Spicer® Compact™ Series Driveshafts for Commercial Vehicle Applications

DANA SPICER® Drivetrain Products

Specifications Guide

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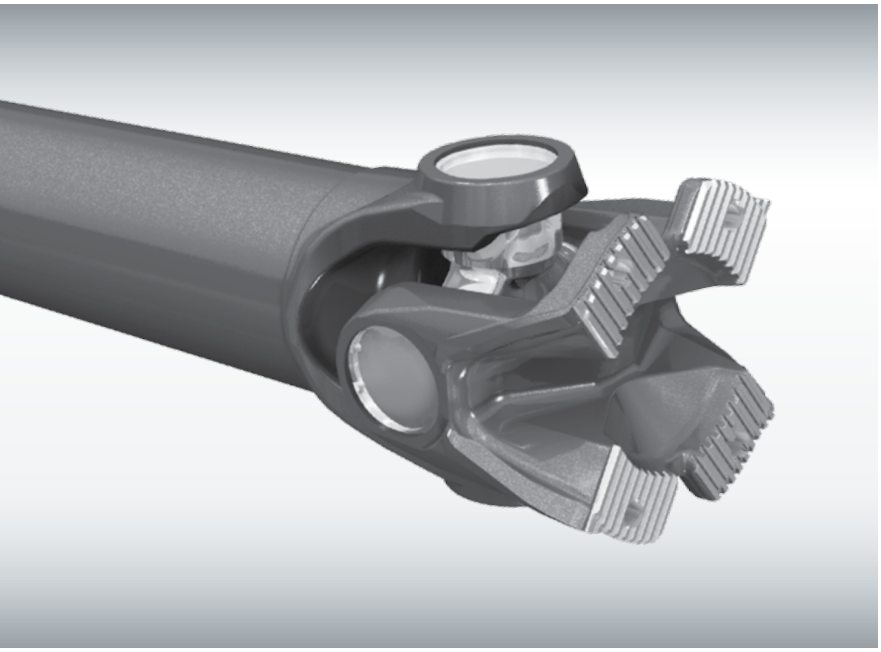
Leading the industry with driveline innovations for the commercial-vehicle market that increase fuel efficiency, reduce maintenance, and lower life cycle cost.

Industry Leadership For more than a century, Dana has developed the Spicer® brand product portfolio as the global benchmark in performance, quality, and reliability. Every day, we meet our customers' needs across a wide range of applications – passenger cars, freight-hauling highway trucks, agriculture and construction machines, and more. Dana is a world leader in the supply of axles, driveshafts, off-highway transmissions, sealing and thermal-management products, and genuine service parts. With many of the best engineering minds in the industry on our team, along with global resources, we relentlessly design and develop new systems, while also continuing to improve the performance of established product lines. Behind each of our products is a dedicated team of expert service professionals, industry-leading warranties, localized inventory, training resources, a dedicated call center, and other enhanced customer interfaces. With Dana, there's more ensuring your success.

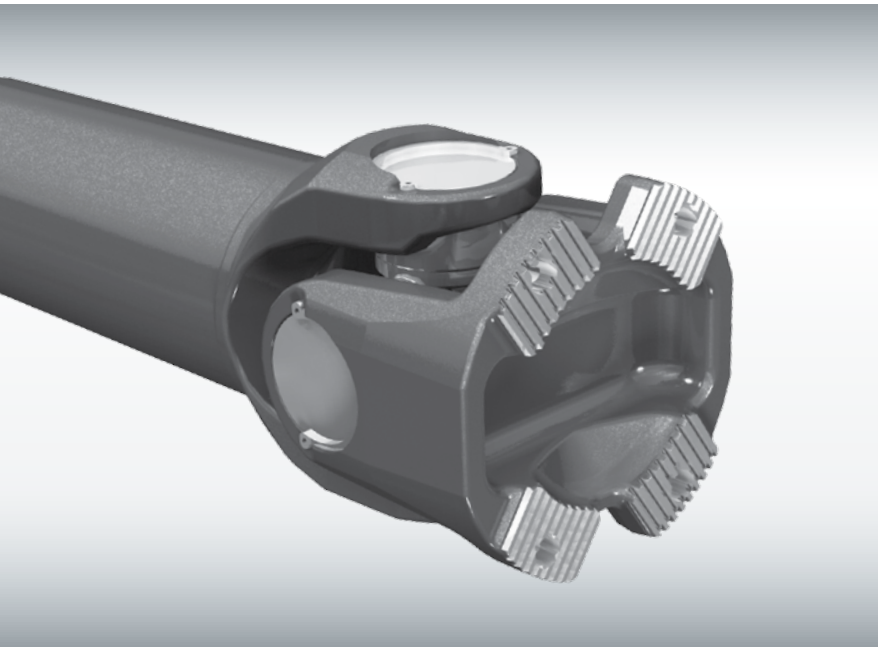
Commercial-Vehicle Driveshaft Product Lines



Spicer® Compact™ Series Driveshafts

Spicer® Compact™ Series Driveshafts set the standard for the global commercial-vehicle industry. For maximum performance and reliability, our comprehensive range of driveshafts offers the best in high power density driveline solutions available for truck and bus driveshafts. The Compact Series offer both reliable and service-free designs.

