SFT

BONDIOLI & PAVESI

398DDS001EN00

Every single generation is made to take up the challenges of its own world, a developing world. Even today, farming is undergoing a period of new challenges, that have to be faced, and a period of new bounds, that have to be crossed. Hence, nowadays a more and more safe, reliable and efficient machinery is required. It is the machinery of a new generation, like yours. To enhance to the maximum the potentialities of this new machinery SFT has taken to the field, to offer you cardan driveshafts of a new generation.

Safety First

What is the highest priority in the design of SFT driveshafts? The safety of the operator. Nothing contributes to safety more than an experienced and cautious operator, but a quality driveshaft, designed with safety in mind, can sometimes make the difference. Not only does the SFT range comply with existing international safety standards, it is also designed to go beyond those criteria to create a new bench mark for safety.

Work,work,work

What is required from a driveshaft during those times when one cannot afford downtime? It is expected to work, continuously. SFT driveshafts are designed, tested and manufactured to be easy to use, robust and reliable in all conditions and applications.

Simply technological

The best technology provides advantages without complications. Years of research and experience, along with many reliable and innovative technical solutions has been summed up in the range of SFT driveshafts.

Drive shafts U-Joints

SIZE	NOMINAL POWER Pn		NOMINAL TORQUE Mn		CATEGORIES ASAE		U-JOINTS	FOUR-TOOTH PROFILE TUBES		FREE ROTATION PROFILE		SPLINED TELESCOPING MEMBERS
	min^{-1}	kW / CV	N·m	in·lb	RD	HD	mm	mm	mm			mm
S1	500	13 / 18	234	2073	1	1	**A=** 22,0 **H=** 54,0	**D1=** 35,2 **T1=** 2,00	**D2=** 30,8 **T2=** 3,00	---	---	---
	1000	20 / 27	190	1679								
S2	500	21 / 28	364	3224	2	1	**A=** 23,8 **H=** 61,3	**D1=** 45,6 **T1=** 2,75	**D2=** 39,6 **T2=** 3,00	**D1=** 40,4 **T1=** 3,10	**D2=** 29,00 **T2=** 4,00	---
	1000	31 / 42	295	2612								
S4	500	28 / 38	494	4376	4	3	**A=** 27,0 **H=** 74,6	**D1=** 50,2 **T1=** 2,75	**D2=** 44,2 **T2=** 3,50	**D1=** 48,0 **T1=** 3,35	**D2=** 36,0 **T2=** 4,00	---
	1000	42 / 57	400	3545								
S5	500	37 / 50	651	5758	4	3	**A=** 30,2 **H=** 79,4	**D1=** 50,2 **T1=** 2,75	**D2=** 44,2 **T2=** 4,20			---
	1000	55 / 75	527	4664								
S6	500	40 / 55	716	6334	5	4	**A=** 30,2 **H=** 79,4	**D1=** 53,9 **T1=** 3,25	**D2=** 46,9 **T2=** 4,50	**D1=** 58,5 **T1=** 3,60	**D2=** 45,0 **T2=** 4,20	**D=** 40 **z=** 14
	1000	61 / 83	583	5161								
H7	500	51 / 70	911	8061	6	4	**A=** 30,2 **H=** 91,5	**D1=** 58,2 **T1=** 3,25	**D2=** 51,2 **T2=** 5,00	---	---	**D=** 40 **z=** 14
	1000	78 / 106	745	6592								
S8	500	66 / 90	1171	10364	6	5	**A=** 34,9 **H=** 93,5	**D1=** 58,2 **T1=** 3,25	**D2=** 51,2 **T2=** 5,00	---	---	**D=** 40 **z=** 14
	1000	100 / 136	956	8457								
H8	500	66 / 90	1171	10364	6	5	**A=** 34,9 **H=** 93,5	**D1=** 66,0 **T1=** 3,50	**D2=** 58,5 **T2=** 4,50	---	---	---
	1000	100 / 136	956	8457								
S9	500	81 / 110	1431	12668	7	5	**A=** 34,9 **H=** 106,0	**D1=** 66,0 **T1=** 3,50	**D2=** 58,5 **T2=** 4,50	---	---	**D=** 45 **z=** 16
	1000	122 / 166	1166	10323								
SH	500	97 / 132	1717	15201	8	7	**A=** 42,0 **H=** 107,5	**D1=** 70,2 **T1=** 4,00	**D2=** 61,7 **T2=** 5,75	---	---	**D=** 45 **z=** 16
	1000	147 / 200	1405	12437								
S0	500	124 / 169	2199	19462	8	7	**A=** 42,0 **H=** 130,0	**D1=** 70,2 **T1=** 4,00	**D2=** 61,7 **T2=** 5,75	---	---	**D=** 45 **z=** 16
	1000	187 / 254	1785	15795								
SK	500	181 / 246	3200	28323	8	8	**A=** 50,0 **H=** 140,0	**D1=** 74,1 **T1=** 6,00	**D2=** 61,8	---	---	---
	1000	272 / 370	2600	23013								

