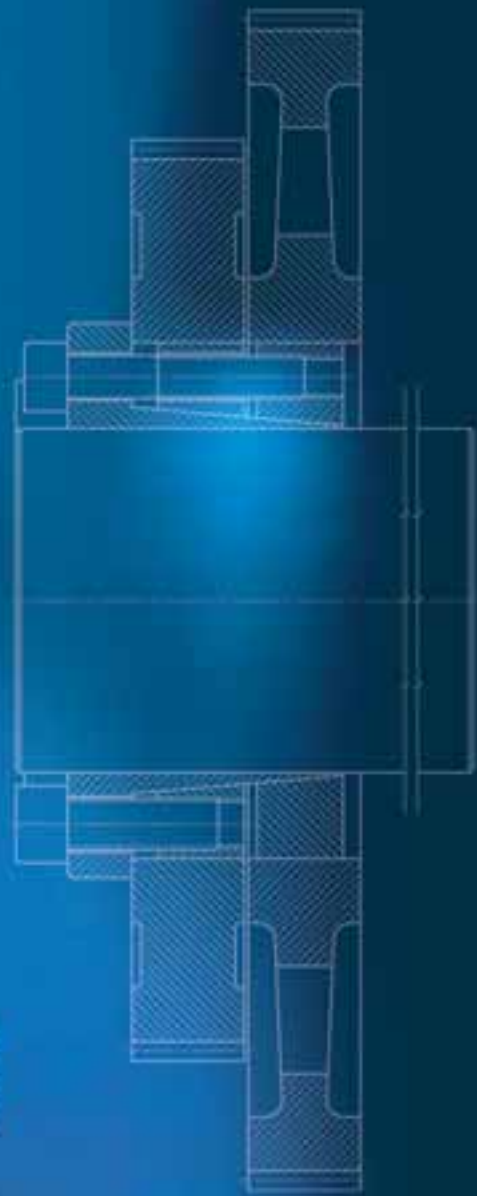


LOCKING ASSEMBLIES



we connect **e**motions

Shrink disc ■ Mini Series ■ Rigid Couplings



www.mav.it



our company

We are an Italian company world renowned for our creativity and ethics. Established in 1989 we have rapidly built a reputation for professional, reliable and comprehensive service and our extensive product range. We are located in Bosentino in Northern Italy, at the foot of the Dolomites, one of the most beautiful areas of the Alps.

our mission

Just as our products connect mechanical components in motion technology our purpose is to unite our partners with their goals, feelings, wishes - emotions. We aim to raise the standards in our industry in conjunction with customers and suppliers who share our goals of quality, safety and environmental conservation.

our vision

We see the market as a huge mosaic of which manufacturers, suppliers and customers are all part. Together we form a global partnership sharing common goals for our mutual benefit. In this mosaic we have a central position and wish to be a key point of reference.

Sandro Zamboni (MAV President)

COMPANY
WITH QUALITY SYSTEM
CERTIFIED BY DNV
=ISO 9001/2000=

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This catalogue contains complete information for the MAV Locking Assemblies Standard Series.

The following pages will help you to find the perfect solution for your application.

Should you require assistance with an application, please feel free to contact MAV technical support.

Our engineers will be pleased to provide any information you might need.

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Shaft-Hub Connections

Traditional Methods

Fig.1: shaft failure due to fatigue crack
(heat treated steel C45)



Keyway and splined locking systems show important disadvantages, in particular under overload and frequent torque reversal conditions. Connected parts undergo micro movements which cause them damage. The notch of keyway seat is a stress concentrator which reduces the fatigue strength. The figures show some fatigue failures fractographs of notched shafts (courtesy of ASM International, Metals Handbook, vol 9).

Keyways and splines are eliminated by forced fit systems (pressing, heating), where high radial pressures are generated due to shaft - hub interference. A backlash free coupling is obtained. In addition, sections of shafts and bearings can be reduced and, as a consequence, also costs. But this kind of connection shows difficulties during the mounting-dismantling steps.



Fig.2: fatigue problem caused by torsion



Fig.3: typical fatigue fracture

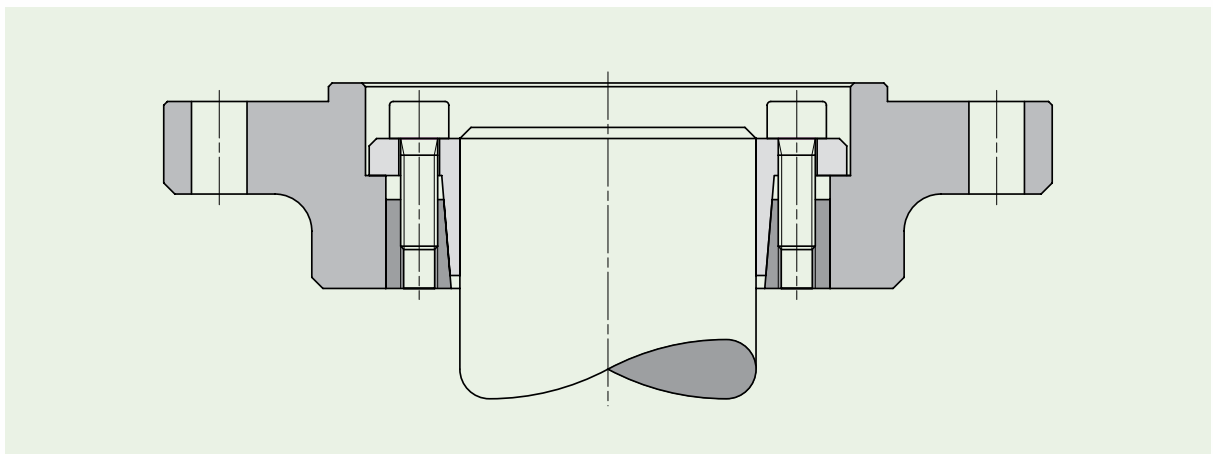
Shaft-Hub Connections

The MAV System

The MAV Locking Devices meet both the advantages of forced fit systems and simplified installation-removal. It is based on the wedge principle: the axial load of the screws generates through the tapers a high radial force that locks the parts by friction.

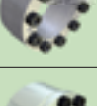
The main features of MAV Locking Devices are:

- shaft - locking device - hub tolerances are sufficient for easy mounting and correct positioning
- high manufacturing precision permits close geometrical tolerances, leading to a well balanced coupling, also for high speed conditions
- high pressures let high torque to be transmitted, also in addition with bending moment; fretting corrosion is eliminated
- absence of notches results in enhanced static and dynamical strength, leading to lighter and more cost-effective designs
- the large variety and the possibility of designing and manufacturing customized units let to find the best solution for any kind of specifications



MAV Locking Assemblies

main characteristics

MAV SERIES	torque capacity	bending capacity	hub contact pressure	self-centering	self-locking	fixed axial hub position during tightening
MAV1061 	medium	medium	medium	yes	yes	yes
MAV1062 	medium	medium	medium	yes	yes	no
MAV2005 	medium	low	high	no	no	yes
MAV3003 	low	-	low	no	no	no
MAV4061 	high	high	medium	yes	yes	no
MAV1008 	high	high	medium	yes	yes	no
MAV5061 	medium	medium	low	yes	yes	yes
MAV6901 	medium	medium	medium	yes	yes	no
MAV6902 	medium	medium	low	yes	yes	yes
MAV6002 	high	high	medium	yes	yes	yes
MAV6903 	medium	medium	low	yes	yes	yes
MAV1261 	medium	-	low	yes	yes	yes

MAV Locking Assemblies

The following series are produced by MAV, but are not included in this catalogue.

Furthermore, MAV is specialized in the design and manufacturing of special and customized solutions, even in small batches.

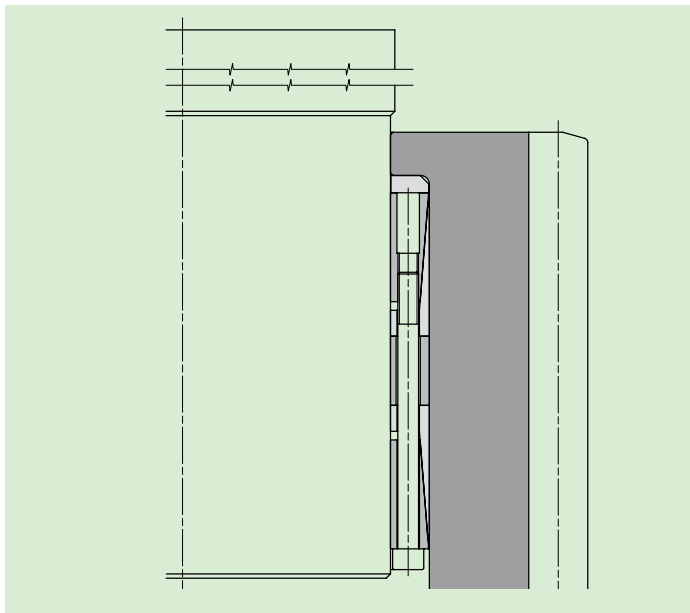
MAV SERIES		torque capacity	bending capacity	hub contact pressure	self-centering	self-locking	fixed axial hub position during tightening
MAV2500		medium	medium	medium	yes	yes	yes
MAV4061L		high	high	medium	yes	yes	no
MAV3505		low	-	low	no	no	no
MAV3705		low	-	low	yes	yes	no
MAV4005		low	-	medium	no	no	yes
MAV3061-2-3		medium	-	medium	yes	yes	yes
MAV4071		medium	medium	medium	yes	yes	yes
MAV1800		medium	medium	low	yes	yes	yes
MAV1071		medium	medium	medium	yes	yes	yes
MAV1072		medium	medium	medium	yes	yes	no
MAV7107		low	-	low	yes	yes	yes / no

For technical features, please visit our website www.mav.it or call +39 0461 845151 or fax +39 0461 845150

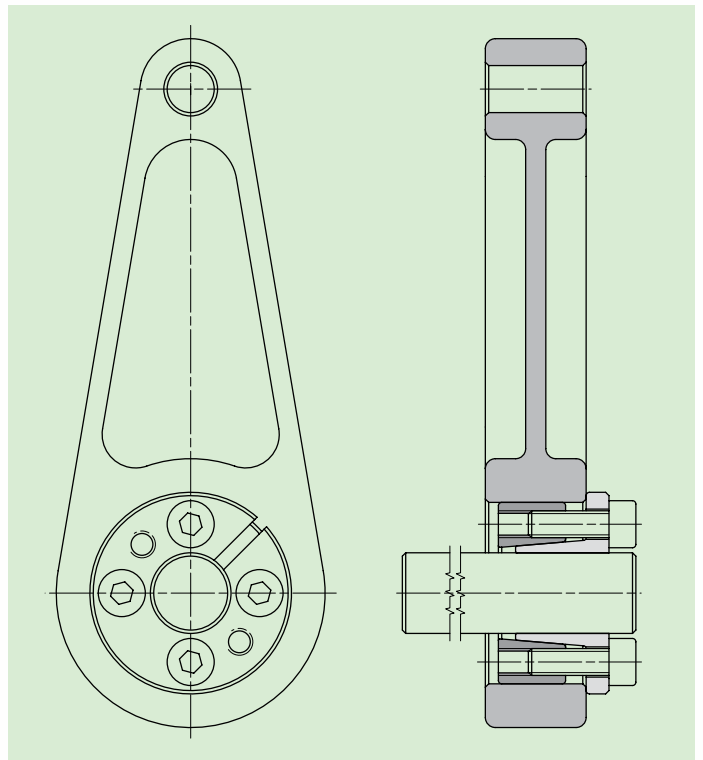


Applications

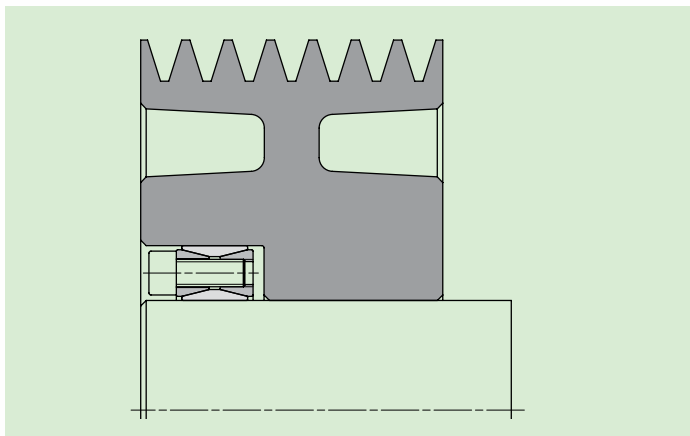




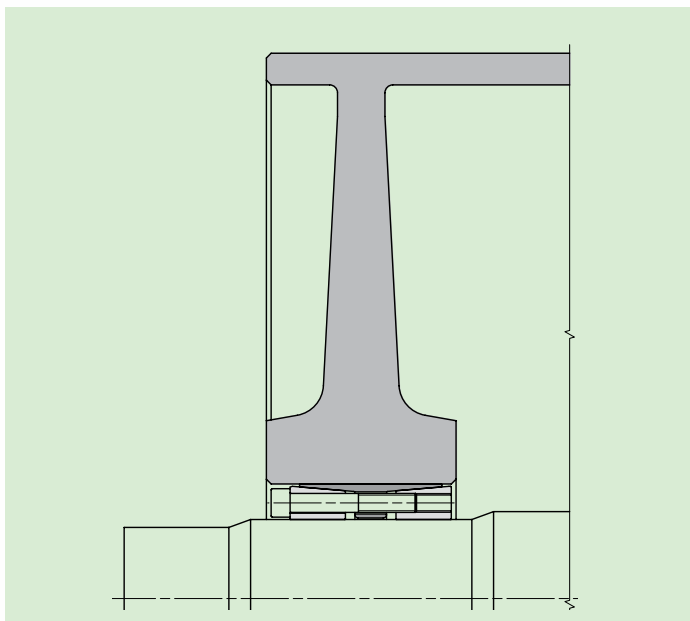
Steel mill gear connected with special MAV 7061



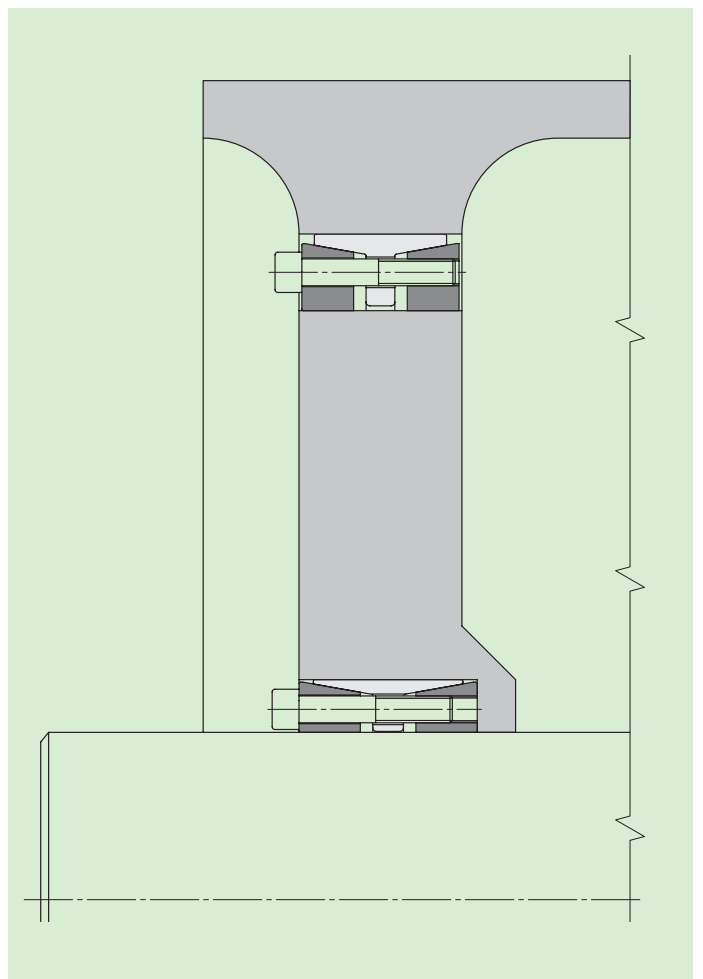
Lever arm connected with MAV 1061



Pulley connected with MAV 2005



Conveyor pulley connected with MAV 4061



Clay mill hub connected with two MAV 1008

Selection

MAV frictional locking assemblies provide a keyless, zero backlash connection between shaft and hub, like gears, pulleys, cams, levers, rotors and many others.

MAV units are well suited to transmit torque, thrust loads, bending moments and radial loads, separately or simultaneously. Performances listed in this catalogue are calculated without safety factor. The user must consider the specific safety factor, which depends on each application.

The following criteria are used for selection of the right unit. The selection should be also based on other specific requirements, like dimensional restrictions, precision of the connection, fixed axial hub position during tightening and others (see characteristics pg. 6 and 7).

