



American
Gear Manufacturers
Association

AGMA ISO 18792-A19

Identical to ISO/TR 18792:2008

AGMA Information Sheet

Lubrication of industrial gear drives

AGMA ISO 18792-A19

American Gear ***Lubrication of industrial gear drives***
Manufacturers AGMA ISO 18792-A19
Association Identical to ISO/TR 18792:2008

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ABSTRACT

This Information Sheet provides general guideline and source of information on lubricants and lubrication selection for industrial drives.

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Foreword

[The foreword, footnotes and annexes, if any, in this document are provided for informational purposes only and are not to be construed as a part of AGMA ISO 18792-A19, Lubrication of industrial gear drives.]

Gear lubrication is important in all types of gear applications. Through adequate lubrication, gear design and selection of gear lubricant, the gear life can be extended, and the gearbox efficiency improved. In order to focus on the available knowledge of gear lubrication, ISO/TC 60 decided to produce this Technical Report combining primary information about the design and use of lubricants for gearboxes.

ISO/TR 18792 was prepared by Technical Committee ISO/TC 60, Gears, Subcommittee SC 2, Gear capacity calculation.

The AGMA Lubrication committee voted to adopt ISO/TR 18792:2008 in January 2019.

The first draft of AGMA ISO 18792-A19, was made in March 2019. The adoption was approved by the AGMA Technical Division Executive Committee on June 10, 2019.

AGMA ISO 18792-A19 represents an identical adoption of ISO/TR 18792:2008.

Suggestions for improvement of this document is welcome. They should be sent to tech@agma.org.

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Lubrication of Industrial Gear Drives

1 Scope

This Information Sheet is designed to provide currently available technical information with respect to the lubrication of industrial gear drives up to pitch line velocities of 30 m/s. It is intended to serve as a general guideline and source of information about the different types of gear, and lubricants, and their selection for gearbox design and service conditions. This Information Sheet is addressed to gear manufacturers, gearbox users and gearbox service personnel, inclusive of manufacturers and distributors of lubricants.

This Information Sheet is not applicable to gear drives for automotive transmissions.

2 Terms, definitions, and symbols

For the purposes of this document, the following terms, definitions, symbols, indices and units listed in Table 1 apply.

Table 1 – Terms, definitions, and symbols

Symbol, index	Term	Unit
A, B, C, D, E	points on the path of contact	—
b	face width	mm
C	cubic capacity of the oil pump	cm ³
d	diameter	mm
$d_{a1,2}$	outside diameter pinion, wheel	mm
$d_{b1,2}$	base circle diameter pinion, wheel	mm
$d_{w1,2}$	operating pitch diameter pinion, wheel	mm
f_H	curvature factor	N ^{0.5} /mm ^{1.5}
f_L	load factor	—
F_{bt}	circumferential load at base circle	N
n_{shaft}	rotational speed of the oil pump driving shaft	rpm
p	pressure	bar
p_H	hertzian stress	N/mm ²
P	gear power	kW
P_{vz}	gear power loss	kW
P_{vzsum}	total gearbox power loss	kW
s	slip	—
t	time	sec
V	oil quantity	l
Q_e	oil flow	l/min
$Q_{bearings}$	oil flow through the bearings	l/min
Q_{gears}	oil flow through the gear mesh	l/min
Q_{pump}	oil pump flow	l/min
Q_{seals}	oil flow through the seals	l/min
v	pitch line velocity	m/s
$v_{1,2}$	surface velocity pinion, wheel	m/s
v_g	sliding velocity	m/s
v_t	pitch line velocity	m/s
v_{Σ}	sum velocity	m/s