The nominal torque Mn as the torque associated with a 1000 hour lifetime of a joint operating with joint angle α = 5°, rotational velocity n = 540 min^{-1} (or 1000 min^{-1}), and a 50 hour lubrication frequency. The nominal power Pn is the power corresponding to the nominal torque Mn.

Four Tooth Profile Tubes are also available with Rilsan coated or with heat-treated inner tube. Free Rotation tubes are also available with Rilsan coated inner Tube.

CV 80°

Constant velocity joints:
high efficiency, low maintenance

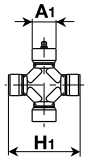
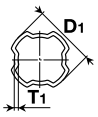
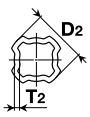
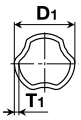
Constant Velocity (CV) joints were first widely used for agricultural applications during the 70's. CV joints increased the efficiency of towed implements by reducing or eliminating the problems associated with high and/or unequal joint angles during turns. The requirement for tight turns with the implement has dictated a wide range of motion for the centering disc inside the CV joint. This required large apertures in the CV joint body, which risks contamination of the lubricating grease. Until now, CV joints have allowed better maneuverability in the field compared to "equal angle" drivelines, but required frequent lubrication with copious amounts of grease. The new SFT EL CV joint overcome these problems and requires regreasing only once a week (or every 50 hours, but sometimes this may be extended to 100 hours). In addition, SFT EL CV joints do not require nearly as much grease as conventional CV joints. The same cross kits are used for 80° and 50° SFT EL CV joints, with double-lip seal caps, and have the same lubrication interval of 50 hours.

CV SH 80°

SH CV joints

SH CV joints: designed for power Developments in farming mean that tractors are increasingly powerful. Farm implements are being made to utilize this power. Therefore, drivelines need to be able to transmit higher power. In the case of drivelines with CV joints, the SFT SH CV joint is the ideal solution for tractors with power over 200 Hp at 1000 rpm.

