MOTTA LUBRICATION | TECHNICAL GUIDANCE

CIRCULATING & aceite para turbina SERIES H30 / H10 / H50 / T50 / T100

OPERATION AND HANDLING INSTRUCTIONS

N.º de documento	Revisión	Fecha de emisión	Release status
MOTTA-CIRC-OHI-ES	REV.02	2026-09-13	Emitido para use

Use con the current producto TDS, SDS y the fabricante del equipo's instructions. 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 Almacenamiento, filling, start-up, in-service monitoring, shutdown y aceite change de the MOTTA circulating y aceite para turbina series: H30 y H10 circulating aceites, H50 sintético paper-máquina aceite, T50 aceite para turbina y T100 zinc-free aceite para turbina. For use only by trained personnel on equipo whose condition has been confirmed.

Not covered: hydraulic sistemas para which the manufacturer specifies an antidesgaste aceite hidráulico; enclosed gear drives that require an EP aceite de engranajes; air y refrigeration compressors; y servicio pesado gas turbines whose manufacturer specifies a sintético or high-temperatura aceite para turbina, unless suitability is confirmed in writing.

The fabricante del equipo's instructions, el producto TDS y SDS, site procedures y local regulations take precedence. Where requisitos conflict, apply the stricter Seguridad condition.

- User responsibility: confirm the grado de viscosidad, nivel de desempeño, equipo suitability, site risk y personnel qualification.
- Operator responsibility: record lote numbers, fill quantities, operating parameters, aceite-sample results y abnormal-condition Manejo.
- Technical boundary: Este documento does not replace equipo design, process design, risk assessment or professional engineering judgement.

MOTTA productos covered by this handbook

Producto	grados	Standards y nivel de desempeños	Formatos de envase
MOTTA H10	VG 150, VG 220, VG 320, VG 460	—	18L / 200L
MOTTA H30	VG 32, VG 46, VG 68, VG 100	DIN 51515 Part 1 (L-TD) · ISO 8068	18L / 200L
MOTTA H50 ISO VG 100	ISO VG 100	—	18L / 200L
MOTTA H50 ISO VG 150	ISO VG 150	—	18L / 200L
MOTTA H50 ISO VG 220	ISO VG 220	—	18L / 200L
MOTTA H50 ISO VG 320	ISO VG 320	—	18L / 200L

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

Producto	grados	Standards y nivel de desempeños	Formatos de envase
MOTTA H50 ISO VG 460	ISO VG 460	—	18L / 200L
MOTTA T50	VG 32, VG 46, VG 68, VG 100	DIN 51515 Part 1 (L-TD) · ISO 8068	18L / 200L
MOTTA T100	VG 32, VG 46, VG 68	DIN 51515 Part 1 (L-TD) · ISO 8068	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.

DIN 51515-1 y ISO 8068 are the turbine-oil performance levels T50, T100 y H30 are formulated toward, as stated on their data sheets; both classify ISO VG 32 to 100 only, so they are not shown para heavier grades. No turbine- or machine-manufacturer approval is claimed unless separately documented.

2 Selección y previa al uso inspection

Important: these five productos are not interchangeable. They differ in viscosity range, base aceite y additive sistema. Seleccionar by the duty y the nivel de desempeño the fabricante del equipo specifies, not by grado de viscosidad alone.

Duty	MOTTA producto	Check Antes del uso
Steam y light-duty gas turbines	T50, ISO VG 32–100	The turbine manufacturer's aceite specification. The data sheet states DIN 51515-1 L-TD y ISO 8068 as the performance level; confirm this meets the manual.
Turbines y sistemas that require a zinc-free (ashless) aceite	T100, ISO VG 32–68	The manufacturer's requisito para a zinc-free aceite. Nunca top up con a zinc-containing antidesgaste aceite.
Industrial circulating sistemas y bearings	H30, ISO VG 32–100	grado de viscosidad y nivel de desempeño. Use in a turbine only donde the manufacturer's specification is met.
servicio pesado circulating, gear y bearing sistemas	H10, ISO VG 150–460	A circulating aceite, not a aceite para turbina. Where gears share the circuit, confirm the gear manufacturer does not require an EP aceite de engranajes.
Paper-máquina circulating sistemas	H50, ISO VG 100–460	The máquina builder's aceite requisito para each section. sintético base: follow the conVersión steps in Section 7 antes de changing over.

- Materials: confirm seals, COAtings y non-ferrous metals are compatible con the aceite, particularly when changing to the sintético H50.
- sistema: verificar the Depósito, breather, return-line filter, cooler, level gauge y pipe connections.
- Verify el producto name, grado de viscosidad, lote number y intact seal antes de filling.

Additional requisitos para aceite para turbina

aceite para turbina must release air quickly y separate water well, because bearing lubrication y governor response are sensitive to entrained air y to steam or condensate ingress. Selección must confirm the nivel de desempeño the turbine manufacturer specifies.