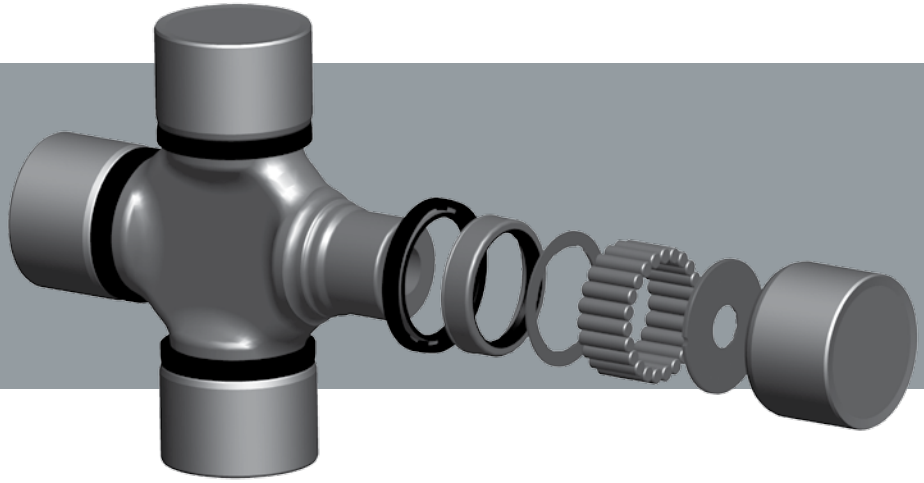
- Best-in-class torque capacity
- Compact and lightweight
- Environmentally friendly manufacturing process and design
- Industry-proven durability



Compact™ High Power Density™ (HPD™) Series Model 75 Driveshaft

The Spicer® Compact™ High Power Density™ (HPD™) Driveshaft Series brings together industry-proven features from across the Spicer family of propshafts to deliver the highest power density available.

- For heavy-duty driveshaft applications
- Industry standard XS 200 flange
- Highest power density available



Spicer® Diamond Series® Driveshafts

Introducing the lightest weight solution for heavy-duty commercial trucks – the Spicer® Diamond Series® Driveshaft. As the only one-piece, eco-friendly, heavy-duty driveshaft with trusted Spicer reliability, Spicer Diamond Series can reduce weight by up to 40 kg, providing greater efficiency and better overall performance.

- Up to 40 kg weight savings
- Corrosion resistant
- Reduced noise, vibration, and harshness (NVH)

Spicer Life® Series Driveshafts

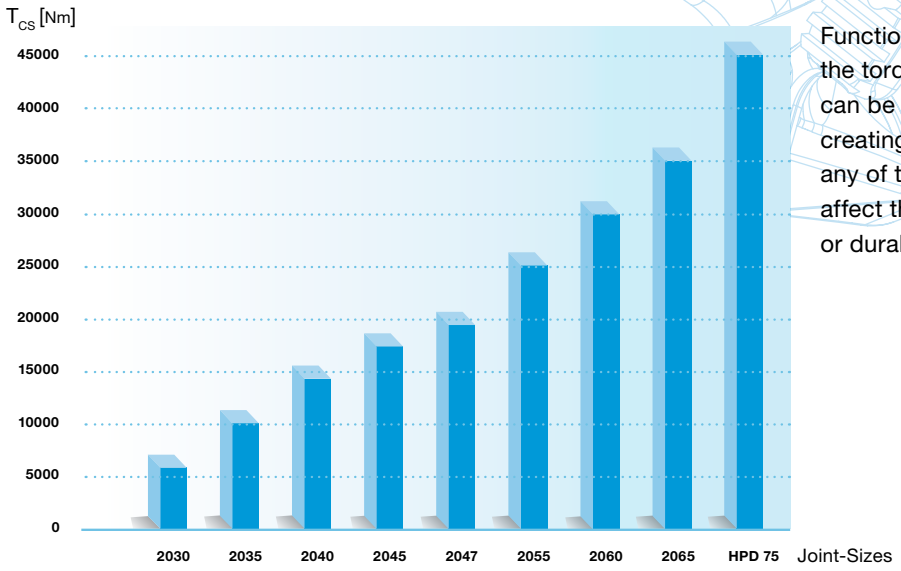
Our Spicer Life® Series Heavy-Duty Driveshafts make handling heavy loads over the long haul easier and more efficient than ever. Enhanced to offer even greater torque, durability, and savings.

