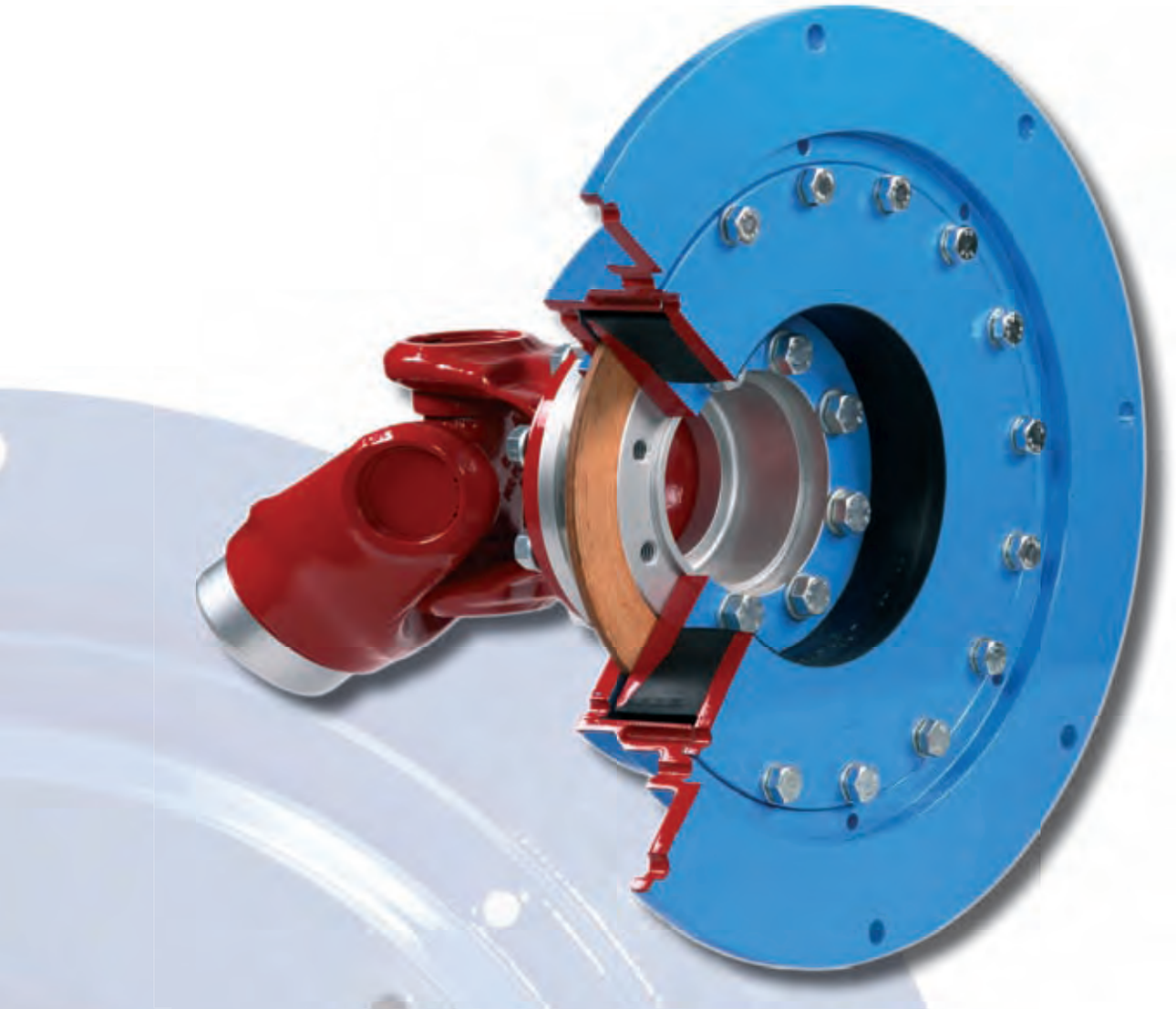
Reich Kupplungen

Dipl.-Ing. Herwarth Reich GmbH

D2C
Designed to Customer

ARCUSAFLEX-VSK

Highly torsionally flexible coupling for drive shafts



Your drive is our strength. Your strength is our drive.





Contents

D2C – Designed to Customer

The principle of Designed to Customer describes the recipe for success of REICH-KUPPLUNGEN: Utilizing our product knowledge, our customers are supplied with couplings which are developed and tailor-made to their specific requirements. The designs are mainly based on modular components to provide effective and efficient customer solutions. The unique form of close cooperation with our partners includes consultation, design, calculation, manufacture and integration into existing environments. Adapting our manufacturing to customer-specific production and utilizing global logistics concepts provides better after sales service - worldwide. This customer-oriented concept applies to both standard products and production in small batch sizes.

The company policy of REICH-KUPPLUNGEN embraces, first and foremost, principles such as customer satisfaction, flexibility, quality, prompt delivery and adaptability to the requirements of our customers.

REICH-KUPPLUNGEN supplies not only a coupling, but a solution: Designed to Customer.

Edition February 2013

The present ARCUSAFLEX-VSK edition renders parts of the previous ARCUSAFLEX-VSK catalogues obsolete.
All dimensions in millimeters.
We reserve the right to change dimensions and / or design details without prior notice.

General technical description

Cardan shafts are used in a drive train when a large shaft displacement or an extended distance between the drive and the driven components must be compensated. Depending on the arrangement of the drive train components, a non-uniform motion of the speed may result, and since cardan shafts exhibit some torsional flexibility, the mass of the prime mover and driven machine may induce a resonant system.

If the prime mover is an internal combustion engine, a highly flexible AC-VSK coupling is required to protect the drive train from dynamic overload. Highly flexible AC-VSK couplings are capable of shifting resonant ranges below the lowest operating speed and of reducing resonance-induced vibratory torques under reversed stresses to tolerable levels.

The highly flexible AC-VSK coupling is mounted on the engine flywheel, ahead of the drive train with drive shaft. The AC-VSK coupling contains its own axial and radial bearing to support the weight of the drive shaft and its reaction forces.

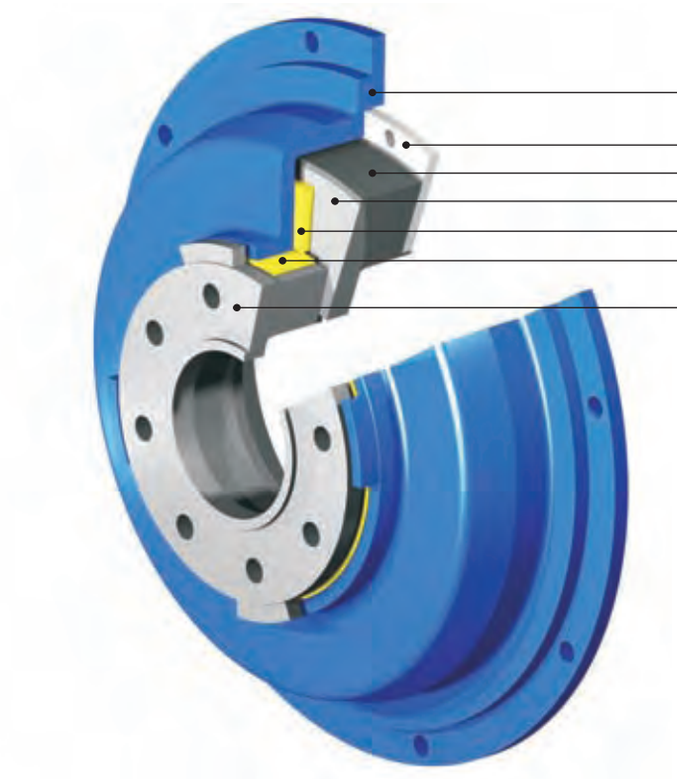
Coupling Sizes
The AC-VSK coupling series is available in nine standard sizes covering a torque range from 390 to 20 000 Nm. REICH-KUPPLUNGEN has an extensive programm of couplings to cover nearly every drive configuration. Customized solutions can be developed and manufactured even in small batches or as prototypes. Calculation programme are available for coupling selection and sizing. - Please challenge us!

