

# PTO Drive shafts Safety information



398DDS003EN00



**BONDIOLI  
& PAVESI**





**All rotating parts must be guarded.  
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.

To comply with international safety standards, the implement manufacturer shall provide safety sign(s) and instructions

stating that guards must be kept in place and the machine should not be operated with guards open or removed. These sign(s) should be used to draw attention to the possible risks when the guard is unlocked, opened, or removed.

In addition it is recommended that the implement manufacturer provide a list of the guards, their corresponding warnings, their positions, and spare parts codes in the instruction manual.

Basic information for safe and correct use of the driveline and shielding are shown in our catalogs and in the instruction sheet provided with Bondioli & Pavesi drivelines. Safety labels and user's manuals in alternative languages are available to meet local requirements.

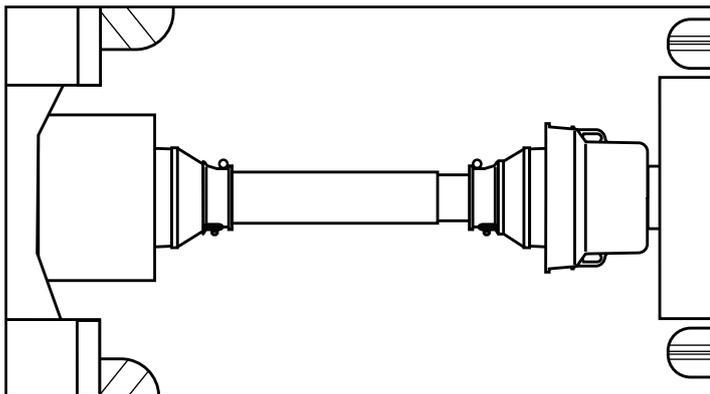


Use the implement only with the original driveline, which is compatible in length, power capacity, torque limiters, overrunning clutches, and shielding. The driveline and safety devices are designed specifically for the implement, and should be used exclusively for this purpose.

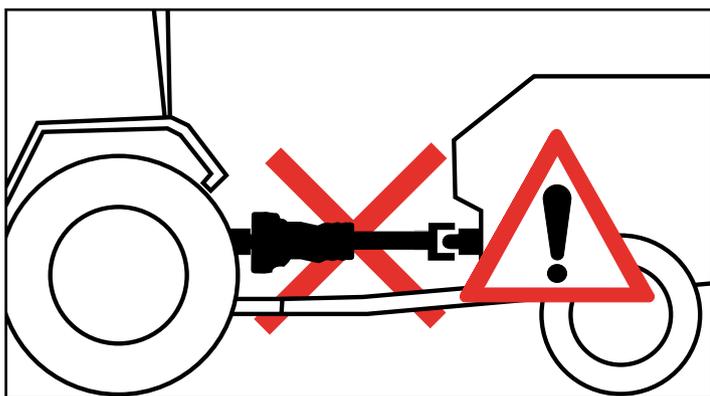
Do not exceed the speed and power limits given by the operator's manual. Drivelines, torque limiters, and overrunning clutches in this catalog are designed to be used at speeds that do not exceed 1000 min<sup>-1</sup>.

Do not overload the implement or suddenly engage the PTO clutch. Any torque limiter or clutch should be installed on the implement end of the driveline. Use the driveline, torque limiters, and overrunning clutches only for their intended purpose.

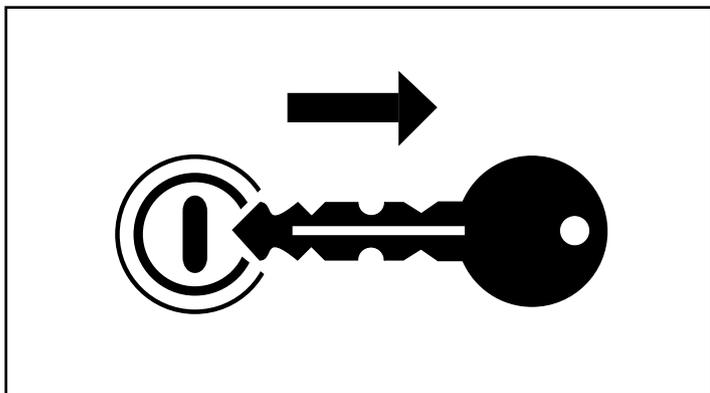
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All rotating parts must be guarded. Contact with a rotating driveline can cause death or serious injury. The tractor master shield, the driveline guards, and the implement input connection shield form an interactive guarding system.