- Designed for heavy-duty and high-efficiency truck applications
- Increased torque and more durability
- Service-free designs with extended warranty

Designed and tested for maximum durability and reliability, they can withstand even the most demanding commercial-vehicle applications.

Spicer® Compact™ Series Features

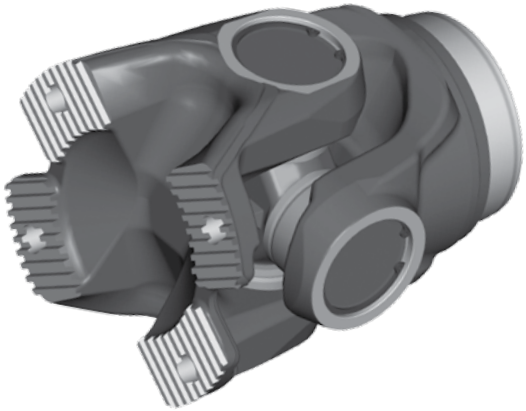
Functional Torque Limit



Functional Torque Limit means the torque to which the driveshaft can be loaded without yielding or creating plastic deformation of any of the parts that adversely affect the driveshaft kinematics or durability.

Main features

Using optimizing engineering, the Spicer® Compact™ Series Driveshaft was designed to meet the requirements of commercial-vehicle manufacturers including:



Capacity

- Transmission of static torque
- Resistance to alternating and pulsating stresses

Bearing life

- Well-matched dynamic and static load bearing capacity

Dynamic behavior

- Reduced mass moment of inertia
- Longer single-piece driveshaft for a given speed
- Reduced residual unbalance by lighter shaft weight
- Improved/repeatable balance due to accurate centering of cross-serration flanges

Operating temperatures

- Driveshafts are available for operating temperatures between -50°C (-58°F) to +80°C (176°F), or special types for peak temperatures up to +120°C (248°F)

Weight

- Weight of the driveshaft is less, given the static and dynamic torque limits

Environmental protection

- Maintenance-free options
- Optimised grease amount
- Enhanced sealing to reduce grease loss
- Solvent-free paint

Component Features and Additional Options

Universal joints

- Optimised stress distribution
- System-matched rigidity

Unit pack – service-free

- Structural dynamic characteristics and dimensions same as regreaseable type
- Highly effective sealing system
- Improved journal cross geometry

Sliding joint

- Refined involute profile guarantees optimised performance
- Functional separation of torque transmission and centering features
- Plastic-coated sliding surface

Center bearing

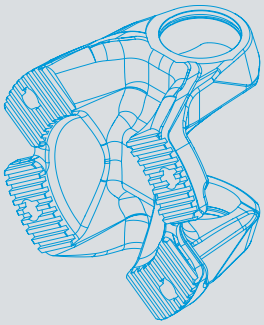
The bearing unit in the reverse-slip construction consists of the following component parts:

- Stub shaft with bearing seat and companion flange
- Groove ball bearings feature dual sealing and service-free grease to keep out dirt and moisture
- Labyrinth sealing method for superior contaminant exclusion
- Rubber cushion for:
  - Damping and isolation
  - Cushioning axial movements
  - Cushioning angular movements and positions

Connection Variants

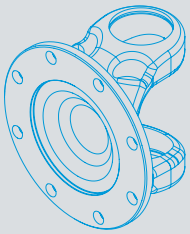
X-Serration Flange

- **XS**

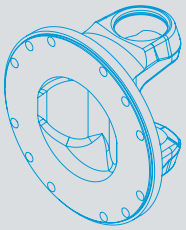


Friction Type Flange

- **DIN**



- **SAE**



Attaching driveshafts to various transmissions and axle assemblies calls for different types of connections. The following types (ISO standard) are available:

XS

The XS flange is the preferred flange because of its technical and economical advantages, including:

- International standardization
- Fewer variants
- Clearly defined mounting position
- Less time required for assembly
- Simplified bolting
- X-serration (XS) – corresponding to ISO 8667 for gearbox flanges and ISO 12667 for driveshaft flanges