Application of the highly flexible ARCUSAFLEX-VSK couplings
For use with combustion engines in conjunction with drive shafts for splitter gearboxes, torque converters, ship gearboxes, control gears and pump drives, for example in drives of construction equipment, excavators, cranes, marine propulsion, locomotives, pump installations and dump trucks.

The most important attributes and advantages of the highly flexible AC-VSK coupling are:

- Linear torsional deflection characteristic
- Elements available in different torsional stiffnesses
- Enhanced damping capacity through frictional damping
- Maintenance-free coupling bearings
- Radial bearing close to the cardan joint
- A variety of designs for different cardan shaft configurations
- Many types with SAE connection dimensions or as specified
- Compact construction, the highly flexible element being protected by the housing
- Fail-safe device visible from the outside for ease of inspection

AC-VSK coupling layout



Coupling shown with fail safe device

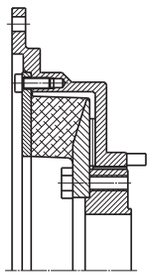
Item	Specification	Material
1	Coupling flange	Standard design spheroidal cast iron GGG 40
2	Drive shaft connection flange	Steel (yield strength min. 320 MPa)
3	Radial bearing	Metal or plastic (maintenance-free)
4	Thrust bearing	Composite material (maintenance-free)
5	Flexible element	Rubber according to technical details
5a, 5b	Element discs	Steel

The highly flexible ARCUSAFLEX-VSK couplings of the type AC-VSK ... F2 are specially designed for fitting to flywheels of internal combustion engines. The coupling flanges (**1**) of the standard design therefore match engine flywheels with SAE connecting dimensions.

The highly flexible coupling element (**5**), is made of rubber bonded to steel discs and is mounted with an axial preload acting on the thrust bearing (**4**). The output flange (**2**), used to connect the cardan shaft is precisely located by means of the radial bearing (**3**) ensuring excellent concentricity.

The dynamic performance of the coupling is improved by the pre-loaded rubber element and stabilizing effect of the support bearings providing enhanced damping capacity due to additional frictional damping.

Standard types



Type AC-VSK....F2

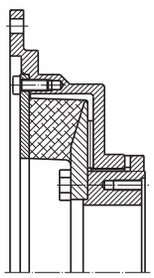
To connect an engine flywheel to a **cardan shaft with metric DIN flange**

T_{KN} = 390 – 20 000 Nm

Technical data Page 7

Dimensions Page 8

Available with or without fail-safe device



Type AC-VSK....F2

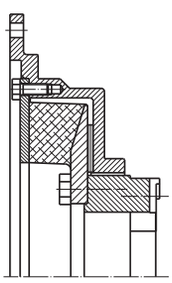
To connect an engine flywheel to a **SPICER cardan shaft**

T_{KN} = 390 – 20 000 Nm

Technical data Page 7

Dimensions Page 9

Available with or without fail-safe device



Type AC-VSK....F2

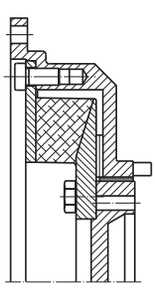
To connect an engine flywheel to a **MECHANICS cardan shaft**

T_{KN} = 390 – 20 000 Nm

Technical data Page 7

Dimensions Page 10

Available with or without fail-safe device



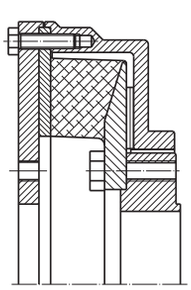
Type AC-VSK....F2 CV

To connect an engine flywheel to a **constant velocity shaft**

T_{KN} = 390 – 20 000 Nm

Technical data Page 7

Dimensions Page 11



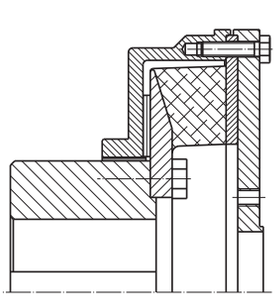
Type AC-VSK....F1

To connect a **flange with cardan shaft connection to a cardan shaft**

T_{KN} = 390 – 20 000 Nm

Technical data Page 7

Dimensions Page 12



Type AC-VSK....F1W

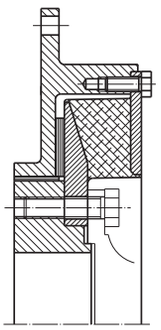
To connect a **shaft to a cardan shaft**

T_{KN} = 390 – 20 000 Nm

Technical data Page 7

Dimensions Page 13

Special types



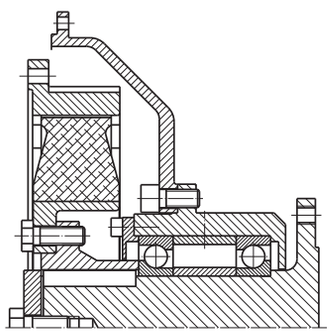
Short type AC-VSK...F2

Narrow width to connect an engine flywheel to a cardan shaft

T_{KN} = 390 - 5 000 Nm

Technical data Page 7

Dimension table available

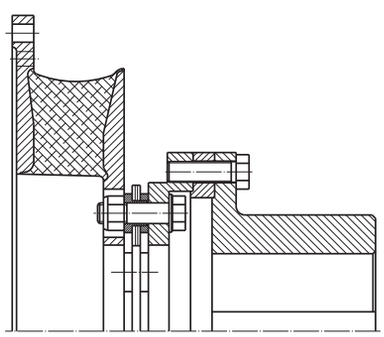


Type AC...F2 FG-GL Flange housing

Highly flexible ARCUSAFLEX flange coupling with integral shaft support to connect a cardan shaft having a large deflection angle, also available with integrated clutch.
A separate shaft bearing support attached to the engine housing keeps the crankshaft of the engine free from the additional stresses arising from cardan shaft deflection.

T_{KN} = 500 - 20 000 Nm

Technical data and dimension tables available on request

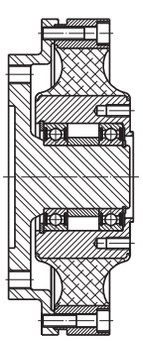


Type FD-VSK

Highly flexible coupling element AC-VSK in combination with a FlexDur disc pack.
For compensating large radial shaft displacements (e.g. in the case of flexibly mounted internal combustion engines).
Axial compensation is ensured by the FlexDur disc pack.

For torques up to 28 000 Nm

Technical data and dimensions available on request

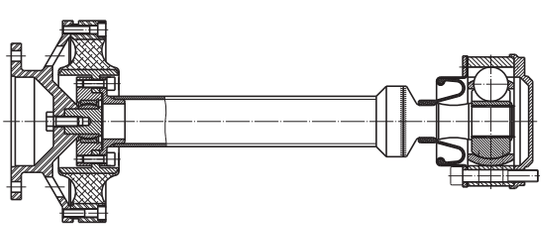


Type TOK

Highly flexible torsionally optimized coupling used in connection with a cardan shaft, constant velocity shaft, flange or splined shaft profile

T_{KN} = 100 - 43 000 Nm

Catalogue available on request



Special type TOK for test benches

Highly flexible torsionally optimized coupling for engine test benches

Available designs:
Integrated bearing with cardan shafts
Integrated bearing with constant velocity shafts
Double element coupling with / without telescopic unit

