65142

Material
Steel (9SMnPb28k, no. 10718, greased).
Bearing type: plain bearing.

Technical Notes
To DIN 808.

Maximum bending angle 45° per joint. The drive speed of universal joints with journal bearings must not exceed 1000 rpm.

Tips
Double universal joints are used where large bending angles are required or where two shafts offset in relation to each other. Zinc plated available on request.

Order No.	d_1 tol. H7	d_2	d_3	l_1 min.	l_1 max.	l_2	l_3 stroke	l_4	w_1 tol. JS9	w_2	Shaft	Weight g
65142.W2100	10	22	22	140	170	48	30	12	3	11.4	11x14x6	310
65142.W2101	10	22	22	160	200	48	40	12	3	11.4	11x14x6	360
65142.W2102	10	22	22	180	240	48	60	12	3	11.4	11x14x6	380
65142.W2103	10	22	22	230	330	48	100	12	3	11.4	11x14x6	500
65142.W2120	12	25	26	160	190	56	30	13	4	13.8	13x16x6	500
65142.W2121	12	25	26	180	225	56	45	13	4	13.8	13x16x6	560
65142.W2122	12	25	26	200	270	56	70	13	4	13.8	13x16x6	620
65142.W2123	12	25	26	220	300	56	80	13	4	13.8	13x16x6	670
65142.W2124	12	25	26	250	355	56	105	13	4	13.8	13x16x6	760
65142.W2125	12	25	26	280	420	56	140	13	4	13.8	13x16x6	840
65142.W2126	12	25	26	300	450	56	150	13	4	13.8	13x16x6	900
65142.W2140	14	28	29	170	200	60	30	14	5	16.3	13x16x6	620
65142.W2141	14	28	29	180	220	60	40	14	5	16.3	13x16x6	640
65142.W2142	14	28	29	200	260	60	60	14	5	16.3	13x16x6	720
65142.W2143	14	28	29	220	300	60	80	14	5	16.3	13x16x6	780
65142.W2144	14	28	29	250	350	60	100	14	5	16.3	13x16x6	870
65142.W2145	14	28	29	280	420	60	140	14	5	16.3	13x16x6	960
65142.W2146	14	28	29	300	450	60	150	14	5	16.3	13x16x6	1030
65142.W2147	14	28	29	350	550	60	200	14	5	16.3	13x16x6	1170
65142.W2148	14	28	29	400	650	60	250	14	5	16.3	13x16x6	1330
65142.W2160	16	32	32	190	220	68	30	16	5	18.3	16x20x6	900
65142.W2161	16	32	32	210	250	68	40	16	5	18.3	16x20x6	980
65142.W2162	16	32	32	240	320	68	80	16	5	18.3	16x20x6	1100
65142.W2163	16	32	32	250	350	68	100	16	5	18.3	16x20x6	1140
65142.W2164	16	32	32	275	390	68	115	16	5	18.3	16x20x6	1240
65142.W2165	16	32	32	300	430	68	130	16	5	18.3	16x20x6	1330
65142.W2166	16	32	32	380	590	68	210	16	5	18.3	16x20x6	1600
65142.W2167	16	32	32	400	630	68	230	16	5	18.3	16x20x6	1730
65142.W2180	18	36	37	230	280	74	50	17	6	20.8	18x22x6	1350
65142.W2181	18	36	37	250	320	74	70	17	6	20.8	18x22x6	1460
65142.W2182	18	36	37	270	370	74	100	17	6	20.8	18x22x6	1550
65142.W2183	18	36	37	290	400	74	110	17	6	20.8	18x22x6	1660