Friction type

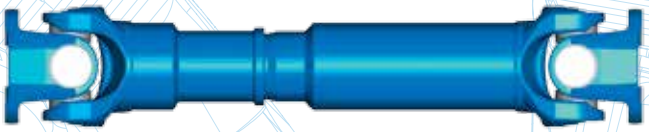
DIN and SAE connection on request

- DIN, corresponding to ISO 7646
- SAE, corresponding to ISO 7647

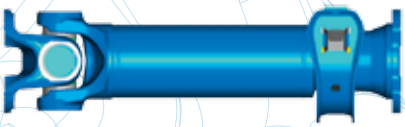
Driveshaft Variants and Combinations

0.02

Driveshaft with length compensation
Variant 0.02



HPD 0.02

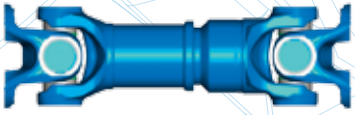


0.04

Driveshaft without length compensation with midship bearing (fixed and mid)
Variant 0.04

8.06

Shaft assembly with length compensation in midship bearing position (MIS)
Variant 8.06



9.01

Short coupled driveshaft with length compensation variant with sleeve muff
Variant 9.01

9.03

Short coupled driveshaft with length compensation variant with sleeve yoke
Variant 9.03

9.06

Extra short coupled driveshaft with length compensation variant with sleeve yoke
Available on request
Variant 9.06

0.06

Driveshaft with length compensation and centered double joints on both sides.
Variant 0.06

0.08

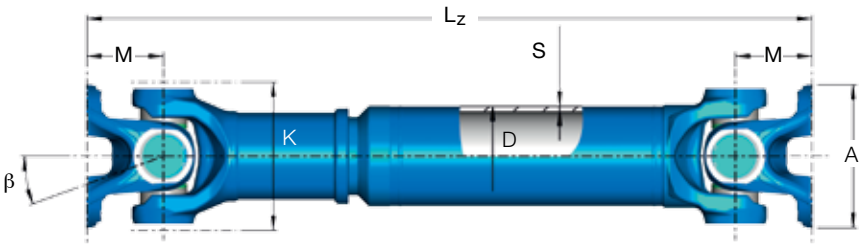
Driveshaft with length compensation and centered double joint on one side
Variant 0.08

Data Sheet Standard Variant 0.02

Driveshaft

with length compensation

Design



Compact			2030	2035		2040		2045		2047	2055		2060	2065
Functional limit torque	T_{cs}	kNm	6,5	10,0		14,0		17,0		19,0	25,0		30,0	35,0
Connection	-	-	KV 120	KV 150		KV 150		KV 180		KV 180	KV 180		KV 180	KV 180
Optional	-	-	KV 150	KV 120		KV 180		KV 150		KV 150	-		-	-
Flange-ø	A	mm	120	155		155		180		180	180		180	180
Max. joint angle	ß	°	25	25	35	25	44	25	44	25	25	44	30	25
Max. rotation-ø	K	mm	127	144		160		174		174	178		196	206
Standout	M	mm	63,5	75	88	82	102	87	108	87	92	108	100	105
Compressed length	$L_{z\ min.}$	mm	475	542	667	546	693	579	729	579	616	735	635	676
Sliding movement	L_a	mm	110	110	180	110	180	110	180	110	110	180	110	110
Tube	DxS	mm	90x3	100x3	85x5	120x3	100x4,5	120x4	110x5	120x5	120x6		130x6	142x6
Weight of 1m-shaft	G_W	kg	17,6	23,3	27,0	30,8	33,5	37,9	42,8	39,2	47,6	49,1	55,0	70,6
Weight of 1m-tube	G_R	kg	6,4	7,2	9,9	8,7	10,6	11,4	12,9	14,2	16,9		18,4	20,1

Recommended connection
Companion flanges
- XS: Cross serration according to ISO 8667

Driveshaft flange yokes
- XS: Cross serration according to ISO 12667

Please note:
All values given are nominal. Exact information should only be obtained from drawing.

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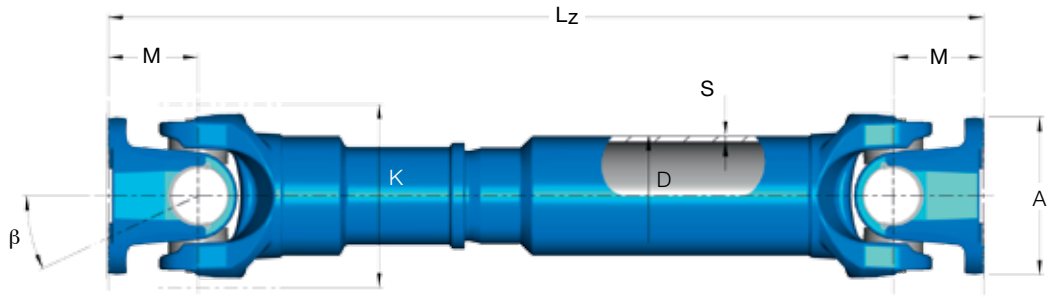
Data Sheet HPD Variant 0.02