Drive shafts CV-Joints

SIZE	NOMINAL POWER		NOMINAL TORQUE		CATEGORIES		CV-JOINTS	FOUR-TOOTH PROFILE TUBES		FREE ROTATION PROFILE		SPLINED TELESCOPING MEMBERS
		Pn		Mn	ASAE							
min^{-1}	kW	CV	N·m	in·lb	RD	HD	mm	mm	mm			mm
S2	500	21	28	364	3224	2	1	**A1=** 22,0 **H1=** 86,0	**D1=** 45,6 **T1=** 2,75	**D2=** 39,6 **T2=** 3,00	**D1=** 40,4 **T1=** 3,10	**D2=** 29,00 **T2=** 4,00	---
	1000	31	42	295	2612								
S4	500	28	38	494	4376	4	3	**A1=** 22,0 **H1=** 86,0	**D1=** 50,2 **T1=** 2,75	**D2=** 44,2 **T2=** 3,50	**D1=** 48,0 **T1=** 3,35	**D2=** 36,0 **T2=** 4,00	---
	1000	42	57	400	3545								
S6	500	40	55	716	6334	5	4	**A1=** 27,0 **H1=** 100,0	**D1=** 53,9 **T1=** 3,25	**D2=** 46,9 **T2=** 4,50	**D1=** 58,5 **T1=** 3,60	**D2=** 45,0 **T2=** 4,20	**D=** 40 **z=** 14
	1000	61	83	583	5161								
H7	500	51	70	911	8061	6	4	**A1=** 27,0 **H1=** 100,0	**D1=** 58,2 **T1=** 3,25	**D2=** 51,2 **T2=** 5,00	---	---	**D=** 40 **z=** 14
	1000	78	106	745	6592								
S8	500	66	90	1171	10364	6	5	**A1=** 30,2 **H1=** 106,0	**D1=** 58,2 **T1=** 3,25	**D2=** 51,2 **T2=** 5,00	---	---	**D=** 40 **z=** 14
	1000	100	136	956	8457								
H8	500	66	90	1171	10364	6	5	**A1=** 30,2 **H1=** 106,0	**D1=** 66,0 **T1=** 3,50	**D2=** 58,5 **T2=** 4,50	---	---	---
	1000	100	136	956	8457								
S9	500	81	110	1431	12668	7	5	**80°: A1=**30,2 **H1=**122,0	**D1=** 66,0 **T1=** 3,50	**D2=** 58,5 **T2=** 4,50	---	---	**D=** 45 **z=** 16
	1000	122	166	1166	10323			**50°: A1=**34,9 **H1=**112,0					
SH	500	97	132	1717	15201	8	7	**A1=** 34,9 **H1=** 112,0	**D1=** 70,2 **T1=** 4,00	**D2=** 61,7 **T2=** 5,75	---	---	**D=** 45 **z=** 16
	1000	147	200	1405	12437								

The nominal torque Mn as the torque associated with a 1000 hour lifetime of a joint operating with joint angle α = 5°, rotational velocity n = 540 min^{-1} (or 1000 min^{-1}), and a 50 hour lubrication frequency. The nominal power Pn is the power corresponding to the nominal torque Mn.

Four Tooth Profile Tubes are also available with Rilsan coated or with heat-treated inner tube. Free Rotation tubes are also available with Rilsan coated inner Tube.

Torque limiters and overrunning clutches

Permanently lubricated torque limiters and overrunning clutches: less maintenance for higher efficiency

SFT drivelines are designed to respond to the user's needs: reliability, high performance, low weight, easy installation, and less maintenance.
These same goals were met with the design of the devices that control torque. The extended 50-hour lubrication interval represents a significant step forward in reduced maintenance requirements. In addition, ratchet torque limiters LC and LT, and shear bolt torque limiter LB, require lubrication only once a season.

