



KOCU-M

Inclined ejector units with angeled sliding surface

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!

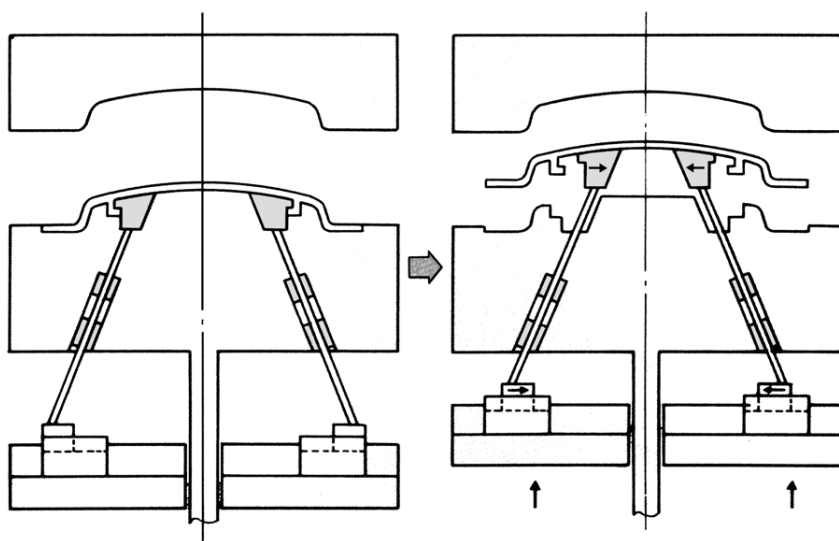
KOCU-Ejector core unit

Maintenance-free inclined core units for easy removing of moldings with undercuts.

All inclined ejector core units are self-lubricating till 300°C. The shaft is fixed with screws and dowel pins or clamping between ejector plates.

					
Model	KOCU-S	KOCU-K	KOCU-KE	KOCU-F	KOCU-M
Diameter	Ø8 - Ø45mm	Ø12 - Ø45mm	Ø16 - Ø30mm	Ø8 - Ø40mm	Ø16 - Ø40mm
Working angle	max. 30°	max. 20°	max. 30°	max. 30°	max. 30°
Feature	Variant with double width	with twin wall pin for directing cooling of the slide core	cooling water connections inside the mould	inclined slideway (0° - 20°)	inclined slideway (0° - 20°) with adjustment screw

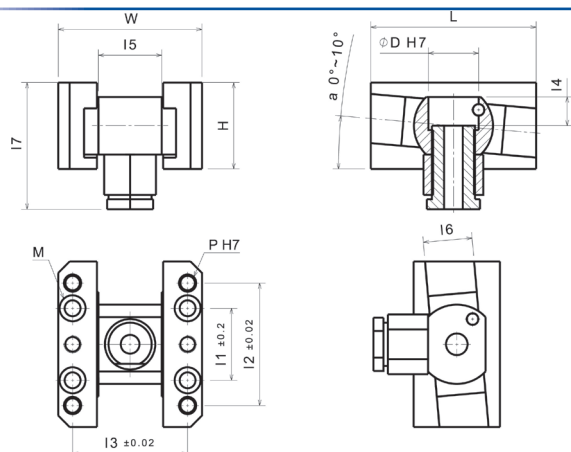
Application example



KOCU-M - Inclined ejector units with angled surface



Article informationen



Properties:

Base material	Special brass (SO#50SP2)
Self-lubricating	Yes
Lubricant	Graphite

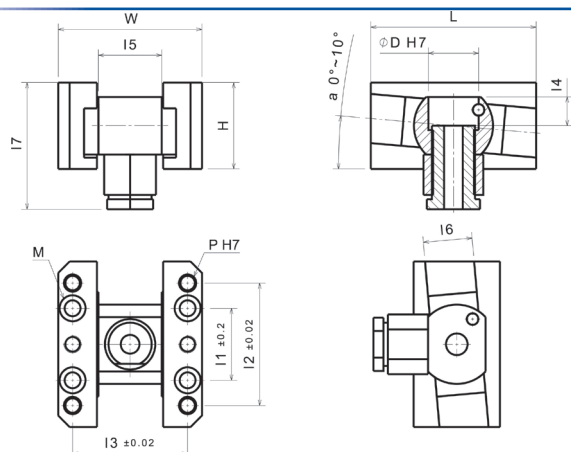
Article no.:	Article name:	Bolt Ø D:	Angle a:	Width W:	Height H:	Length L:	I1:	I2:	I3:	I4:	I5:	I6:	I7:	M (ISO 4762):	P (ISO 8734):
260000168	KOCU-M 16-0	16	0	64	40	70	25	50	50	15	21	24	42	4xM8	6
260000169	KOCU-M 16-1		1												
260000170	KOCU-M 16-2		2												
260000171	KOCU-M 16-3		3												
260000172	KOCU-M 16-4		4												
260000173	KOCU-M 16-5		5												
260000174	KOCU-M 16-6		6												
260000175	KOCU-M 16-7		7												
260000176	KOCU-M 16-8		8												
260000177	KOCU-M 16-9		9												
260000167	KOCU-M 16-10		10		48								56		
260000178	KOCU-M 16-11		11												
260000179	KOCU-M 16-12		12												
260000180	KOCU-M 16-13		13												
260000181	KOCU-M 16-14		14												
260000182	KOCU-M 16-15		15												
260000183	KOCU-M 16-16		16												
260000184	KOCU-M 16-17		17		50										
260000185	KOCU-M 16-18		18												
260000186	KOCU-M 16-19		19												
260000187	KOCU-M 16-20		20												