Driveshaft

with length compensation

Design



HPD			75
Functional limit torque	T_{cs}	kNm	45,0
Connection	-	-	KV 200
Flange-ø	A	mm	200
Max. joint angle	ß	°	25
Max. rotation-ø	K	mm	206
Standout	M	mm	108
Compressed length	$L_{z\ min.}$	mm	797
Sliding movement	L_a	mm	110
Tube	DxS	mm	144x7
Weight of 1m-shaft	G_W	kg	85,2
Weight of 1m-tube	G_R	kg	23,4

Recommended connection
Companion flanges
- XS: Cross serration according to ISO 8667

Driveshaft flange yokes
- XS: Cross serration according to ISO 12667

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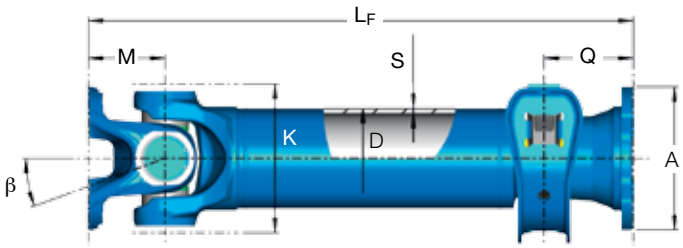
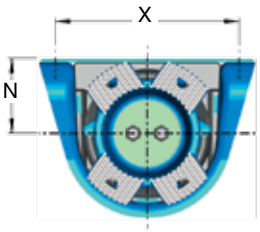
Data Sheet Standard Variant 0.04

Driveshaft

without length compensation with midship bearing

Design





Compact			2030		2035		2040	2045	2047	2055	2060	2065
Functional limit torque	T_{cs}	kNm	6,5		10,0		14,0	17,0	19,0	25,0	30,0	35,0
Connection	-	-	KV 120		KV 150		KV 150	KV 180	KV 180	KV180	KV 180	KV 180
Optional	-	-	KV 150		KV 120		KV 180	KV 150	KV 150	–	–	–
Flange-ø	A	mm	120		155		155	180	180	180	180	180
Max. joint angle	ß	°	25		25		25	25	25	25	25	25
Max. rotation-ø	K	mm	129		144		160	174	174	178	196	206
Standout	M	mm	63,5		75		82	87	87	92	100	105
Compressed length	$L_{F\ min.}$	mm	325		324		350	363	363	399	412	425
Tube	DxS	mm	90x3		100x3		120x3	120x4	120x5	120x6	130x6	142x6
Joint overhang	Q	mm	80	73	80	73	80	80	80	107	107	107
Hole distance	x	mm	220	193,5	220	193,5	220	220	220	220	220	220
Drop height	N	mm	90	69	90	69	90	90	90	90	90	90
Hole-ø	d	mm	15	13	15	13	15	15	15	15	15	15
Weight of 1m-shaft	G_W	kg	18,8		22,6		25,6	30,2	32,0	37,7	42,8	53,0
Weight of 1m-tube	G_R	kg	6,4		7,2		8,7	11,4	14,2	16,9	18,4	20,1

Recommended connection
Companion flanges
- XS: Cross serration according to ISO 8667

Driveshaft flange yokes
- XS: Cross serration according to ISO 12667

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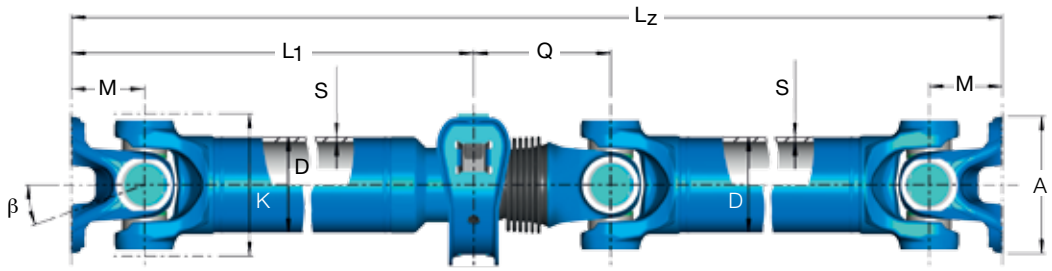
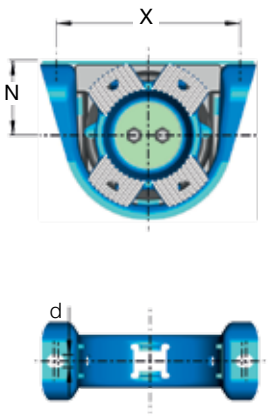
Data Sheet Standard Variant 8.06