OVERRUNNING CLUTCH

RA

50

RL

PERMANENTLY LUBRICATED

SHEAR BOLT TORQUE LIMITER

LB

SEASONAL LUBRICATION

RATCHET TORQUE LIMITER

ONE-WAY

SA

50

LC

SEASONAL LUBRICATION

SYMMETRICALS

LN

50

LT

SEASONAL LUBRICATION

AUTOMATIC TORQUE LIMITER

PERMANENTLY LUBRICATED

LR

FRICTION TORQUE LIMITERS

ADJUSTABLE

FV

FFV

NON-ADJUSTABLE

FT

FK

FRICTION TORQUE LIMITERS INCORPORATED OVERRUNNING CLUTCH

ADJUSTABLE

FNV

FFNV

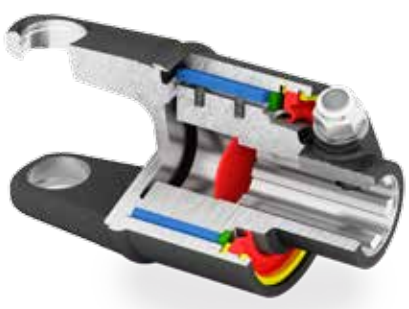
NON-ADJUSTABLE

FNT

TORSIONALLY RESILIENT JOINT

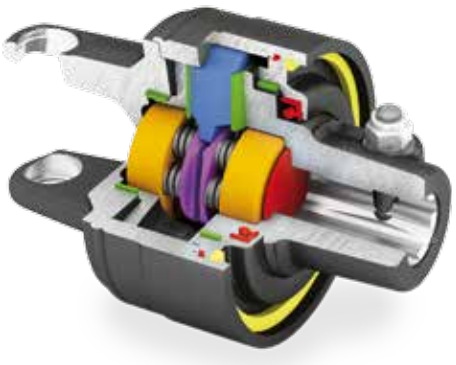
GE

RL



LT

LR



The lubrication frequency has been extended from the traditional one day to a weekly interval. Each component of SFT driveshafts, including constant velocity joints, is specifically designed to operate for at least 50 hours without maintenance. Grease fittings are aligned and easy to access. Extended 250 hour lubrication interval is possible for specific applications. The 50 hours interval of lubrication for CV Joints can be occasionally extended to 100 hours.

Greasing System

If the driveline is equipped with the Greasing System the telescoping tubes may be lubricated via the grease fitting located next to the tube yoke. The Greasing System enables rapid lubrication of telescoping tubes at any driveline position, without removal from either the tractor or implement.

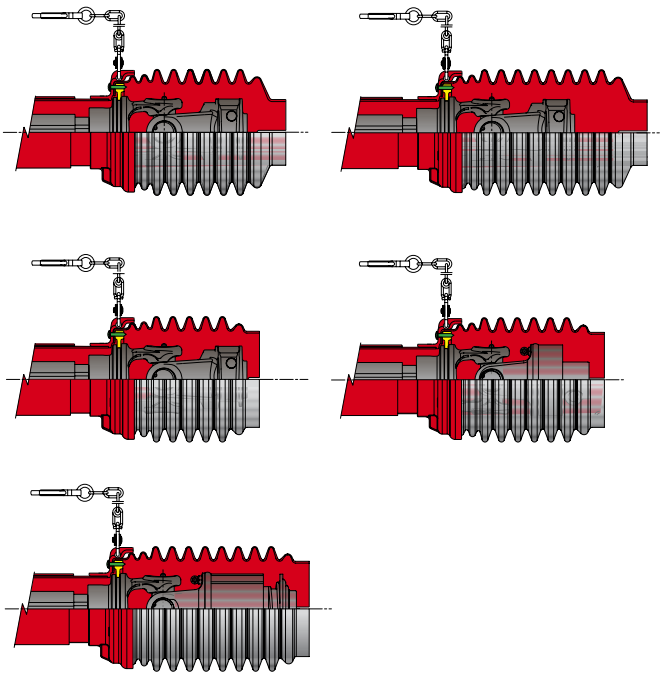
Interactive guarding system

All rotating parts must be guarded. Contact with a rotating driveline can cause death or serious injury. The tractor master shield, the driveline guards, and the implement input connection shields form an interactive guarding system

Proper use and maintenance of the driveline and shielding is of primary importance for operator safety. A high percentage of driveline accidents occur when safety shielding is missing or does not function properly. Bondioli & Pavesi recommends the use of proper shields and guards for the driveline, tractor, and implement. Damaged or missing components must be replaced with original equipment spare parts, correctly installed, before using the driveline. Use the implement only with the original driveline. The implement input connection shield must be compatible with the driveline and the application.