T_{KN}= 100 - 30 000 Nm

n_{max}= 10 000 rpm

Technical Data

Size	Element version	Nominal torque T_{KN} Nm	Maximum torque T_{Kmax} Nm	Cont. vibratory torque[2] $T_{KW\ (10\ Hz)}$ Nm	Permissible power loss P_{KV} (30 °C) W	Dynamic torsional stiffness C_{Tdyn} Nm/rad	Relative damping[1] Ψ -	Maximum speed n_{max} rpm	SAE
AC-VSK 15	EN	390	1170	140	120	2400	1.00	4500	8"
	WN	450	1350			2900	1.25	4000	10"
	NN	560	1680			4500	1.40		
AC-VSK 25	EN	710	2130	250	190	4500	1.00	4000	10"
	WN	820	2440			5200	1.25	3500	11.5"
	NN	1000	3000			8000	1.40		
AC-VSK 35	EN	1100	3300	400	220	7800	1.00	3600	10"
	WN	1250	3750			9500	1.25	3500	11.5"
	NN	1600	4800			14000	1.40	3000	14"
AC-VSK 45	EN	1400	4200	525	240	9000	1.00	3500	11.5"
	WN	1600	4800			11000	1.25	3000	14"
	NN	2100	6300			17000	1.40		
AC-VSK 50	EN	2000	6000	750	280	14000	1.00	3000	14"
	WN	2300	6900			18000	1.25	2300	18"
	NN	3000	9000			24000	1.40		
AC-VSK 55	EN	3500	10500	1250	335	24000	1.00	2600	14"
	WN	4000	12000			30000	1.25	2300	18"
	NN	5000	15000			45000	1.40		
AC-VSK 60	EN	4400	13200	1550	375	35000	1.00	2500	14"
	WN	5000	15000			42000	1.25	2300	18"
	NN	6200	18600			65000	1.40		
AC-VSK 70	EN	7000	21000	2500	445	50000	1.00	2300	18"
	WN	8000	24000			62000	1.25	2100	21"
	NN	10000	30000			93000	1.40		
AC-VSK 85	EN	14000	42000	5000	650	96000	1.00	2100	21"
	WN	16000	48000			120000	1.25		
	NN	20000	60000			185000	1.40		

Shore hardness of the rubber element version: EN = 50° Shore A; WN = 55° Shore A; NN = 65° Shore A

1) The relative damping relates only to the elastomer. The frictional damping of the bearings has to be considered seperately, depending on the type of operation.

2) Continuous vibratory torque under reversing stresses $\pm T_{KW}$ at f = 10 Hz, for other frequencies f_x apply $T_{KW} \cdot \sqrt{\frac{10}{f_x}}$

Selection of the proper coupling size

The selected coupling for internal combustion engine drives should be verified by a torsional vibration analysis which we will provide on request. A preliminary selection of the coupling can, however, be made based on the continuous engine power being transmitted.

1. Calculation of the nominal drive torque T_{AN}
   Given a driving powe P_{AN} and a coupling speed n_{AN}, the driving torque is calculated as follows

$$T_{AN}\ [Nm] = 9550 \frac{P_{AN}\ [kW]}{n_{AN}\ [rpm]}$$

2. The nominal torque capacity T_{KN} of the coupling should be at least equal to the maximum engine torque T_{AN} at any operating temperature

$$T_{KN} \geq T_{AN} \cdot S_t$$

3. The temperature factor S_t allows for the decreasing load capacity of the coupling when affected by elevated ambient temperatures close to the coupling

	60 °C	70 °C	80 °C	> 80 °C
S_t	1.25	1.4	1.6	on request

4. The torsional vibration analysis to verify the coupling selection should confirm that the permissible continous vibratory torque under reversing stresses T_{KW} is at least equal to the highest vibratory torque under reversing stresses T_W encountered throughout the operating speed range while taking into account the temperature and frequency

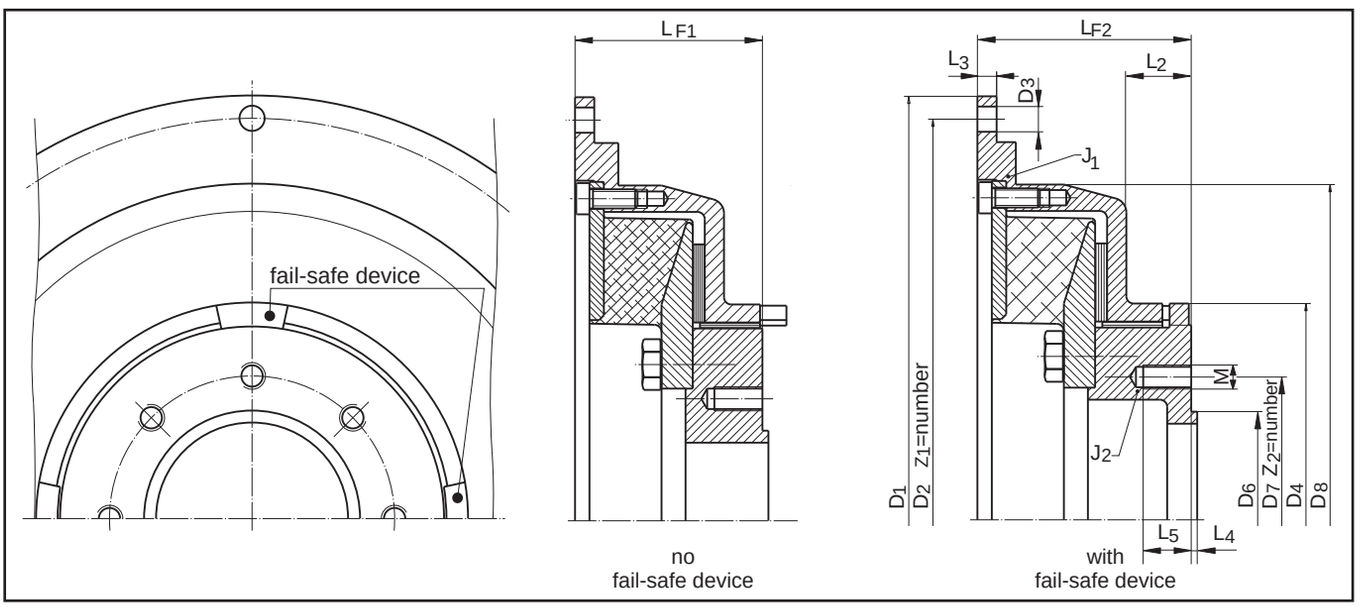
$$T_{kW\ (10\ Hz)} \geq T_W \cdot S_t \cdot S_f$$

5. The frequency factor S_f allows for the frequency dependence of the permissible continuous vibratory torque under reversing stresses $T_{KW\ (10\ Hz)}$ when operating with a different frequency f_x

$$S_f = \sqrt{\frac{f_x}{10}}$$

ARCUSAFLEX-VSK flange couplings

Type AC-VSK...F2 for cardan shafts with metric **DIN flange**
Engine flywheels with SAE connecting dimensions acc. to J620