Torque

Where **T** is the peak torque, select a unit where **Mt** > **T**, where **Mt** = torque capacity.

Combined loads

When the following loads apply:

T = peak torque

B = peak bending moment

F = peak thrust load

Calculate a resultant torque, according to:

$$M_{tc} = \sqrt{T^2 + \left(F \cdot \frac{d}{2}\right)^2 + (2 \cdot B)^2}$$

where **d** = shaft diameter

The selected unit has to meet both requirements:

Mt > **Mtc**

Mb > **B**, where **Mb** = bending capacity

Mb depends on each application.

Consult our Technical Dept. for specific information.

Radial load

Radial loads are usually associated with pin or axle connections. They apply perpendicular to the centerline of the shaft.

The radial load generates a contact pressure **Prad**, according to:

$$Prad = \frac{Frad}{d \cdot Ls}$$

where

d = shaft diameter

Ls = shaft – locking assembly contact length

Prad is added and subtracted to the contact pressure **Ps** provided by locking assembly on the shaft. It must be:

$$(Ps + Prad) < Rp_{0.2}$$

where $Rp_{0.2}$ = yield point of shaft material

$$(Ps - Prad) > 0$$

Fitting several units arranged in series

In applications where two or more units are installed in series, the total torque capacity **Mt_{tot}** is not linear function of the number of units **n**. It is calculated as follows:

$$Mt_{tot} = n \cdot Mt \cdot f_{RS}$$

MAV series	No. of units (n)		
	2	3	4
2005 – 1062 – 6902	0.80	0.75	0.70
4061	0.85	-	-
1008	0.80	0.75	-
3003	0.77	0.62	0.50

where **f_{RS}** = reduction factor, according to table 1.

Table 1

Shaft and hub verification

Locking assemblies exert high contact pressures on both shaft (**Ps**) and hub (**Ph**). Size and material of shaft and hub must be selected in order to resist the stress generated by the locking assembly and by the applied loads.

The following criteria are valid by considering only the contact pressures exerted by the locking assembly.

The verification of connected components is based on thick walled cylinder theory.

In case of solid shaft, the material yield point must be greater than shaft contact pressure **Ps**. In case of hollow shaft, the resistance must be calculated by considering the shaft as a thick walled cylinder, stressed by external pressure **Ps**.

Hub verification is based on the maximum tangential stress, applied to hub bore. The minimum hub outer diameter **Dem** is calculated as follows:

$$Dem = D \cdot \sqrt{\frac{Rp_{0.2} + P_h \cdot C}{Rp_{0.2} - P_h \cdot C}}$$

where

D = locking assembly outer diameter (hub bore diameter)

Rp_{0.2} = yield point of hub material

C = stress reduction factor (see fig. 1)

For a quick calculation, use table 2 which provides the ratio **Dem/D**.

Dem / D		Hub material yield point Rp _{0.2} [MPa]																			
Ph	C	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	
	1,0	2,45	2,08	1,87	1,73	1,63	1,56	1,50	1,45	1,41	1,38	1,35	1,33	1,31	1,29	1,27	1,26	1,25	1,24	1,22	
100	0,8	1,91	1,73	1,61	1,53	1,46	1,41	1,37	1,34	1,31	1,29	1,27	1,25	1,24	1,22	1,21	1,20	1,19	1,18	1,18	
	0,6	1,58	1,48	1,41	1,36	1,32	1,29	1,26	1,24	1,22	1,21	1,20	1,18	1,17	1,16	1,15	1,15	1,14	1,13	1,13	
	1,0	2,89	2,32	2,04	1,86	1,73	1,64	1,57	1,51	1,47	1,43	1,40	1,37	1,35	1,33	1,31	1,29	1,28	1,26	1,25	
110	0,8	2,09	1,86	1,71	1,60	1,53	1,47	1,42	1,38	1,35	1,33	1,30	1,28	1,27	1,25	1,24	1,22	1,21	1,20	1,19	
	0,6	1,67	1,55	1,47	1,41	1,36	1,33	1,30	1,27	1,25	1,23	1,22	1,20	1,19	1,18	1,17	1,16	1,16	1,15	1,14	
	1,0	3,61	2,65	2,24	2,00	1,84	1,73	1,65	1,58	1,53	1,48	1,45	1,41	1,39	1,36	1,34	1,32	1,31	1,29	1,28	
120	0,8	2,32	2,00	1,81	1,69	1,60	1,53	1,47	1,43	1,39	1,36	1,34	1,31	1,29	1,28	1,26	1,25	1,24	1,22	1,21	
	0,6	1,77	1,62	1,53	1,46	1,40	1,36	1,33	1,30	1,28	1,26	1,24	1,22	1,21	1,20	1,19	1,18	1,17	1,16	1,16	
	1,0	5,20	3,11	2,49	2,17	1,97	1,83	1,73	1,65	1,59	1,54	1,50	1,46	1,43	1,40	1,38	1,36	1,34	1,32	1,30	
130	0,8	2,60	2,17	1,93	1,78	1,67	1,59	1,53	1,48	1,44	1,40	1,37	1,35	1,32	1,30	1,29	1,27	1,26	1,25	1,24	
	0,6	1,88	1,70	1,59	1,51	1,45	1,40	1,36	1,33	1,30	1,28	1,26	1,25	1,23	1,22	1,21	1,20	1,19	1,18	1,17	
	1,0		3,87	2,83	2,38	2,12	1,95	1,83	1,73	1,66	1,60	1,55	1,51	1,47	1,44	1,41	1,39	1,37	1,35	1,33	
140	0,8	3,00	2,38	2,07	1,88	1,75	1,66	1,59	1,53	1,48	1,44	1,41	1,38	1,35	1,33	1,31	1,30	1,28	1,27	1,26	
	0,6	2,00	1,79	1,66	1,56	1,50	1,44	1,40	1,36	1,33	1,31	1,29	1,27	1,25	1,24	1,22	1,21	1,20	1,19	1,18	
	1,0		5,57	3,32	2,65	2,30	2,08	1,93	1,82	1,73	1,66	1,61	1,56	1,52	1,48	1,45	1,43	1,40	1,38	1,36	
150	0,8	3,61	2,65	2,24	2,00	1,84	1,73	1,65	1,58	1,53	1,48	1,45	1,41	1,39	1,36	1,34	1,32	1,31	1,29	1,28	
	0,6	2,14	1,89	1,73	1,62	1,54	1,48	1,43	1,40	1,36	1,34	1,31	1,29	1,27	1,26	1,24	1,23	1,22	1,21	1,20	
	1,0			4,12	3,00	2,52	2,24	2,05	1,91	1,81	1,73	1,67	1,61	1,57	1,53	1,49	1,46	1,44	1,41	1,39	
160	0,8	4,73	3,00	2,43	2,13	1,94	1,81	1,71	1,64	1,58	1,53	1,49	1,45	1,42	1,39	1,37	1,35	1,33	1,31	1,30	
	0,6	2,32	2,00	1,81	1,69	1,60	1,53	1,47	1,43	1,39	1,36	1,34	1,31	1,29	1,28	1,26	1,25	1,24	1,22	1,21	
	1,0			5,92	3,51	2,79	2,42	2,19	2,02	1,90	1,81	1,73	1,67	1,62	1,57	1,54	1,50	1,47	1,45	1,42	
170	0,8	8,31	3,51	2,68	2,29	2,06	1,90	1,79	1,70	1,63	1,57	1,53	1,49	1,45	1,42	1,40	1,38	1,36	1,34	1,32	
	0,6	2,52	2,13	1,90	1,76	1,65	1,57	1,51	1,46	1,42	1,39	1,36	1,34	1,32	1,30	1,28	1,27	1,25	1,24	1,23	
	1,0				4,36	3,16	2,65	2,35	2,14	2,00	1,89	1,80	1,73	1,67	1,62	1,58	1,54	1,51	1,48	1,46	
180	0,8		4,36	3,00	2,48	2,19	2,00	1,87	1,77	1,69	1,62	1,57	1,53	1,49	1,46	1,43	1,40	1,38	1,36	1,34	
	0,6	2,78	2,27	2,00	1,83	1,71	1,62	1,56	1,50	1,46	1,42	1,39	1,36	1,34	1,32	1,30	1,28	1,27	1,26	1,25	
	1,0				6,24	3,70	2,93	2,54	2,29	2,11	1,98	1,88	1,80	1,73	1,68	1,63	1,59	1,55	1,52	1,49	
190	0,8		6,24	3,44	2,71	2,34	2,11	1,95	1,84	1,75	1,68	1,62	1,57	1,53	1,49	1,46	1,43	1,41	1,39	1,37	
	0,6	3,13	2,44	2,11	1,91	1,78	1,68	1,60	1,54	1,49	1,45	1,42	1,39	1,36	1,34	1,32	1,30	1,29	1,27	1,26	
	1,0					4,58	3,32	2,77	2,45	2,24	2,08	1,96	1,87	1,80	1,73	1,68	1,63	1,59	1,56	1,53	
200	0,8			4,12	3,00	2,52	2,24	2,05	1,91	1,81	1,73	1,67	1,61	1,57	1,53	1,49	1,46	1,44	1,41	1,39	
	0,6	3,61	2,65	2,24	2,00	1,84	1,73	1,65	1,58	1,53	1,48	1,45	1,41	1,39	1,36	1,34	1,32	1,31	1,29	1,28	

Table 2

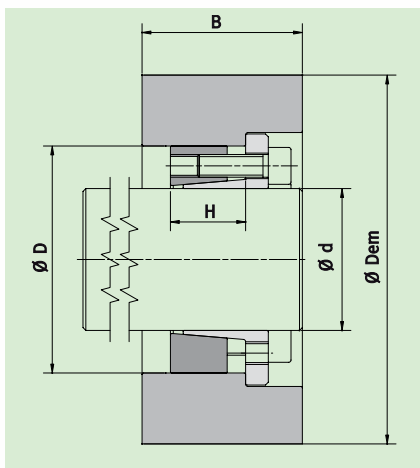


Fig. 1

If the hub has a different configuration, consider the most similar shape or the worst condition. Our Technical Dept. is at your disposal for technical assistance.

Stress reduction factor C valid for all series		
$B < 1.5 \times H$	$1.5 \times H < B < 2 \times H$	$B > 2 \times H$
1	0.8	0.6

Self-centering and self-locking units

SELF-CENTERING units provide an excellent centering of the connection. Concentricity and perpendicularity range from 0.02 mm to 0.05 mm. Self-centering characteristic depends on length and taper angle, manufacturing process and proper installation.

If the locking assembly is not self-centering, a pre-centering hub section is needed in order to obtain an excellent centering of the connection.

SELF-LOCKING units ensure the transmission of loads even in case of loosening of the screws. In addition, the screws are not subject to dynamic stress (typical when bending moment applies), which causes fatigue failure. Self-locking characteristic depends on taper angle.

Removal of self-locking units is obtained by means of integrated push-off threads. Removal of self-releasing units is obtained by loosening the locking screws.

Material

MAV locking assemblies are manufactured from carbon and heat treated alloy steels. In order to improve corrosion resistance, all units are available in different grades of stainless steel (reduction of performances approx. 50%), as well as supplied with different surface coatings like zinc plating, nickel plating and phosphate treatment.

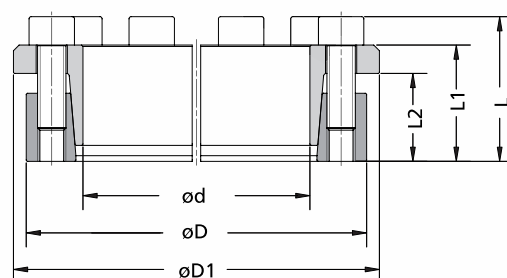
Lubrication

Locking assemblies are lubricated with ordinary machine oil. Stainless steel units are lubricated with food grade oil, quality H-1 according to FDA. Shaft and hub must be oiled as well. Do not use low friction lubricants (ex. Molybdenum Disulfide based grease) which strongly reduce the performances of the units.

Temperature influence

Working temperature ranges from -20°C to $+150^{\circ}\text{C}$. Locking assemblies work correctly as long as temperature changes apply equally to shaft and hub. Different materials must be used if the connection works in temperatures out of the above mentioned range.

DIMENSIONS							SCREWS		PERFORMANCES				WEIGHT kg
d mm	x	D mm	D1 mm	L2 mm	L1 mm	L mm	size	Ma Nm	Mt Nm	Fax kN	Ps MPa	Ph MPa	
14	x	28	32,0	17,0	20,5	24,5	M 4	5	68	10	132	66	0,07
15	x	28	32,0	17,0	20,5	24,5	M 4	5	73	10	123	66	0,06
16	x	32	37,0	18,0	21,5	25,5	M 4	5	78	10	115	58	0,09
18	x	47	52,0	22,5	28,5	34,5	M 6	17	250	28	241	92	0,30
19	x	47	52,0	22,5	28,5	34,5	M 6	17	260	28	229	92	0,30
20	x	47	52,0	22,5	28,5	34,5	M 6	17	280	28	217	92	0,30
22	x	47	52,0	22,5	28,5	34,5	M 6	17	310	28	197	92	0,30
24	x	50	56,5	22,5	28,5	34,5	M 6	17	400	33	217	104	0,30
25	x	50	56,5	22,5	28,5	34,5	M 6	17	420	33	209	104	0,30
28	x	55	61,5	22,5	28,5	34,5	M 6	17	470	33	186	95	0,40
30	x	55	61,5	22,5	28,5	34,5	M 6	17	500	33	174	95	0,30
32	x	60	66,5	22,5	28,5	34,5	M 6	17	710	45	217	116	0,40
35	x	60	66,5	22,5	28,5	34,5	M 6	17	780	45	199	116	0,40
38	x	65	71,5	22,5	28,5	34,5	M 6	17	850	45	183	107	0,50
40	x	65	71,5	22,5	28,5	34,5	M 6	17	890	45	174	107	0,40
42	x	75	83,5	26,5	34,5	42,5	M 8	41	1'510	72	227	127	0,80
45	x	75	83,5	26,5	34,5	42,5	M 8	41	1'620	72	212	127	0,70
48	x	80	88,5	26,5	34,5	42,5	M 8	41	1'730	72	199	119	0,80
50	x	80	88,5	26,5	34,5	42,5	M 8	41	1'800	72	191	119	0,80
55	x	85	93,5	26,5	34,5	42,5	M 8	41	2'260	82	198	128	0,80
60	x	90	98,0	26,5	34,5	42,5	M 8	41	2'470	82	182	121	0,90
65	x	95	102,0	26,5	34,5	42,5	M 8	41	3'010	93	189	129	0,90
70	x	110	119,0	30,5	40,5	50,5	M 10	83	4'730	135	213	136	1,70
75	x	115	124,0	30,5	40,5	50,5	M 10	83	5'070	135	199	130	1,80
80	x	120	129,0	30,5	40,5	50,5	M 10	83	5'410	135	187	124	1,90
85	x	125	134,0	30,5	40,5	50,5	M 10	83	6'460	152	198	134	2,00
90	x	130	139,0	30,5	40,5	50,5	M 10	83	6'840	152	187	129	2,00
95	x	135	144,0	30,5	40,5	50,5	M 10	83	8'020	169	197	138	2,10
100	x	145	154,0	33,0	45,0	57,0	M 12	145	10'100	202	206	142	2,80
110	x	155	164,0	33,0	45,0	57,0	M 12	145	11'100	202	187	133	3,00
120	x	165	174,0	33,0	45,0	57,0	M 12	145	13'600	227	193	140	3,30
130	x	180	189,0	41,0	55,0	69,0	M 14	230	19'800	305	183	132	4,70
140	x	190	199,0	41,0	55,0	69,0	M 14	230	21'400	305	170	125	5,20
150	x	200	209,0	41,0	55,0	69,0	M 14	230	25'400	339	176	132	5,50
160	x	210	219,0	41,0	55,0	69,0	M 14	230	29'900	373	182	139	5,80
170	x	225	234,0	51,0	65,0	79,0	M 14	230	34'600	407	144	109	8,10
180	x	235	244,0	51,0	65,0	79,0	M 14	230	36'600	407	136	104	8,50
190	x	250	259,0	51,0	65,0	79,0	M 14	230	48'300	509	161	123	9,80
200	x	260	269,0	51,0	65,0	79,0	M 14	230	50'900	509	153	118	10,20
220	x	285	292,0	57,0	73,0	89,0	M 16	355	61'300	558	134	104	13,70
240	x	305	314,0	57,0	73,0	89,0	M 16	355	83'600	697	154	121	14,80
260	x	325	334,0	57,0	73,0	89,0	M 16	355	109'000	836	171	137	15,80
280	x	355	364,0	67,0	85,0	103,0	M 18	485	126'000	897	142	112	23,40
300	x	375	384,0	67,0	85,0	103,0	M 18	485	151'000	1'010	149	119	24,80
320	x	405	414,0	82,0	102,0	122,0	M 20	690	209'000	1'310	146	116	35,00
340	x	425	434,0	82,0	102,0	122,0	M 20	690	259'000	1'530	161	129	37,00
360	x	455	464,0	94,0	116,0	138,0	M 22	930	292'000	1'620	139	110	50,50
380	x	475	484,0	94,0	116,0	138,0	M 22	930	359'000	1'890	153	123	53,10
400	x	495	504,0	94,0	116,0	138,0	M 22	930	378'000	1'890	146	118	56,50