Order No.	d_1 tol. H7	d_2	d_3	l_1 min.	l_1 max.	l_2	l_3 stroke	l_4	w_1 tol. JS9	w_2	Shaft	Weight g
65142.W2184	18	36	37	300	415	74	115	17	6	20.8	18x22x6	1710
65142.W2185	18	36	37	400	620	74	220	17	6	20.8	18x22x6	2230
65142.W2186	18	36	37	500	820	74	320	17	6	20.8	18x22x6	2750
65142.W2303	30	58	58	400	510	122	110	29	8	33.3	32x38x8	5850
65142.W2304	30	58	58	450	620	122	170	29	8	33.3	32x38x8	6480
65142.W2305	30	58	58	500	720	122	220	29	8	33.3	32x38x8	7140
65142.W2306	30	58	58	540	795	122	255	29	8	33.3	32x38x8	7690
65142.W2202	20	42	42	290	380	82	90	18	6	22.8	21x25x6	2250
65142.W2206	20	42	42	500	800	82	300	18	6	22.8	21x25x6	3660
65142.W2253	25	50	52	380	500	108	120	26	8	28.3	26x32x6	4200
65142.W2222	22	45	47	290	350	95	60	22	6	24.8	23x28x6	2670
65142.W2300	30	58	58	330	380	122	50	29	8	33.3	32x38x8	4900
65142.W2254	25	50	52	420	590	108	170	26	8	28.3	26x32x6	4590
65142.W2250	25	50	52	295	345	108	50	26	8	28.3	26x32x6	3390
65142.W2223	22	45	47	330	430	95	100	22	6	24.8	23x28x6	3000
65142.W2203	20	42	42	320	440	82	120	18	6	22.8	21x25x6	2460
65142.W2200	20	42	42	250	300	82	50	18	6	22.8	21x25x6	1990
65142.W2301	30	58	58	350	420	122	70	29	8	33.3	32x38x8	5170
65142.W2204	20	42	42	380	560	82	180	18	6	22.8	21x25x6	2860
65142.W2255	25	50	52	460	660	108	200	26	8	28.3	26x32x6	4980
65142.W2220	22	45	47	250	280	95	30	22	6	24.8	23x28x6	2350
65142.W2251	25	50	52	310	375	108	65	26	8	28.3	26x32x6	3520
65142.W2224	22	45	47	350	470	95	120	22	6	24.8	23x28x6	3160
65142.W2256	25	50	52	500	745	108	245	26	8	28.3	26x32x6	5370
65142.W2205	20	42	42	420	640	82	220	18	6	22.8	21x25x6	3130
65142.W2252	25	50	52	350	450	108	100	26	8	28.3	26x32x6	3920
65142.W2302	30	58	58	370	455	122	85	29	8	33.3	32x38x8	5420
65142.W2221	22	45	47	270	320	95	50	22	6	24.8	23x28x6	2510
65142.W2201	20	42	42	270	340	82	70	18	6	22.8	21x25x6	2120
65142.W2225	22	45	47	470	710	95	240	22	6	24.8	23x28x6	4130

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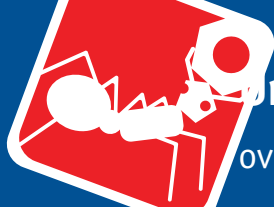
Parts overview

Single Universal Joints

Available with plain bearings or needle roller bearings. Plain bore and keyed bores stocked as standard, hex or square shaped bores on request. Bore diameters 6mm up to 50mm.

Double Universal Joints

Available with plain bearings or needle roller bearings. Plain bore and keyed bores stocked as standard, hex or square shaped bores on request. Bore diameters 6mm up to 50mm.

Quick Release Universal Joints

Quick change mechanism one end of the joint to allow rapid connection and release of the shaft, ideal when time is critical. Bore diameters 8mm up to 30mm.

Stainless Steel Universal Joints

Single and double universal joints with plain bearings and plain bores. Keyed, hex or square shaped bores available on request. Bore diameters 6mm up to 30mm.

Universal Joint Bellows

Available for both single and double universal joints, bellows are used to cover and protect the joints. Available to protect joints up to 58mm outside diameter.

Telescopic Universal Joints

Two universal joints connected by a sliding splined shaft with the ability to extend, allowing adjustments in length during installation. Bore diameters 10mm up to 30mm.

# Universal Joints
selection and assembly
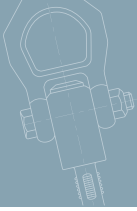
When one single joint is coupled with two shafts (of which the driving one is rotating at a constant speed) forming an angle, a periodic variation of the driven shaft is caused with exactly four fluctuations per revolution.

The difference between the maximum and the minimum speed of the driven shaft depends on the angle formed by the two shafts. The difference grows with the an increase of the angle a°. To have a homokinetic transmission, either two opposite single joints (ensuing that that the two central yokes lie on the same plane and the angles are equal) or a double joint need to be fitted. The irregularity caused by the former articulation is cancelled by the latter. The overall length resulting from the coupling of the two single joints can be reduced by using a double joint. In other words, the double joint is to be considered as the shortest homokinetic transmission.

For low speed applications (Max. 1000 rpm), joints with plain bearings (rubbing bearings) are suggested. They are able to support shock loads, motion reversals, irregular runnings and relatively high torques. The working angles must be be restricted when using at speeds between 500 - 1000 rpm. Please consult our technical department if you have such an application.