AC-VSK Coupling size	Flywheel connection dimensions SAE size	D_1 mm	D_2 mm	D_3 mm	Z_1	D_4 mm	D_8 mm	L_2 mm	L_3 mm	L_{F1} mm	L_{F2} mm	Cardan shaft connecting dimensions Flange Ø	D_6/h_6 mm	D_7 mm	Z_2 x M[2]	L_4 mm	L_5 mm	J_1 kgm²	J_2[5] kgm²	Total[5] weight kg
- 15.[1].F2	8	263.5	244.5	10.5	6	140	215	18	8	57	68	100	57	84.0	6 x M8	2.0	16	0.055	0.010	8.9
	10	314.3	295.3	10.5	8							120	75	101.5	8 x M10			0.084		10.3
- 25.[1].F2	10	314.3	295.3	10.5	8	144	260	22	10	74	85	120	75	101.5	8 x M10	2.0	20	0.148	0.023	15.8
	11.5	352.4	333.4	10.5														0.188		17.2
- 35.[1].F2	10	314.3	295.3	10.5	8	180	279	28	16	78	90	120	75	101.5	8 x M10	2.0	20	0.144	0.052	17.0
	11.5	352.4	333.4	10.5					8			150	90	130.0	8 x M12	2,5		0.177		18.2
	14	466.7	438.2	13.0					8									0.362		22.5
- 45.[1].F2	11.5	352.4	333.4	10.5	8	180	314	25	26	89	100	150	90	130.0	8 x M12	2,5	20	0.281	0.066	23.9
	14	466.7	438.2	13.0					10									0.517		29.5
- 50.[1].F2	14	466.7	438.2	13.0	8	210	352	36	12	103	120	150	90	130.0	8 x M12	2,5	25	0.668	0.123	37.2
	18	571.5	542.9	17.0								180	110	155.5	8 x M14	3.0	30	1.180		44.7
- 55.[1].F2	14	466.7	438.2	13.0	8	285	417	35	28	115	130	180	110	155.5	8 x M14	3.0	25	1.087	0.380	55.0
	18	571.5	542.9	17.0	6							225	140	196.0	8 x M16			1.754	0.378	64.4
												250	140	218.0	8 x M18	4.0	30			
- 60.[1].F2	14	466.7	438.2	13.0	8	300	424	47	25[3]	122	137	225	140	196.0	8 x M16	4.0	45	1.100	0.464	60.5
	18	571.5	542.9	17.0	6				15	133	148	250	140	218.0	8 x M18			1.878		72.2
- 70.[1].F2	18	571.5	542.9	17.0	12	348	510	46	15	139	160	250	140	218.0	8 x M18	4.0	30	2.681	1.080	105.6
	21	673.1	641.4	17.0	12							285	175	245.0	8 x M20	5.0	35	3.747	1.073	116.5
- 85.[1].F2	21	673.1	641.4	17.0	12	440	610	66	35[4]	160	181	285	175	245.0	8 x M20	5.0	35	6.857	2.231	155.2
												315	175	280.0	8 x M22	5.0	35			

[1] For the element version see "Technical data" on page 7
[2] Alternative connection threads on request
[3] Centering depth 9 mm
[4] Centering depth 14 mm
[5] Values without fail-safe device

Ordering example: Coupling designation **AC-VSK 50.WN.F2.14.150.DS**

- Coupling size
- Element version acc. to „Technical data“
- SAE flywheel connection
- Cardan shaft flange Ø
- Design with fail safe device

ARCUSAFLEX-VSK flange couplings

Type AC-VSK...F2 for **SPICER cardan shafts**
Engine flywheels with SAE connecting dimensions acc. to J620

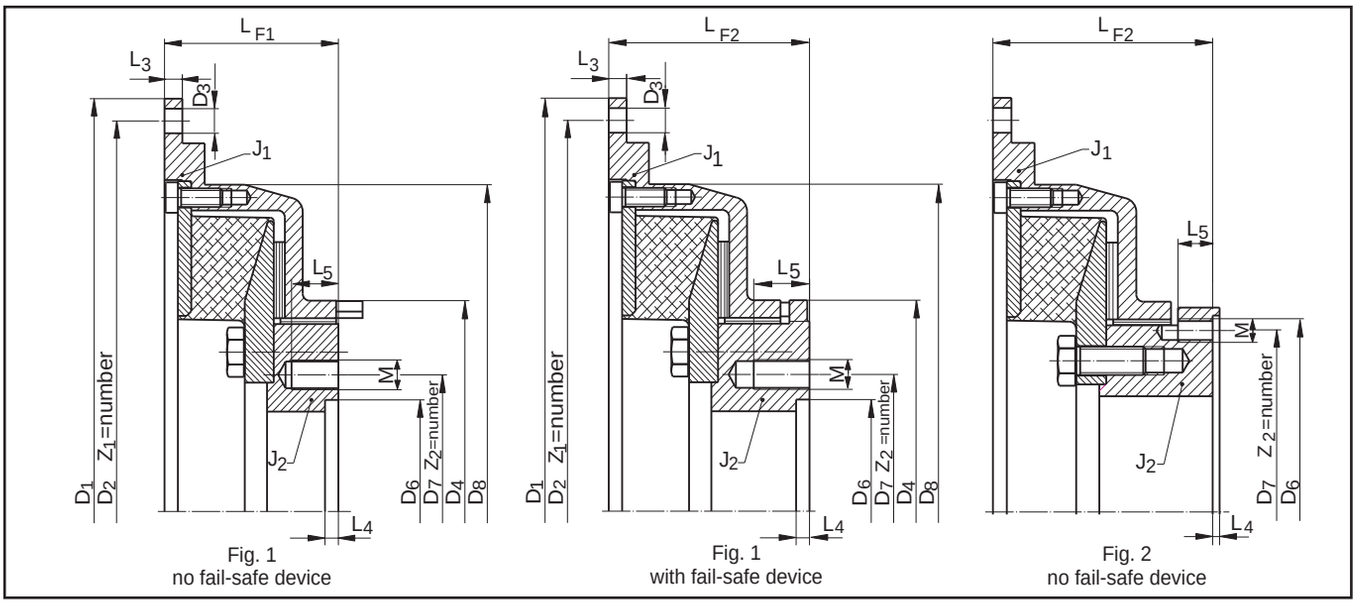


Fig. 1
no fail-safe device

Fig. 1
with fail-safe device

Fig. 2
no fail-safe device

AC-VSK Coupling size	Flywheel connection dimensions SAE size	D_1 mm	D_2 mm	D_3 mm	Z_1	D_4 mm	D_8 mm	L_3 mm	L_{F1} mm	L_{F2} mm	Spicer cardan shaft connecting dimensions size	Fig.	D_6/H_6 mm	D_7 mm	$Z_2 \times M^{2)}$	L_4 mm	L_5 mm	J_1 kgm²	$J_2^{6)}$ kgm²	Total[6] weight kg
- 15.[1].F2	8	263.5	244.5	10.5	6	140	215	8	57	68	1280/1310	1	60.33	79.38	4 x 3/8"- 24	5	20	0.055	0.010	8.9
	10	314.3	295.3	10.5	8						1350/1410		69.85	95.25	4 x 7/16"- 20			0.084		10.3
- 25.[1].F2	10	314.3	295.3	10.5	8	144	260	10	74	85	1280/1310	1	60.33	79.38	4 x 3/8"- 24	5	20	0.148	0.023	15.8
	11.5	352.4	333.4	10.5							1350/1410		69.85	95.25	4 x 7/16"- 20			0.188		17.2
- 35.[1].F2	10	314.3	295.3	10.5	8	180	279	16	78	90	1480/1550	1	95.25	120.65	4 x 1/2"- 20	6	25	0.144	0.052	17.0
	11.5	352.4	333.4	10.5				8	95	-	1610[3]	2	168.28	155.58	8 x 3/8"- 24	2	15	0.177	0.058	19.2
	14	466.7	438.2	13.0														0.362		23.5
- 45.[1].F2	11.5	352.4	333.4	10.5	8	180	314	26	89	100	1480/1550	1	95.25	120.65	4 x 1/2"- 20	6	25	0.281	0.066	23.9
	14	466.7	438.2	13.0				10	105	-	1610[3]	2	168.28	155.58	8 x 3/8"- 24	2	15	0.517	0.072	30.5
- 50.[1].F2	14	466.7	438.2	13.0	8	210	352	12	100	117	1610	2	168.28	155.58	8 x 3/8"- 24	3	30	0.668	0.123	37.2
									125	-	1710[3]		196.85	184.15	8 x 3/8"- 24		17		0.138	39.2
	18	571.5	542.9	17.0	6						1760/1810[3]				12 x 7/16"- 20			1.180		46.7
- 55.[1].F2	14	466.7	438.2	13.0	8	285	417	28	112	127	1710	2	196.85	184.15	8 x 3/8"- 24	3	30	1.087	0.380	55.0
	18	571.5	542.9	17.0	6						1760/1810				12 x 7/16"- 20			1.754		64.4
									115	130	1880/1910	1	177.80	209.55	8 x 5/8"- 18	7				
- 60.[1].F2	14	466.7	438.2	13.0	8	300	424	25[4]	119	134	1760/1810	2	196.85	184.15	12 x 7/16"- 20	3	30	1.100	0.509	64.9
	18	571.5	542.9	17.0	6			15	133	148	1880/1910	1	177.80	209.55	8 x 5/8"- 18	7		1.878		76.6
- 70.[1].F2	18	571.5	542.9	17.0	12	348	510	15	139	160	1880/1910	1	177.80	209.55	8 x 5/8"- 18	7	35	2.681	1.080	105.6
	21	673.1	641.4	17.0	12						1950		209.55	249.30	12 x 3/4"- 16			3.747	1.073	116.5
- 85.[1].F2	21	673.1	641.4	17.0	12	440	610	35[5]	160	181	1880/1910	1	177.80	209.55	8 x 5/8"- 18	7	35	6.857	2.229	157.8
											1950		209.55	249.30	12 x 3/4"- 16					