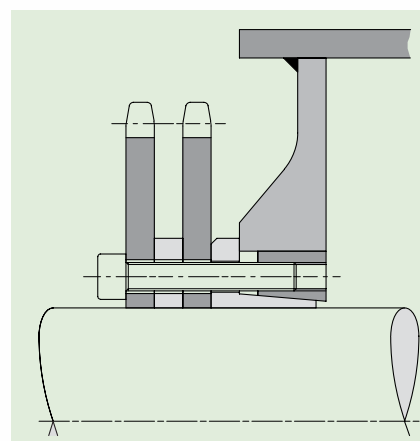
Example of order: MAV 1061 50 x 80

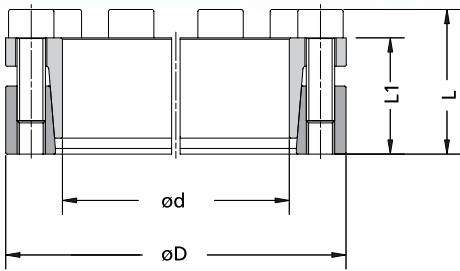
Features

- Medium capacity
- Self-centering, self-locking
- Fixed axial hub position during tightening (MAV 1061 only)
- Single taper design
- Tolerances: shaft h8; hub bore H8
- Surface finish of shaft and hub bore $Ra < 3,2 \mu m$

Application examples

Simultaneous connection of chain sprocket and conveyor pulley





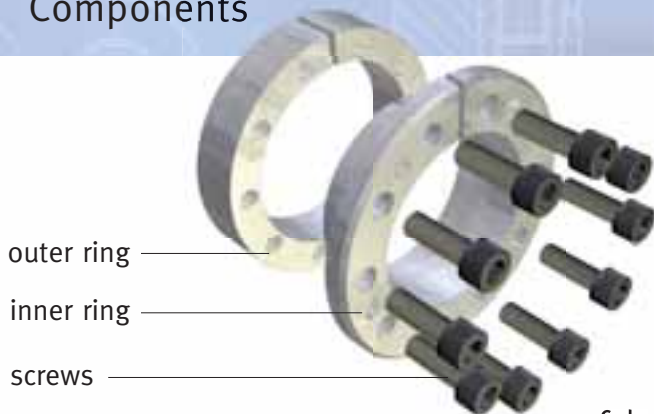
Example of order: MAV 1062 50 x 80



Composition

- Slotted inner ring, with integrated push-off threads
- Slotted outer ring
- Set of socket head cap screws, grade 12.9

Components



Code:

Ma: screws tightening torque

Mt: transmissible torque with Fax=0 kN

Fax: transmissible axial load with Mt=0 Nm

Ps: contact pressure on shaft

Ph: contact pressure in hub bore

DIMENSIONS					SCREWS			PERFORMANCES				WEIGHT kg
d mm	x	D mm	L1 mm	L mm	size	Ma Nm		Mt Nm	Fax kN	Ps MPa	Ph MPa	
14	x	32	21,5	25,5	M 4	5		108	15	209	91	0,09
15	x	32	21,5	25,5	M 4	5		116	15	195	91	0,09
16	x	32	21,5	25,5	M 4	5		123	15	183	91	0,08
18	x	47	28,5	34,5	M 6	14		330	36	314	120	0,30
19	x	47	28,5	34,5	M 6	14		340	36	297	120	0,30
20	x	47	28,5	34,5	M 6	14		360	36	283	120	0,30
22	x	47	28,5	34,5	M 6	14		400	36	257	120	0,20
24	x	50	28,5	34,5	M 6	14		520	43	283	136	0,30
25	x	50	28,5	34,5	M 6	14		540	43	271	136	0,30
28	x	55	28,5	34,5	M 6	14		610	43	242	123	0,30
30	x	55	28,5	34,5	M 6	14		650	43	226	123	0,30
32	x	60	28,5	34,5	M 6	14		930	58	283	151	0,40
35	x	60	28,5	34,5	M 6	14		1'010	58	258	151	0,30
38	x	65	28,5	34,5	M 6	14		1'100	58	238	139	0,40
40	x	65	28,5	34,5	M 6	14		1'160	58	226	139	0,40
42	x	75	34,5	42,5	M 8	35		2'040	97	307	172	0,70
45	x	75	34,5	42,5	M 8	35		2'190	97	287	172	0,60
48	x	80	34,5	42,5	M 8	35		2'340	97	269	161	0,70
50	x	80	34,5	42,5	M 8	35		2'430	97	258	161	0,70
55	x	85	34,5	42,5	M 8	35		3'060	111	268	174	0,80
60	x	90	34,5	42,5	M 8	35		3'340	111	246	164	0,80
65	x	95	34,5	42,5	M 8	35		4'070	125	255	175	0,90
70	x	110	40,5	50,5	M 10	69		6'230	178	281	179	1,60
75	x	115	40,5	50,5	M 10	69		6'680	178	262	171	1,60
80	x	120	40,5	50,5	M 10	69		7'120	178	246	164	1,70
85	x	125	40,5	50,5	M 10	69		8'510	200	261	177	1,80
90	x	130	40,5	50,5	M 10	69		9'020	200	246	170	1,90
95	x	135	40,5	50,5	M 10	69		10'570	223	259	182	2,00
100	x	145	45,0	57,0	M 12	120		13'200	265	270	186	2,60
110	x	155	45,0	57,0	M 12	120		14'600	265	245	174	2,90
120	x	165	45,0	57,0	M 12	120		17'900	298	253	184	3,10
130	x	180	55,0	69,0	M 14	190		26'000	400	240	173	4,50
140	x	190	55,0	69,0	M 14	190		28'000	400	223	164	5,00
150	x	200	55,0	69,0	M 14	190		33'300	444	231	173	5,20
160	x	210	55,0	69,0	M 14	190		39'100	488	238	181	5,60
170	x	225	65,0	79,0	M 14	190		45'300	533	189	143	7,70
180	x	235	65,0	79,0	M 14	190		48'000	533	178	137	8,10
190	x	250	65,0	79,0	M 14	190		63'300	666	211	161	9,30
200	x	260	65,0	79,0	M 14	190		66'600	666	201	154	9,90
220	x	285	73,0	89,0	M 16	295		81'000	736	178	137	13,30
240	x	305	73,0	89,0	M 16	295		110'000	920	203	160	14,20
260	x	325	73,0	89,0	M 16	295		144'000	1'104	225	180	15,30
280	x	355	85,0	103,0	M 18	405		166'000	1'187	187	148	22,70
300	x	375	85,0	103,0	M 18	405		200'000	1'340	197	157	24,30
320	x	405	102,0	122,0	M 20	580		279'000	1'750	196	155	34,10
340	x	425	102,0	122,0	M 20	580		346'000	2'040	215	172	36,00
360	x	455	116,0	138,0	M 22	780		388'000	2'160	185	146	49,40
380	x	475	116,0	138,0	M 22	780		478'000	2'520	204	163	51,90
400	x	495	116,0	138,0	M 22	780		503'000	2'520	194	157	55,30

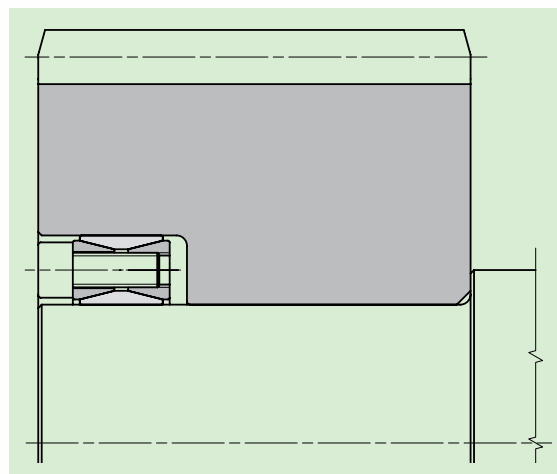
DIMENSIONS					SCREWS			PERFORMANCES				WEIGHT kg
d mm	x	D mm	L1 mm	L mm	size	Ma Nm		Mt Nm	Fax kN	Ps MPa	Ph MPa	
18 x		47	20	26	M 6	17		300	33	332	127	0,2
19 x		47	20	26	M 6	17		310	33	314	127	0,2
20 x		47	20	26	M 6	17		330	33	298	127	0,2
22 x		47	20	26	M 6	17		360	33	271	127	0,2
24 x		50	20	26	M 6	17		440	37	280	134	0,2
25 x		50	20	26	M 6	17		460	36	269	134	0,2
28 x		55	20	26	M 6	17		560	40	266	136	0,3
30 x		55	20	26	M 6	17		600	40	249	136	0,3
32 x		60	20	26	M 6	17		770	48	280	149	0,3
35 x		60	20	26	M 6	17		830	48	256	149	0,3
38 x		65	20	26	M 6	17		1'050	55	275	161	0,3
40 x		65	20	26	M 6	17		1'100	55	261	161	0,3
42 x		75	24	32	M 8	41		1'830	87	336	188	0,6
45 x		75	24	32	M 8	41		1'950	87	314	188	0,5
48 x		80	24	32	M 8	41		2'080	87	294	176	0,6
50 x		80	24	32	M 8	41		2'160	86	282	176	0,6
55 x		85	24	32	M 8	41		2'750	100	300	194	0,6
60 x		90	24	32	M 8	41		2'990	100	275	183	0,7
63 x		95	24	32	M 8	41		3'570	113	299	198	0,7
65 x		95	24	32	M 8	41		3'680	113	290	198	0,7
70 x		110	28	38	M 10	83		5'650	162	321	204	1,2
75 x		115	28	38	M 10	83		6'030	161	300	196	1,3
80 x		120	28	38	M 10	83		6'410	160	281	187	1,4
85 x		125	28	38	M 10	83		7'750	182	302	206	1,4
90 x		130	28	38	M 10	83		8'180	182	286	198	1,5
95 x		135	28	38	M 10	83		9'680	204	304	214	1,6
100 x		145	33	45	M 12	145		11'700	234	307	212	2,1
110 x		155	33	45	M 12	145		12'800	232	279	198	2,3
120 x		165	33	45	M 12	145		15'900	264	293	213	2,5
130 x		180	38	50	M 12	145		21'400	329	258	187	3,5
140 x		190	38	50	M 12	145		25'200	360	264	194	3,8
150 x		200	38	50	M 12	145		29'300	391	269	201	4,0
160 x		210	38	50	M 12	145		33'700	422	273	208	4,2
170 x		225	44	58	M 14	230		41'200	485	265	200	5,7
180 x		235	44	58	M 14	230		47'400	527	273	209	6,0
190 x		250	52	66	M 14	230		58'200	613	249	190	8,2
200 x		260	52	66	M 14	230		65'400	655	254	195	8,5
220 x		285	56	72	M 16	355		85'100	774	252	195	10,8
240 x		305	56	72	M 16	355		107'000	888	267	210	11,9
260 x		325	56	72	M 16	355		130'000	1'001	279	223	12,8
280 x		355	66	84	M 18	485		158'000	1'128	245	193	19,3
300 x		375	66	84	M 18	485		190'000	1'264	257	206	20,6



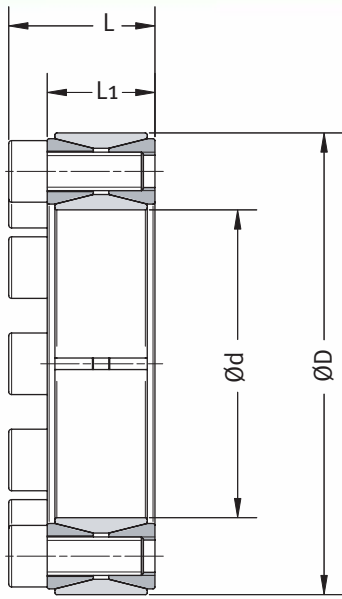
Features

- Medium capacity
- Not self-centering, not self-locking (self-releasing)
- Fixed axial hub position during tightening
- Two thrust rings with double taper design
- Low axial dimension
- Tolerances: shaft h7-h11; hub bore H7-H11
- Surface finish of shaft and hub bore $Ra < 3.2 \mu m$

Application examples



gear wheel connection

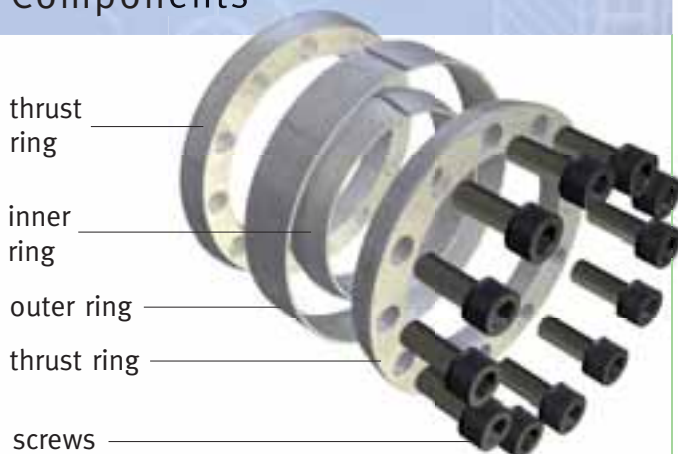


Example of order: MAV 2005 50 x 80

Composition

- Slotted inner ring
 - Slotted outer ring
 - Double taper front thrust ring, with integrated pull-out threads
 - Double taper rear thrust ring
 - Set of socket head cap screws, grade 12.9.
- Zinc plated screws indicate the position of pull-out threads

Components



DIMENSIONS					SCREWS			PERFORMANCES					WEIGHT ^{kg}
d mm	x	D mm	L1 mm	L mm	size	Ma Nm	Mt Nm	Fax kN	Ps MPa	Ph MPa			
320	x	405	78	98	M 20	690	260'000	1'627	259	205	29,4		
340	x	425	78	98	M 20	690	275'000	1'620	244	195	31,0		
360	x	455	90	112	M 22	930	356'000	1'980	242	192	43,0		
380	x	475	90	112	M 22	930	375'000	1'973	230	184	45,0		
400	x	495	90	112	M 22	930	393'000	1'967	218	176	47,0		
420	x	515	90	112	M 22	930	458'000	2'179	231	188	49,0		
440	x	545	102	126	M 24	1'200	562'000	2'555	227	183	65,0		
460	x	565	102	126	M 24	1'200	586'000	2'548	217	177	67,0		
480	x	585	102	126	M 24	1'200	640'000	2'668	218	179	71,0		
500	x	605	102	126	M 24	1'200	697'000	2'788	220	181	72,0		
520	x	630	102	126	M 24	1'200	740'000	2'845	216	178	80,0		
540	x	650	102	126	M 24	1'200	766'000	2'838	208	173	82,0		
560	x	670	102	126	M 24	1'200	846'000	3'020	214	179	84,0		
580	x	690	102	126	M 24	1'200	910'000	3'139	215	181	87,0		
600	x	710	102	126	M 24	1'200	940'000	3'133	208	176	91,0		
620	x	730	102	126	M 24	1'200	1'008'000	3'251	209	178	93,0		
640	x	750	102	126	M 24	1'200	1'078'000	3'370	210	180	96,0		
660	x	770	102	126	M 24	1'200	1'151'000	3'488	212	181	99,0		
680	x	790	102	126	M 24	1'200	1'184'000	3'481	205	177	102,0		
700	x	810	102	126	M 24	1'200	1'303'000	3'723	214	185	104,0		
720	x	830	102	126	M 24	1'200	1'338'000	3'717	208	180	107,0		
740	x	850	102	126	M 24	1'200	1'419'000	3'834	209	182	110,0		
760	x	870	102	126	M 24	1'200	1'501'000	3'951	210	184	112,0		
780	x	890	102	126	M 24	1'200	1'562'000	4'006	208	182	116,0		
800	x	910	102	126	M 24	1'200	1'625'000	4'061	206	181	118,0		
820	x	930	102	126	M 24	1'200	1'713'000	4'178	207	182	121,0		
840	x	950	102	126	M 24	1'200	1'804'000	4'294	208	184	124,0		
860	x	970	102	126	M 24	1'200	1'897'000	4'411	209	185	127,0		
880	x	990	102	126	M 24	1'200	1'992'000	4'527	210	186	129,0		
900	x	1'010	102	126	M 24	1'200	2'062'000	4'581	208	185	132,0		
920	x	1'030	102	126	M 24	1'200	2'133'000	4'636	206	184	135,0		
940	x	1'050	102	126	M 24	1'200	2'233'000	4'752	207	185	138,0		
960	x	1'070	102	126	M 24	1'200	2'336'000	4'867	208	187	140,0		
980	x	1'090	102	126	M 24	1'200	2'412'000	4'922	206	185	143,0		
1'000	x	1'110	102	126	M 24	1'200	2'488'000	4'976	205	184	146,0		

