

Sumitomo Drive Technologies

ACC GEARBOX

**MAXIMIZE YOUR RETURN ON
INVESTMENT**

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31 July 2025



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Hansen Industrial Transmissions NV

Top 5 Considerations for Maximizing Your ACC Gearboxes' Return on Investment

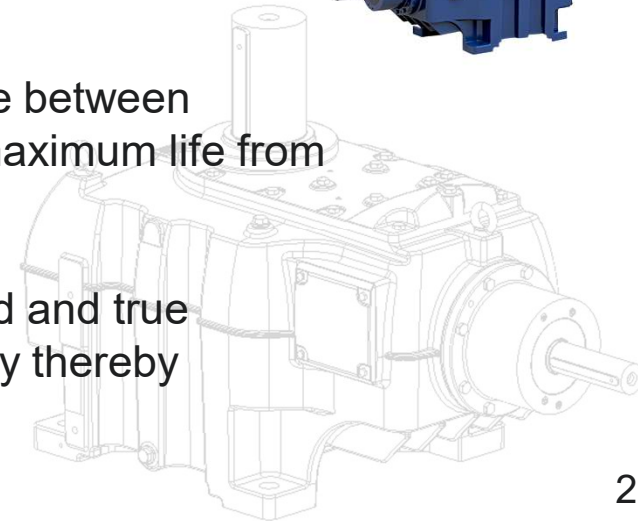
Abstract:

Airplanes don't make money sitting on the ground! Gearboxes can be viewed in much the same principle. If they aren't operating – they aren't earning their cost back!

Like Airplanes, Cooling Tower systems are a large capital investment and making sure your equipment is operating at peak efficiency and for as long as possible is critical to a healthy Return on Investment (ROI).

ACC's gearboxes can have a tough life. Higher efficiency, longer run-time between services, shorter down-time are critical to ensuring that you are getting maximum life from your gearbox.

Through many years of hard-earned expertise, we discuss our top 5, tried and true considerations to ensure your gearbox is operating at maximum efficiency thereby maximizing your ROI.



01

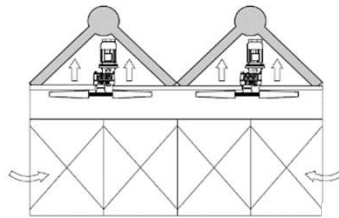
STARTING TORQUES

ACC FAN DRIVE = FREQUENT STARTS AND STOPS ...

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Parallel gearbox

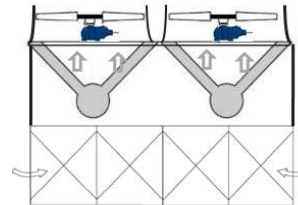
FORCED DRAFT AIR COOLED
CONDENSERS



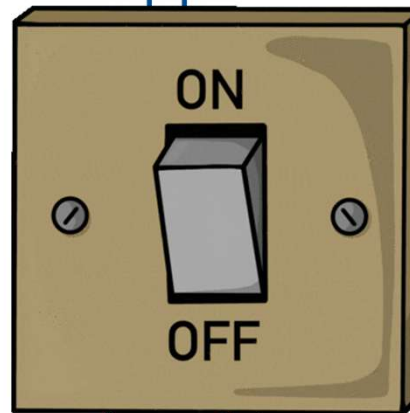
Hansen M4ACC

Right-angle gearbox

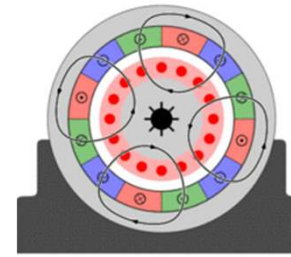
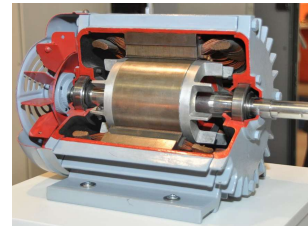
INDUCED DRAFT FOR AIR COOLED
CONDENSERS
(new design)



Hansen M5CT



MOTOR TORQUE PEAKS DURING STARTUP CYCLE....