Shaft Assembly

with length compensation in midship bearing area

Design





Compact			2030		2035		2040	2045	2055
Functional limit torque	T_{cs}	kNm	6,5		10,0		14,0	17,0	25,0
Connection	-	-	KV 120		KV 150		KV 150	KV 180	KV 180
Flange-ø	A	mm	120		155		155	180	180
Max. joint angle	ß	mm	25		25		25	25	25
Max. rotation-ø	K	°	127		144		160	174	178
Standout	M	mm	63,5		75		82	87	92
Compressed length	$L_{z\ min.}$	mm	632		720		765	816	863
Length 1	$L_{1\ min.}$	mm	266,5		318		308	330	352
Sliding movement	L_a	mm	110		110		110	110	110
Tube	DxS	mm	90x3		100x3		120x3	120x4	120x6
Joint overhang	$Q_{min.}$	mm	142		146		156	164	174
Hole distance	X	mm	220	193,5	220	193,5	220	220	220
Drop height	N	mm	90	69	90	69	90	90	90
Hole-ø	d	mm	15	13	15	13	15	15	15
Weight of 2m-shaft	G_W	kg	32,3		39,8		50,6	66,1	76,2
Weight of 1m-tube	G_R	kg	6,4		7,2		8,7	11,4	16,9

Recommended connection
Companion flanges
- XS: Cross serration according to ISO 8667

Driveshaft flange yokes
- XS: Cross serration according to ISO 12667

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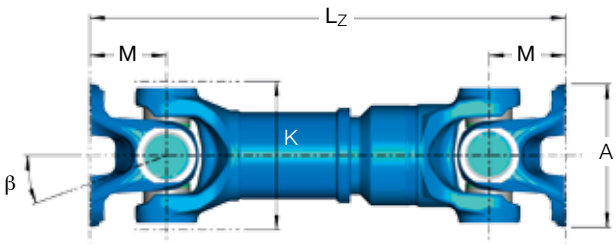
Data Sheet Standard Variant 9.01

Short Coupled Driveshaft

Sleeve-Muff Design

Design



Compact			2030	2035	2040	2045	2055	2060	2065
Functional limit torque	T_{cs}	kNm	6,5	10,0	14,0	17,0	25,0	30,0	35,0
Connection	-	-	KV 120	KV 150	KV 150	KV 180	KV 180	KV 180	KV 180
Optional	-	-	KV 150	KV 120	KV 180	KV 150	-	-	-
Flange-ø	A	mm	120	120	155	180	180	180	180
Max. joint angle	ß	°	25	25	25	25	25	25	25
Max. rotation-ø	K	mm	127	144	160	174	178	196	206
Standout	M	mm	63,5	75	82	87	92	100	105
Compressed length/ Sliding movement	$L_{z\ max.}/L_a$	mm/mm	436/110	510/110	505/110	541/110	571/110	590/110	631/110
Compressed length/ Sliding movement	$L_{z\ min.}/L_a$	mm/mm	371/45	470/70	465/70	501/70	541/70	550/70	591/70
Max. weight	$G_{W\ max.}$	kg	15,2	20,5	23,5	31,4	39,7	46,0	61,1
Min. weight	$G_{W\ min.}$	kg	13,5	19,3	21,7	29,4	36,8	43,6	57,9

Recommended connection
Companion flanges
- XS: Cross serration according to ISO 8667

Driveshaft flange yokes
- XS: Cross serration according to ISO 12667

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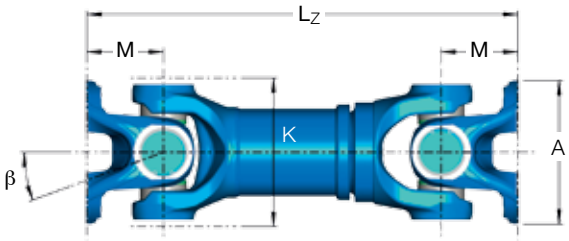
Data Sheet Standard Variant 9.03

