Idler pulleys for the accessory drive in mobile machinery

Features

Idler pulleys in the accessory drive of internal combustion engines contribute to improvements in their performance capacity and noise behaviour.

In the accessory drive, idler pulleys are normally subjected to a demanding combination of high loads, exposure to dust and mud as well as high temperatures.

Specially developed rolling bearings

In the case of idler pulleys, *Figure 1* and *Figure 2*, special single row deep groove ball bearings or double row angular contact ball bearings are used. The grease reservoir volume is larger in these bearings in comparison with standard catalogue bearings. Due to the use of a high temperature rolling bearing grease in conjunction with a suitable sealing arrangement, the rolling bearings are maintenance-free throughout their life.

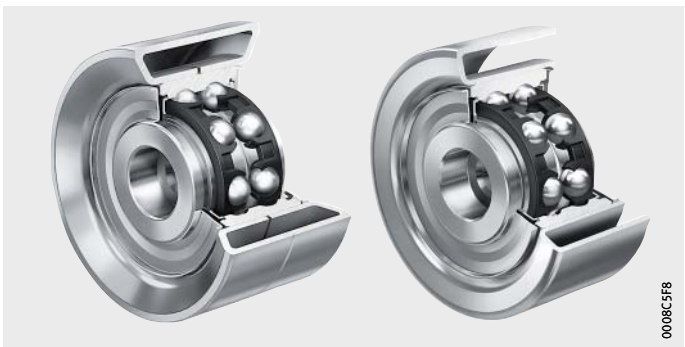

Figure 1
Idler pulleys with sheet steel tyre, smooth

Figure 2
Idler pulley with steel tyre, profiled

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Single row deep groove bearings are particularly suitable for high speeds, while double row angular contact ball bearings can support higher loads. Special knurling on the outer ring ensures rigid long term seating of a plastic tyre.

Standard catalogue bearings are less suitable for use in idler pulleys.

Sealing

The rolling bearings are sealed on both sides. Most idler pulleys additionally have a plastic end cap.

Tyres

Depending on their requirement profile and mounting position, tyres are made from steel or plastic and are of a smooth or profiled design, *Figure 1* and *Figure 2*, page 1.

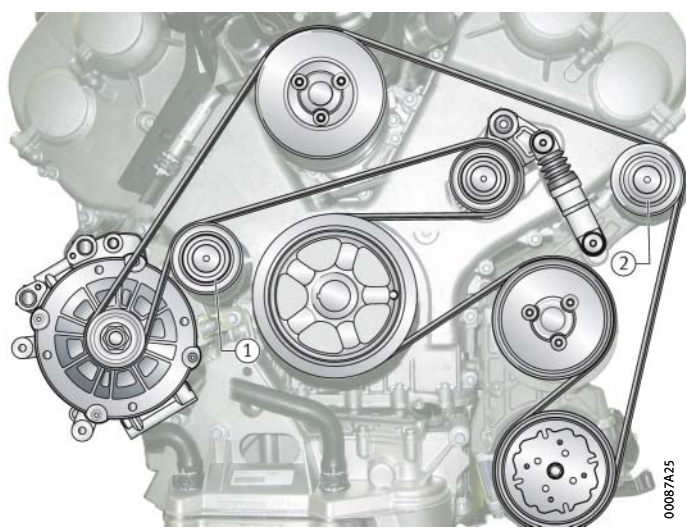
In the case of tyres made from steel, a selection can be made between various coatings for protection against wear and corrosion.

Tyres made from polyamide with high temperature resistance and glass fibre reinforcement in some cases offer significant advantages in cost and mass compared with steel tyres. Due to highly developed tooling and manufacturing technologies, their roundness and running characteristics are comparable with those of steel tyres.

Function

Idler pulleys in the accessory drive, *Figure 3*, fulfil a range of important functions:

- calming of critical belt segments
- remedy for collision problems with the adjacent construction
- guidance of the belt
- increase in the wrap angle on adjacent belt pulleys.



① Idler pulley with smooth tyre
② Idler pulley with profiled tyre

Figure 3
Accessory drive

Application in mobile machinery

The knowledge of products and systems that Schaeffler has built up as a market leader for idler pulleys in the automotive industry can also be beneficially used in the design and production of idler pulleys for mobile machinery.

The priority is to achieve the life required in these machines despite the high mechanical loads and heavily contaminated environment and to prevent downtime of the machine.

Advantages

Idler pulleys from Schaeffler offer numerous advantages in the mobile machinery sector.

The advantages for the customer in the development process are as follows:

- A complete system is available from a single source and all components are matched to each other
- Calculation programs (SIMDRIVE 3D, BeltDrive) specially developed by Schaeffler are available for the reliable calculation of the rating life in the belt drive
- An economical solution can be achieved, since existing tooling can be used in production.

The advantages in operation are as follows:

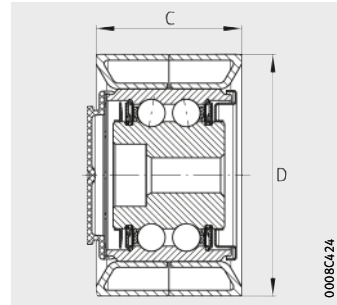
- The robust design has optimised mass
- Protection against dust and mud is matched specifically to operation under aggressive environmental conditions
- The component is maintenance-free due to the high performance seal and the increased grease volume comprising a high temperature rolling bearing grease
- The rolling bearings are specially designed for the loads present in belt drives
- There is a wide selection of tyres covering the specific requirements in the accessory drive.

Available designs

The following dimension table contains a selection of existing designs of idler pulleys, which can be used to cover a wide range of applications. Where necessary, modified designs and completely new developments are possible.

Idler pulleys

Available designs for mobile machinery



Idler pulley
Sheet steel tyre

Dimension table · Dimensions in mm

Variant	Dimensions		Basic load ratings		Maximum speed	Tyre			End cap
	D	C	dyn. C_r N	stat. C_{0r} N	n min^{-1}	Material	Profile		
A	**64**	32,88	20 800	13 400	11 000	Steel	profiled	8PK	no
B	**64**	32,88	20 800	13 400	11 000	Steel	profiled	8PK	yes
C	**64**	40	20 800	13 400	11 000	Steel	profiled	10PK	no
D	**64**	40	20 800	13 400	11 000	Steel	profiled	10PK	yes
E	**70**	34	20 800	13 400	11 000	Sheet steel	smooth	8PK	no
F	**70**	42	20 800	13 400	11 000	Sheet steel	smooth	10PK	no
G	**70**	42	20 800	13 400	11 000	Sheet steel	smooth	10PK	yes
H	**70**	48	20 800	13 400	11 000	Steel	smooth	12PK	no
I	**80**	36	20 800	13 400	11 000	Sheet steel	smooth	8PK	no
J	**80**	48	20 800	13 400	11 000	Sheet steel	smooth	12PK	no
K	**85**	32	20 800	13 400	11 000	Steel	profiled	8PK	no
L	**94**	40	20 800	13 400	11 000	Steel	profiled	10PK	yes

In order to check the suitability of a variant for the specific application, please contact Schaeffler.

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