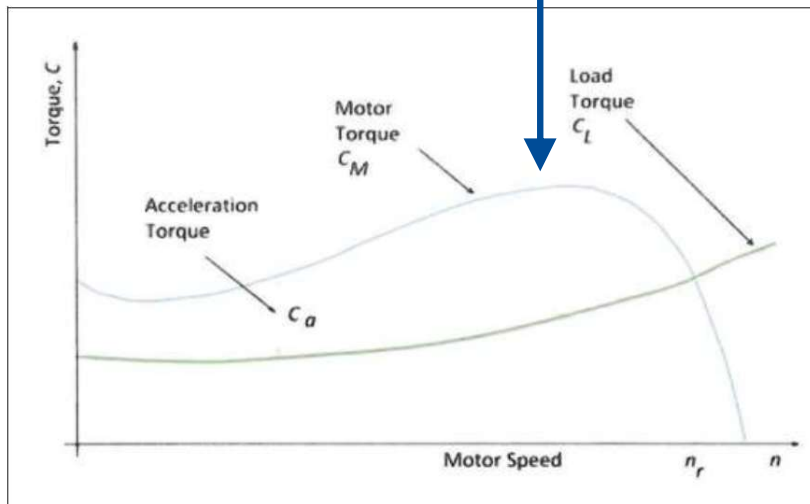


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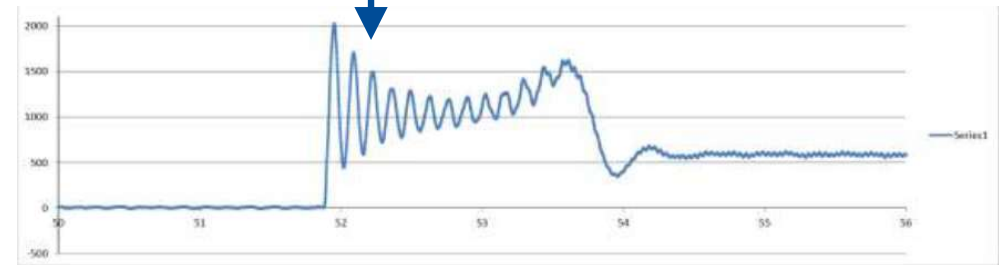
3 x NOMINAL TORQUE of the motor or even higher



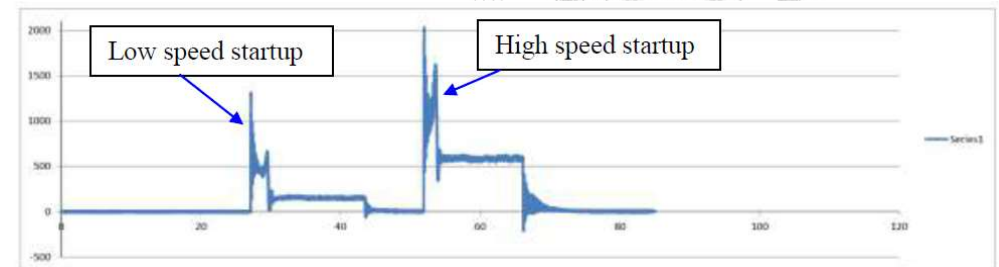
Additionally, motor creates a sinusoidal TRANSIENT TORQUE



Motor Torque/speed curve



Detail of High speed start torque evolution, measured on Gearbox shaft

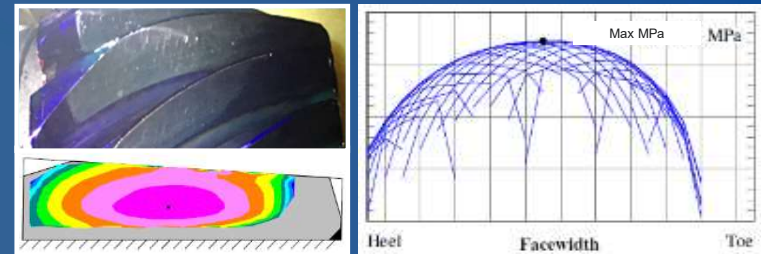
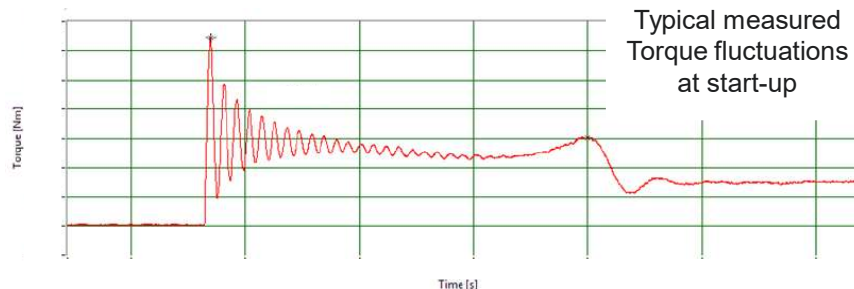