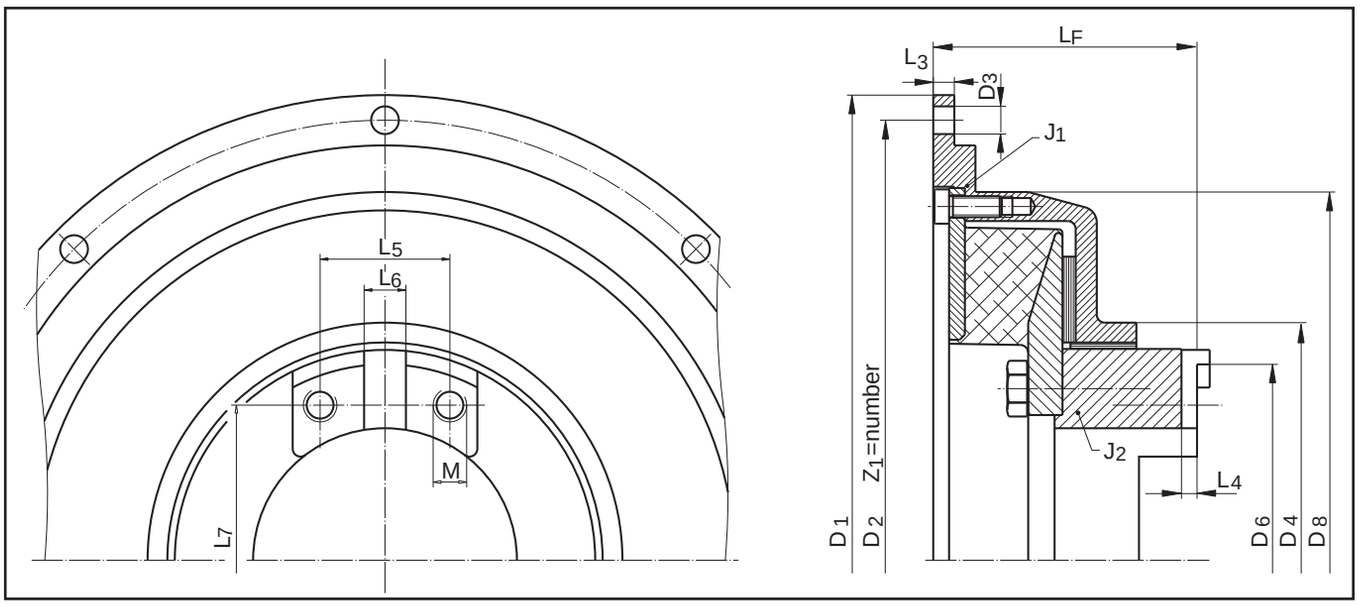
[1] For the element version see "Technical data" on page 7
[2] Alternative connection threads on request
[3] This version not available with fail-safe device
[4] Centering depth 9 mm
[5] Centering depth 14 mm
[6] Values without fail-safe device

Ordering example: Coupling designation **AC-VSK 50.WN.F2.14.1610.DS**

- Coupling size
- Element version acc. to „Technical data“
- SAE flywheel connection
- Spicer Cardan shaft flange
- Design with fail-safe device

ARCUSAFLEX-VSK flange couplings

Type AC-VSK...F2 for **MECHANICS cardan shafts**
Engine flywheels with SAE connecting dimensions acc. to J620



AC-VSK Coupling size	Flywheel connection dimensions SAE size	D_1 mm	D_2 mm	D_3 mm	Z_1	D_4 mm	D_8 mm	L_3 mm	L_F mm	Mechanics cardan shaft connecting dimensions size	D_6/H_7 mm	L_4 mm	L_5 mm	L_6 mm	L_7 mm	M	J_1 kgm²	J_2 kgm²	Total weight kg
- 15.[1].F2	8	263.5	244.5	10.5	6	140	215	8	83	4C	107.92	3.8	36.5	9.5	87.3	5/16"-24	0.055	0.010	8.8
	10	314.3	295.3	10.5	8					5C	115.06	5.1	42.9	14.26	88.9	3/8"- 24	0.084		10.2
- 25.[1].F2	10	314.3	295.3	10.5	8	144	260	10	95	5C	115.06	5.1	42.9	14.26	88.9	3/8"- 24	0.148	0.022	15.3
	11.5	352.4	333.4	10.5													0.188		16.7
- 35.[1].F2	10	314.3	295.3	10.5	8	180	279	16	100	5C	115.06	5.1	42.9	14.26	88.9	3/8"- 24	0.144	0.048	16.0
	11.5	352.4	333.4	10.5				8		6C	140.46	5.1	42.9	14.26	114.3	3/8"- 24	0.177		17.9
	14	466.7	438.2	13.0													0.362		22.2
- 45.[1].F2	11.5	352.4	333.4	10.5	8	180	314	26	111	5C	115.06	5.1	42.9	14.26	88.9	3/8"- 24	0.281	0.063	23.5
	14	466.7	438.2	13.0				10		6C	140.46	5.1	42.9	14.26	114.3	3/8"- 24	0.517		29.1
- 50.[1].F2	14	466.7	438.2	13.0	8	210	352	12	130	6C	140.46	5.1	42.9	14.26	114.3	3/8"- 24	0.668	0.115	36.2
										7C	148.39	6.0	49.2	15.85	117.5	1/2"- 20		0.116	36.3
	18	571.5	542.9	17.0	6					8.5C	165.08	6.0	71.4	15.85	123.8	1/2"- 20	1.180	0.114	43.1
- 55.[1].F2	14	466.7	438.2	13.0	8	285	417	28	155	8C	206.32	6.0	49.2	15.85	174.6	1/2"- 20	1.087	0.348	52.1
	18	571.5	542.9	17.0	6					8.5C	165.08	6.0	71.4	15.85	123.8	1/2"- 20	1.754	0.353	63.1
										9C	209.52	6.0	71.4	15.85	168.3	1/2"- 20		0.356	62.2
- 60.[1].F2	14	466.7	438.2	13.0	8	300	424	25[2]	148	8.5C	165.08	6.0	71.4	15.85	123.8	1/2"- 20	1.100	0.471	62.1
	18	571.5	542.9	17.0	6			15	173	9C	209.52	6.0	71.4	15.85	168.3	1/2"- 20	1.878		73.8
- 70.[1].F2	18	571.5	542.9	17.0	12	348	510	15	170	9C	209.52	6.0	71.4	15.85	168.3	1/2"- 20	2.681	0.964	99.0
	21	673.1	641.4	17.0	12					10C	212.70	9.5	92.1	25.35	165.1	5/8"- 18	3.747		109.9
- 85.[1].F2	21	673.1	641.4	17.0	12	440	610	35[3]	200	12C	289.05	12.5	92.1	25.35	241.3	5/8"- 18	6.857	2.305	157.2
										15C	260.00	12.5	100.0	31.78	200.0	3/4"- 16			
										280	280.00	9.0	92.0	35.00	227.0	M18			