Code:

Ma: screws tightening torque

Mt: transmissible torque with Fax=0 kN

Fax: transmissible axial load with Mt=0 Nm

Ps: contact pressure on shaft

Ph: contact pressure in hub bore

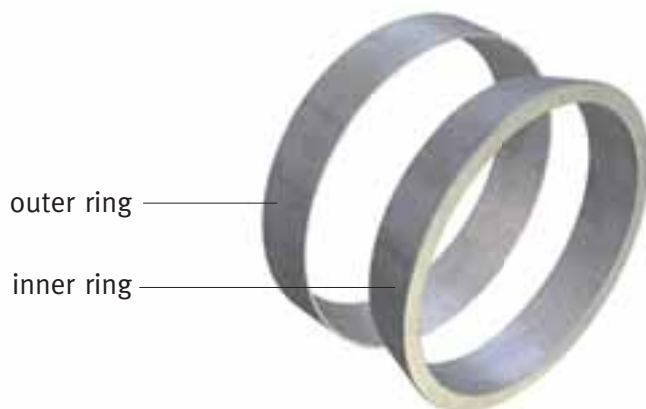
DIMENSIONS				PERFORMANCES						X			WEIGHT kg
d mm	x mm	D mm	L mm	Ca kN	Cb kN	Mt Nm	Fax kN	Ps MPa	Ph MPa	1 mm	2 mm	3 mm	
6 x	9	4,5		0,0	4,7	3	1,0	120	80	2	2	3	0,001
7 x	10	4,5		0,0	5,4	4	1,2	120	84	2	2	3	0,001
8 x	11	4,5		0,0	6,2	5	1,3	120	87	2	2	3	0,002
9 x	12	4,5		7,6	7,0	7	1,5	120	90	2	2	3	0,002
10 x	13	4,5		7,0	7,8	8	1,7	120	92	2	2	3	0,002
12 x	15	4,5		7,0	9,3	12	2,0	120	96	2	2	3	0,002
13 x	16	4,5		6,6	10,1	14	2,2	120	98	2	2	3	0,002
14 x	18	6,3		11,2	15,5	23	3,4	120	93	3	3	4	0,004
15 x	19	6,3		10,6	16,7	27	3,6	120	95	3	3	4	0,005
16 x	20	6,3		10,0	17,8	31	3,8	120	96	3	3	4	0,005
17 x	21	6,3		9,5	18,9	35	4,1	120	97	3	3	4	0,005
18 x	22	6,3		9,1	20,0	39	4,3	120	98	3	3	4	0,006
19 x	24	6,3		12,7	21,1	43	4,6	120	95	3	3	4	0,007
20 x	25	6,3		12,2	22,2	48	4,8	120	96	3	3	4	0,008
22 x	26	6,3		9,3	24,4	58	5,3	120	102	3	3	4	0,007
24 x	28	6,3		8,6	26,6	69	5,8	120	103	3	3	4	0,007
25 x	30	6,3		10,1	27,8	75	6,0	120	100	3	3	4	0,010
28 x	32	6,3		7,5	31,1	94	6,7	120	105	3	3	4	0,010
30 x	35	6,3		8,6	33,3	108	7,2	120	103	3	3	4	0,010
32 x	36	6,3		7,8	35,5	123	7,7	120	107	3	3	4	0,010
35 x	40	7,0		9,9	44,0	170	9,5	120	105	3	3	4	0,020
36 x	42	7,0		11,4	45,2	180	9,8	120	103	3	3	4	0,020
38 x	44	7,0		10,9	47,8	200	10,3	120	104	3	3	4	0,020
40 x	45	8,0		13,6	55,3	240	11,9	120	107	3	4	5	0,020
42 x	48	8,0		15,4	58,1	260	12,5	120	105	3	4	5	0,030
45 x	52	10,0		23,8	81,1	390	17,5	120	104	3	4	5	0,040
48 x	55	10,0		22,6	86,5	450	18,7	120	105	3	4	5	0,040
50 x	57	10,0		21,8	90,1	490	19,5	120	105	3	4	5	0,040
55 x	62	10,0		21,4	99,1	590	21,4	120	106	3	4	5	0,050
56 x	64	12,0		28,7	122,0	740	26,3	120	105	3	4	5	0,070
60 x	68	12,0		27,0	130,7	850	28,2	120	106	3	4	5	0,070
63 x	71	12,0		25,8	137,3	930	29,6	120	106	3	4	5	0,080
65 x	73	12,0		25,1	141,6	990	30,6	120	107	3	4	5	0,080
70 x	79	14,0		30,6	178,9	1'350	38,6	120	106	3	5	6	0,100
71 x	80	14,0		30,2	181,5	1'390	39,2	120	107	3	5	6	0,100
75 x	84	14,0		32,2	191,7	1'550	41,4	120	107	3	5	6	0,100
80 x	91	17,0		44,4	251,4	2'170	54,3	120	105	4	5	6	0,200
85 x	96	17,0		44,9	267,1	2'450	57,7	120	106	4	5	6	0,200
90 x	101	17,0		42,6	282,8	2'750	61,1	120	107	4	5	6	0,200
95 x	106	17,0		40,5	298,5	3'060	64,5	120	108	4	5	6	0,200

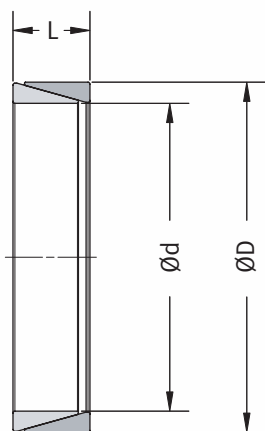


Features

- Low capacity
- Not self-centering, not self-locking (self-releasing)
- Single taper design
- Low axial and radial dimensions
- Thrust ring is needed (not supplied by MAV)
- Slotted execution also available
- Tolerances (for shaft dia. ≤ 38mm): shaft h6; hub bore H7
- Tolerances (for shaft dia. > 38mm): shaft h8; hub bore H8
- Surface finish of shaft and hub bore Ra < 0.8 μm

Components





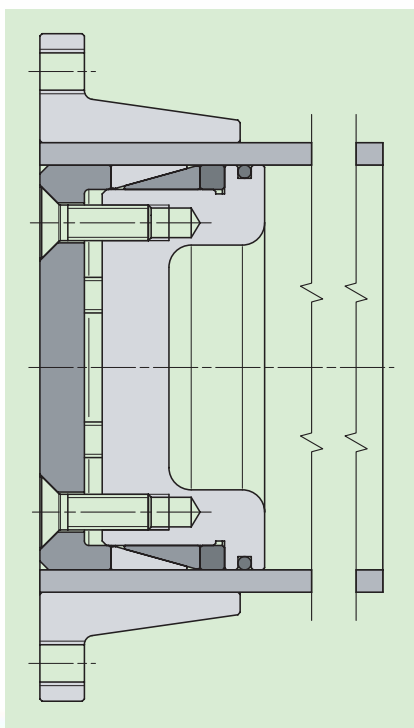
Example of order: MAV 3003 50 x 57

Composition

- Inner ring
- Outer ring

Application examples

Connection of seal and flange
of a pneumatic cylinder



DIMENSIONS				PERFORMANCES						X			WEIGHT kg
d mm	x	D mm	L mm	Ca kN	Cb kN	Mt Nm	Fax kN	Ps MPa	Ph MPa	1 mm	2 mm	3 mm	
100	x	114	21,0	60,1	392	4230	84,6	120	105	4	6	7	0,4
110	x	124	21,0	60,8	431	5120	93,1	120	106	4	6	7	0,4
120	x	134	21,0	56,4	470	6090	101,5	120	107	4	6	7	0,5
130	x	148	28,0	94,3	689	9'670	148,8	120	105	5	7	9	0,8
140	x	158	28,0	88,2	742	11'200	160,2	120	106	5	7	9	0,9
150	x	168	28,0	82,8	795	12'900	171,7	120	107	5	7	9	1,0
160	x	178	28,0	78,0	848	14'700	183,1	120	108	5	7	9	1,0
170	x	191	33,0	110,0	1'070	19'600	230,7	120	107	6	8	10	1,5
180	x	201	33,0	104,7	1'130	22'000	244,3	120	107	6	8	10	1,6
190	x	211	33,0	105,3	1'190	24'500	257,9	120	108	6	8	10	1,7
200	x	224	38,0	131,7	1'460	31'500	314,9	120	107	6	8	11	2,3
210	x	234	38,0	125,9	1'530	34'700	330,6	120	108	6	8	11	2,5
220	x	244	38,0	120,6	1'600	38'100	346,3	120	108	6	8	11	2,6
230	x	257	43,0	149,4	1'900	47'300	411,0	120	107	6	9	12	3,4
240	x	267	43,0	143,9	1'990	51'500	428,9	120	108	6	9	12	3,6
250	x	280	48,0	169,6	2'300	62'200	497,6	120	107	7	10	13	4,6
260	x	290	48,0	173,1	2'400	67'300	517,5	120	108	7	10	13	4,8
270	x	300	48,0	167,2	2'490	72'600	537,4	120	108	7	10	13	5,0
280	x	313	53,0	202,2	2'870	86'900	620,7	120	107	7	11	14	6,3
290	x	323	53,0	196,1	2'980	93'200	642,8	120	108	7	11	14	6,5
300	x	333	53,0	190,4	3'080	99'800	665,0	120	108	7	11	14	6,7
320	x	360	65,0	271,6	3'960	137'000	854,1	120	107	10	15	20	10,7
340	x	380	65,0	257,0	4'200	154'000	907,5	120	107	10	15	20	11,4
360	x	400	65,0	245,9	4'450	173'000	960,9	120	108	10	15	20	12,0
380	x	420	65,0	234,5	4'700	193'000	1'014,3	120	109	10	15	20	12,7
400	x	440	65,0	224,1	4'940	214'000	1'067,6	120	109	10	15	20	13,2
420	x	460	65,0	224,7	5'190	235'000	1'121,0	120	110	10	15	20	13,8
440	x	480	65,0	215,1	5'440	258'000	1'174,4	120	110	10	15	20	14,5
460	x	500	65,0	209,6	5'690	282'000	1'227,8	120	110	13	19	26	15,0
480	x	520	65,0	201,7	5'930	308'000	1'281,2	120	111	13	19	26	15,5
500	x	540	65,0	194,4	6'180	334'000	1'334,5	120	111	13	19	26	16,5

Code:

Ma: screws tightening torque

Mt: transmissible torque with Fax=0 kN

Fax: transmissible axial load with Mt=0 Nm

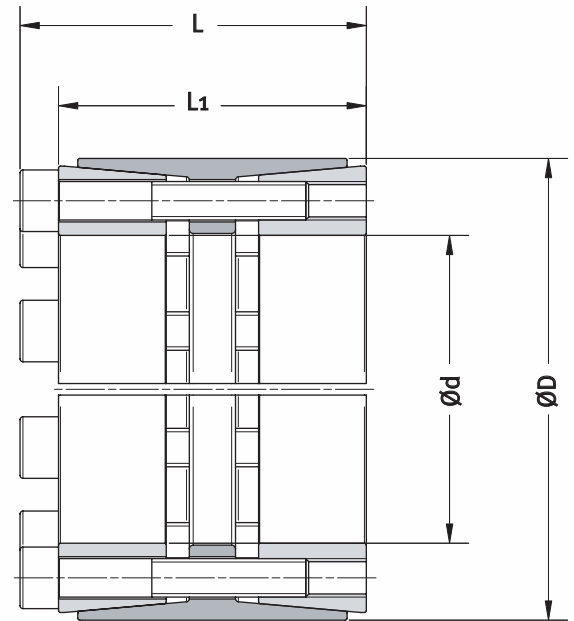
Ca: assembling load

Cb: locking load

Ps: contact pressure on shaft

Ph: contact pressure in hub bore

X: thrust flange - hub distance



Example of order: MAV 4061 50 x 80

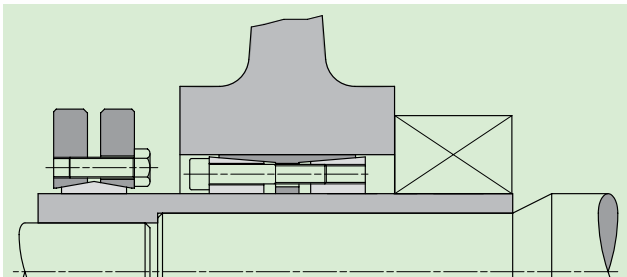
Features

- High capacity
- Self-centering, self-locking
- Two thrust rings with single taper design
- Tolerances: shaft h8; hub bore H8
- Surface finish of shaft and hub bore $Ra < 3.2 \mu m$

Composition

- Slotted front thrust ring, with integrated push-off holes
- Slotted rear thrust ring
- Slotted outer ring, with integrated push-off threads
- Set of socket head cap screws, grade 12.9

Application examples

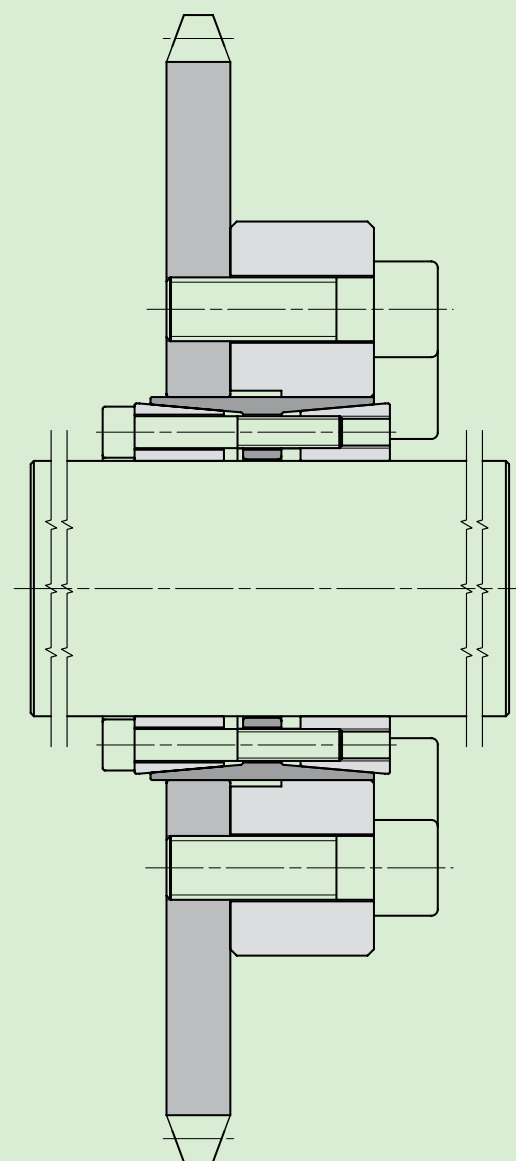


Simultaneous connection of two shafts with hollow shaft and hub with MAV 4061 and shrink disc MAV 2008

Components



DIMENSIONS					SCREWS			PERFORMANCES				WEIGHT kg
d mm	x	D mm	L1 mm	L mm	size	Ma Nm		Mt Nm	Fax kN	Ps MPa	Ph MPa	
24	x	55	40	46	M 6	17		800	67	308	134	0,4
25	x	55	40	46	M 6	17		840	67	295	134	0,4
28	x	55	40	46	M 6	17		940	67	264	134	0,4
30	x	55	40	46	M 6	17		1'000	67	246	134	0,4
32	x	60	54	60	M 6	17		1'200	78	190	101	0,6
35	x	60	54	60	M 6	17		1'400	78	174	101	0,6
38	x	75	54	62	M 8	41		2'700	144	296	150	1,0
40	x	75	54	62	M 8	41		2'900	144	281	150	1,0
42	x	75	54	62	M 8	41		3'000	144	268	150	1,0
45	x	75	54	62	M 8	41		3'200	144	250	150	0,9
48	x	80	66	74	M 8	41		4'000	165	207	124	1,3
50	x	80	66	74	M 8	41		4'100	165	198	124	1,2
55	x	85	66	74	M 8	41		5'100	185	203	131	1,3
60	x	90	66	74	M 8	41		6'200	206	207	138	1,4
65	x	95	66	74	M 8	41		6'700	206	191	131	1,5
70	x	110	80	90	M 10	83		11'800	338	229	145	2,8
75	x	115	80	90	M 10	83		12'700	338	213	139	3,0
80	x	120	80	90	M 10	83		14'900	372	220	147	3,1
85	x	125	80	90	M 10	83		15'800	372	207	141	3,3
90	x	130	80	90	M 10	83		18'200	405	213	148	3,5
95	x	135	80	90	M 10	83		19'300	405	202	142	3,6
100	x	145	102	114	M 12	145		27'700	555	210	145	5,6
110	x	155	102	114	M 12	145		33'300	605	209	148	6,1
120	x	165	102	114	M 12	145		42'400	706	223	162	6,5
130	x	180	116	130	M 14	230		53'700	826	201	145	9,0
140	x	190	116	130	M 14	230		67'400	963	217	160	9,5
150	x	200	116	130	M 14	230		77'400	1'030	217	163	10,1
160	x	210	116	130	M 14	230		88'100	1'100	217	166	10,6
170	x	225	149	165	M 16	355		111'000	1'310	186	141	16,1
180	x	235	149	165	M 16	355		126'000	1'410	188	144	16,9
190	x	250	149	165	M 16	355		142'000	1'500	190	145	19,6
200	x	260	149	165	M 16	355		150'000	1'500	181	139	20,5
220	x	285	150	166	M 16	355		185'000	1'690	185	143	24,5
240	x	305	150	166	M 16	355		225'000	1'870	188	148	26,5
260	x	325	150	166	M 16	355		256'000	1'970	182	146	28,5
280	x	355	177	197	M 20	690		370'000	2'640	190	150	42,5
300	x	375	177	197	M 20	690		440'000	2'940	197	157	46,5
320	x	405	177	197	M 20	690		493'000	3'080	194	153	56,0
340	x	425	177	197	M 20	690		549'000	3'230	191	153	59,5
360	x	455	203	225	M 22	930		680'000	3'780	183	145	80,0
380	x	475	203	225	M 22	930		752'000	3'960	182	145	84,5
400	x	495	203	225	M 22	930		864'000	4'320	188	152	88,0
420	x	515	203	225	M 22	930		907'000	4'320	179	146	92,0
440	x	535	203	225	M 22	930		950'000	4'320	171	141	96,0
460	x	555	203	225	M 22	930		993'000	4'320	164	136	100,5
480	x	575	203	225	M 22	930		1'209'000	5'040	183	153	103,0
500	x	595	203	225	M 22	930		1'260'000	5'040	176	148	107,5
520	x	615	203	225	M 22	930		1'404'000	5'400	181	153	111,0
540	x	635	203	225	M 22	930		1'458'000	5'400	174	148	114,0
560	x	655	203	225	M 22	930		1'613'000	5'760	179	153	118,5
580	x	675	203	225	M 22	930		1'670'000	5'760	173	149	123,0
600	x	695	203	225	M 22	930		1'782'000	5'940	173	149	128,0



Pinion gear connected with MAV 4061. The resisting ring is used to compensate the pressure generated by the locking assembly in the zone adjacent to the pinion gear.