Torque measurements on gearbox input shaft with low and high speed startup

✓ **DEDICATED SELECTION METHOD
TAKING STARTS AND STOPS INTO
ACCOUNT**

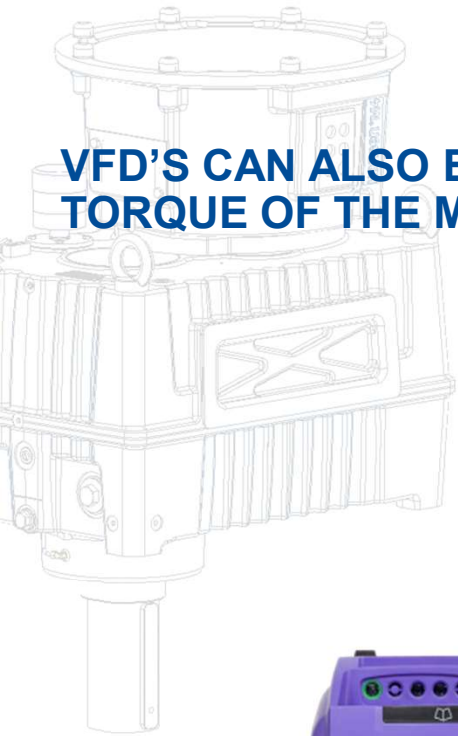
✓ **DEDICATED GEAR MICRO GEOMETRY
FOR ACC APPLICATIONS**

Well balanced design to withstand many torque fluctuations at start-up



- Advanced designed micro geometry to withstand the peak fluctuations during start-up

VFD'S CAN ALSO BE A GOOD SOLUTION TO LIMIT THE STARTING TORQUE OF THE MOTOR



02

MAINTENANCE FRIENDLY GEARBOX SEALING AND LUBRICATION

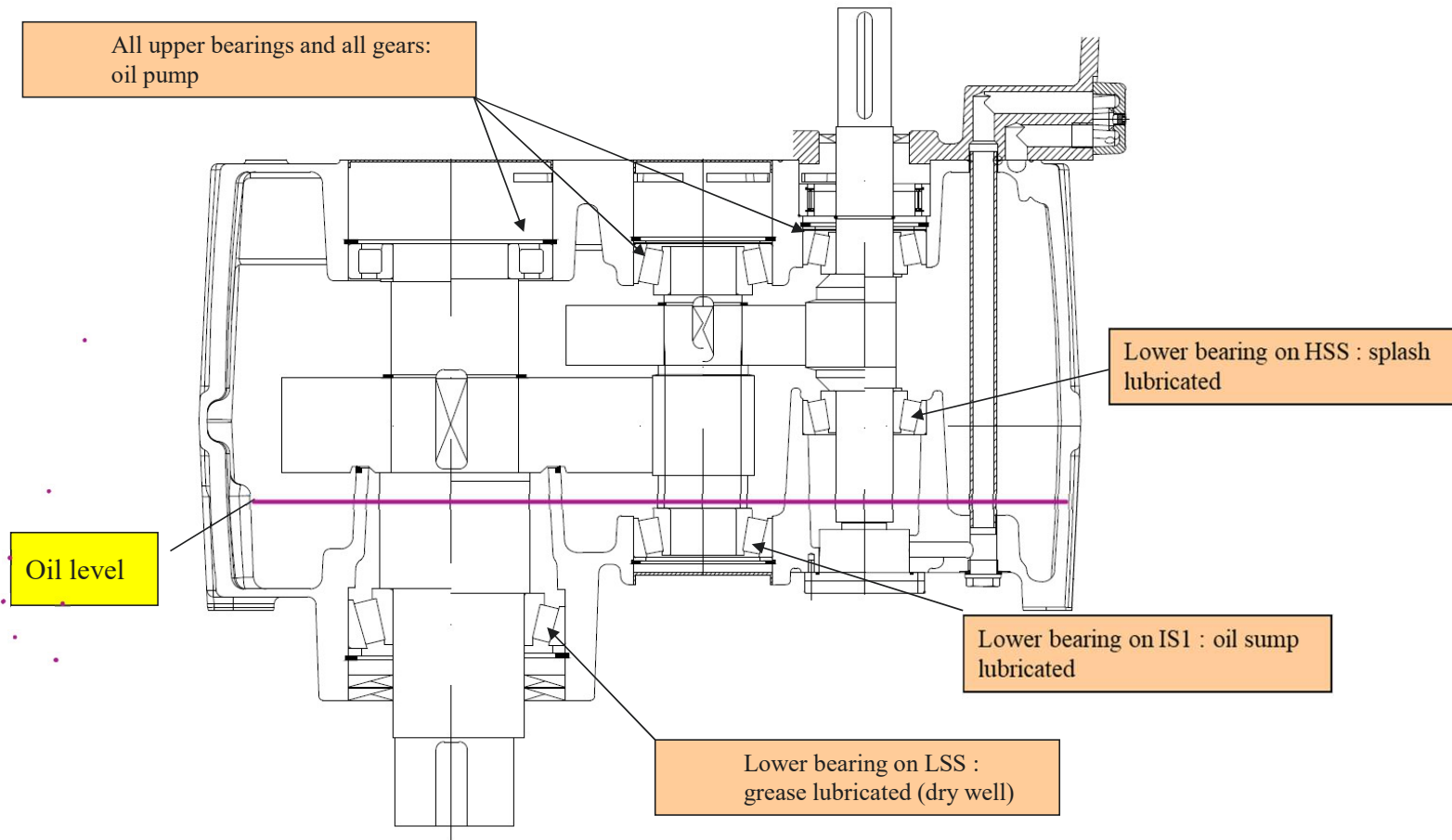
MAKE SURE YOUR ACC IS EQUIPPED WITH A DEDICATED GEAR-UNIT DESIGN FOR A-FRAME ACC