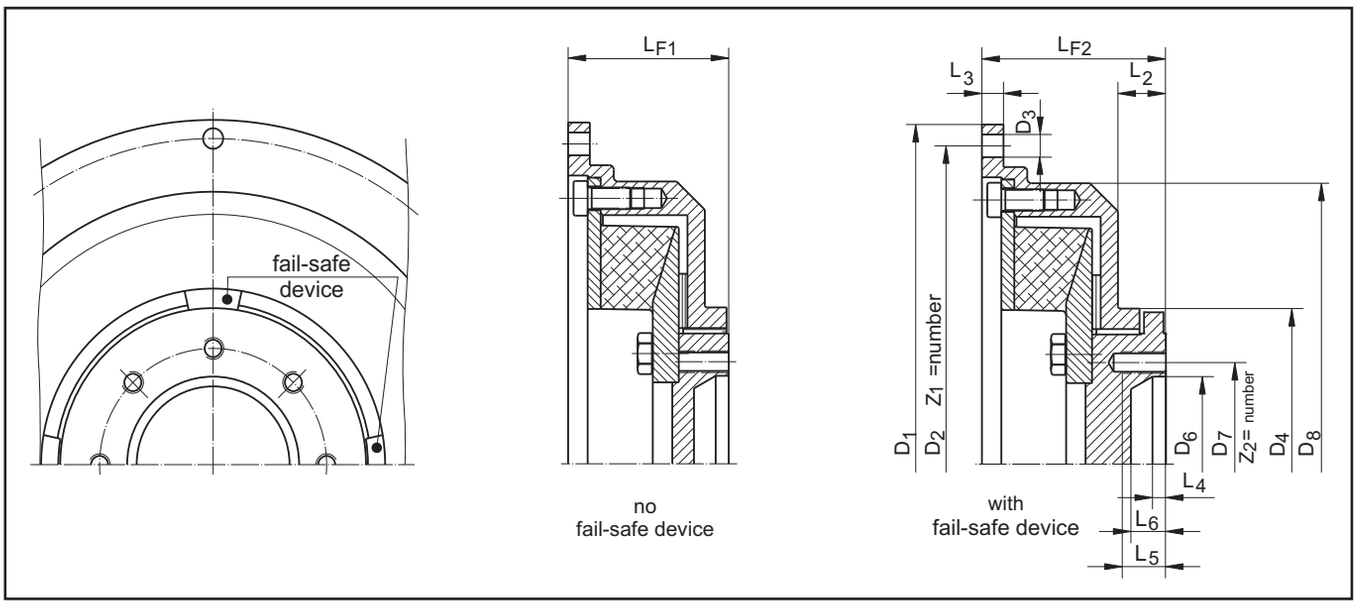
[1] For the element version see „Technical data“ on page 7
Version with fail-safe device on request
[2] Centering depth 9 mm
[3] Centering depth 14 mm

Ordering example: Coupling designation **AC-VSK 50.WN.F2.14.7C**

- Coupling size
- Element version acc. to „Technical data“
- SAE flywheel connection
- MECHANICS cardan shaft connection

ARCUSAFLEX-VSK flange couplings

Type AC-VSK...F2.CV for **constant velocity shafts**
Engine flywheels with SAE connecting dimensions acc. to J620



AC-VSK Coupling size	Flywheel connection dimensions SAE size	D_1 mm	D_2 mm	D_3 mm	Z_1	D_4 mm	D_8 mm	L_2 mm	L_3 mm	LF_1 mm	LF_2 mm	Constant velocity shaft connections size	D_6/H_7 mm	D_7 mm	Z_2 x M	L_4 mm	L_5 mm	L_6 mm	J_1 kgm²	J_2[2] kgm²	Total[2] weight kg
- 15.[1].F2	8	263.5	244.5	10.5	6	140	215	18	8	57	68	CV 15	81	94.0	6 x M10	6	15	16	0.055	0.009	8.1
	10	314.3	295.3	10.5	8														0.084		9.5
- 25.[1].F2	10	314.3	295.3	10.5	8	144	260	22	10	74	85	CV 15	81	94.0	6 x M10	6	20	16	0.148	0.022	15.2
	11.5	352.4	333.4	10.5															0.188		16.6
- 35.[1].F2	10	314.3	295.3	10.5	8	180	279	28	16	78	90	CV 21	90	108.0	6 x M12	8	20	20	0.144	0.049	17.0
	11.5	352.4	333.4	10.5					8			CV 30	112	128.0	6 x M12	12	23	25	0.177		17.2
- 45.[1].F2	11.5	352.4	333.4	10.5	8	180	314	25	26	89	100	CV 30	112	128.0	6 x M12	12	23	25	0.281	0.055	22.8
	14	466.7	438.2	13.0					10										0.517		28.4
- 50.[1].F2	14	466.7	438.2	13.0	8	210	352	36	12	103	120	CV 30	112	128.0	6 x M12	12	25	25	0.668	0.115	36.2
												CV 32	136	155.5	6 x M16		30	26			
- 55.[1].F2	14	466.7	438.2	13.0	8	285	417	35	28	115	130	CV 42	144	165.0	8 x M16	10	35	26	1.087	0.357	54.7
- 60.[1].F2	14	466.7	438.2	13.0	8	300	424	48	25[3]	122	147	CV 42	144	165.0	8 x M16	10	35	26	1.100	0.465	62.0
	18	571.5	542.9	17.0	6				15										1.878		73.7
- 70.[1].F2	18	571.5	542.9	17.0	12	348	510	46	15	134	155	CV 60	216	245.0	8 x M20	5	35	25	2.681	0.929	95.7
	21	673.1	641.4	17.0	12														3.747		108.0

[1] For the element version see „Technical data“ on page 7
[2] Values without fail-safe device
[3] Centering depth 9 mm

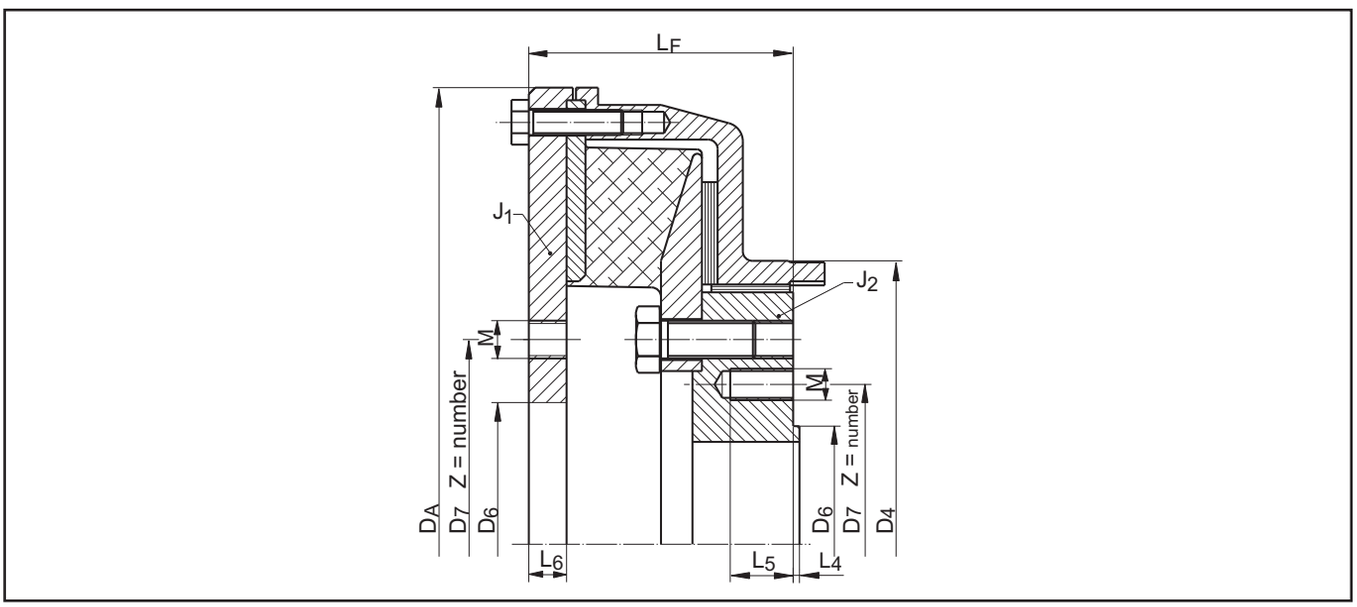
Ordering example: Coupling designation **AC-VSK 50.WN.F2.14.CV32.DS**

- Coupling size
- Element version acc. to „Technical data“
- SAE flywheel connection
- Size of joint
- Design with fail-safe device

ARCUSAFLEX-VSK double flange couplings

Type AC-VSK...F1

For mounting between a cardan shaft and related adaptor flange. Alternative flange dimensions are available.