Article no.:	Article name:	Bolt Ø D:	Angle a:	Width W:	Height H:	Length L:	I1:	I2:	I3:	I4:	I5:	I6:	I7:	M (ISO 4762):	P (ISO 8734):
260000208	KOCU-M 20-0	20	0	76	46	75	30	55	60	18	28	24	45	4xM10	8
260000209	KOCU-M 20-1		1												
260000210	KOCU-M 20-2		2												
260000211	KOCU-M 20-3		3												
260000212	KOCU-M 20-4		4												
260000213	KOCU-M 20-5		5												
260000214	KOCU-M 20-6		6												
260000215	KOCU-M 20-7		7												
260000216	KOCU-M 20-8		8												
260000217	KOCU-M 20-9		9												
260000207	KOCU-M 20-10		10												
260000218	KOCU-M 20-11		11		50								60		
260000219	KOCU-M 20-12		12												
260000220	KOCU-M 20-13		13												
260000221	KOCU-M 20-14		14												
260000222	KOCU-M 20-15		15												
260000223	KOCU-M 20-16		16		54										
260000224	KOCU-M 20-17		17												
260000225	KOCU-M 20-18		18												
260000226	KOCU-M 20-19		19												
260000227	KOCU-M 20-20		20												
260000258	KOCU-M 25-0	25	0	81	48	85	40	65	65	20,5	33	26			
260000259	KOCU-M 25-1		1												
260000260	KOCU-M 25-2		2												
260000261	KOCU-M 25-3		3												
260000262	KOCU-M 25-4		4												
260000263	KOCU-M 25-5		5												
260000264	KOCU-M 25-6		6												
260000265	KOCU-M 25-7		7												
260000266	KOCU-M 25-8		8												
260000267	KOCU-M 25-9		9												
260000257	KOCU-M 25-10		10												
260000268	KOCU-M 25-11		11		54								64		
260000269	KOCU-M 25-12		12												
260000270	KOCU-M 25-13		13												
260000271	KOCU-M 25-14		14												
260000272	KOCU-M 25-15		15												
260000273	KOCU-M 25-16		16		59										
260000274	KOCU-M 25-17		17												
260000275	KOCU-M 25-18		18												
260000276	KOCU-M 25-19		19												
260000277	KOCU-M 25-20		20												

KOCU-M - Inclined ejector units with angled surface



Article informationen



Properties:

Base material	Special brass (SO#50SP2)
Self-lubricating	Yes
Lubricant	Graphite

Article no.:	Article name:	Bolt Ø D:	Angle a:	Width W:	Height H:	Length L:	I1:	I2:	I3:	I4:	I5:	I6:	I7:	M (ISO 4762):	P (ISO 8734):	
260000308	KOCU-M 30-0	30	0	88	54	100	50	80	72	22	38	30	55	4xM10	8	
260000309	KOCU-M 30-1		1													64
260000310	KOCU-M 30-2		2													
260000311	KOCU-M 30-3		3													
260000312	KOCU-M 30-4		4													
260000313	KOCU-M 30-5		5													
260000314	KOCU-M 30-6		6													
260000315	KOCU-M 30-7		7													
260000316	KOCU-M 30-8		8													
260000317	KOCU-M 30-9		9													
260000307	KOCU-M 30-10		10		64											
260000318	KOCU-M 30-11		11										64			
260000319	KOCU-M 30-12		12													
260000320	KOCU-M 30-13		13													
260000321	KOCU-M 30-14		14													
260000322	KOCU-M 30-15		15													
260000323	KOCU-M 30-16		16													
260000324	KOCU-M 30-17		17													
260000325	KOCU-M 30-18		18													74
260000326	KOCU-M 30-19		19													
260000327	KOCU-M 30-20		20													