Short Coupled Driveshaft

Sleeve-Yoke Design

Design



Compact			2030	2035	2040	2045	2055	2065
Functional limit torque	T_{cs}	kNm	6,5	10,0	14,0	17,0	25,0	35,0
Connection	-	-	KV 120	KV 150	KV 150	KV 180	KV 180	KV 180
Optional	-	-	KV 150	KV 120	KV 180	KV 150	-	-
Flange-ø	A	mm	120	155	155	180	180	180
Max. joint angle	ß	°	25	25	25	25	25	25
Max. rotation-ø	K	mm	127	144	160	174	178	206
Standout	M	mm	63,5	75	82	87	92	105
Compressed length/ Sliding movement	$L_{z\ max.}/L_a$	mm/mm	380/95	444/110	466/110	491/110	517/110	574/110
Compressed length/ Sliding movement	$L_{z\ min.}/L_a$	mm/mm	321/36	384/50	411/55	430/50	457/50	514/50
Max. weight	$G_{W\ max.}$	kg	13,9	19,2	23,1	30,2	38,2	54,7
Min. weight	$G_{W\ min.}$	kg	12,0	17,4	21,0	27,3	34,9	49,9

Recommended connection
Companion flanges
- XS: Cross serration according to ISO 8667

Driveshaft flange yokes
- XS: Cross serration according to ISO 12667

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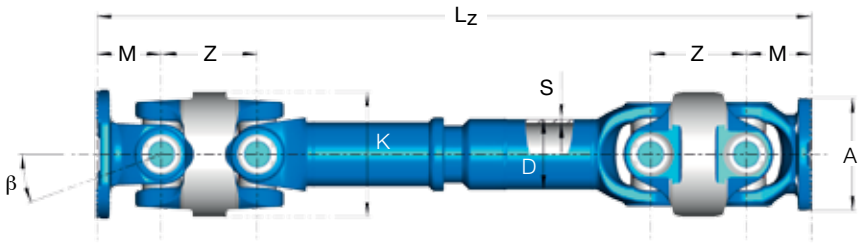
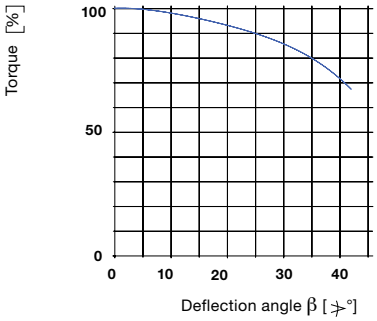
Data Sheet Standard Variant 0.06

Driveshaft

with length compensation and centered double joint on both sides

Design





Transmission capacity dependent on deflection angle for a centered double joint

Compact			687.30		587.20/ 687.35		587.35/ 687.45
Functional limit torque	T_{cs}	kNm	3,9	6,5	7,4	8,3	17,0
Connection	-	-	DIN 120	DIN 150	DIN 150	KV 150	DIN 180
Flange-ø	A	mm	120	150	150	155	180
Max. joint angle	ß	°	42		20/42		20/42
Max. rotation-ø	K	mm	140		152		182
Standout	M	mm	72	70	75	78	90
Compressed length	$L_{z\ min.}$	mm	829	825	797	803	1040
Sliding movement	L_a	mm	190		110		150
Standout	Z	mm	102		115		140
Tube	DxS	mm	90x3		85x5		100x6
Weight of 1m-shaft	G_W	kg	36,1 kg	37,0 kg	40,2	41,0	75
Weight of 1m-tube	G_R	kg	6,4		9,9		13,9

Recommended connection
Companion flanges
- DIN: According to ISO 7646
- SAE: According to ISO 7647
- XS: Cross serration according to ISO 8667

Driveshaft flange yokes
- XS: Cross serration according to ISO 12667

Please note:
All values given are nominal. Exact information should only be obtained from drawing.

Attention:
Not all DIN/SAE-flange connections can transmit the function-limit torque of the corresponding driveshaft size by friction.

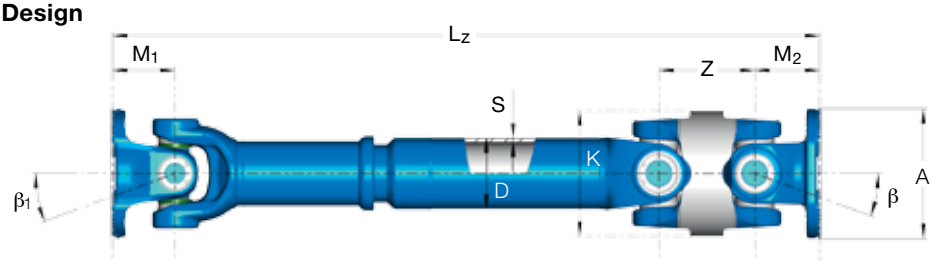
Capacity ratings, features, and specifications vary depending upon the model and type of service. Application approvals must be obtained from Dana; contact your representative for application approval. We reserve the right to change or modify our product specifications, configurations, or dimensions at any time without notice.