AC-VSK Coupling size	D_A mm	D_4 mm	L_F mm	Flange connecting dimensions[2] Flange Ø	D_6 H_7/h_6 mm	D_7 mm	Z x M[2]	L_4 mm	L_5 mm	L_6 mm	J_1 kgm²	J_2 kgm²	Total weight kg
-15.[1].F1	222	140	60	100	57	84.0	6 x M8	2.0	16	10	0.068	0.0086	10.8
				120	75	101.5	8 x M10						
-25.[1].F1	268	144	75	120	75	101.5	8 x M10	2.0	20	10	0.164	0.022	17.5
-35.[1].F1	290	180	84	120	75	101.5	8 x M10	2.0	20	12	0.222	0.048	23.5
				150	90	130.0	8 x M12	2.5	23				
-45.[1].F1	320	180	92	150	90	130.0	8 x M12	2.5	23	12	0.408	0.063	33.3
-50.[1].F1	360	210	108	150	90	130.0	8 x M12	2.5	25	14	0.659	0.114	42.7
				180	110	155.5	8 x M14	3.0	30				
-55.[1].F1	475	285	130	180	110	155.5	8 x M14	3.0	25	15	1.711	0.350	73.0
				225	140	196.0	8 x M16						
				250	140	218.0	8 x M18	4.0	30				
-60.[1].F1	475	300	137	180	110	155.5	8 x M14	3.0	25	20	1.796	0.464	83.4
				225	140	196.0	8 x M16						
				250	140	218.0	8 x M18	4.0	30				
-70.[1].F1	580	348	154	250	140	218.0	8 x M18	4.0	30	20	3.965	0.945	127.0
				285	175	245.0	8 x M20	5.0	35				
-85.[1].F1	685	440	180	285	175	245.0	8 x M20	5.0	35	20	10.234	2.231	211.7
				315	175	280.0	8 x M22						

[1] For the element version see „Technical data“ on page 7

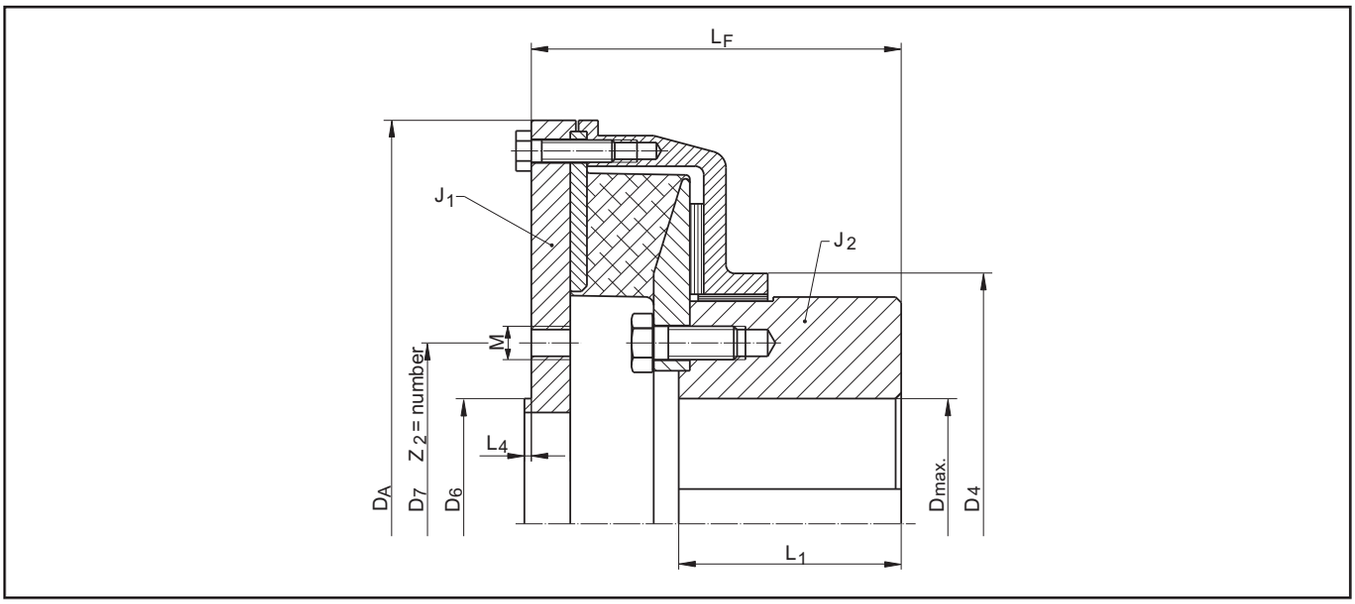
[2] Alternative connecting dimensions and threads on request

Ordering example: Coupling designation **AC-VSK 50.WN.F1.150.M12.180**

- Coupling size
- Element version acc. to „Technical data“
- Cardan shaft flange Ø (part J_2)
- Size of the threads
- Cardan shaft flange Ø (part J_1)

ARCUSAFLEX-VSK shaft couplings

Type AC-VSK...F1W
To connect a shaft to a cardan shaft



AC-VSK Coupling size	D_A mm	D_4 mm	D_{max} mm	L_1 mm	L_F mm	Cardan shaft connecting dimensions[2] Flange Ø	D_6 h_6 mm	D_7 mm	Z x M[2]	L_4 mm	J_1 kgm²	J_2 kgm²	Total weight kg
-15.[1].F1	222	140	60	65	104	100	57	84.0	6 x M8	2.0	0.068	0.016	14.3
						120	75	101.5	8 x M10				
-25.[1].F1	268	144	60	65	114	120	75	101.5	8 x M10	2.0	0.164	0.028	20.7
-35.[1].F1	290	180	90	80	133	120	75	101.5	8 x M10	2.0	0.222	0.073	30.0
						150	90	130.0	8 x M12	2.5			
-45.[1].F1	320	180	90	80	139	150	90	130.0	8 x M12	2.5	0.408	0.088	39.9
-50.[1].F1	360	210	100	100	171	150	90	130.0	8 x M12	2.5	0.659	0.168	54.0
						180	110	155.5	8 x M14	3.0			
-55.[1].F1	475	285	120	140	230	180	110	155.5	8 x M14	3.0	1.711	0.666	110.0
						225	140	196.0	8 x M16				
						250	140	218.0	8 x M18	4.0			
-60.[1].F1	475	300	120	140	225	180	110	155.5	8 x M14	3.0	1.796	0.760	113.0
						225	140	196.0	8 x M16				
						250	140	218.0	8 x M18	4.0			
-70.[1].F1	580	348	150	170	275	250	140	218.0	8 x M18	4.0	3.965	1.737	190.0
						285	175	245.0	8 x M20	5.0			

[1] For the element version see „Technical data“ on page 7
[2] Alternative connecting dimensions and threads on request

Ordering example: Coupling designation **AC-VSK 50.WN.F1.W150**
coupling size
Element version acc. to „Technical data“
Cardan shaft flange Ø

Mounting instructions

General

The highly flexible ARCUSAFLEX AC-VSK coupling is well suited for installation with drive shafts because of its internal support by the radial and thrust bearings. The use of appropriate bearing materials makes the AC-VSK coupling maintenance-free.