Article no.:	Article name:	Bolt Ø D:	Angle a:	Width W:	Height H:	Length L:	I1:	I2:	I3:	I4:	I5:	I6:	I7:	M (ISO 4762):	P (ISO 8734):
260000358	KOCU-M 35-0	35	0	100	60	115	50	85	80	23	44	34	58	4xM12	10
260000359	KOCU-M 35-1		1												
260000360	KOCU-M 35-2		2												
260000361	KOCU-M 35-3		3												
260000362	KOCU-M 35-4		4												
260000363	KOCU-M 35-5		5												
260000364	KOCU-M 35-6		6												
260000365	KOCU-M 35-7		7												
260000366	KOCU-M 35-8		8												
260000367	KOCU-M 35-9		9												
260000357	KOCU-M 35-10		10		75								68		
260000368	KOCU-M 35-11		11												
260000369	KOCU-M 35-12		12												
260000370	KOCU-M 35-13		13												
260000371	KOCU-M 35-14		14												
260000372	KOCU-M 35-15		15		85										
260000373	KOCU-M 35-16		16												
260000374	KOCU-M 35-17		17												
260000375	KOCU-M 35-18		18												
260000376	KOCU-M 35-19		19												
260000377	KOCU-M 35-20	20													
260000408	KOCU-M 40-0	40	0	108	65	125	50	85	88	24,5	50	38	60,5		
260000409	KOCU-M 40-1		1												
260000410	KOCU-M 40-2		2												
260000411	KOCU-M 40-3		3												
260000412	KOCU-M 40-4		4												
260000413	KOCU-M 40-5		5												
260000414	KOCU-M 40-6		6												
260000415	KOCU-M 40-7		7												
260000416	KOCU-M 40-8		8												
260000417	KOCU-M 40-9		9												
260000407	KOCU-M 40-10		10		80								70,5		
260000418	KOCU-M 40-11		11												
260000419	KOCU-M 40-12		12												
260000420	KOCU-M 40-13		13												
260000421	KOCU-M 40-14		14												
260000422	KOCU-M 40-15		15		92										
260000423	KOCU-M 40-16		16												
260000424	KOCU-M 40-17		17												
260000425	KOCU-M 40-18		18												
260000426	KOCU-M 40-19		19												
260000427	KOCU-M 40-20	20													

KOCU-M - Inclined ejector units with angled surface



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]	Standard Max	-50 / +150 +300	-50 / +150 +300	-50 / +150 +300	-50 / +150 +300	-50 / +150 +300	-50 / +150 +400
Friction coefficient**	initial long term	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	-12 / +90	-50 / +150 +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

KOCU-M - Inclined ejector units with angled surface



General and technical information

Chemical resistance

Water

Material	SO#50SP2 SO#50SP8	SO#50B	SO#50SP5 SO#50SP7 SO#50SP13 SO#50AIB	SO#50F	SO#50S45C	Polyacetal
	<i>High strength brass casting</i>	<i>Red brass</i>	<i>Alu-bronze</i>	<i>Grey cast</i>	<i>Steel</i>	<i>Red brass mit FSS</i>
Fresh Water	○	◎	◎	X	◎	○
Sea Water	△	○	○	X	◎	○

Acid

Material	SO#50SP2 SO#50SP8	SO#50B	SO#50SP5 SO#50SP7 SO#50SP13 SO#50AIB	SO#50F	SO#50S45C	Polyacetal
	<i>High strength brass casting</i>	<i>Red brass</i>	<i>Alu-bronze</i>	<i>Grey cast</i>	<i>Steel</i>	
Alcohol	◎	◎	◎	-	◎	-
Formic acid	-	-	-	-	-	X
Chlorine (dry)	◎	◎	◎	-	◎	-
Chlorine (wet)	X	△	△	-	-	-
Chromic acid	X	X	X	X	-	-
Acetic acid	X	X	◎ (20°C) △ (118°C)	X	◎	○
Hydrochloric acid	-	○	○	X	-	X
Concentrated hydrochloric acid	X	X	△	X	X	-
Lactic acid	X	X	X	X	○	X
Phenol	-	-	-	-	-	X
Phosphoric acid	X	○	○	X	△	X
Nitric acid	X	X	X	X	○	-
Sulfuric acid (40-80%)	X	△	△	X	△	X* △**
Sulfuric acid (80-95%)	X	○	○	X	△	X* △**
Diluted hydrochloric acid	△	-	-	-	-	X
Hydrogen peroxide	△	○	○	X	○	-

*: High concentration

** : Low concentration

Explanation		
◎: Preferred	○: no problem in use	△: Affected
X: Not allowed for use	-: unknown	