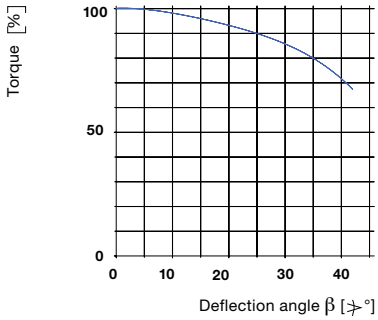
Data Sheet Standard Variant 0.08

Driveshaft

with length compensation and centered double joint on one side

Design





Transmission capacity dependent on deflection angle for a centered double joint

Compact			687.30		587.20/ 687.35		587.35/ 687.45
Functional limit torque	T_{cs}	kNm	3,9	6,5	7,4	8,3	17,0
Connection	-	-	DIN 120	DIN 150	DIN 150	KV 150	DIN 180
Flange-ø	A	mm	120	150	150	150	180
Max. joint angle	ß	°	42		42		42
Max. joint angle	$ß_1$	°	25		35	25	25
Max. rotation-ø	K	mm	140		150		180
Standout	M_1	mm	72	78	95	75	90
Standout	M_2	mm	72	70	75	78	95
Compressed length	$L_{z\ min.}$	mm	600	604	766	749	725
Sliding movement	L_a	mm	110		190		110
Standout	Z	mm	102		115		140
Tube	D x S	mm	90 x 3		85 x 5		120 x 4
Weight of 1m-shaft	G_W	kg	24,4 kg	25,7 kg	35,0	36,0	55,2
Weight of 1m-tube	G_R	kg	6,4		9,9		11,4

Recommended connection
Companion flanges
- DIN: According to ISO 7646
- SAE: According to ISO 7647
- XS: Cross serration according to ISO 8667

Driveshaft flange yokes
- XS: Cross serration according to ISO 12667

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Global Support Dana brings industry-leading innovation and proven technology to our customers through a network of technical centers located across four continents. We design, develop, and manufacture world-class, high-performance, commercial-vehicle products that reduce the total cost of ownership and increase productivity. For the most demanding commercial-vehicle applications and the heaviest loads, we offer a full range of the most durable, reliable, and efficient driveline products in the industry. And, no matter what you need, our extensive, highly trained service and support network is here to assist you – wherever you are, whenever you need us.

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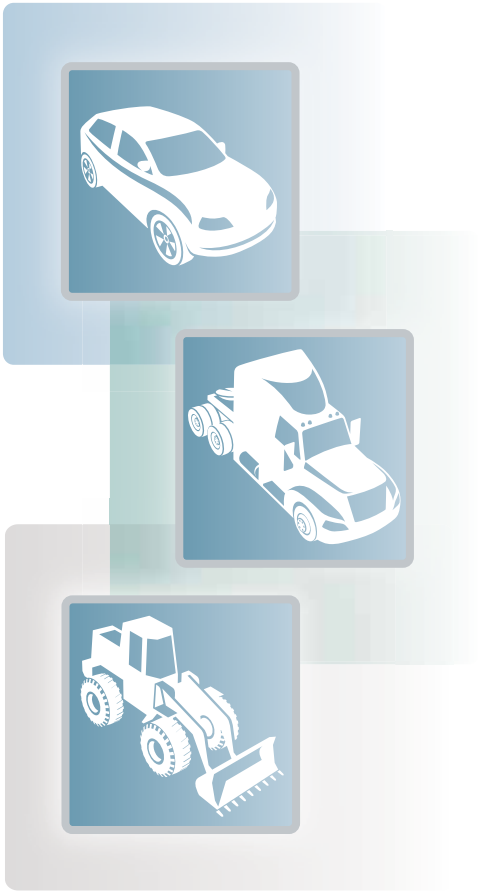

For Spicer Driveshaft application guidelines' including the application approval form, please visit our website at www.dana.com/cv.

About Dana Holding Corporation

Dana is a world-leading supplier of driveline, sealing, and thermal-management technologies that improve the efficiency and performance of passenger, commercial, and off-highway vehicles with both conventional and alternative-energy powertrains. Our global network of engineering, manufacturing, and distribution facilities provides original-equipment and aftermarket customers with local product and service support. Founded in 1904, we employ thousands of people across five continents.

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Dana serves commercial-vehicle customers worldwide with over 40 facilities and five technical centers in 11 countries that design, market, and manufacture complete systems for medium and heavy-duty trucks. We continuously illustrate our commitment to the commercial-vehicle industry by introducing new products with enhanced, award-winning technologies, including Spicer® axles, driveshafts, and tire management solutions; Victor Reinz® sealing systems; and Long® thermal-management products. We back our offerings with world-class after-sales support and genuine service parts manufactured to the same high standards as original-equipment products to maximize the return on investment for your commercial vehicle.

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