Code:

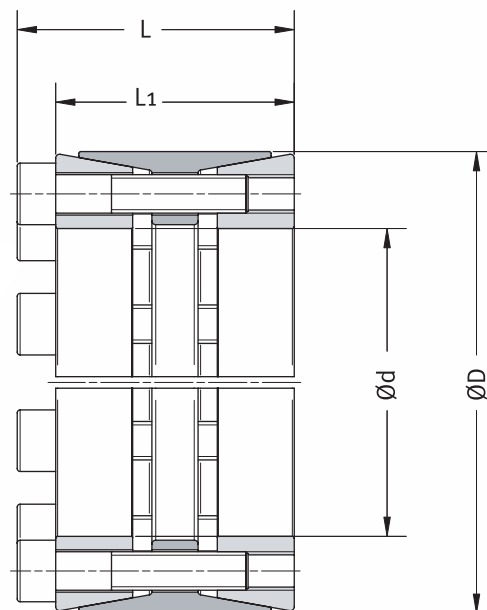
Ma: screws tightening torque

Mt: transmissible torque with Fax=0 kN

Fax: transmissible axial load with Mt=0 Nm

Ps: contact pressure on shaft

Ph: contact pressure in hub bore



Example of order: MAV 1008 100 x 145

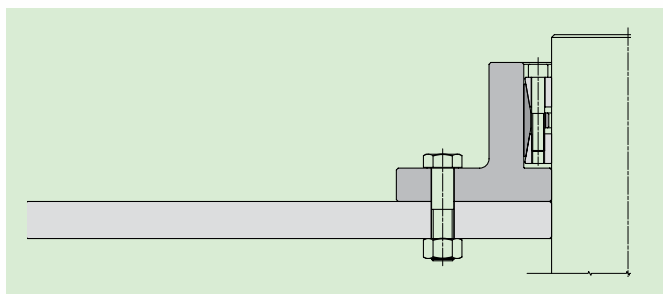
Features

- High capacity
- Self-centering, self-locking
- Two thrust rings with single taper design
- Tolerances: shaft h7-h11; hub bore H7-H11
- Surface finish of shaft and hub bore $Ra < 3.2 \mu m$

Composition

- Slotted front thrust ring, with integrated push-off holes
- Slotted rear thrust ring
- Slotted outer ring, with integrated push-off threads
- Set of socket head cap screws, grade 12.9

Application examples



Brake disc connected with MAV 1008 and flange

Components



DIMENSIONI					SCREWS		PERFORMANCES				WEIGHT kg
d mm	x	D mm	L1 mm	L mm	size	Ma Nm	Mt Nm	Fax kN	Ps MPa	Ph MPa	
70	x	110	62	72	M 10	83	7'300	208	197	125	2,3
75	x	115	62	72	M 10	83	7'800	208	184	120	2,4
80	x	120	62	72	M 10	83	10'400	260	216	144	2,5
85	x	125	62	72	M 10	83	11'100	260	203	138	2,6
90	x	130	62	72	M 10	83	12'900	286	211	146	2,7
95	x	135	62	72	M 10	83	13'600	286	200	141	2,9
100	x	145	72	84	M 12	145	19'400	388	215	148	4,1
110	x	155	72	84	M 12	145	21'400	388	195	138	4,3
120	x	165	72	84	M 12	145	25'600	427	197	143	4,6
130	x	180	81	93	M 12	145	35'300	544	205	148	6,4
140	x	190	82	94	M 12	145	40'800	583	204	151	6,7
150	x	200	82	94	M 12	145	43'700	583	191	143	7,2
160	x	210	82	94	M 12	145	49'700	621	191	145	7,6
170	x	225	93	107	M 14	230	67'500	795	194	146	10,5
180	x	235	93	107	M 14	230	71'500	795	183	140	10,9
190	x	250	105	119	M 14	230	80'500	848	156	118	14,2
200	x	260	105	119	M 14	230	105'000	1'047	183	141	14,6
220	x	285	111	127	M 16	355	119'000	1'082	159	123	18,9
240	x	305	111	127	M 16	355	173'000	1'442	194	153	20,0
260	x	325	111	127	M 16	355	197'000	1'514	188	151	21,5
280	x	355	111	131	M 20	690	237'000	1'695	211	167	27,0
300	x	375	111	131	M 20	690	254'000	1'695	197	158	29,7
320	x	405	136	156	M 20	690	362'000	2'260	195	154	43,5
340	x	425	136	156	M 20	690	384'000	2'260	184	147	46,5
360	x	455	160	182	M 22	930	499'000	2'771	170	135	66,0
380	x	475	160	182	M 22	930	526'000	2'771	161	129	68,5
400	x	495	160	182	M 22	930	610'000	3'048	168	136	72,0
420	x	515	160	182	M 22	930	698'000	3'325	175	143	74,5
440	x	535	160	182	M 22	930	731'000	3'325	167	137	78,0
460	x	555	160	182	M 22	930	765'000	3'325	160	132	82,0
480	x	575	160	182	M 22	930	831'000	3'463	159	133	84,0
500	x	595	160	182	M 22	930	866'000	3'463	153	129	88,0
520	x	615	160	182	M 22	930	1'008'000	3'879	165	139	91,0
540	x	635	160	182	M 22	930	1'047'000	3'879	159	135	94,0
560	x	655	160	182	M 22	930	1'164'000	4'156	164	140	97,0
580	x	675	160	182	M 22	930	1'205'000	4'156	158	136	100,0
600	x	695	160	182	M 22	930	1'247'000	4'156	153	132	103,0

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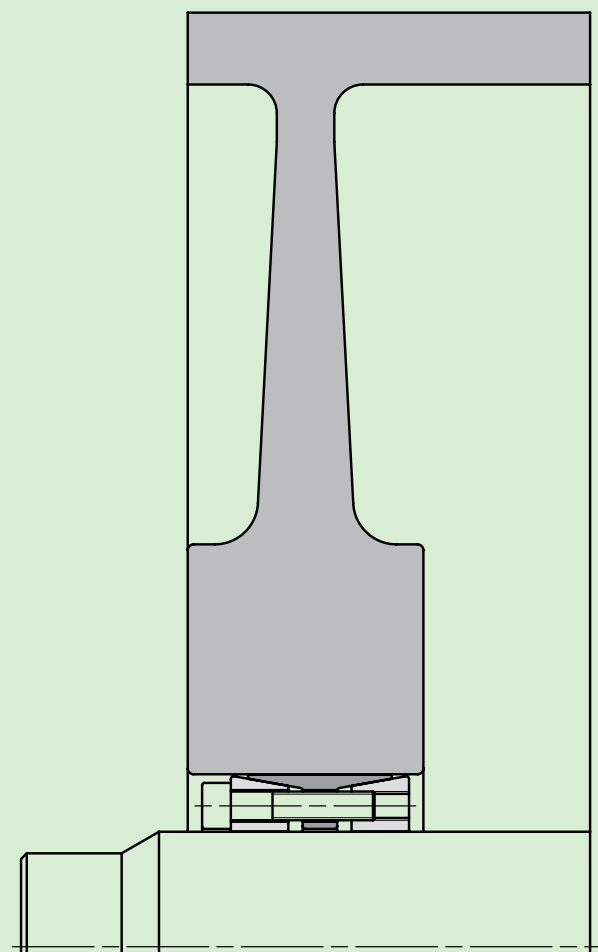
Ma: screws tightening torque

Mt: transmissible torque with Fax=0 kN

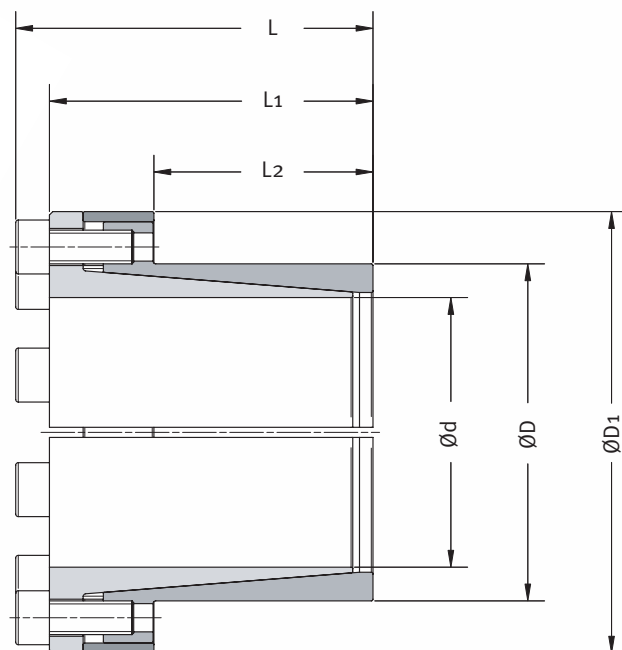
Fax: transmissible axial load with Mt=0 Nm

Ps: contact pressure on shaft

Ph: contact pressure in hub bore



Connection of end disc of conveyor pulley for mining industry. The MAV 1008 allows an optimized “T” shaped design of the end disc, which is lighter and cheaper and compensates higher bending moment generated by the tension of the belt.



Example of order: MAV 5061 50 x 65

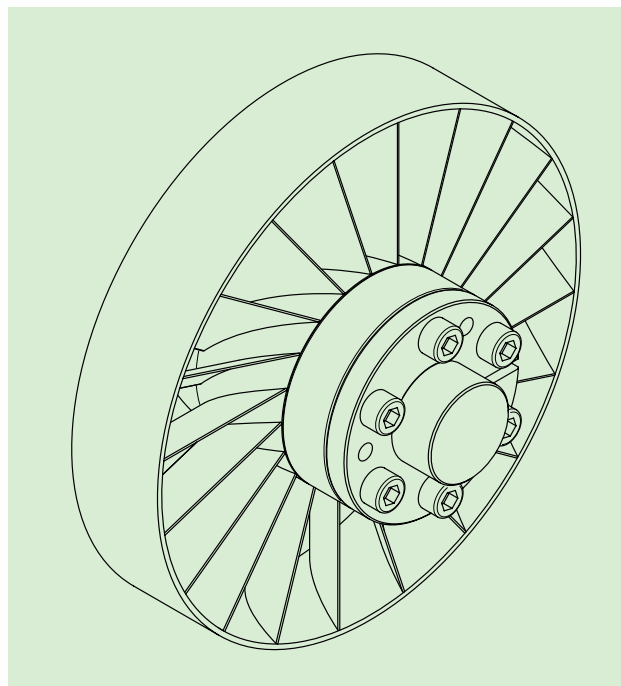
Features

- Medium capacity
- Self-centering, self-locking
- Fixed axial hub position during tightening
- Single taper design
- Well suited for connection of thin walled hubs
- Tolerances: shaft h7-h11; hub bore H7-H11
- Surface finish of shaft and hub bore $Ra < 3.2 \mu m$

Composition

- slotted inner ring, with integrated push-off threads
- Slotted outer ring
- Spacer
- Set of socket head cap screws, grade 12.9

Application examples



Connection of fan with thin walled hub

DIMENSIONS							SCREWS		PERFORMANCES				WEIGHT kg
d mm	x	D mm	D1 mm	L2 mm	L1 mm	L mm	size	Ma Nm	Mt Nm	Fax kN	Ps MPa	Ph MPa	
6 x	14	25	10	22,0	26,0	26,0	M 4 5		21	7	273	134	0,04
7 x	15	27	12	25,0	29,0	29,0	M 4 5		25	7	199	104	0,04
8 x	15	27	12	25,0	29,0	29,0	M 4 5		28	7	177	104	0,05
9 x	16	29	14	27,0	31,0	31,0	M 4 5		42	9	182	112	0,06
10 x	16	29	14	27,0	31,0	31,0	M 4 5		47	9	166	112	0,06
11 x	18	32	14	27,5	31,5	31,5	M 4 5		52	9	149	99	0,07
12 x	18	32	14	27,5	31,5	31,5	M 4 5		57	9	138	99	0,07
13 x	23	38	14	27,5	31,5	31,5	M 4 5		61	9	122	78	0,11
14 x	23	38	14	27,5	31,5	31,5	M 4 5		66	9	114	78	0,11
15 x	24	44	16	36,5	42,5	42,5	M 6 17		130	17	167	115	0,20
16 x	24	44	16	36,5	42,5	42,5	M 6 17		130	17	159	115	0,20
17 x	25	45	18	39,5	45,5	45,5	M 6 17		190	22	179	131	0,20
18 x	26	47	18	39,5	45,5	45,5	M 6 17		200	22	169	126	0,30
19 x	27	49	18	39,5	45,5	45,5	M 6 17		210	22	160	122	0,30
20 x	28	50	18	39,5	45,5	45,5	M 6 17		220	22	152	117	0,30
22 x	32	54	25	47,0	53,0	53,0	M 6 17		250	22	100	74	0,40
24 x	34	56	25	47,0	53,0	53,0	M 6 17		400	33	138	104	0,40
25 x	34	56	25	47,0	53,0	53,0	M 6 17		420	33	133	104	0,40
28 x	39	61	25	47,0	53,0	53,0	M 6 17		470	33	117	91	0,40
30 x	41	62	25	47,0	53,0	53,0	M 6 17		500	33	109	86	0,40
32 x	43	65	25	47,0	53,0	53,0	M 6 17		710	45	137	110	0,50
35 x	47	68	32	54,0	60,0	60,0	M 6 17		780	45	99	79	0,50
38 x	50	72	32	54,0	60,0	60,0	M 6 17		850	45	91	74	0,60
40 x	53	75	32	54,0	60,0	60,0	M 6 17		890	45	86	70	0,70
42 x	55	78	32	54,0	60,0	60,0	M 6 17		940	45	82	67	0,70
45 x	59	86	45	70,0	78,0	78,0	M 8 41		1'900	82	102	82	1,10
48 x	62	87	45	70,0	78,0	78,0	M 8 41		2'000	82	96	78	1,10
50 x	65	92	45	70,0	78,0	78,0	M 8 41		2'100	82	91	75	1,30
55 x	71	98	55	81,0	89,0	89,0	M 8 41		2'500	93	77	63	1,60
60 x	77	104	55	81,0	89,0	89,0	M 8 41		2'800	93	70	58	1,80
65 x	84	111	55	81,0	89,0	89,0	M 8 41		3'000	93	65	53	2,10
70 x	90	119	65	96,0	106,0	106,0	M 10 83		5'300	152	84	69	2,80
75 x	95	126	65	96,0	106,0	106,0	M 10 83		5'700	152	78	65	3,10
80 x	100	131	65	96,0	106,0	106,0	M 10 83		8'100	203	98	83	3,20
85 x	106	137	65	96,0	106,0	106,0	M 10 83		8'600	203	92	78	3,50
90 x	112	144	65	96,0	106,0	106,0	M 10 83		9'100	203	87	74	3,90
95 x	120	149	65	96,0	106,0	106,0	M 10 83		11'200	236	95	80	4,30
100 x	125	160	70	107,0	119,0	119,0	M 12 145		15'100	303	108	92	5,50
110 x	140	174	70	107,0	119,0	119,0	M 12 145		16'600	303	97	82	6,80
120 x	155	198	90	128,0	140,0	140,0	M 12 145		24'200	404	93	77	9,90
130 x	165	208	90	128,0	140,0	140,0	M 12 145		26'200	404	85	72	10,50