Chemical resistance

Alkali

Material	SO#50SP2 SO#50SP8	SO#50B	SO#50SP5 SO#50SP7 SO#50SP13 SO#50AIB	SO#50F	SO#50S45C	Polyacetal
	<i>High strength brass casting</i>	<i>Red brass</i>	<i>Alu-bronze</i>	<i>Grey cast</i>	<i>Steel</i>	
Ammonia (dry)	◎	◎	◎	O	◎ (20°C) X (Gas)	X
Ammonia (wet)	X	X	X	O	◎ (20°C) X (Gas)	X
Ammonia (liquid)	X	X	X	-	◎	X
Iron chloride	X	O	O	X	△	-
Potassium hydroxide	O	O	O	-	-	-
Calcium chloride	X	O	O	△	O	-
Calcium hydroxide	O	◎	◎	O	-	O
Sodium hydroxide	O	O	O	-	◎	-
Sulfur (dry)	◎	O	O	△	-	O
Sulfur (wet)	X	X	X	△	-	O

Solvent

Material	SO#50SP2 SO#50SP8	SO#50B	SO#50SP5 SO#50SP7 SO#50SP13 SO#50AIB	SO#50F	SO#50S45C	Polyacetal
	<i>High strength brass casting</i>	<i>Red brass</i>	<i>Alu-bronze</i>	<i>Grey cast</i>	<i>Steel</i>	
Acetone	◎	◎	◎	O	◎	△
Benzene	-	-	-	-	-	△
Ethylene glycol	O	◎	◎	△	-	-
Carbon tetrachloride (dry)	◎	◎	◎	X	◎	-
Carbon tetrachloride (wet)	X	O	O	X	-	-
Methyl alcohol	◎	◎	◎	O	O	△
Toluene	◎	◎	◎	O	-	-

Explanation		
◎: Preferred	O: no problem in use	△: Affected
X: Not allowed for use	-: unknown	

KOCU-M - Inclined ejector units with angled surface



General and technical information

Chemical resistance

Grease and others

Material	SO#50SP2 SO#50SP8	SO#50B	SO#50SP5 SO#50SP7 SO#50SP13 SO#50AIB	SO#50F	SO#50S45C	Polyacetal
	<i>High strength brass casting</i>	<i>Red brass</i>	<i>Alu-bronze</i>	<i>Grey cast</i>	<i>Steel</i>	
Gasoline	◎	◎	◎	○	◎	○
Diesel	-	-	-	-	-	○
Crude oil	△	○	○	○	○	-
Lacquer	◎	◎	◎	△	-	-
Kerosene	◎	◎	◎	○	◎	-
Vegetable oil	◎	◎	◎	△	-	-
Lubricants	◎	◎	◎	◎	◎	○
Heavy oil	○	◎	◎	○	○	-
Animal oil	◎	◎	◎	-	-	-

Explanation		
◎: Preferred	○: no problem in use	△: Affected
X: Not allowed for use	-: unknown	

Maintenance and lubrication

Before inserting the sliding elements, clear the mounting surfaces of the housing. An oil film on the back surface will make it easier to mount the bearing. Before mounting the axle, lubricate the sliding surfaces with a light greasy film to avoid wear of the inlet and to activate the solid lubricant.

The following greases should be preferred:

ELKALUB GLS 364	ELKALUB	120°C	For the food industry
ELKALUB GLS 595/N2	ELKALUB	300°C	For the food industry
ELKALUB GLS 993 H1	ELKALUB	150°C	For the food industry
GLEITMO 805	FUCHS	110°C	
ALTEMP QNB 50	KLÜBER	150°C	
Klüberalfa DH 3-350	KLÜBER	230°C	
Klüberfood NH1 CH 2-150	KLÜBER	250°C	For the food & pharmaceutical industry
Klübertemp GR AR 555	KLÜBER	250°C	
PARALIQ P 68	KLÜBER	100°C	For the food & pharmaceutical industry
Gadus S2 V100 2	SHELL	130°C	
Gadus S3 V100 2	SHELL	160°C	
Multi-purpose grease Nr.12511	PRESSOL	80°C	

The greases have to be free of Additives like MoS₂ (molybdenum disulfide) and EP.

The work to be carried out is usually limited to an inspection of the wear in the period from ½ to 2 years, depending on the duration of use and load. After each disassembly, a single re-greasing should be carried out, but the sintered sliding film of solid lubricant should not be removed. Continuous introduction of lubricant is not necessary, as the parts are maintenance-free under consideration of the application criteria for sliding elements made of bronze with solid lubricant.

Transport and storage

The parts are to be stored dust-free and dry, mechanical damages during transport and storage are to be avoided. Contact with organic and inorganic solvents must also be prevented, as this may destroy the solid lubricant.