Ensure that all driveline, tractor, and implement shields are functional and in place before operation. Damaged or missing parts must be replaced with the original equipment spare parts, correctly installed, before using the driveline.

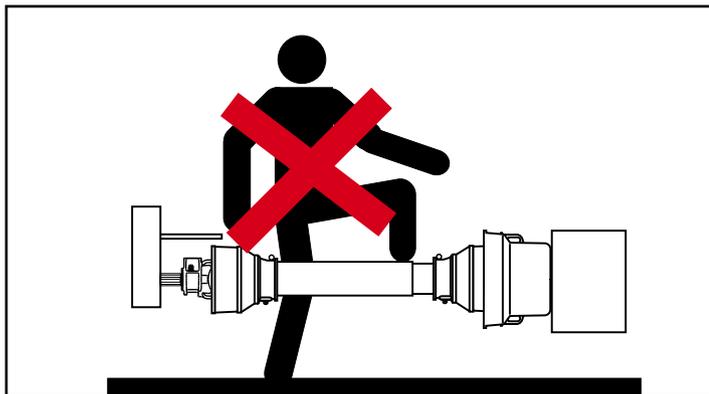


Disengage the PTO, turn off the tractor engine, remove the key, and check that all rotating parts have come to a standstill before approaching the implement or performing maintenance work.

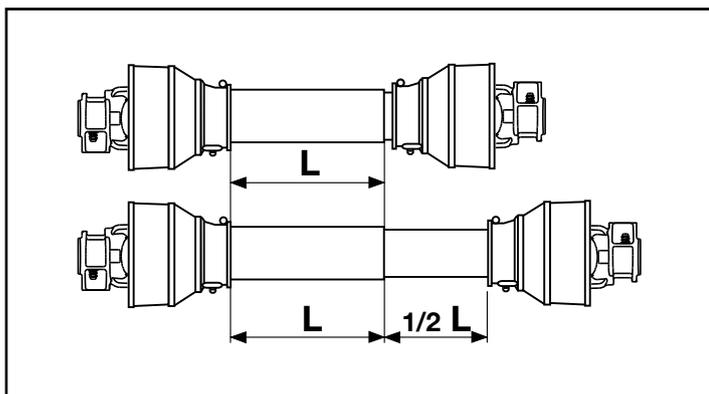


Do not approach, nor allow bystanders to come near the work zone or rotating parts. Do not wear loose clothing, jewelry, hair, or anything which could get caught in the machine. Contact with rotating parts could cause serious injury or death.

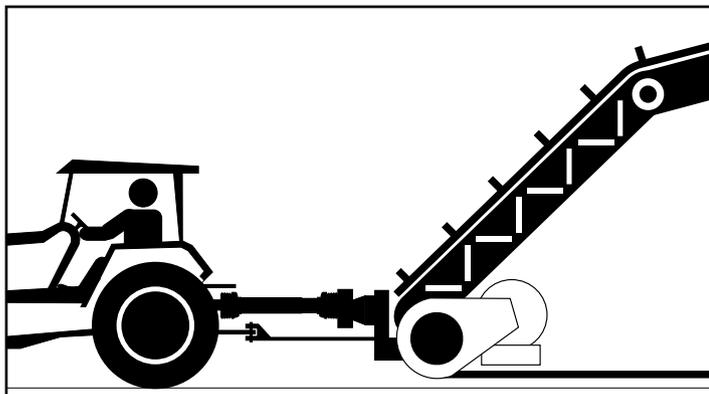
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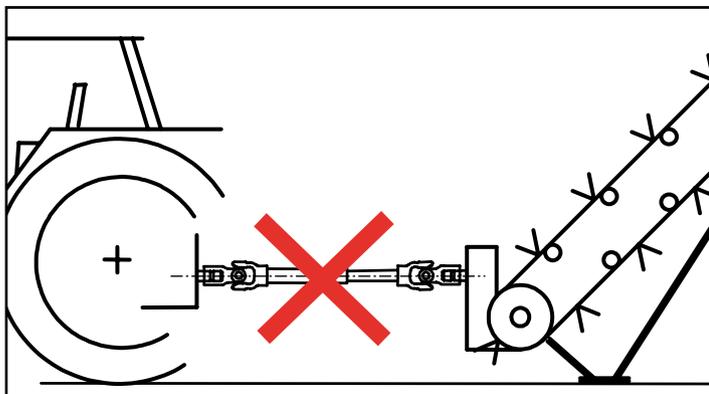
Do not stand, lean, or otherwise come in contact with the driveline. Do not step over or go under the driveline.