Additional requisitos para paper máquinas

- Wet-end circulating sistemas take in process water; water separation y filterability decide how the aceite copes. Drain free water from the Depósito at the interval the máquina builder sets.
- Dryer-section bearings run hot; estabilidad a la oxidación y deposit control decide service life there. Record the aceite temperatura at the bearing return.
- Where the máquina builder lists approved aceites, use an aceite from that list. MOTTA H50 holds no machine-builder approval unless separately documented.

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

3 Purgaring, filling y initial run

- For a new sistema or después de overhaul, Purgar the sistema first to remove assembly debris y rust-preventive residue antes de the formal fill.
- Filling: use dedicated, limpieza transfer equipo y filter the aceite on the way in; No pour directly from the Tambor into the Depósito.
- Level: control to the Depósito mark, reserving reasonable room para thermal expansion.
- After filling, run the circulation pump at low pressure y no load first to purge trapped air.
- Take a new-aceite sample from the fill y keep it con the lote number; it is the reference para every later result.

4 Start-up y loading

- Confirm the cooler, filters, aceite pump y interlocks are in normal condition.
- For a new sistema, después de overhaul or después de an aceite change, start at low load y observe para abnormal pump noise, vibration y leakage.
- Check that supply pressure y aceite temperatura establish normally antes de increasing load in stages.
- After the initial run, re-verify the level, filter differential-pressure indicator y seal condition.

5 Normal operation control

Item	Minimum operating requisito	Key judgement point
Level	Verify periodically against the gauge	Abnormal drop suggests leakage; abnormal rise requires verificaring para water or fluid ingress
Temperature	Record stable temperatura y load variation	Exceeding the equipo limit requires reduced load y cooling-sistema verificars
Pressure / flow	Check sistema pressure, flow y filter differential pressure	Rising differential pressure suggests filter blockage; pressure fluctuation suggests leakage or pump wear
Apariencia	Watch para cloudiness, emulsification or persistent foam	Abnormal appearance suggests water ingress, air entrainment or oxidative degradation
Depósito water	Drain free water from the Depósito low point donde fitted	A rising quantity de drained water points at a cooler, seal or steam-gland leak

Key control: in turbine y paper-máquina sistemas, watch para deterioration in water-separation performance — a loss de demulsibility is one de the most characteristic ageing signals in a long-life circulating aceite.

6 Service-life management y replacement criteria

The service life de this series is normally measured in years, y 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 fabricante del equipo's or aceite-analysis 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 number y initial test Valores	Reference para viscosity, acid number, water content y oxidation-life trends
Post-commissioning	Sample 1–3 months después de stable normal operation	Confirm Purgaring effectiveness y sistema limpieza

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Stage	Recommended minimum arrangement	Control purpose
Normal operation	At a fixed interval agreed con the laboratory — commonly quarterly para turbines y paper máquinas, 6–12 months para general circulating sistemas	Keep the same sampling point, temperatura y laboratory Método
After an abnormal event or overhaul	Sample promptly después de water ingress, overheating, aceite Mezcla or major repair	No resume long-term operation on top-up alone antes de results are confirmed

Test parameters y three-tier judgement

Parameter	Continue in service	Precaución / investigate	Action trigger
Cinemática viscosity	Change vs new aceite within ±10 %	Change de 10–20 %: acortar the intervalo de remuestreo	Change above 20 %: replace después de laboratory confirmation
Acid number (AN)	Close to the new-aceite reference, stable trend	Continuous rise: verificar oxidation y contamination	Reaches the laboratory's in-service limit: take action
Water / demulsibility	No free water, normal separation time	Separation time lengthening: verificar seals y condensation	Persistent emulsification: act immediately
Oxidation life (RPVOT)	Above 50 % de the new-aceite Valor	25–50 % de the new-aceite Valor: sample more often	Below 25 % de the new-aceite Valor: plan the aceite change

Nota: the figures above are a field-screening starting point donde no equipo- or laboratory-specific limit is available. They are not a producto guarantee or a universal scrap criterion. The 25 % RPVOT action point follows ASTM D4378 orientación para in-service turbine oils; the 50 % band is common laboratory practice.

Recommended Métodos: kinematic viscosity ASTM D445; acid number ASTM D664 or D974; demulsibility ASTM D1401; water content ASTM D6304; oxidation life ASTM D2272 (RPVOT); varnish potential ASTM D7843 (membrane patch colorimetry); air release ASTM D3427; foam ASTM D892; limpieza reported as an ISO 4406 code. The laboratory selects the tests by equipo críticoity.

7 Top-up, Mezcla, conVersión y aceite change

- Before topping up, verify el producto y lote number. Different nivel de desempeños or base-aceite types must not be mixed directly.
- T100 zinc-free sistemas: top up only con T100 or an aceite the manufacturer confirms is zinc-free. A zinc-containing antidesgaste aceite defeats the reason the sistema specifies zinc-free aceite.
- Converting to H50 sintético: drain the sistema completely, including coolers, filters y low points; Purgar as the máquina builder specifies; verificar filters more often in the first weeks, because a new aceite can loosen existing deposits.
- Where water content, contamination or oxidative degradation is severe, address the sistema root cause first, then determine the aceite-change plan.
- Before draining, shut down, cool, isolate y depressurise; work must follow the site permit sistema y equipo procedures.