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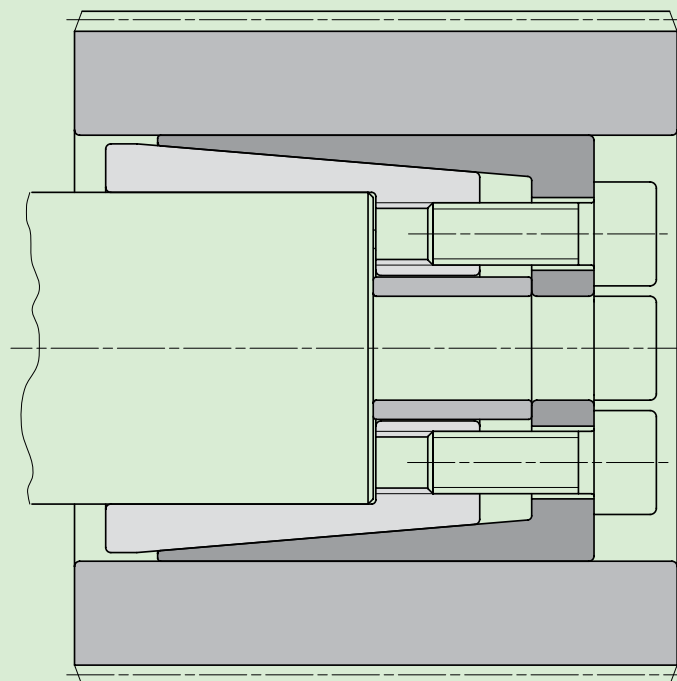
Ma: screws tightening torque

Mt: transmissible torque with Fax=0 kN

Fax: transmissible axial load with Mt=0 Nm

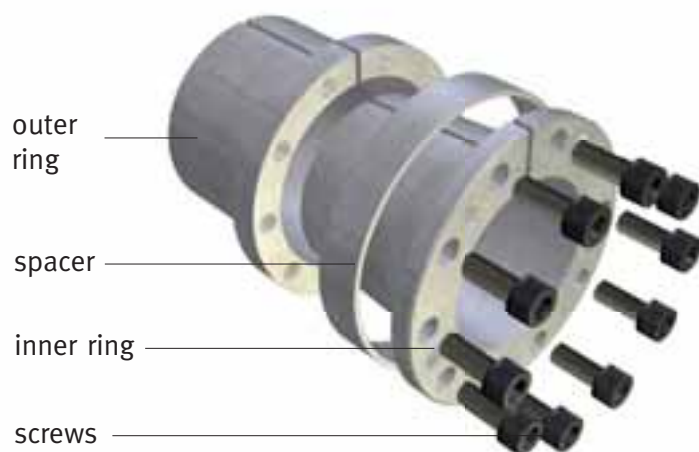
Ps: contact pressure on shaft

Ph: contact pressure in hub bore



Special inverted MAV 5061 for connection of aluminum gear.

Components



DIMENSIONS					SCREWS		PERFORMANCES				WEIGHT kg
d mm	x	D mm	L1 mm	L mm	size	Ma Nm	Mt Nm	Fax kN	Ps MPa	Ph MPa	
18	x	47	42,0	48,0	M 6	17	510	57	322	123	0,4
19	x	47	42,0	48,0	M 6	17	540	57	305	123	0,4
20	x	47	42,0	48,0	M 6	17	570	57	290	123	0,4
22	x	47	42,0	48,0	M 6	17	620	57	263	123	0,3
24	x	50	43,0	49,0	M 6	17	680	57	241	116	0,4
25	x	50	43,0	49,0	M 6	17	710	57	232	116	0,4
28	x	55	43,0	49,0	M 6	17	790	57	207	105	0,5
30	x	55	43,0	49,0	M 6	17	850	57	193	105	0,5
32	x	60	43,0	49,0	M 6	17	1'200	76	241	129	0,5
35	x	60	43,0	49,0	M 6	17	1'300	76	221	129	0,5
38	x	65	43,0	49,0	M 6	17	1'400	76	203	119	0,6
40	x	65	43,0	49,0	M 6	17	1'500	76	193	119	0,5
42	x	75	50,5	58,5	M 8	41	2'200	100	221	124	1,0
45	x	75	50,5	58,5	M 8	41	2'400	100	206	124	0,9
48	x	80	50,5	58,5	M 8	41	2'500	100	193	116	1,0
50	x	80	50,5	58,5	M 8	41	2'600	100	185	116	1,0
55	x	85	50,5	58,5	M 8	41	3'800	140	225	145	1,0
60	x	90	50,5	58,5	M 8	41	4'200	140	206	137	1,1
63	x	95	50,5	58,5	M 8	41	4'400	140	196	130	1,2
65	x	95	50,5	58,5	M 8	41	45'00	140	190	130	1,2
70	x	110	60,0	70,0	M 10	83	7'000	200	190	121	2,2
75	x	115	60,0	70,0	M 10	83	7'500	200	178	116	2,4
80	x	120	60,0	70,0	M 10	83	8'000	200	167	111	2,5
85	x	125	60,0	70,0	M 10	83	98'00	230	179	122	2,7
90	x	130	60,0	70,0	M 10	83	10'300	230	169	117	2,8
95	x	135	60,0	70,0	M 10	83	13'600	290	200	141	2,9
100	x	145	71,0	83,0	M 12	145	15'000	300	173	119	4,2
110	x	155	71,0	83,0	M 12	145	16'500	300	157	112	4,1
120	x	165	71,0	83,0	M 12	145	20'600	340	165	120	4,9
130	x	180	71,0	83,0	M 12	145	27'900	430	190	137	5,9
140	x	190	82,0	86,0	M 14	230	32'300	460	171	126	7,2
150	x	200	82,0	86,0	M 14	230	43'200	580	200	150	7,5
160	x	210	82,0	86,0	M 14	230	46'100	580	187	143	8,0
170	x	225	82,0	86,0	M 14	230	58'800	690	212	160	9,4
180	x	235	82,0	86,0	M 14	230	62'300	690	200	153	9,8
190	x	250	82,0	86,0	M 14	230	82'100	860	237	180	11,2
200	x	260	82,0	86,0	M 14	230	86'500	860	225	173	13,9
220	x	285	98,0	102,0	M 16	355	104'000	950	178	138	17,2
240	x	305	98,0	102,0	M 16	355	142'000	1'200	204	161	18,3
260	x	325	98,0	102,0	M 16	355	185'000	1'400	227	181	21,0
280	x	355	121,0	127,0	M 20	690	207'000	1'500	187	148	32,0
300	x	375	121,0	127,0	M 20	690	259'000	1'700	204	163	34,0
320	x	405	140,0	148,0	M 20	690	355'000	2'200	205	162	48,0
340	x	425	140,0	148,0	M 20	690	441'000	2'600	225	180	51,0
360	x	455	164,0	174,0	M 24	1'200	518'000	2'900	193	152	72,0
380	x	475	164,0	174,0	M 24	1'200	615'000	3'200	205	164	75,0
400	x	495	164,0	174,0	M 24	1'200	647'000	3'200	195	158	79,0



Features

- Medium capacity
- Self-centering, self-locking
- Fixed axial hub position during tightening
(MAV 6902 only)
- Single taper design
- High contact length, low contact pressures
- Tolerances: shaft h8; hub bore H8
- Surface finish of shaft and hub bore $Ra < 3.2 \mu m$

Composition

- Slotted inner ring, with integrated push-off threads
- Slotted outer ring
- Spacer (MAV 6902 only)
- Set of socket head cap screws, grade 12.9

Code:

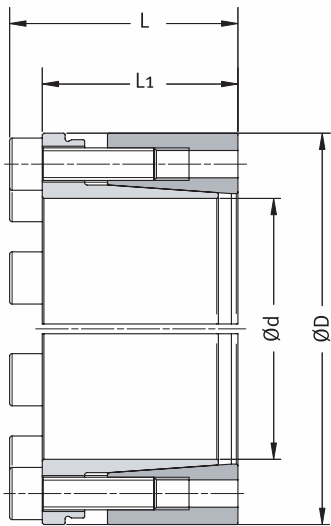
Ma: screws tightening torque

Mt: transmissible torque with Fax=0 kN

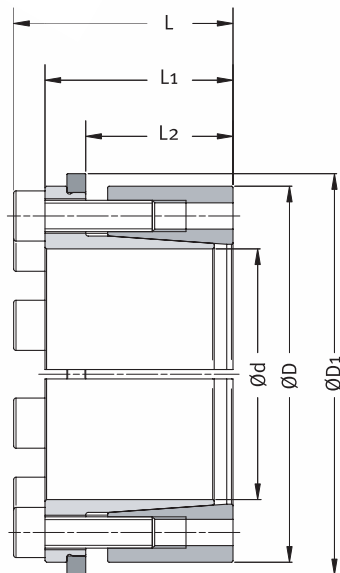
Fax: transmissible axial load with Mt=0 Nm

Ps: contact pressure on shaft

Ph: contact pressure in hub bore

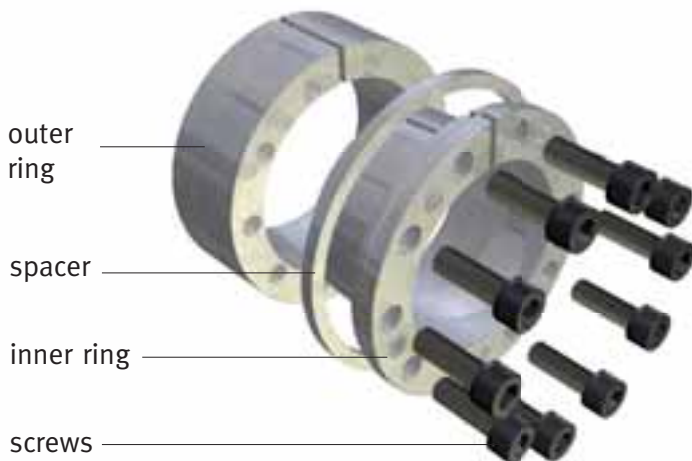


Example of order:
MAV 6901 50 x 80



Example of order:
MAV 6902 50 x 80

Components



DIMENSIONS							SCREWS			PERFORMANCES				WEIGHT ^{kg}
d mm	x	D mm	D1 mm	L2 mm	L1 mm	L mm	size	Ma Nm	Mt Nm	Fax kN	Ps MPa	Ph MPa		
18	x	47	53	30,0	42,0	48,0	M 6	17	310	35	198	76	0,4	
19	x	47	53	30,0	42,0	48,0	M 6	17	330	35	187	76	0,4	
20	x	47	53	30,0	42,0	48,0	M 6	17	350	35	178	76	0,4	
22	x	47	53	30,0	42,0	48,0	M 6	17	380	35	162	76	0,4	
24	x	50	56	31,0	43,0	49,0	M 6	17	420	35	148	71	0,4	
25	x	50	56	31,0	43,0	49,0	M 6	17	440	35	142	71	0,4	
28	x	55	61	31,0	43,0	49,0	M 6	17	490	35	127	65	0,5	
30	x	55	61	31,0	43,0	49,0	M 6	17	520	35	119	65	0,5	
32	x	60	66	31,0	43,0	49,0	M 6	17	700	47	148	79	0,5	
35	x	60	66	31,0	43,0	49,0	M 6	17	800	47	136	79	0,5	
38	x	65	71	31,0	43,0	49,0	M 6	17	900	47	125	73	0,6	
40	x	65	71	31,0	43,0	49,0	M 6	17	900	47	119	73	0,6	
42	x	75	81	35,5	50,5	58,5	M 8	41	1'400	60	136	76	1,0	
45	x	75	81	35,5	50,5	58,5	M 8	41	1'500	60	127	76	0,9	
48	x	80	86	35,5	50,5	58,5	M 8	41	1'500	60	119	71	1,0	
50	x	80	86	35,5	50,5	58,5	M 8	41	1'600	60	114	71	1,0	
55	x	85	91	35,5	50,5	58,5	M 8	41	2'400	90	138	89	1,1	
60	x	90	96	35,5	50,5	58,5	M 8	41	2'600	90	127	84	1,1	
63	x	95	101	35,5	50,5	58,5	M 8	41	2'700	90	121	80	1,3	
65	x	95	101	35,5	50,5	58,5	M 8	41	2'800	90	117	80	1,2	
70	x	110	117	47,0	60,0	70,0	M 10	83	4'300	120	117	74	2,3	
75	x	115	122	47,0	60,0	70,0	M 10	83	4'600	120	109	71	2,5	
80	x	120	127	47,0	60,0	70,0	M 10	83	4'900	120	102	68	2,6	
85	x	125	132	47,0	60,0	70,0	M 10	83	6'000	140	110	75	2,7	
90	x	130	137	47,0	60,0	70,0	M 10	83	6'400	140	104	72	2,9	
95	x	135	142	47,0	60,0	70,0	M 10	83	8'400	180	123	87	3,0	
100	x	145	153	53,0	71,0	83,0	M 12	145	9'200	180	106	73	4,4	
110	x	155	163	53,0	71,0	83,0	M 12	145	10'100	180	97	69	4,7	
120	x	165	173	53,0	71,0	83,0	M 12	145	12'600	210	101	74	5,0	
130	x	180	188	53,0	71,0	83,0	M 12	145	17'100	260	117	84	6,0	
140	x	190	199	59,0	82,0	86,0	M 14	230	19'800	280	105	78	7,3	
150	x	200	209	59,0	82,0	86,0	M 14	230	26'600	350	123	92	7,7	
160	x	210	219	59,0	82,0	86,0	M 14	230	28'400	350	115	88	8,2	
170	x	225	234	59,0	82,0	86,0	M 14	230	36'100	430	130	98	9,6	
180	x	235	244	59,0	82,0	86,0	M 14	230	38'300	430	123	94	10,1	
190	x	250	259	59,0	82,0	86,0	M 14	230	50'500	530	146	111	11,5	
200	x	260	269	59,0	82,0	86,0	M 14	230	53'200	530	138	106	14,1	
220	x	285	294	72,0	98,0	102,0	M 16	355	64'000	580	110	85	17,5	
240	x	305	314	72,0	98,0	102,0	M 16	355	87'000	700	126	99	18,6	
260	x	325	334	72,0	98,0	102,0	M 16	355	114'000	900	139	111	21,3	
280	x	355	364	83,0	121,0	127,0	M 20	690	127'000	900	115	91	32,5	
300	x	375	384	83,0	121,0	127,0	M 20	690	159'000	1'100	125	100	34,5	
320	x	405	414	98,0	140,0	148,0	M 20	690	219'000	1'400	126	99	49,0	
340	x	425	434	98,0	140,0	148,0	M 20	690	271'000	1'600	138	111	52,0	
360	x	455	464	118,0	164,0	174,0	M 24	1'200	318'000	1'800	118	94	73,0	
380	x	475	484	118,0	164,0	174,0	M 24	1'200	378'000	2'000	126	101	76,0	
400	x	495	504	118,0	164,0	174,0	M 24	1'200	398'000	2'000	120	97	80,0	