Keep the profile tubes overlapped as much as possible during transport and operation or rotation. Do not exceed the values given in this catalog for permissible length extension. If greater telescoping ability is required, contact Bondioli & Pavesi engineering.



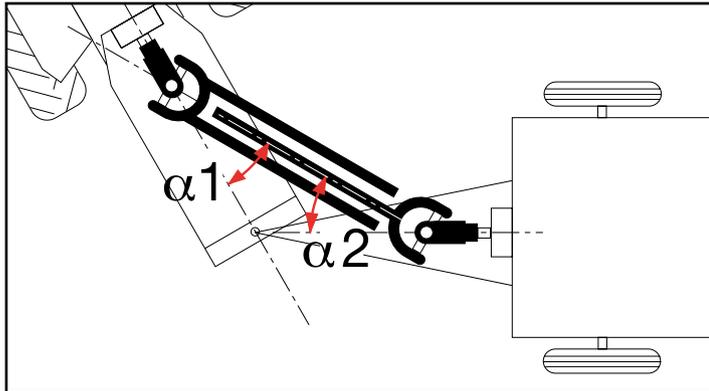
Always hitch the tractor to **STATIONARY MACHINERY** (pumps, hoists, generators, dryers, etc.). Chock the tractor wheels to prevent rolling and check that joint angles are small and as equal as possible.



Always hitch the tractor to **STATIONARY MACHINERY** (pumps, hoists, generators, dryers, etc.) so that the profile tubes are not overextended.

Under all working conditions, extension of the driveline should not exceed the values reported in this catalog. All rotating parts must be guarded."

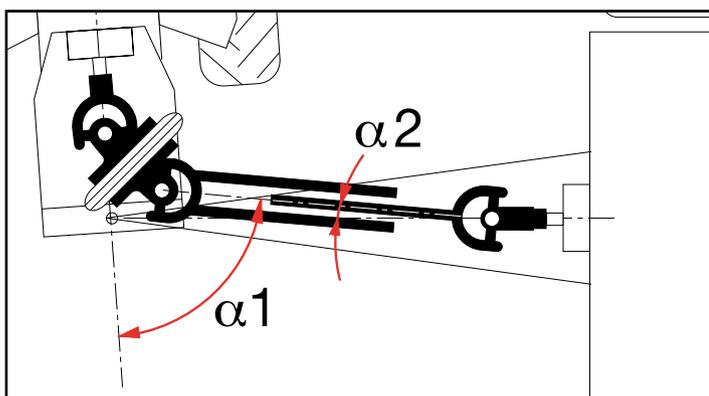
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## SINGLE CARDAN JOINTS

When operating, ensure that angles  $\alpha_1 = \alpha_2$  are small and as equal as possible. The joint angles may vary widely during turns, but must never exceed  $35^\circ$  under power or  $45^\circ$  while rotating.

Disengage the PTO when the joint angles become excessive or too unequal. See "Driveline applications" for more information.



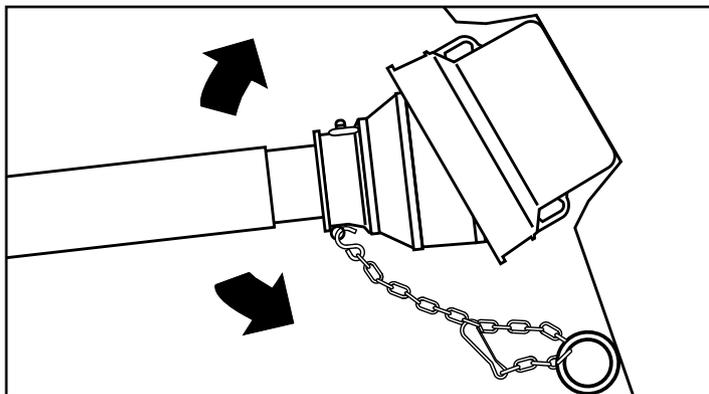
## CONSTANT VELOCITY JOINTS

Constant velocity joint can allow large joint angles -up to  $50^\circ$  or  $80^\circ$  depending upon the type. These joint angles should only be allowed for brief periods, for example during turning.

For drivelines with a constant velocity joint on the tractor side and a single cardan joint on the implement side, the maximum recommended angles of the single joint are  $16^\circ$  at  $540 \text{ min}^{-1}$  and  $9^\circ$  at

$1000 \text{ min}^{-1}$  to prevent irregular motion.