The coupling element is suitable for ambient temperatures of -40 °C to 80 °C.

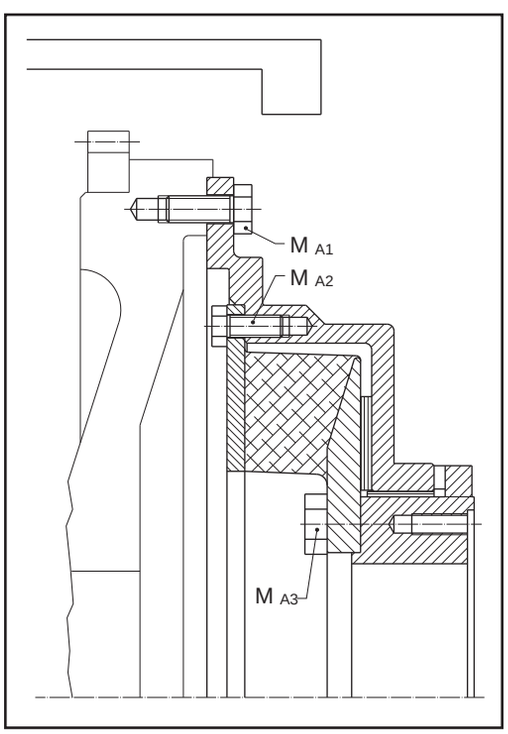
All couplings meet by default the balancing grade of G =16 for n =1500 rpm acc. to ISO 1940.

Assembly

Prior to the assembly, all parts of the coupling must be cleaned. All closely toleranced surfaces are protected with corrosion prevention preservative ex works. These surfaces must be cleaned with a suitable solvent prior to installation of the coupling. The solvent which is used for cleaning must not contact the rubber.

All bolted connections of the coupling should be tightened with a torque wrench and the correct bolt tightening torque must be checked. The prescribed bolt tightening torques must be precisely observed. As standard the values shown below are valid except when other values are specified. Values stated on the specific design drawing take precedence.

The coupling in its fully assembled condition is bolted to the engine flywheel and the full bolt tightening torque is applied. Then the flange of the drive shaft is bolted to the flange of the coupling.



Tightening torques for the bolted flange connection to the engine flywheel (bolt grade 8.8, lightly oiled[1])

Flywheel SAE	$6^1/_2$	$7^1/_2$	8	10	$11^1/_2$	14	16	18	21
Metric bolts	M8		M10			M12		M16	
M_{A1} [Nm]	25		50			85		210	
Inch-bolts	$^5/_{16}$ - 18		$^3/_8$ - 16			$^1/_2$ - 13		$^5/_8$ - 11	
M_{A1} [Nm]	24		42			102		203	

Tightening torques for AC-VSK-element bolted connections (lightly oiled[1])

AC-VSK Size	15	25	35	45	50	55	60	70	85
Bolt size	M8	M10	M8	M10	M10	M12	M12	M12	M16
Bolt grade	8.8	8.8	8.8	8.8	8.8	8.8	10.9	8.8	8.8
M_{A2} [Nm]	25	50	25	50	50	85	120	85	210
Bolt size	M10	M10	M12	M12	M16	M16	M16	M20	M20
Bolt grade	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9
M_{A3} [Nm]	69	69	120	120	295	295	295	580	580

[1] Values are reduced by 20% for bolts with additional lubrication.

Disassembly

First the drive shaft must be disconnected from the coupling. Then the coupling is unbolted from the engine flywheel and lifted out. To take the coupling apart, the bolt connections of the rubber elements must be released.

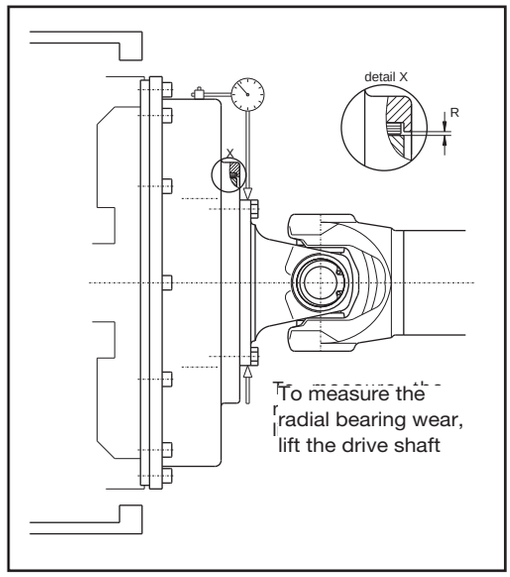
Assembly and maintenance instructions

Within the established periodic maintenance and inspections of other parts of the installation, the coupling should regularly be visually inspected. Generally the internal bearing support in the coupling is maintenance-free. If there are any conspicuous symptoms a closer inspection is necessary.

The coupling must be disassembled according to the instructions. The visible outside and inside diameter of the rubber part of the removed coupling element has to be checked for possible cracks and separations. If there is any damage the coupling element must be replaced. At this time it is also advisable to replace the bearings as well.

The thrust bearing (friction disc) and the radial bearing (bearing bush) must be replaced if rough running is observed, or if a tilting clearance at the coupling is detectable. The thrust bearing (friction disc) must be replaced if there is a relative axial play between the drive shaft flange and the housing of the coupling. The radial bearing (bearing bush) must be replaced if the radial wear R is exceeded. For this the radial relocation of the drive shaft flange to the coupling housing can be measured (see picture). The values shown in the table below serve as a guide. The running surfaces of the bearings must not be damaged. No reworking of the precision surfaces is advisable, if damaged these particular parts must be replaced.

During maintenance the coupling must be thoroughly cleaned.



Limits for wear of the friction disc and bearing bush

AC-VSK size	15	25	35	45	50	55	60	70	85
Thrust bearing friction disc thickness [mm]	4	4	5	5	5	5	5	5	6
Permissible axial wear [mm]	0.6	0.6	0.7	0.7	0.7	0.7	0.8	0.8	0.8
Radial bearing bush thickness [mm]	2.5	2.5	2.5	2.5	2.5	2.5	5	6	7.5
Permissible radial wear R [mm]*	0.3	0.3	0.3	0.3	0.3	0.3	0.8	0.8	0.8

*) The wear of the bearing bush is equal to half of the measured radial wear R

During all operation phases the coupling has to run silently and vibration-free. Any deviation from this smooth behaviour during running indicates the need for closer inspection, repair or replacement.

In general a rebalancing of the coupling after replacing worn parts is not necessary. If rough running is observed after the repair, a further inspection is necessary and balancing may be required.

Technical note

The technical data applies only to the complete coupling or the corresponding coupling elements. It is the customer's/user's responsibility to ensure there are no inadmissible loads acting on all the components. Especially existing connections, like bolt connections, have to be checked regarding the transmittable torque, if necessary other measures, e.g. additional reinforcement by pins, may be required. It is the customer's/user's responsibility to make sure the dimensioning of the shaft and keyed or other connection, e.g. shrinking or clamping connection, is correct.

REICH-KUPPLUNGEN have an extensive programme of couplings and coupling systems to cover nearly every drive configuration. Furthermore customized solutions can be developed and be manufactured also in small series or as prototypes. Calculation programmes are available for coupling selection and sizing. - Please challenge us!

Safety precautions

It is the customer's and user's responsibility to observe the national and international safety rules and laws. Proper safety devices must be provided for the coupling to prevent accidental contact.

Check all bolted connections for the correct tightening torque and fit after a short running period preferably after a test run.

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