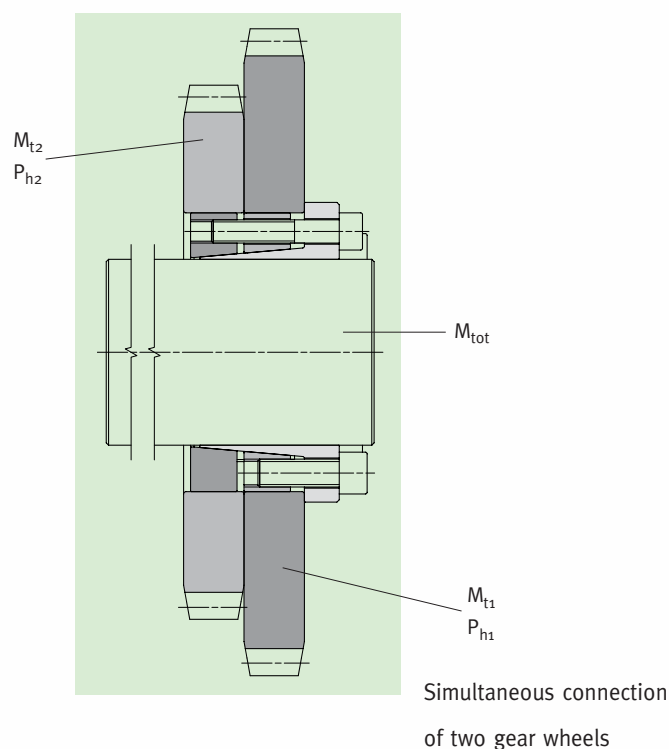
DIMENSIONS								SCREWS			
d mm	x	D mm	D1 mm	L3 mm	L2 mm	L1 mm	L mm	size 1	Ma Nm	size 2	Ma Nm
30	x	60	66	15	36	48	56	M 8	41	M 6	17
32	x	65	71	15	36	48	56	M 8	41	M 6	17
35	x	65	71	15	36	48	56	M 8	41	M 6	17
38	x	70	76	15	36	48	56	M 8	41	M 6	17
40	x	70	76	15	36	48	56	M 8	41	M 6	17
42	x	80	86	18	42	57	67	M 10	83	M 8	41
45	x	80	86	18	42	57	67	M 10	83	M 8	41
48	x	85	91	18	42	57	67	M 10	83	M 8	41
50	x	85	91	18	42	57	67	M 10	83	M 8	41
55	x	90	96	18	42	57	67	M 10	83	M 8	41
60	x	95	101	18	42	57	67	M 10	83	M 8	41
65	x	100	106	18	42	57	67	M 10	83	M 8	41
70	x	115	121	24	56	74	86	M 12	145	M 10	83
75	x	125	131	24	56	74	86	M 12	145	M 10	83
80	x	125	131	24	56	74	86	M 12	145	M 10	83
85	x	135	141	24	56	74	86	M 12	145	M 10	83
90	x	135	141	24	56	74	86	M 12	145	M 10	83
95	x	150	156	26	67	82	96	M 14	230	M 12	145
100	x	150	156	26	67	82	96	M 14	230	M 12	145
110	x	160	166	26	67	82	96	M 14	230	M 12	145
120	x	170	176	26	67	82	96	M 14	230	M 12	145
130	x	190	196	30	71	95	111	M 16	355	M 14	230
140	x	200	206	30	71	95	111	M 16	355	M 14	230
150	x	210	216	30	71	95	111	M 16	355	M 14	230
160	x	220	226	30	71	95	111	M 16	355	M 14	230
170	x	250	256	40	92	122	142	M 20	690	M 16	355
180	x	250	256	40	92	122	142	M 20	690	M 16	355
190	x	270	276	40	92	122	142	M 20	690	M 16	355
200	x	270	276	40	92	122	142	M 20	690	M 16	355
220	x	290	296	40	92	122	142	M 20	690	M 16	355
240	x	310	316	40	92	122	142	M 20	690	M 16	355
260	x	330	336	40	92	122	142	M 20	690	M 16	355
280	x	365	371	45	108	144	168	M 24	1'200	M 20	690
300	x	385	391	45	108	144	168	M 24	1'200	M 20	690
340	x	425	431	45	108	144	168	M 24	1'200	M 20	690
380	x	465	471	45	108	144	168	M 24	1'200	M 20	690
400	x	485	491	45	108	144	168	M 24	1'200	M 20	690
420	x	505	511	45	108	144	168	M 24	1'200	M 20	690
440	x	525	531	59	137	178	202	M 24	1'200	M 20	690
460	x	545	551	59	137	178	202	M 24	1'200	M 20	690
480	x	565	571	59	137	178	202	M 24	1'200	M 20	690
500	x	585	591	59	137	178	202	M 24	1'200	M 20	690
520	x	605	611	59	137	178	202	M 24	1'200	M 20	690
540	x	625	631	59	137	178	202	M 24	1'200	M 20	690
560	x	645	651	59	137	178	202	M 24	1'200	M 20	690
580	x	665	671	59	137	178	202	M 24	1'200	M 20	690
600	x	685	691	59	137	178	202	M 24	1'200	M 20	690

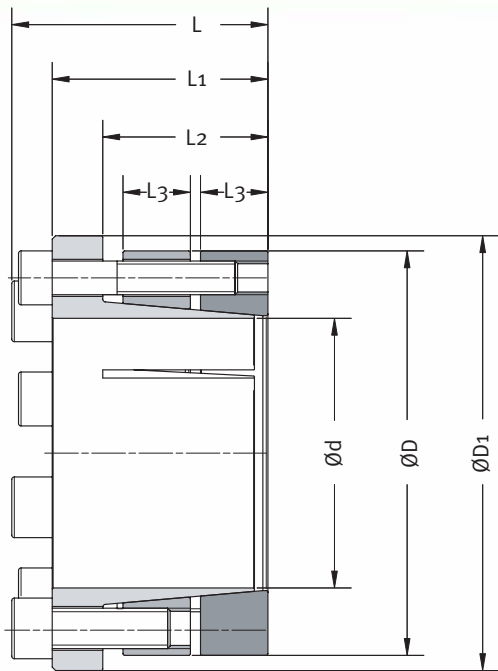


Features

- High capacity
- Self-centering, self-locking
- Fixed axial hub position during tightening
- Single taper design with two outer rings
- Well suited to transmit high bending moments
- Tolerances: shaft h7-h11; hub bore H7-H11
- Surface finish of shaft and hub bore $Ra < 3.2 \mu m$

Application examples



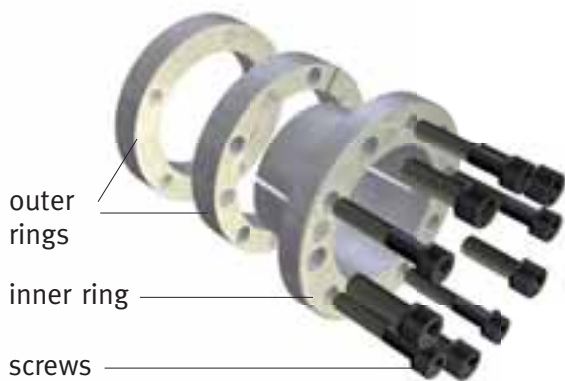


Example of order: MAV 6002 50 x 85

Composition

- Slotted inner ring, with integrated push-off threads
- Two slotted outer rings
- Two sets of different sizes socket head cap screws, grade 12.9

Components



Code:

Ma: screws tightening torque
 Mt: transmissible torque with Fax=0 kN
 Fax: transmissible axial load with Mt=0 Nm
 Ps: contact pressure on shaft
 Ph: contact pressure in hub bore

DIMENSIONS			PERFORMANCES										WEIGHT kg
d mm	x	D mm	M _{t1} Nm	M _{t2} Nm	M _{tot} Nm	Fax ₁ kN	Fax ₂ kN	Fax _{tot} kN	Ps ₁ MPa	Ph ₁ MPa	Ps ₂ MPa	Ph ₂ MPa	
30	x	60	620	330	950	41	22	63	243	121	131	66	0,8
32	x	65	660	450	1'110	41	28	69	227	112	154	76	0,9
35	x	65	720	490	1'210	41	28	69	208	112	141	76	0,9
38	x	70	980	530	1'510	51	28	79	239	130	130	70	1,0
40	x	70	1'030	560	1'590	51	28	79	227	130	123	70	1,0
42	x	80	1'420	1'080	2'500	68	51	119	237	124	181	95	1,6
45	x	80	1'520	1'160	2'680	68	51	119	221	124	168	95	1,5
48	x	85	2'030	1'230	3'260	84	51	135	259	146	158	89	1,7
50	x	85	2'110	1'290	3'400	84	51	135	249	146	152	89	1,6
55	x	90	2'320	1'410	3'730	84	51	135	226	138	138	84	1,7
60	x	95	3'040	1'850	4'890	101	62	163	249	157	152	96	1,9
65	x	100	3'290	2'010	5'300	101	62	163	230	149	140	91	2,0
70	x	115	5'300	3'550	8'850	151	101	252	239	145	160	97	3,6
75	x	125	6'620	4'430	11'050	177	118	295	260	156	174	105	4,3
80	x	125	7'060	4'730	11'790	177	118	295	244	156	163	105	4,0
85	x	135	7'500	5'020	12'520	177	118	295	230	145	154	97	4,7
90	x	135	7'950	5'320	13'270	177	118	295	217	145	145	97	4,3
95	x	150	11'300	8'390	19'690	238	177	415	255	162	190	120	6,1
100	x	150	11'900	8'830	20'730	238	177	415	242	162	180	120	5,6
110	x	160	13'100	9'710	22'810	238	177	415	220	151	164	113	6,1
120	x	170	14'300	10'600	24'900	238	177	415	202	143	150	106	6,5
130	x	190	24'200	17'600	41'800	372	271	643	253	173	185	126	10,5
140	x	200	26'000	19'000	45'000	372	271	643	235	164	171	120	11,3
150	x	210	27'900	20'400	48'300	372	271	643	219	157	160	114	11,8
160	x	220	29'700	21'700	51'400	372	271	643	205	149	150	109	12,5
170	x	250	49'400	31'600	81'000	581	372	953	227	154	145	99	24,1
180	x	250	52'300	33'500	85'800	581	372	953	214	154	137	99	21,5
190	x	270	69'000	44'100	113'100	727	465	1'192	254	178	162	114	26,3
200	x	270	72'700	46'500	119'200	727	465	1'192	241	178	154	114	23,6
220	x	290	79'900	51'100	131'000	727	465	1'192	219	166	140	106	25,5
240	x	310	105'000	66'900	171'900	872	558	1'430	241	186	154	119	27,6
260	x	330	113'000	72'500	185'500	872	558	1'430	222	175	142	112	29,6
280	x	365	148'000	102'000	250'000	1'060	727	1'787	223	171	153	117	45,5
300	x	385	159'000	109'000	268'000	1'060	727	1'787	208	162	143	111	48,3
340	x	425	252'000	173'000	425'000	1'480	1'020	2'500	257	206	176	141	53,9
380	x	465	322'000	221'000	543'000	1'690	1'160	2'850	263	215	180	147	59,6
400	x	485	339'000	232'000	571'000	1'690	1'160	2'850	250	206	171	141	62,4
420	x	505	356'000	244'000	600'000	1'690	1'160	2'850	238	198	163	136	65,2
440	x	525	373'000	256'000	629'000	1'690	1'160	2'850	173	145	119	100	84,3
460	x	545	390'000	267'000	657'000	1'690	1'160	2'850	166	140	114	96	87,8
480	x	565	406'000	279'000	685'000	1'690	1'160	2'850	159	135	109	92	91,3
500	x	585	476'000	327'000	803'000	1'910	1'310	3'220	171	146	118	101	94,8
520	x	605	495'000	340'000	835'000	1'910	1'310	3'220	165	142	113	97	98,3
540	x	625	514'000	353'000	867'000	1'910	1'310	3'220	159	137	109	94	102,0
560	x	645	533'000	366'000	899'000	1'910	1'310	3'220	153	133	105	91	105,0
580	x	665	614'000	421'000	1'035'000	2'120	1'450	3'570	164	143	113	98	109,0
600	x	685	635'000	436'000	1'071'000	2'120	1'450	3'570	159	139	109	95	113,0

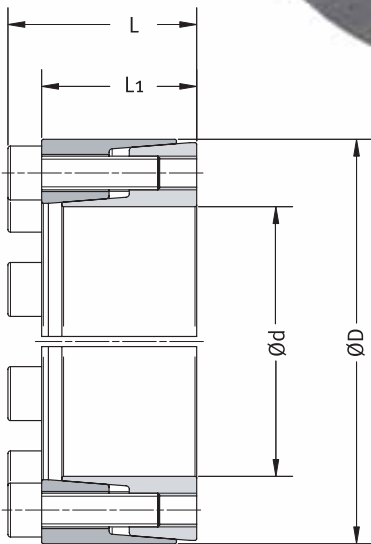


Features

- Medium capacity
- Self-centering, self-locking
- Fixed axial hub position during tightening
- Single taper design
- Well suited for axial locking of other components (ex. bearings) adjacent to the hub
- Tolerances: shaft h8; hub bore H8
- Surface finish of shaft and hub bore $Ra < 3.2 \mu m$

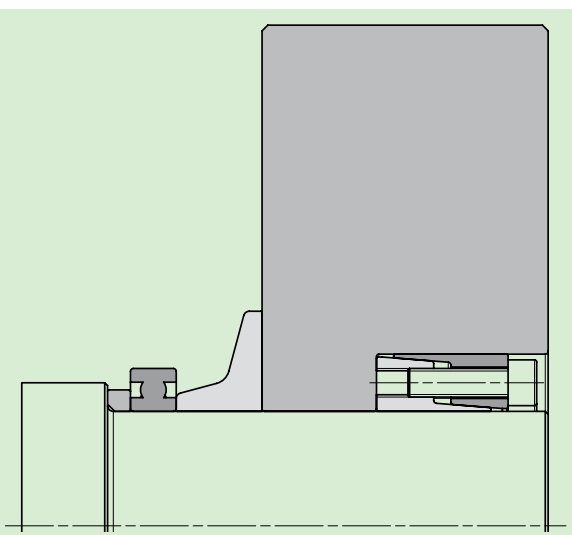
Composition

- Slotted inner ring
- Slotted outer ring, with integrated push-off threads
- Set of socket head cap screws, grade 12.9



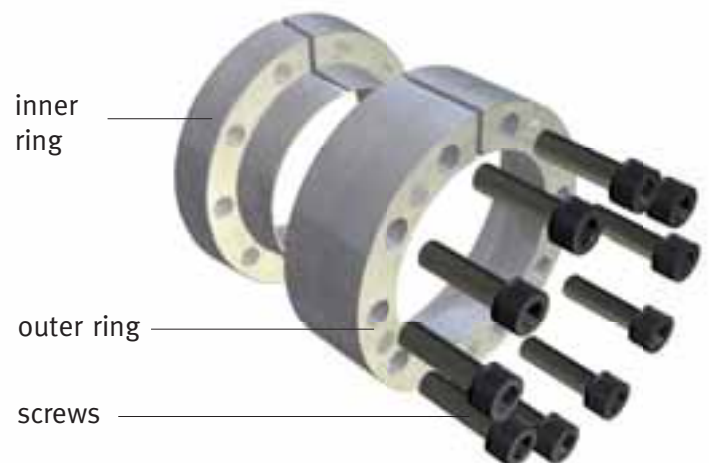
Example of order: MAV 6903 50 x 80

Application examples



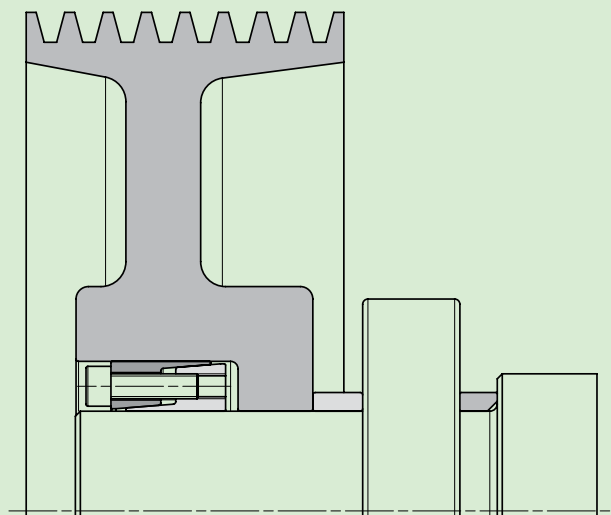
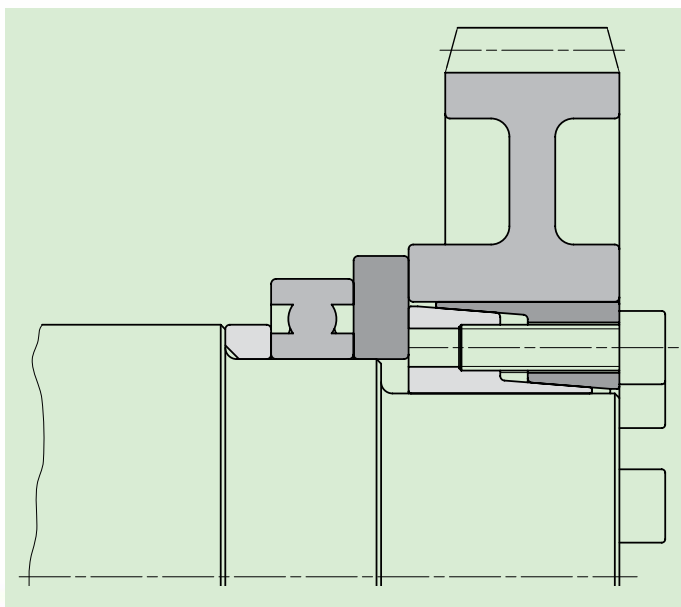
Fly wheel connection

Components



DIMENSIONS					SCREWS		PERFORMANCES				WEIGHT kg
d mm	x	D mm	L1 mm	L mm	size	Ma Nm	Mt Nm	Fax kN	Ps MPa	Ph MPa	
20	x	47	29	35	M 6	17	280	28	154	65	0,3
22	x	47	29	35	M 6	17	310	28	140	65	0,3
24	x	50	29	35	M 6	17	400	33	154	74	0,3
25	x	50	29	35	M 6	17	420	33	148	74	0,3
28	x	55	29	35	M 6	17	470	33	132	67	0,4
30	x	55	29	35	M 6	17	500	33	123	67	0,3
32	x	60	29	35	M 6	17	710	45	154	82	0,4
35	x	60	29	35	M 6	17	780	45	141	82	0,4
38	x	65	29	35	M 6	17	850	45	130	76	0,4
40	x	65	29	35	M 6	17	890	45	123	76	0,4
42	x	75	36	44	M 8	41	1'500	72	152	85	0,7
45	x	75	36	44	M 8	41	1'600	72	142	85	0,7
48	x	80	36	44	M 8	41	1'700	72	133	80	0,8
50	x	80	36	44	M 8	41	1'800	72	127	80	0,8
55	x	85	36	44	M 8	41	2'300	82	132	86	0,5
60	x	90	36	44	M 8	41	2'500	82	121	81	0,9
63	x	95	36	44	M 8	41	2'900	93	130	86	0,9
65	x	95	36	44	M 8	41	3'000	93	126	86	0,9
70	x	110	46	56	M 10	83	4'700	135	128	81	1,8
75	x	115	46	56	M 10	83	5'100	135	119	78	1,9
80	x	120	46	56	M 10	83	5'400	135	112	75	2,0
85	x	125	46	56	M 10	83	6'500	152	119	81	2,1
90	x	130	46	56	M 10	83	6'800	152	112	78	2,2
95	x	135	46	56	M 10	83	8'000	169	118	83	2,3
100	x	145	56	68	M 12	145	10'100	202	107	74	3,4
110	x	155	56	68	M 12	145	11'100	202	97	69	3,7
120	x	165	56	68	M 12	145	13'600	227	100	73	4,0
130	x	180	68	80	M 12	145	19'700	303	101	73	5,9

Connection of
press gear
for plastic
materials



The specific purpose of series MAV 6903 is the axial locking of other elements adjacent to hub (e.g. bearings) during tightening of locking assembly. The movement of outer ring of locking assembly generates an axial force which is transmitted to hub and, by means of flanges and spacers, to adjacent elements.