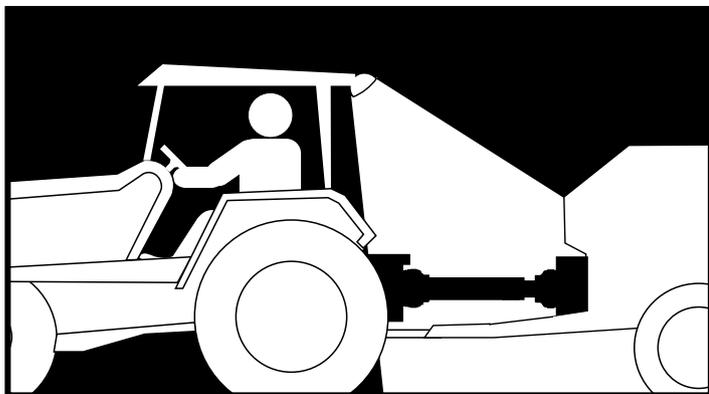
See "Driveline Applications" for more information.



Attach the shield restraint chains, allowing sufficient slack for

the driveline to move during turns and operation.

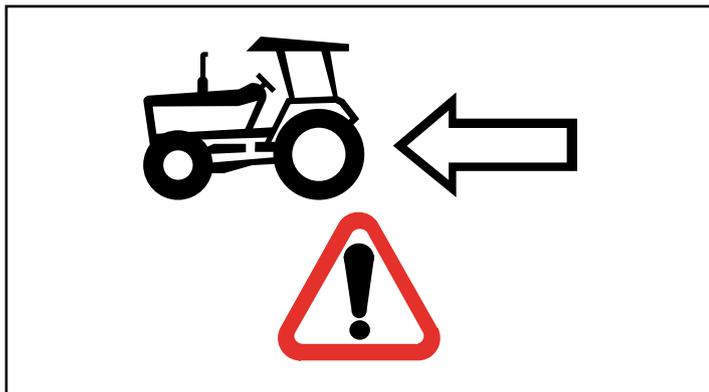
Best results are achieved when the chains are attached nearly perpendicular to the driveline guard. Adjust the length to allow articulation of the driveline in working or transport positions, but avoid excessive slack that may wrap around the driveline.



When used at night or in poor visibility, illuminate the driveline operating area.

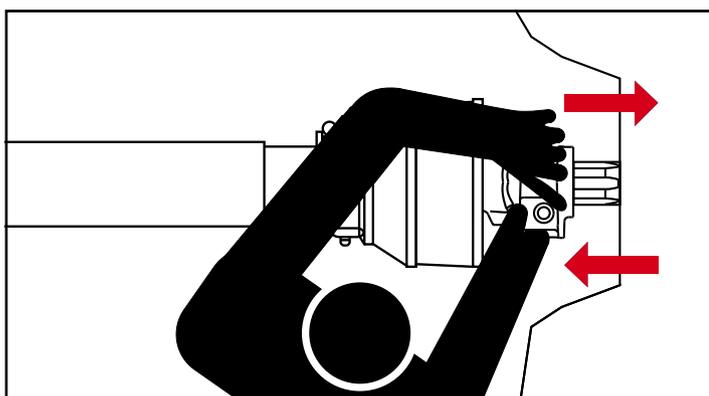
The tractor printed on the shield indicates the tractor end of

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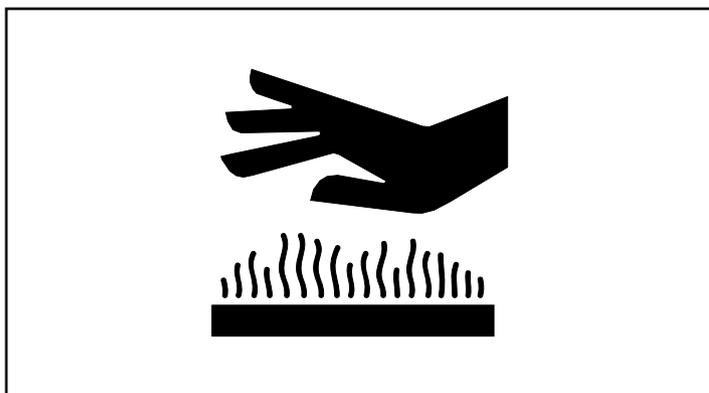
the driveline.  
Any torque limiter or overrunning clutch must be installed on the implement end of the driveline.