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- Proven design > 10.000 units globally installed
- Monobloc Housing for leakage free operation (no split)
- All gears case hardened and ground for low noise and high performance, advanced designed micro geometry to withstand the peak fluctuations during start-up and the high number of starts.
- Dedicated bearing span for each shaft in order to increase tooth contact pattern
- Sealing Low speed shaft with dry well and lip seal for leakage free operation.
- Dedicated bearings at each shaft to withstand application specific shaft-loads.
- Internal piping lubrication, no risk for damage.
- Circulation lubrication by means of an integrated shaft driven oil pump
- Grease lubrication point on top of gear unit (for low speed shaft bearing)
- Easy to remove inspection cover above oil level

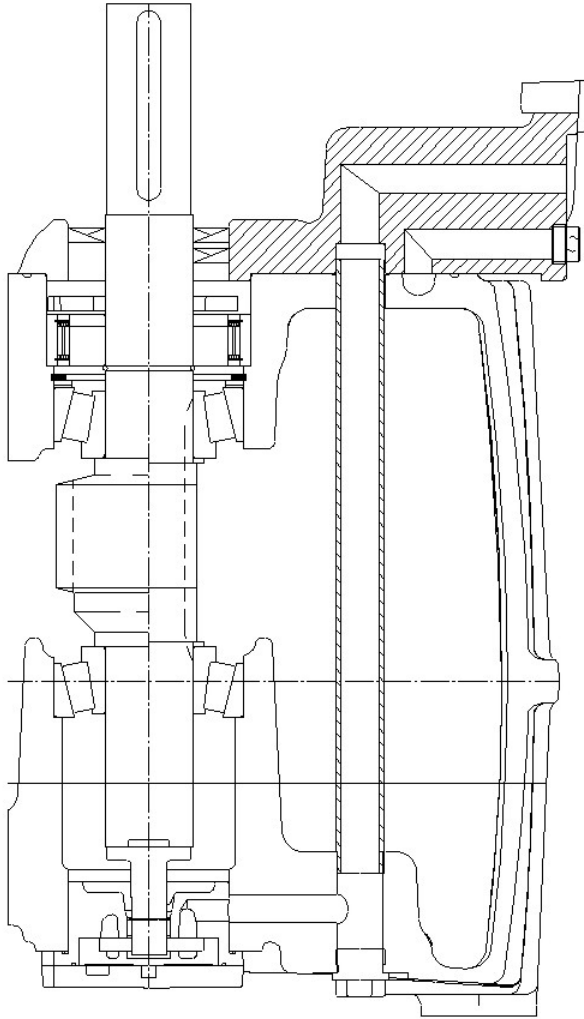


LUBRICATION M4ACC



LUBRICATION M4ACC

No external piping

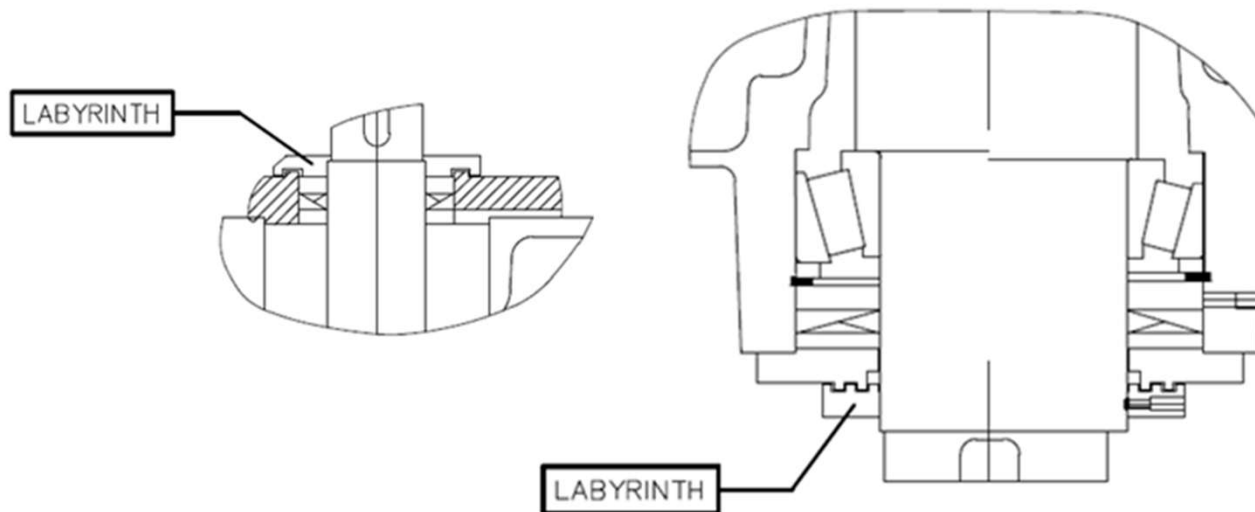


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- Automatic grease lubrication system is optionally available

- Gear pump and reversing mechanism integrated

SEALING M4ACC

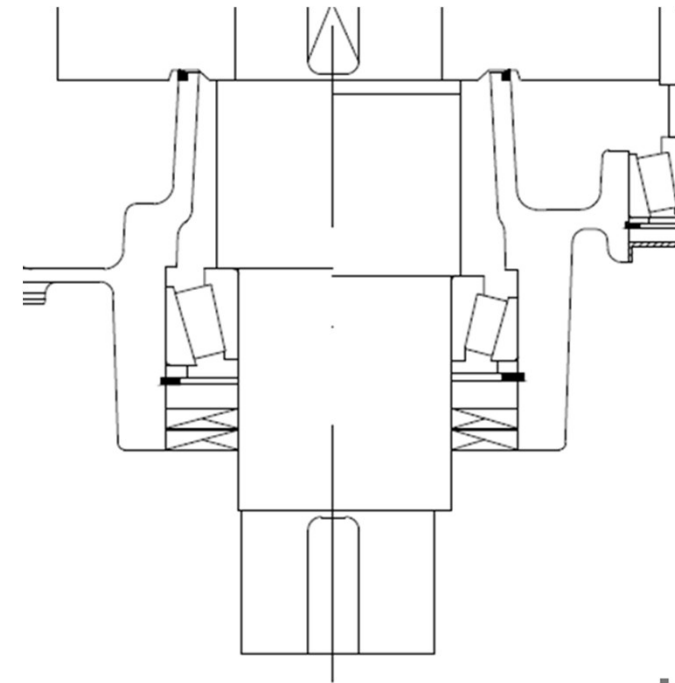


Low Speed Shaft

standard: Casted in Dry-well + Double dust lip oil seal

optional: Dry-well + Labyrinth

Leakage is not possible



Top 3 reasons for LS Oil Leak

1. Overfill
2. Tilt with oil
3. Gease Overfill

MARKET CHANGED TO INDUCED DRAFT W-FRAME

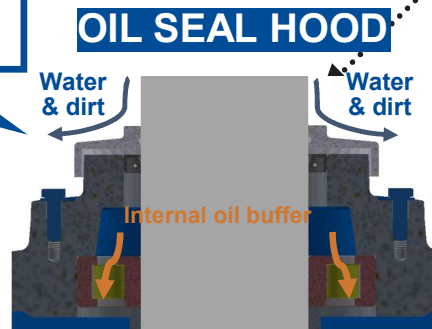
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- Make sure your ACC is equipped with a dedicated gear-unit design for W-frame ACC

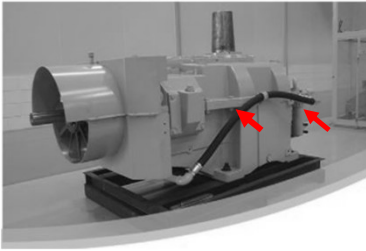
SEALING M5CT : MAKE USE OF CENTRIFUGAL EFFECT

- Sealing function: keep oil in and dirt out!
- Design: No grease + centrifugal effect + no wear
- Maintenance-free

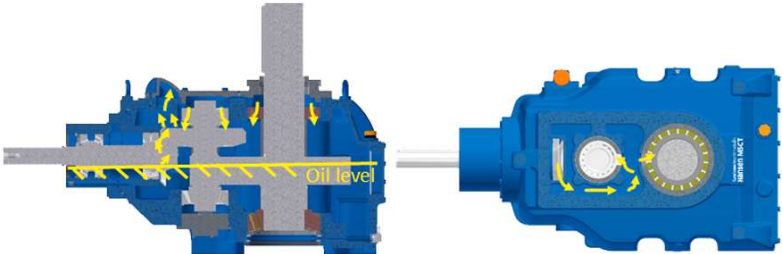
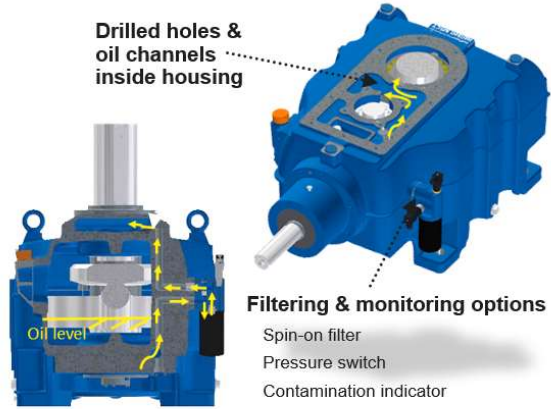
Based on centrifugal force on the rotating parts, a slinger effect will be generated, removing all water & dirt



LUBRICATION M5CT: AVOID GREASE & PIPING ON THE OUTSIDE Sumitomo Drive Technologies

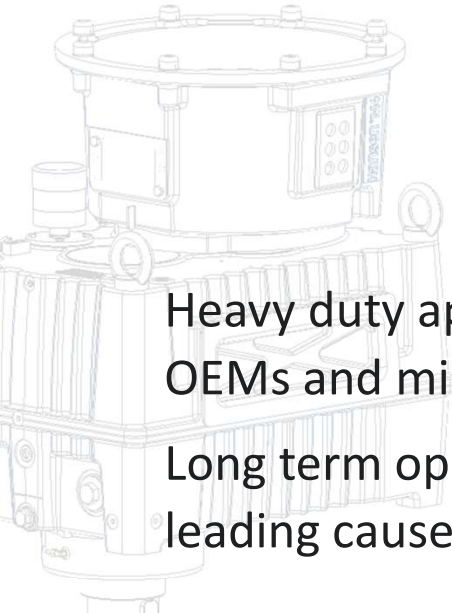


- All bearings and gears oil lubricated (no grease).
- Oil distribution via internal drilled pipes or via the design of the casting.
 - Splash or pump lubrication
- Easy to install without damaging + Leakage risk reduction.

SPLASH lubrication	PUMP lubrication
 <p>Splash principle via 'oil slinger disc' on the input shaft</p> <p>Oil level</p> <p>Simple & safe lubrication without monitoring instruments (e.g. no cabling needed)</p>	 <p>Drilled holes & oil channels inside housing</p> <p>Oil level</p> <p>Filtering & monitoring options</p> <ul style="list-style-type: none">Spin-on filterPressure switchContamination indicator

03

PROPER INSTALLATION AND ALIGNMENT



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Heavy duty applications like ACCs are typically erected and installed by experienced OEMs and millwrights.

Long term operation can wreak havoc on nuts and bolts. Soft Foot is another leading cause of premature wear and/or failure of gearboxes.



Check of alignment HSS



Gearbox level 0,3°



Feeler gauge beneath foot of gearbox



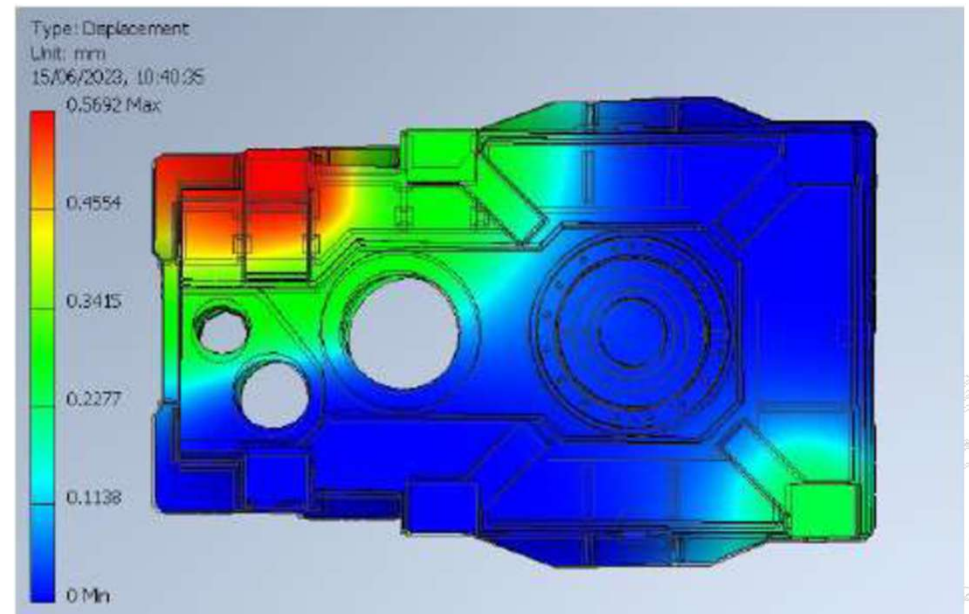
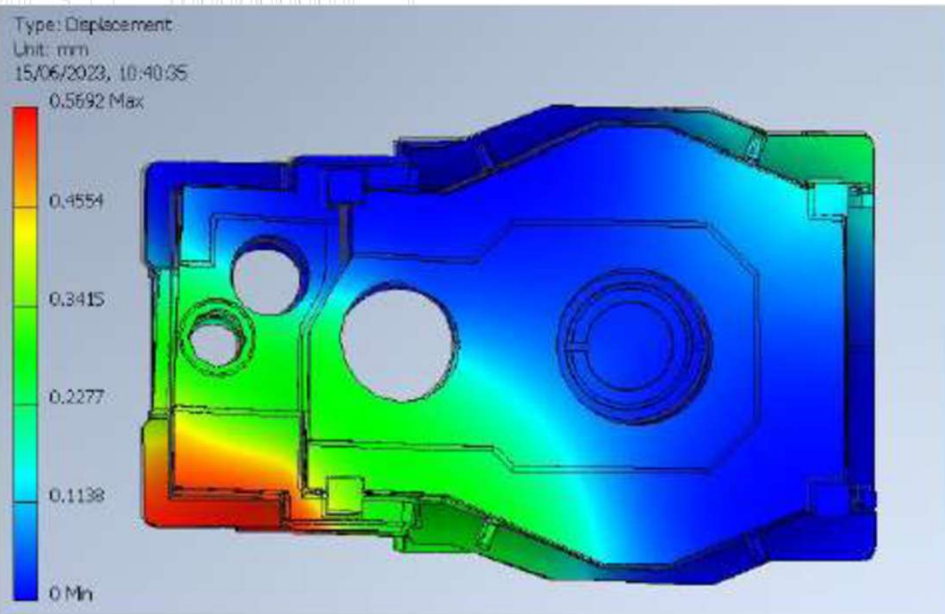
Bolt of baseplate not tightened



DEFORMATION OF THE HOUSING DUE TO SOFT-FOOT

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- Misalignment of the shafts.
- Reduced gear contact pattern.
- Out-of-Round bearing seats, support of outer bearing ring reduced



04

REGULAR INSPECTIONS

INSPECTION POINTS

Change the oil. First change after 800 hours of operations

Do a check for oil leaks.

Do a check on the safety covers for damages and dents.

Clean the gear unit.

Do a check for unwanted noise and vibrations.

Do a check on the gear oil level.

Do a check on the gear oil quality.

Do a check on the breather plug.

Do a check on the fixation and position of the gear unit.

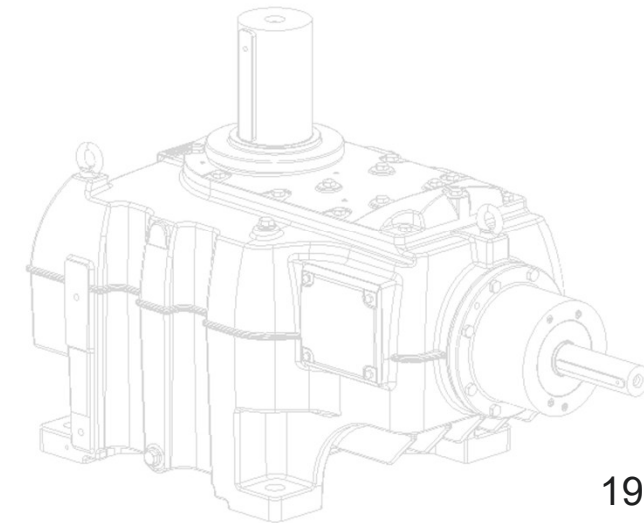
Do a check for corrosion.

Replace the oil filter cartridge.

Change the oil, based on oil sampling.

Drain the condensation water from the breather lines.

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Choose Your Country or Region

Asia & Oceania

Japan

[日本語](#) | [English](#)

Japan (Gearboxes)

[日本語](#) | [English](#)

Korea

[한국어](#)

China

[中文](#)

Southeast Asia & Oceania

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The Americas

United States

[English](#)

Canada

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Mexico, Latin America & The Caribbean

[Español](#)

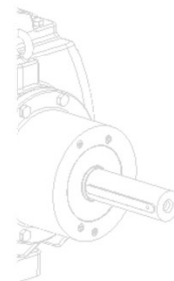
Brazil

[Português](#)

EMEIA

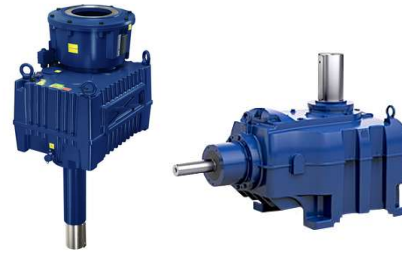
Europe, Middle East, India & Africa

[English](#) | [Deutsch](#) | [Español](#) | [Français](#)



05

**OPEN SUPPORT POLICY
NO CHARGE FOR ASKING
QUESTIONS**



No Charge for Asking Questions

In the event problems occur the ACC OEM will most likely be the first point of contact.

We Hansen/Sumitomo do expect to be informed by the ACC OEM because we stand behind our product and our goal is customer (ACC user) satisfaction.

If we are not informed no one can blame us for not providing support.

The End-user is always allowed to contact Hansen/Sumitomo directly, at any time, for any reason.

#1 Starting Torques

ACC fan drives experience frequent starts/stops.
Motor startup creates transient torque peaks—up to 3× nominal torque.
Traditional AGMA calculations may be insufficient for high-frequency startups.
Sophisticated tools are needed to model torque and fatigue accurately.

#2 Maintenance-Friendly Sealing & Lubrication

Hansen M5CT and M4ACC gearboxes designed for minimal maintenance.
Centrifugal sealing avoids grease and wear.
Internal oil distribution reduces external piping and leakage risks.
Splash and pump lubrication options available.

#3 Proper Installation & Alignment

Misalignment and soft-foot conditions can deform housing and reduce gear life.
Emphasis on precision installation by experienced millwrights.

#4 Routine Inspections

Detailed checklist includes oil level/quality, breather plug, corrosion, and vibration checks.
Involve Manufacturer's Service Group or Sales Engineers for customized support.

#5 Open Support Policy

Hansen/Sumitomo encourages direct contact from end-users.
No charge for asking questions—support is always available.

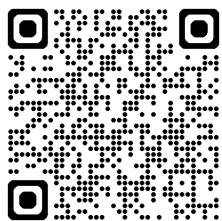

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»» Building Tomorrow Together



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THANK YOU
FOR YOUR ATTENTION

M4ACC BRAKE SYSTEM

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- Anticipating the Machinery Directive 2006/42/EG, Hansen Industrial Transmissions has developed a brake system, specific for use on the Hansen M4ACC gear units.
- With this brake system, Hansen Industrial Transmissions offers added value to manufacturers of cooling towers worldwide.



Patented