For high rotation speeds, relatively low torques or wide angles, joints with needle roller bearings are preferred. They can reach 4000 RPM dependent on the angle.
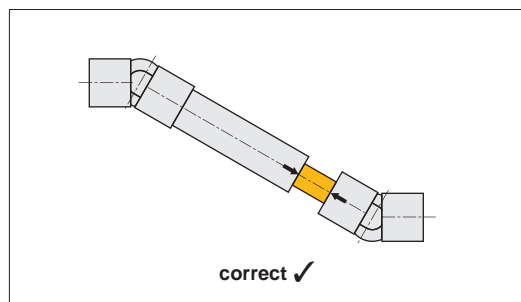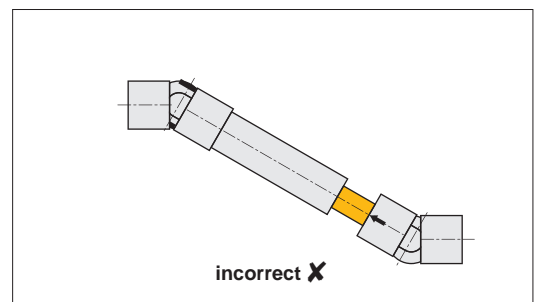
Dynamic basic load ratings of plain bearing rod ends
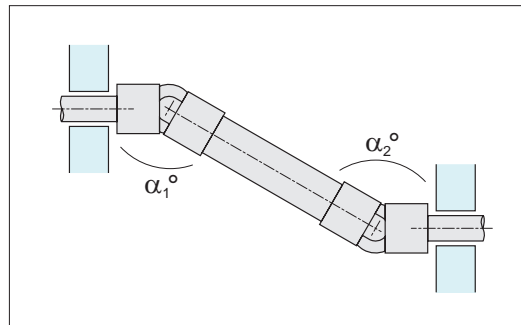
To obtain a uniform rotary motion always use either two opposite single joints or one double joints. $\alpha_1 = \alpha_2$.
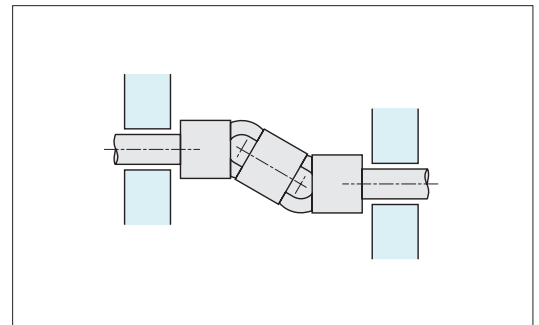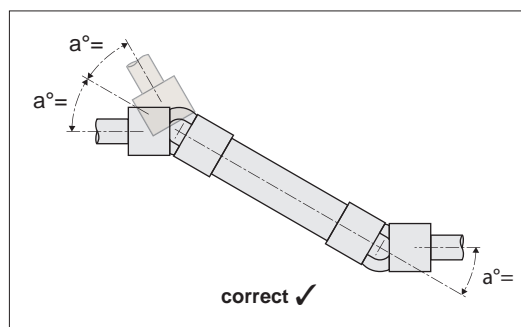
The pillow block supports should be positioned as close as possible to the joints.
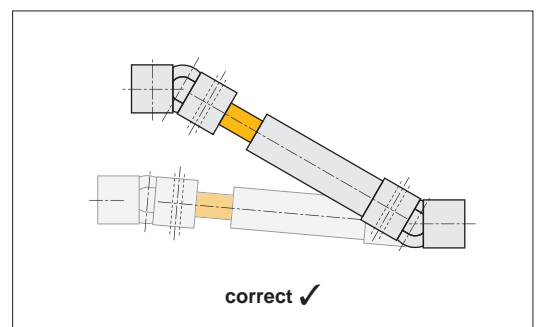
correct ✓

incorrect ✗

When using two opposite single joints ensure the alignment of the inside yokes.

In extensible transmissions make sure that the arrows are perfectly aligned.

correct ✓

correct ✓

It is essential that the two bending angles a° are equal.

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How to read diagrams

The joint capacity to transmit a regular torque at a constant load with no shocks, for a long period, mainly depends on the number of revolutions per minute and the inclination angle a° of the two axes. The diagrams on the following pages are based on this. Each curve corresponds to the joint size (outside diameter "D") and represents the torque that the joint can transmit depending on speed and working angle a°.

The diagrams can be directly read if angle (a°) is 10°. For wider angles, torques are reduced, therefore these are to be corrected using the correction vales (F) relating to the angle shown in the table.

Important Note: Diagrams' values are merely indicative and refer to the single joints only. When choosing a double joint, you have to consider that they can transmit a torque about 10% lower than the same sized single joints. Each application has its own particular motion characteristics, such as: shock loads, motion reversals, connected masses, kind of starting, presence of elastic joints, stops and starts, etc., that have to be considered when choosing the joint.

Working angle a°	Correction value F
5°	1,25
10°	1,00
15°	0,80
20°	0,65
25°	0,55
30°	0,45
35°	0,38
40°	0,30
45°	0,25

Example

Known: Power = 0,65 kW
RPM = 230

With working angle a 10°, F = 1, we get point **P**. Torque = 27 Nm corresponding to joint size "D" = 25/26mm = Types **65170.W0016** and **65172.W0012**

With working angle a 30°, F = 0,45 (kW 0,65: 0,45 = 1,44 kW) we get point **P1** Torque = 60 Nm corresponding to joint size "D" = 32mm = Types **65170.W0020** and **65172.W0016**

Consider that:

$$\text{Torque in Nm} = 9550 \times \frac{\text{Power (kW)}}{\text{RPM}}$$

$$\text{Torque in Nm} = 7020 \times \frac{\text{Power (HP)}}{\text{RPM}}$$

1 kW	=	1,35 HP
1 HP	=	0,736 kW
1 Kgm	=	9,81 Nm
1 Nm	=	0,102 Kgm