Ensure that the driveline is securely attached to the tractor and



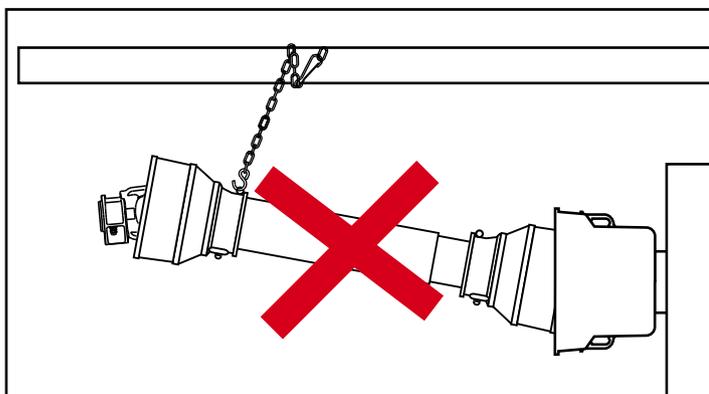
the implement before operating.  
Check that all bolts or nuts are properly torqued.

Friction clutches may become hot during use.



Do not touch !  
Keep the area around the friction clutch clear of any material which could catch fire and avoid prolonged slipping.

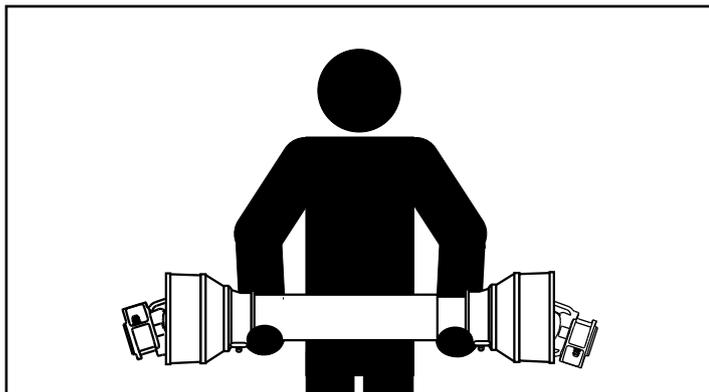
Never use the shield restraint chains to support the driveline



for storage. Always use the support on the implement.

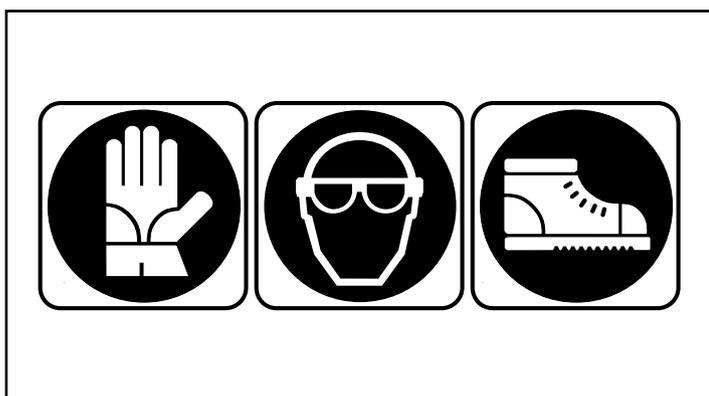
Keep the driveline horizontal during handling to prevent the

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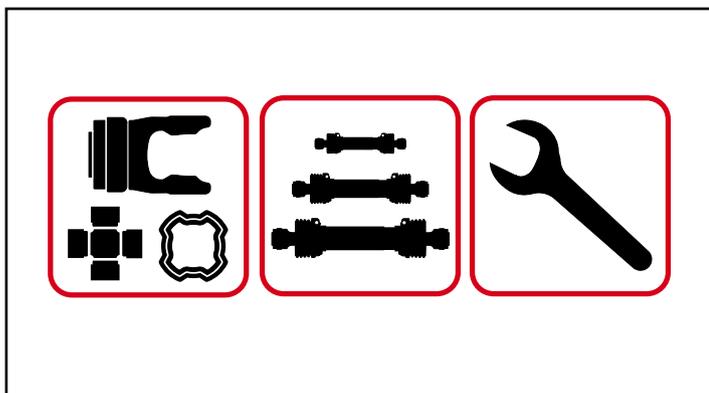


halves from sliding apart, which could cause injury or damage the shielding. Use suitable means to transport the driveline, depending on the weight.

Always wear adequate safety equipment when performing any maintenance or repair work.



Replace worn or damaged components with the original



Bondioli & Pavesi spare parts. Do not alter or tamper with any driveline component. Contact an authorized Bondioli & Pavesi dealer concerning any operations not described in the instruction manual.

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