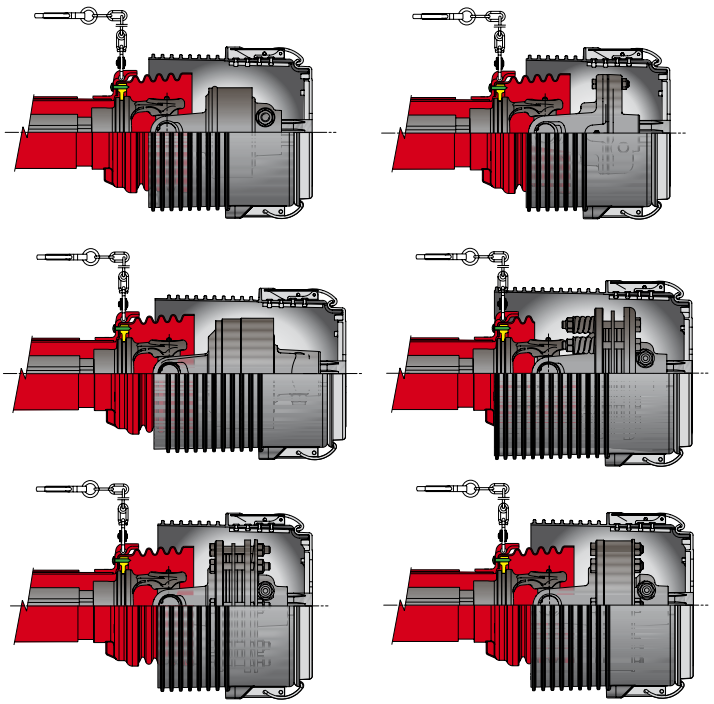
Shield cone configurations

Shields can be provided with extended outer cones that cover the joint completely. The ends of these extended cones must be supported by the implement by means of a clamp, and the shield must be properly restrained. Extended outer cones are normally used on internal drivelines that handle the flow of processed material such as fodder or forage. Extended outer cones are available in various lengths and diameters, depending on the size of the driveline.



Implement input connection shields

Implement input connection (IIC) shields comply with international standards and are designed to complete an interactive guarding system along with the driveline guard and tractor master shield, even if the driveline is equipped with a CV joint, torque limiter, or an overrunning clutch. These shields are practical and can be opened to easily access the joints for installation and maintenance operations.

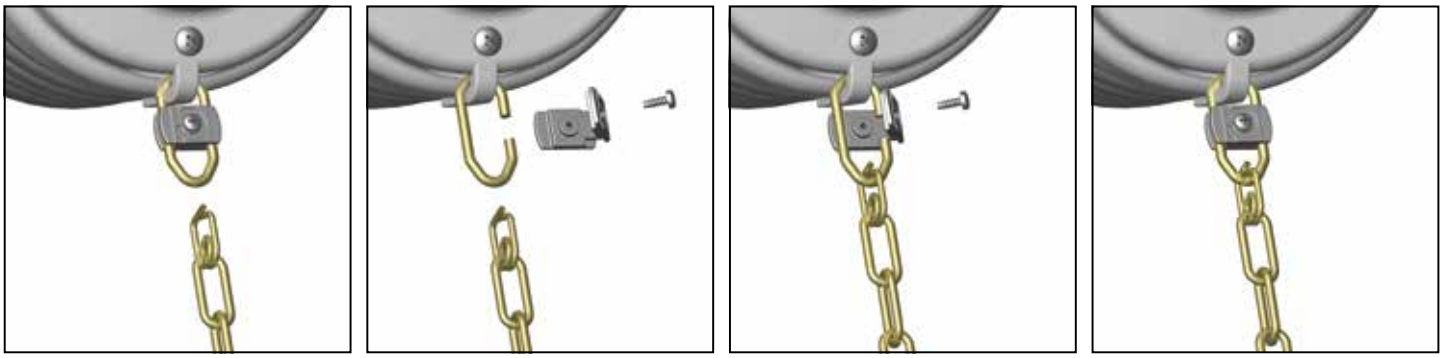


Single Chain

The Single Chain system helps prevent shields from being damaged due to incorrect chain connections. With this system, the inner shield tube is splined and connected to the outer tube by a splined band. The Single Chain system allows the shield tubes to telescope as the driveline retracts and extends, but prevents them from rotating with respect to each other. Therefore, a single chain positioned on the implement end of the driveline is sufficient to prevent the shield from rotating, as required by the Machinery Directive.