Code:

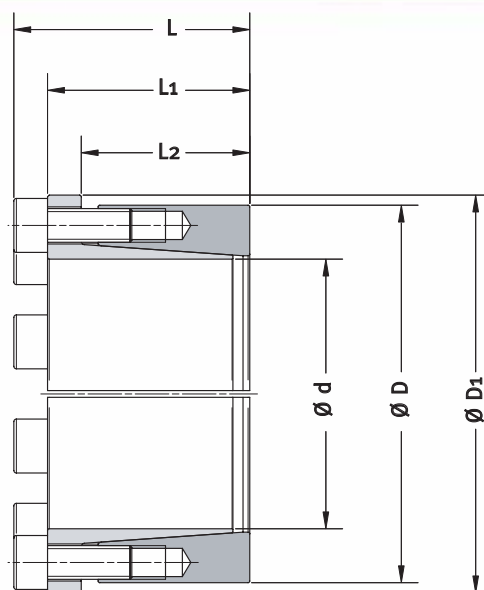
Ma: screws tightening torque

Mt: transmissible torque with Fax=0 kN

Fax: transmissible axial load with Mt=0 Nm

Ps: contact pressure on shaft

Ph: contact pressure in hub bore



Example of order: MAV 1261 40 x 67

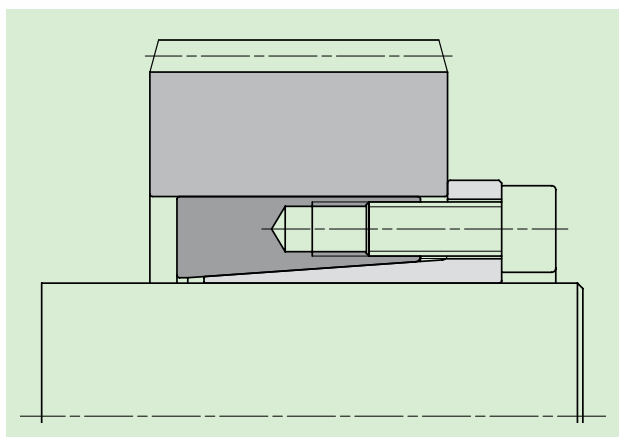
Features

- Medium capacity
- Self-centering, self-locking
- Fixed axial hub position during tightening
- Single taper design
- Zinc plated rings
- **LUBRICATION.** Rings, shaft, hub bore: OIL-FREE and DRY. Screws: OILED
- Tolerances: shaft ± 0.08 mm; hub bore ± 0.08 mm
- Surface finish of shaft and hub bore $Ra < 3.2 \mu m$

Composition

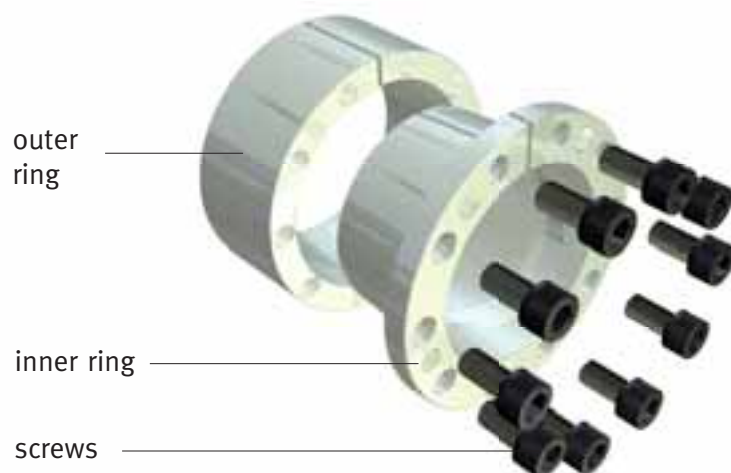
- Slotted inner ring, with integrated push-off threads
- Slotted outer ring
- Set of socket head cap screws, grade 12.9

Application examples



Gear connection

Components



DIMENSIONS									SCREWS			PERFORMANCES					WEIGHT kg
d mm	d inch	x	D mm	D inch	D1 mm	L mm	L1 mm	L2 mm	size	Ma Nm	Mt Nm	Fax kN	Ps MPa	Ph MPa			
15,00		x	38,00		43	31,0	25,0	19,0	M 6 17		183	24,3	181	72	0,2		
15,88	5/ 8	x	38,10	1 1/ 2	43	31,0	25,0	19,0	M 6 17		193	24,3	171	71	0,2		
16,00		x	38,00		43	31,0	25,0	19,0	M 6 17		195	24,3	170	72	0,2		
17,00		x	38,00		43	31,0	25,0	19,0	M 6 17		207	24,3	160	72	0,2		
17,46	11/16	x	38,10	1 1/ 2	43	31,0	25,0	19,0	M 6 17		212	24,3	156	71	0,2		
18,00		x	38,00		43	31,0	25,0	19,0	M 6 17		219	24,3	151	72	0,2		
19,00		x	38,00		43	31,0	25,0	19,0	M 6 17		231	24,3	143	72	0,2		
19,05	3/ 4	x	38,10	1 1/ 2	43	31,0	25,0	19,0	M 6 17		232	24,3	143	71	0,2		
20,00		x	45,00		50	34,2	28,2	22,2	M 6 17		304	30,4	145	65	0,3		
20,64	13/16	x	44,45	1 3/ 4	50	34,2	28,2	22,2	M 6 17		314	30,4	141	65	0,3		
22,00		x	45,00		50	34,2	28,2	22,2	M 6 17		335	30,4	132	65	0,2		
22,23	7/ 8	x	44,45	1 3/ 4	50	34,2	28,2	22,2	M 6 17		338	30,4	131	65	0,2		
23,81	15/16	x	44,45	1 3/ 4	50	34,2	28,2	22,2	M 6 17		362	30,4	122	65	0,2		
24,00		x	45,00		50	34,2	28,2	22,2	M 6 17		365	30,4	121	65	0,2		
25,00		x	45,00		50	34,2	28,2	22,2	M 6 17		380	30,4	116	65	0,2		
25,40	1	x	44,45	1 3/ 4	50	34,2	28,2	22,2	M 6 17		386	30,4	114	65	0,2		
26,99	1 1/16	x	50,80	2	57	37,4	31,4	25,4	M 6 17		493	36,5	113	60	0,3		
28,00		x	51,00		57	37,4	31,4	25,4	M 6 17		511	36,5	109	60	0,3		
28,58	1 1/ 8	x	50,80	2	57	37,4	31,4	25,4	M 6 17		522	36,5	107	60	0,3		
30,00		x	51,00		57	37,4	31,4	25,4	M 6 17		548	36,5	102	60	0,3		
30,16	1 3/16	x	50,80	2	57	37,4	31,4	25,4	M 6 17		551	36,5	101	60	0,3		
31,75	1 1/ 4	x	50,80	2	57	37,4	31,4	25,4	M 6 17		580	36,5	96	60	0,3		
32,00		x	51,00		57	37,4	31,4	25,4	M 6 17		584	36,5	95	60	0,3		
33,34	1 5/16	x	60,33	2 3/ 8	67	50,0	44,0	38,0	M 6 17		811	48,7	82	45	0,6		
34,00		x	60,50		67	50,0	44,0	38,0	M 6 17		827	48,7	80	45	0,6		
34,93	1 3/ 8	x	60,33	2 3/ 8	67	50,0	44,0	38,0	M 6 17		850	48,7	78	45	0,6		
35,00		x	60,50		67	50,0	44,0	38,0	M 6 17		852	48,7	78	45	0,6		
36,00		x	60,50		67	50,0	44,0	38,0	M 6 17		876	48,7	76	45	0,6		
36,51	1 7/16	x	60,33	2 3/ 8	67	50,0	44,0	38,0	M 6 17		889	48,7	74	45	0,6		
38,00		x	60,50		67	50,0	44,0	38,0	M 6 17		925	48,7	72	45	0,5		
38,10	1 1/ 2	x	60,33	2 3/ 8	67	50,0	44,0	38,0	M 6 17		927	48,7	71	45	0,5		
39,69	1 9/16	x	66,68	2 5/ 8	73	54,8	48,8	42,8	M 6 17		966	48,7	61	36	0,8		
40,00		x	67,00		73	54,8	48,8	42,8	M 6 17		974	48,7	60	36	0,8		
41,28	1 5/ 8	x	66,68	2 5/ 8	73	54,8	48,8	42,8	M 6 17		1'005	48,7	58	36	0,8		
42,00		x	67,00		73	54,8	48,8	42,8	M 6 17		1'022	48,7	57	36	0,7		
42,86	1 11/16	x	66,68	2 5/ 8	73	54,8	48,8	42,8	M 6 17		1'043	48,7	56	36	0,7		
44,45	1 3/ 4	x	66,68	2 5/ 8	73	54,8	48,8	42,8	M 6 17		1'082	48,7	54	36	0,7		
45,00		x	73,00		81	62,8	56,8	50,8	M 6 17		1'095	48,7	45	28	1,0		
46,04	1 13/16	x	73,03	2 7/ 8	81	62,8	56,8	50,8	M 6 17		1'121	48,7	44	28	1,0		
47,63	1 7/ 8	x	73,03	2 7/ 8	81	62,8	56,8	50,8	M 6 17		1'159	48,7	43	28	1,0		
48,00		x	73,00		81	62,8	56,8	50,8	M 6 17		1'168	48,7	42	28	1,0		
49,21	1 15/16	x	73,03	2 7/ 8	81	62,8	56,8	50,8	M 6 17		1'198	48,7	41	28	0,9		
50,00		x	73,00		81	62,8	56,8	50,8	M 6 17		1'217	48,7	41	28	0,9		
50,80	2	x	73,03	2 7/ 8	81	62,8	56,8	50,8	M 6 17		1'236	48,7	40	28	0,9		

Code:

Ma: screws tightening torque

Mt: transmissible torque with Fax=0 kN

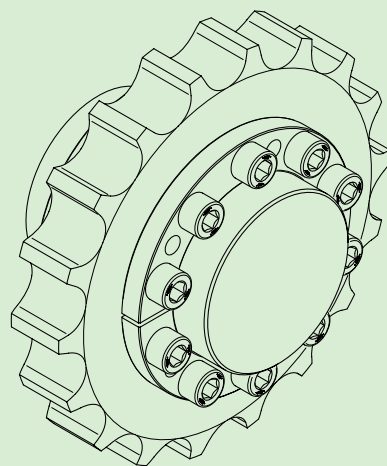
Fax: transmissible axial load with Mt=0 Nm

Ps: contact pressure on shaft

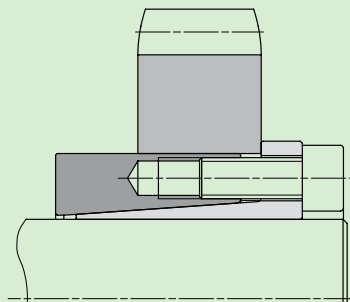
Ph: contact pressure in hub bore

This series is used as an alternative to the hex nut keyless bushings.

The force generated by large nut is provided by small quantity of screws, which eliminates the need of large and expensive wrenches and allows easier installation.



Pinion gear connection



Pinion gear connection

Installation and removal instructions

Installation

MAV locking assemblies are supplied ready for installation. Performances are based on a friction coefficient $\mu=0.12$, for lightly oiled rings, screws, shaft and hub bore. It is important NOT TO USE molybdenum disulphide lubricants (ex. Molykote, Never-Seeze or similar).

1. Disengage the rings by loosening the screws or by tightening some of them into the push-off threads (fig.1).
2. Insert the locking assembly and relocate any screw used to separate the rings.
3. Ensure the right position of shaft and hub, then hand tighten the screws.
4. Use torque wrench and set it approx. 5% higher than specified tightening torque. Tighten the screws in a crosswise pattern in several steps.
5. Reset torque wrench to the specified tightening torque and make sure no screw can turn, otherwise repeat the procedure from step 4 for 1 or 2 times.

Removal

Prior to initiating the removal procedure, check to ensure that no load is acting on the locking assembly, shaft or any mounted component.

1. Remove all screws. Transfer required number of screws into all push-off threads.
2. Tighten the screws in a crosswise pattern in several steps until rings disengage (fig.2).

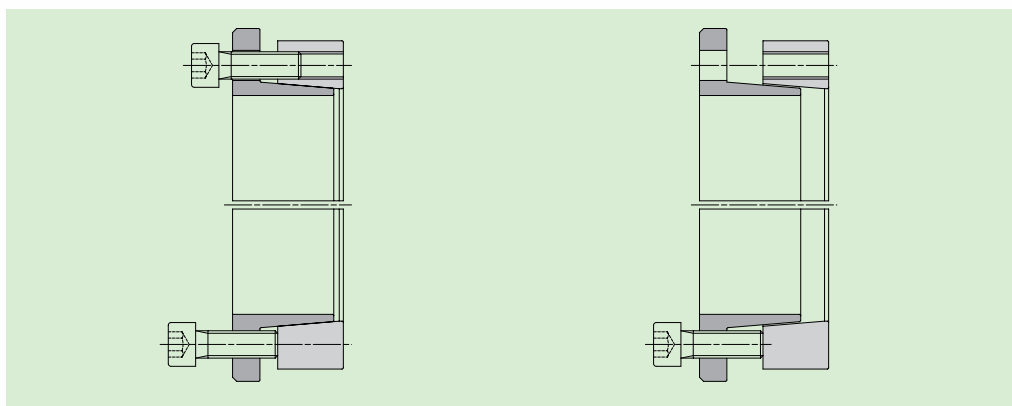


Fig. 1

Fig. 2

NOTE: download from our website www.mav.it, or request to our Technical Department, the detailed installation and removal instructions for each MAV series.

Technical Support

Data of application

If you need technical assistance to select the right MAV Locking Device for your application, please fill out this questionnaire and send it to us by fax using the following number:

+39 0461 84 51 50

Peak torque to be transmitted T _____ [Nm]
Peak axial force to be transmitted F _____ [kN]
Peak bending moment to be transmitted B _____ [Nm]
Peak radial force to be transmitted Frad _____ [kN]
Maximum speed n _____ [1/min]
Operating temperature To _____ [°C]
Ambient temperature Ta _____ [°C]

SHAFT DATA:

Size d _____ [mm]
If hollow-shaft; inner diameter di _____ [mm]
Material _____
Yield point $R_{p_{0,2}}$ _____ [MPa]

HUB DATA:

Outer diameter dH _____ [mm]
Length L _____ [mm]
Material _____
Yield point $R_{p_{0,2}}$ _____ [MPa]

Describe your application

(if possible, please attach a sketch or a drawing)



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Your local MAV distributor: