MOTTA LUBRICATION | TECHNICAL GUIDANCE

D HEAT TRANSFER aceite SERIES D300 / D310 SYNTH / D315–D327

OPERATION AND HANDLING INSTRUCTIONS

N.º de documento	Revisión	Fecha de emisión	Release status
MOTTA-D-OHI-ES	REV.05	2026-09-13	Emitido para use

Use con the current producto TDS, SDS, the heater y sistema manufacturer's instructions y site fire-Seguridad rules. Emitido by MOTTA Lubricants. The current Revisión de Este documento is published at motta-lube.com/documentos/ — if your copy differs, that list governs.

1 Alcance

Este documento applies to the selection, filling, heat-up, operation, monitoring, shutdown y aceite change de MOTTA D Series heat transfer oils in closed, indirect liquid-phase heating sistemas. For use only by trained personnel on equipo whose condition has been confirmed.

Crítico: the maximum bulk temperatura y maximum film temperatura are not stated on the current D Series data sheets. Obtain both limits para the grado in writing from MOTTA antes de the sistema is heated, y set the heater controls y alarms below them. No operate on an assumed limit.

Not covered: vapour-phase sistemas, direct-contact heating, pressurised sistemas operated above the fluid's baceiteing range, y food-contact or pharmaceutical duty que requiere registered fluids. The heater y sistema manufacturer's instructions, el producto TDS y SDS, site fire-Seguridad rules y local regulations take precedence.

- User responsibility: confirm the grado, the temperatura limits, equipo suitability, site risks y personnel qualification.
- Operator responsibility: record lote numbers, fill quantities, operating temperaturas, aceite-sample results y abnormal events.
- Technical boundary: Este documento does not replace heater or sistema design, risk assessment or professional engineering judgement.

MOTTA productos covered by this handbook

Producto	grados	Standards y nivel de desempeños	Formatos de envase
MOTTA D300	mineral	—	18L / 200L
MOTTA D310 SYNTH	Totalmente sintético	—	18L / 200L
MOTTA D315	mineral	DIN 51522	18L / 200L
MOTTA D318	mineral	DIN 51522	18L / 200L
MOTTA D325	mineral	DIN 51522	18L / 200L
MOTTA D327	mineral	DIN 51522	18L / 200L

grados, standards y Formatos de envase as published on each producto's Ficha técnica at motta-lube.com/productos/. Where a data sheet y this table differ, the data sheet governs.

Traducción de la versión inglesa. En caso de diferencia, prevalece la versión inglesa.

DIN 51522 is the performance reference on the D315 to D327 data sheets. Maximum bulk y film temperaturas are not stated on the current data sheets; obtain them in writing Antes del uso. No heater-manufacturer approval is claimed unless separately documentoed.

2 Selección y previa al uso inspection

Producto	Data-sheet type	Selección point
D315, D318, D325, D327	mineral heat transfer aceites, DIN 51522 performance reference	Viscosidad rises from D315 to D327 (typical 20 to 490 mm²/s at 40 °C): heavier grados need confirmed pumpability at the lowest start-up temperatura
D300	mineral thermal transfer aceite, several formulations	Confirm which formulation y its data sheet antes de ordering
D310 SYNTH	Totalmente sintético, typical pour point −50 °C	Where low-temperatura start-up or a wide temperatura range is required

- producto: verify the full producto name, grado, lote number, Envase seal y the corresponding TDS y SDS.
- sistema: verificar pumps, valves, filters, expansion tank, vent points, low-point drains, instrumentation y interlocks.
- limpieza: remove welding slag, rust, water, solvent, limpiezaing-agent residue, old sludge y construction debris.
- compatibilidad: heat transfer fluids de different chemical types, different brands or unknown origin must not be mixed directly.

3 Filling y cold circulation

- Preparation: use a limpieza, dry, dedicated pump, hose y container.
- Filling: introduce the fluid slowly at the designated fill point, preventing the entry de moisture, contaminants or excessive air.
- Level: fill to the cold-fill mark y leave room para thermal expansion; No fill the expansion tank by estimation.
- Cold circulation: run the circulation pump antes de switching on the heat source; verificar flow, pressure, filter differential pressure, pump noise y leakage.
- Verification: después de venting, re-verificar the level y top up in small amounts. Take a new-aceite sample y record viscosity, acid number y flash point as the reference.

4 Initial heat-up, dewatering y degassing

Precaución: residual water or low-baceiteing componentes baceite as the sistema heats, causing pressure surges, pump cavitation, spray-out y level swings. Follow the heater manufacturer's heat-up procedure y the site risk assessment.

- Establish stable circulation first, then increase heat input in stages. Hold near 100–120 °C, or as the sistema manufacturer specifies, until water has been driven off through the expansion tank vent.
- At each stage, verificar temperatura, pressure, level, pump current, noise y filter differential pressure.
- Keep the designed venting path open; No open or close hot sistema componentes without authorisation.
- If pressure fluctuation, pump noise, level swings or a temperatura excursion occurs, reduce or cut heat input while keeping circulation running.
- Proceed to normal operating temperatura only when parameters are stable y venting has stopped.

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5 Normal operation control

Item	Minimum operating requisito	Key judgement point
Temperature	Record heater outlet, return y key user points	Must stay below the written maximum bulk temperatura para the grado y the equipo limit, whichever is lower
Flow y differential pressure	Monitor pump y filter trends	Low flow raises the film temperatura in the heater y causes coking
Pressure	Watch para stability y fluctuation	Fluctuation points at gas, moisture, blockage or pump wear
Level	Record against the cold y hot reference	Abnormal change: verificar para leaks, vaporisation or process-side connection
Expansion tank	Record temperatura	Keep it cool — commonly below 60 °C. It is donde hot aceite meets air y oxidises
Leakage y insulation	Inspect flanges, valves, pump seals y insulation	aceite-soaked insulation can ignite below the aceite's flash point — replace it

Key control: low flow, high heat flux y local stagnation must Nunca coincide. The bulk aceite temperatura does not show the film temperatura at the heater tube wall, which is Siempre higher.

6 Service-life management y replacement criteria

No service-life commitment independent de condiciones de operación is given. Manage service life con a new-aceite reference, fixed sampling, trend analysis y defined trigger conditions. The heater manufacturer's, producto data or laboratory's limits take precedence.

Baseline y sampling plan

Stage	Recommended minimum arrangement	Control purpose
New aceite / initial fill	Retain a representative new-aceite sample; record lote, quantity y initial results	Reference para viscosity, acid number, flash point y composition trends
Post-commissioning	Sample 1–3 months después de stable normal operation	Confirm dewatering, degassing y limpieza
Normal operation	Every 6–12 months; every 3–6 months para continuous high-temperatura or crítico unidades	Keep the same sampling point, temperatura y laboratory Método
After an abnormal event or overhaul	Sample promptly después de overheating, water ingress, Mezcla, leakage, limpiezaing or major repair	No resume long-term operation on top-up alone antes de results are confirmed

Conditions that acortar service life

Factor	Accelerating condition	Management requisito
Heat load	Long periods near the maximum bulk temperatura, high film temperatura or high heat flux	Halve the sampling interval; verificar flow y heater surfaces
Circulation	Low flow, stagnation, incorrect bypass setting, pump wear	Correct immediately; stagnation accelerates cracking y coking
Oxygen y water	Hot expansion tank, air ingress, condensation, process-side leakage	Monitor acid number y water more often; free water needs immediate action
Operating pattern	Frequent start-stop, rapid heating or cooling, long hot standby	Shorten the interval; verificar para low-baceiteing componentes y pressure fluctuation

Traducción de la versión inglesa. En caso de diferencia, prevalece la versión inglesa.

Factor	Accelerating condition	Management requisito
Contamination	limpiezaing agents, old aceite, a different fluid or solids	Isolate, volver a muestrear y complete a compatibilidad y contamination assessment

Test parameters y three-tier judgement

Parameter	Continue in service	Precaución / investigate	Action trigger
Cinemática viscosity	Within ±10 % de new aceite	10–20 %: acortar the intervalo de remuestreo; verificar temperatura y Mezcla	Above 20 %, or changing fast: act después de laboratory confirmation
Acid number	Near the new-aceite reference, stable	Rising: volver a muestrear; verificar oxidation y the expansion tank	At the laboratory's in-service limit
Flash point / low baceiteers	Stable	Falling flash point or more low baceiteers: verificar para cracking y contamination	A fire or vaporisation risk: stop heating y act
Water content	No free water, stable	Rising: verificar condensation, limpiezaing residue y exchanger leaks	Free water or pressure fluctuation: act immediately
Insolubles / carbon residue	Stable, no deposits	Rising, or faster filter loading: verificar para local overheating	Sludge, coking, repeated blockage or reduced heat transfer: limpieza or replace

> Nota: these percentages are a field-screening starting point donde no grado-specific limit is available; they are not a producto guarantee or a universal scrap criterion. Flash point, low baceiteers y insolubles should be interpreted by a laboratory experienced in heat transfer fluids.

Recommended Métodos: kinematic viscosity ASTM D445; acid number ASTM D664; water content ASTM D6304; flash point ASTM D92 (open cup) y ASTM D93 (closed cup); carbon residue ASTM D189; the laboratory may add distillation or gas chromatography para low y high baceiteers.

7 Top-up, Mezcla y aceite change

- Before topping up, verify grado y lote number; use dedicated tools y record the date, quantity y reason.
- No mezclar fluids because colour, name or viscosity look alike. Any necessary Mezcla needs a compatibilidad assessment first.
- Where water, coking or unidentified contamination is severe, deal con the sistema cause first, then plan limpiezaing y aceite change.
- Before draining, shut down, cool, isolate y depressurise; follow the site permit sistema. Drain only when the aceite has cooled to a safe Manejo temperatura.

8 Shutdown y abnormal-condition Manejo

Situation	Primary action
Planned shutdown	Cut heat input first y keep circulating while cooling; stop the pump only when the sistema's allowed temperatura is reached
Power loss or pump stop	Stop heat input immediately; start standby circulation or emergency cooling as designed
Pressure fluctuation or pump noise	Reduce heat input; verificar level, venting, filters y pump inlet
Slow heat-up or rising fuel use	Check temperatura difference, flow y differential pressure; sample y assess coking
Leak, smoking insulation or fire	Start the site emergency plan; isolate heat y leak source; firefighting y PPE per the SDS

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9 Valores de referencia — indicativos, no una especificación de MOTTA

The figures below are published industry references, given so that a reading can be judged on site when the máquina documentación is not to hand. They are screening prompts, not scrap limits. Where the fabricante del equipo, the component manufacturer or your aceite analysis laboratory states a figure, that figure governs y this table does not apply.

Specification reference

Reference	What it covers	Published by
DIN 51522	Heat transfer fluids Q — requisitos; cited on the D315, D318, D325 y D327 data sheets	DIN
ASTM D92 / ASTM D93	Flash point, open cup y closed cup	ASTM

When a reading is worth investigating

What is measured	Prompt to investigate	Why this figure
Cinemática viscosity at 40 °C	More than ±10 % from the new-aceite reference para that producto	Common condition-monitoring screening Valor; also confirms the correct producto is in the sistema
Flash point	A clear fall from the new-aceite Valor	Thermal cracking forms low-baceiteing productos; a falling flash point is a rising fire risk
Acid number	A rise against the new-aceite reference	Oxidation, usually from a hot expansion tank or air ingress
Carbon residue y insolubles	A rise against the new-aceite reference	Coke y sludge insulate heater tubes y raise the film temperatura further
Expansion tank temperatura	Above 60 °C	Commonly used limit: above it, aceite in contact con air oxidises quickly
Water content	Above 0.05 % (500 ppm), or any free or emulsified water	Free water attacks additive sistemas y bearing surfaces at any level

A single result is a reason to look, not a reason to drain. Establish the new-aceite reference para el producto actually in use, trend against it, y find the cause antes de changing the aceite — changing the aceite does not remove a contamination source or a mechanical fault.

10 Almacenamiento y residuos aceite

- Keep in the original sealed container in a cool, dry, ventilated area away from ignition sources, heat, rain y strong oxidisers.
- Store Tambors under cover, or on their side con the bungs at the 3 y 9 o'clock positions, so water is not drawn in.
- Transfer containers must be limpieza, dry y clearly labelled; No use unlabelled containers.
- Residuos aceite, limpiezaing residue y aceite-soaked insulation must be collected separately y handed to a compliant Eliminación organisation under local regulations.

Use y documento information

Precaución: Este documento provides general operating orientación. It is not heater or sistema design, a fire-Seguridad procedure, legal advice or a guarantee de results para any specific equipo, process, country or site.

- Conditions de use: confirm el producto, the written temperatura limits, equipo, materials y regulations Antes del uso. Any unconfirmed substitution or Mezcla requires a written technical assessment first.

Traducción de la versión inglesa. En caso de diferencia, prevalece la versión inglesa.

- Data y limits: temperaturas, viscosities, intervals y screening Valores are governed by el producto data, the SDS, the heater manufacturer's documentos y your laboratory. Este documento sets no general guaranteed Valores.
- Seguridad y environment: Almacenamiento, Manejo, filling, draining, leaks, fire, first aid y residuos Eliminación must follow the SDS, site rules y local law.
- Limitation: to the extent permitted by aplicable law, MOTTA gives no warranty para loss arising from operation above confirmed limits, incorrect selection, unconfirmed Mezcla, contamination, equipo defects or inadequate maintenance. This does not exclude liability that cannot be excluded or limited by law.

Revisión 05: moved to the current MOTTA documento format; stated that maximum bulk y film temperaturas must be obtained in writing Antes del uso; added selection between mineral y sintético grados, insulation-fire y expansion-tank orientación; added reference Valores, the table de MOTTA productos covered, y the copyright y trademark notice. First Traditional Chinese edition.

Recommended Records to Retain

Record	Details to retain
sistema	Unidad number, heater manufacturer y rating, sistema volume, written temperatura limits para the grado.
Producto	Full producto name, grado, lote number, fill quantity, new-aceite viscosity, acid number y flash point.
Operation	Filling, dewatering, heat-up, shutdown y drain dates, person responsible.
Running	Heater outlet y return temperaturas, expansion tank temperatura, flow, pressure, level.
aceite analysis	Sampling point, date, results, trend y action.
Abnormal event	Overheating, pump stops, leaks, insulation replacement, contamination, action taken.

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