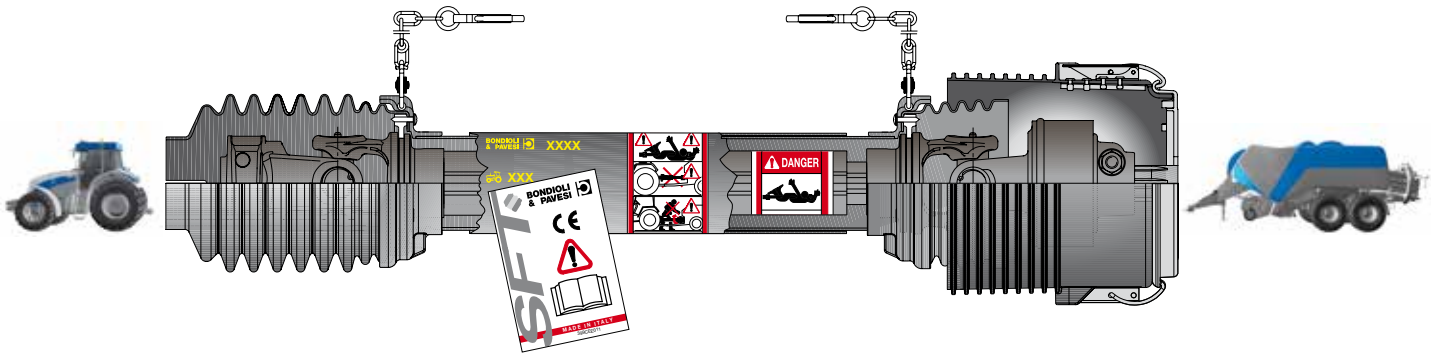
Spring Link

Restraint chains can be supplied on request with the Spring Link device. This device includes a clip which can be opened and closed by screwdriver, and a spring hook which detaches from the shield when subjected to the loads described in the standards.



Safety labels and operator's manuals

SFT driveshafts are provided with safety labels and operator's manuals as prescribed by international safety standards and regulations.
The destination of the driveline, and consequently its labels and operator's manual, is indicated by a destination code, i.e. the character in the eighth position in the driveline code number. The table below shows the codes assigned to the labels and operator's manuals provided with Series 100 drivelines, according to their destination codes.



Country of destination	Destination code	Inner label	Outer label	Operator's manual
Drivelines bearing the CE mark	**C**	399143000	399CEE051	399CEE011
Drivelines made for USA and CANADA	**U**	399143000	399141000	399USA011
Drivelines made for Japan	**J**	399143000	399JAP001	399USA011
Drivelines made for other countries and for CEE – EFTA countries not bearing CE mark	**F**	399143000	399CEE051	399USA011

Outer label 399CEE051

The outer label displays basic safety information for using the driveline, presented according to the rules existing in the country of destination. In Europe, the Machinery Directive requires that information shown on the outer label must be understood in the language of the country of destination, which in practice means all EEC languages. For this reason, label no. 399CEE051 provides information by means of illustrations. This label is used for all CE marked drivelines, as well as other countries.

Outer label 399141000

In North America (United States, Canada, Mexico) standard ASAE S441.3 and ANSI Z535 details the requirements for labels and text. Drivelines for sale into North America are provided with the outer label no. 399141000.

Outer label 399JAP001

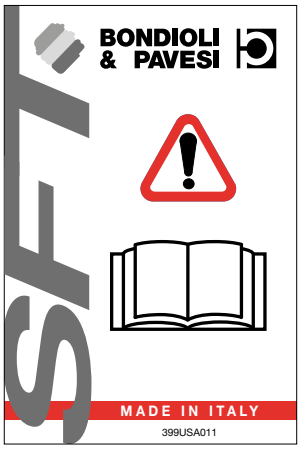
Drivelines bound for Japan are provided with the outer label no. 399JAP001.

Inner label 399143000

This safety label draws the operators' attention to the fact that the protective guard is missing and therefore the driveline is hazardous to operate. This is shown by the pictorial of a person entangled by a rotating shaft. In addition, the signal word "DANGER" is used, which is understood throughout the world. Inner label no. 399143000 is applied on the outer profile tube, under the protective guard, and provided on drivelines for all countries.

Operator's manuals 399CEE011

Operator's manuals contain explanations on the labels, information on safe and correct driveline use, and instructions for proper maintenance. Machinery Directive 2006/42/CE specifies that drivelines between self-powered vehicles (or tractors) and implements, marketed in EU and EFTA countries, should be CE marked. The manual 399CEE011 is provided with CE marked drivelines and includes a Declaration of Compliance with Machinery Directive 2006/42/CE.



Operator's manuals 399USA011

Manual 399USA011 is provided with drivelines without EC marking, i.e. for non-primary drivelines market in the EEC and EFTA countries and for drivelines for other countries.

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