8 Shutdown y abnormal-condition Manejo

Situation	Primary action
Planned shutdown	Unload y reduce pressure gradually; shut down once the equipo's allowable condition is reached
Rising noise or vibration	Reduce load or shut down; verificar para pump wear y aceite level; sample if necessary
Abnormal temperatura rise	Check aceite level, cooler condition y load; sample to assess aceite condition
Loss de water separation	Trace the seal, cooler or condensation source; assess the need para an aceite change
Persistent foam or slow air release	Check para air leaks on the suction side, low level y contamination by another aceite
Leakage	Isolate the leak source; select protective equipo y limpieza-up measures 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 51515-1 (L-TD)	aceite lubricantees para steam turbines, normal duty — ISO VG 32 to 100	DIN
ISO 8068	Petroleum turbine aceite lubricantees — classification y requisitos	ISO
ASTM D4378	In-service monitoring de mineral aceite para turbinas para steam, gas y combined-cycle turbines	ASTM
ISO 4406	Code para solid-particle limpieza de the aceite	ISO

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
Oxidation life, RPVOT (ASTM D2272)	Below 25 % de the new-aceite Valor	ASTM D4378 orientación: at this level, especially con a rising acid number, plan the oil change
Acid number	A sustained rise above the new-aceite reference, confirmed on volver a muestrear	Acid number rises as oxidation productos form; the trend matters more than one result
Varnish potential, MPC ΔE (ASTM D7843)	A rising trend, or a result in the laboratory's elevated band	Membrane patch colorimetry measures the insoluble deposits that form varnish on bearings y servo valves; severity bands are set by the laboratory

What is measured	Prompt to investigate	Why this figure
Demulsibility (ASTM D1401)	Separation time lengthening against the new-aceite reference	Loss de water separation is a characteristic ageing y contamination signal in turbine y paper-máquina aceites
Water content	Above 0.05 % (500 ppm), or any free or emulsified water	Free water attacks additive sistemas y bearing surfaces at any level
Air release y foam (ASTM D3427, D892)	Persistent foam, or air release slower than the new-aceite reference	Entrained air disturbs the bearing film y governor response; contamination by another aceite is a common cause
Sustained aceite temperatura	Above the manufacturer's normal operating range	Oxidation rate roughly doubles para every 10 °C — the standard rule de thumb

limpieza targets y analysis limits are set by the turbine or máquina manufacturer y your laboratory; donde they give a figure, theirs governs. ISO 4406 defines the code, not the target.

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.

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10 Almacenamiento y residuos aceite

- Keep in the original sealed container in a cool, dry, ventilated area away from moisture, ignition sources y strong oxidisers.
- Store Tambors under cover, or on their side con the bungs at the 3 y 9 o'clock positions, so rainwater is not drawn in as the Tambor cools.
- Transfer containers must be limpieza, dry y clearly labelled. Store sintético, mineral y zinc-free productos separately.
- Residuos aceite, Purgaring residue y aceite-contaminated materials 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 engineering design, legal advice or a guarantee de results para any specific equipo, process, country or site.

- Conditions de use: confirm el producto, equipo, materials, temperatura, load, environment y regulations Antes del uso. Any unconfirmed substitution or Mezcla requires a written technical assessment first.
- Data y limits: temperaturas, viscosities, intervals, screening Valores y other figures are governed by el producto TDS y SDS, the fabricante del equipo's documentos y validated site standards. Este documento sets no general guaranteed Valores.
- Seguridad y environment: Almacenamiento, Manejo, filling, draining, spills, fire, first aid y residuos-aceite 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 incorrect selection, unconfirmed Mezcla, contamination, equipo defects, operation outside limits, inadequate maintenance or failure to follow mandatory requisitos. This does not exclude liability that cannot be excluded or limited by law.

Revisión 02: moved to the current MOTTA documento format; added producto selection by duty para H30, H10, H50, T50 y T100, con paper-máquina y zinc-free aceite para turbina requisitos; replaced an abnormal-condition table that did not apply to circulating sistemas; added oxidation y varnish monitoring references, the table de MOTTA productos covered, y the copyright y trademark notice.

Recommended Records to Retain

Record	Details to retain
equipo	Unidad number, manufacturer, model, location, críticoity.
Producto	Full producto name, grado de viscosidad, lote number, fill quantity.
Operation	Purgaring, draining, filling, start-up y shutdown dates, person responsible.
Running	Temperature, pressure, flow, level, drained water, abnormal events.
aceite analysis	Sampling point, date, running hours, results incl. RPVOT y MPC, trend y action.
Maintenance	Filter changes, leaks, seal replacement, contamination or Mezcla events.

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