new tools.

Milling

The use of cooling lubricants is recommended by using HSS or carbide tools. First pre-roughing to approx. distance of 0,3mm to nominal. In general: Milling / rough machining with little effort, slow forward feed, at high rotation-speeds and small depths of cut.

Drilling

The use of cooling lubricants is recommended by using HSS or carbide tools. Drill as with normal steel and if it's necessary increase the forward feed with same rotation-speed. Flat plates have to be drilled from backside and countersink on the sliding surface if it's necessary to drill through a solid-lubricant depot.

Grinding

The use of cooling lubricants is recommended by working with grinding wheels.

Grain size	46 - 60
Material	Silicon carbid
Rotation speed	1500 U/min
Working speed	30 m/min

Reaming

The use of cooling lubricants is recommended by using HSS reamers. Proceed as with normal steel and if it's necessary increase the forward feed with same rotation-speed.

Turning

Example (up to 100mm)	External turning	Internal turning
Rotation speed	approx. 1000 U/min	approx. 500 U/min
Feed rate	ca. 0,1 m/min	approx. 0,07 m/min
Tool	Carbide	Carbide

Custom-made products

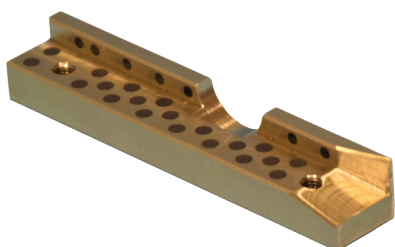
Beside to the big variety of standard products, we offer custom-made rotation- and milled-parts. We are producing these products out of steel or with our special Sankyo bronze with solid lubrication. Also, it is possible to get standard products with modifications. We only need your drawing or 3D-model with the assembly situation, like load cases and operating conditions, to prove the feasibility.

Our expert team will gladly advise you, also at your side. You can contact the department „Engineering“ by:

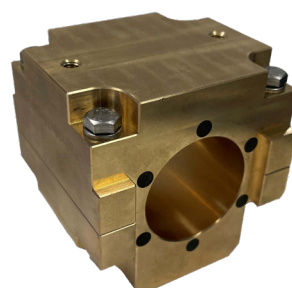
Tel.: [+49 2103 584 800](tel:+492103584800)

E-Mail: technik@de.sankyo-oilless.com

Examples



Custom-made products



Prefabricated dividable bush set to add a thread at the customer's site



Special design of a special spindle nut



Large bushings for all applications

C-Bush - Bronze bearings acc. to DIN ISO 4379



General and technical information

Material data

Material		SO#50SP2*	SO#50SP5	SO#50SP7	SO#50SP8	SO#50SP13	SO#50B
		<i>Hard brass with graphite</i>	<i>Alu-bronze with graphite</i>	<i>Alu-bronze with graphite</i>	<i>Hard brass with graphite</i>	<i>Bronze with graphite</i>	<i>Red brass with graphite</i>
Self-lubricating		Yes	Yes	Yes	Yes	Yes	Yes
Lubricant		Graphite	Graphite	Graphite	Graphite	Graphite	Graphite
Max. surface pressure [N/mm ²]		100	100	120	130	120	50
Max. sliding speed [m/min]		30	10	10	15	10	50
Max. P*v-Wert [N/mm ² * m/min]		200	150	200	200	200	100
Temperature [°C]	<i>Standard Max</i>	-50 / +200 +300	-50 / +200 +300	-50 / +200 +300	-50 / +200 +300	-50 / +200 +300	-50 / +200 +400
Friction coefficient**	<i>initial long term</i>	0,15 0,07	0,15 0,07	0,15 0,07	0,15 0,07	0,2 0,15	0,15 0,07
Brinell hardness [HB]		>210	>210	>260	220 ~ 260	>280	>60
Further information							
Elongation [%]		>12	>18	>2	>3	>0,5	>15
Density [kg/dm ³]		7,9	7,7	7,8	7,8	7,2	8,7
Tensile strength [N/mm ²]		>755	>686	>833	>700	>550	>195
Yield strength [N/mm ²]		>412	>372	>509	-	-	>105
E-Module [N/mm ²]		97000	108000	123600	108000	145000	96000
Thermal expansion [10 ⁻⁵ * grd.-1]		1,9	1,6	1,6	1,9	1,71	1,8

*: Material used according to SANKYO OILLESS standards

**: against steel, hardened and grinded

Tin bronze	Sinter-bronze	SO#50PB	CuSn8	SO#50S45C	SO#50F	Polyacetal
		<i>Ton bronze</i>	<i>acc. to DIN 17662</i>	<i>Steel with graphite</i>	<i>Grey cast iron with graphite</i>	<i>Plastic</i>
No	Yes	No	No	Yes	Yes	No
-	Oil	-	-	Graphite	Graphite	Graphite
80	50	80	40	30	5	25 35 (with oil)
20	300	50	120	10	10	50 200 (with oil)
-	96	100	-	80	50	100 200 (with oil)
-50 / +200 +300	-12 / +90	-50 / +200 +300	-200 / +200	-50 / +150	-50 / +150	-50 / +80
0,16	0,09	0,15 0,07	-	0,01	-	-
>80	>25	>80	-	>375	160 ~ 220	115 (HRR)
n						
>6	-	>5	-	19	-	73
8,7	6,5 ~ 7,0	8,2	8,8	7,8	7,1 ~ 7,3	1,4
>295	-	>295	-	>690	>250	69
>161	-	>161	-	-	-	-
108000	-	108000	115000	-	-	-
1,8	-	1,8	-	1,1	1	7,7

