

F3000 FIRE-RESISTANT HYDRAULIC FLUID

HFC Water-Glycol Type

OPERATION AND HANDLING INSTRUCTIONS

Document no.	Revision	Issue date	Release status
MOTTA-F3000-OHI-EN	REV.02	2026-09-13	Issued for use

Use with the current product TDS, SDS, the equipment manufacturer's instructions and site fire-safety rules. Issued by MOTTA Lubricants. The current revision of this document is published at motta-lube.com/documents/ — if your copy differs, that list governs.

1 Scope

This document applies to the conversion, filling, in-service control, water management and fluid change of MOTTA F3000, an HFC water-glycol fire-resistant hydraulic fluid, in industrial hydraulic systems near hot surfaces or ignition sources. For use only by trained personnel on equipment whose condition has been confirmed.

F3000 is fire resistant, not fireproof. It reduces the risk of a hydraulic leak feeding a fire; it does not replace guarding, shielding, leak control or any other fire-protection measure required on site.

Not covered: mineral and synthetic hydraulic oils (see MOTTA-Y-OHI); phosphate-ester (HFD) and water-in-oil (HFB) fire-resistant fluids; and systems whose manufacturer has not approved an HFC fluid. The equipment manufacturer's instructions, the product TDS and SDS, site fire-safety rules and local regulations take precedence.

- User responsibility: confirm the system and every component is approved for HFC fluid — pumps, seals, hoses, accumulators, filters and interior coatings.
- Operator responsibility: record water content, viscosity, pH, make-up quantities and abnormal events.
- Technical boundary: this document does not replace equipment design, fire-risk assessment or professional engineering judgement.

MOTTA products covered by this handbook

Product	Grades	Standards and performance levels	Pack sizes
MOTTA F3000	HFC type	ISO 12922 · ISO 6743-4	18L / 200L

Grades, standards and pack sizes as published on each product's technical data sheet at motta-lube.com/products/. Where a data sheet and this table differ, the data sheet governs.

ISO 6743-4 HFC and ISO 12922 are the fluid type and specification F3000 is formulated toward, as stated on its data sheet. No fire-resistance approval by a testing body, and no equipment-manufacturer approval, is claimed unless separately documented.

2 Selection and pre-use inspection

Important: water is a designed component of F3000, not a contaminant. The data sheet gives a typical water content of 44 %. Too little water raises viscosity and reduces fire resistance; too much water lowers viscosity and wear protection. Never manage F3000 by the rules for mineral hydraulic oil, where water is removed.

Item	Suitable	Not suitable
Seals and hoses	Nitrile (NBR) and fluorocarbon (FKM), as confirmed by the seal or hose maker	Polyurethane, which degrades in water; cork, leather and paper
Metals	Steel, cast iron; copper alloys as confirmed by the component maker	Zinc and galvanised surfaces, cadmium, magnesium; aluminium only where the component maker approves it
Reservoir interior	Unpainted, or a coating rated for water-glycol fluid	Conventional oil-resistant paint, which can lift and block filters
Filter elements	Glass-fibre or synthetic media	Cellulose (paper) media

- Pumps: pump pressure and speed ratings are often lower for HFC fluid than for mineral oil. Use the pump maker's rating for water-glycol service.
- Suction side: F3000 is denser than mineral oil and contains water, so it cavitates more readily. Keep the pump inlet flooded and suction lines short and generously sized, and do not fit fine suction strainers.
- Verify the product name, batch number and intact seal. Label every transfer container for F3000 only.

3 Conversion, flushing and filling

- Converting from mineral oil: drain the whole system, including cylinders, accumulators, coolers, lines and low points. Mineral oil does not mix with water-glycol fluid and will separate out.
- Before filling, replace seals, hoses, filter elements and interior coatings that are not suitable (Section 2). Follow the equipment manufacturer's conversion procedure.
- Flush with F3000, drain the flushing charge, then fill. Fill through a filter with clean equipment used only for F3000.
- After filling, take a sample and record water content, viscosity and pH with the batch number. This is the new-fluid reference for every later result.

4 Start-up

- Vent the pump and system before start-up; run at low pressure and no load first.
- Listen for cavitation noise at the pump and watch for foam in the reservoir before increasing load.
- In the first weeks after conversion, check filters more often: residual deposits are loosened by the new fluid.
- Re-check the level, all joints for leaks and seal condition after the initial run.

5 In-service control

Test at a fixed interval and trend every result against the new-fluid reference recorded at filling.

Item	Minimum requirement	Key judgement point
Water content	At a fixed interval, by the method your laboratory or supplier sets	Moving away from the new-fluid reference needs correction; a continuing drift needs its cause found
Viscosity	With each water check	Rising viscosity usually means water loss; falling viscosity means water gain
pH	At a fixed interval	A falling pH points at depleted corrosion inhibitor or contamination
Temperature	Record reservoir temperature	Water evaporates and cavitation risk rises as temperature climbs
Appearance	Watch for separation, a floating oil layer, sludge or odour	Points at contamination or additive breakdown

Item	Minimum requirement	Key judgement point
Seals and hoses	Inspect for leaks, swelling, shrinkage or cracking	Material change points at incompatibility

Key control: judge water content by measurement, never by appearance. A clear fluid can be well outside its water target.

6 Water management and top-up

- Water lost by evaporation (level falling, viscosity rising, no leak): add deionised or distilled water in the quantity the analysis calls for, in small steps, then re-test.
- Fluid lost by leakage (level falling, water content unchanged): top up with F3000 only.
- Never add tap water. Its hardness salts react with the additives and form deposits.
- Water content above the reference: find the source — cooler leak, wash-down, condensation — before any correction. Adjust only by the method your supplier or laboratory sets.
- Keep reservoir covers and breathers closed; an open reservoir near a hot surface loses water quickly.

7 Fluid-change judgement

Judge the fluid on its trend and on whether a correction holds, not on a single result.

Observation	Continue in service	Requires attention	Change fluid
Water content	At the reference	Drifting; corrected by make-up	Cannot be held at the reference by make-up
pH	Near the new-fluid value	Falling	Low and not recovered after correction
Appearance	Uniform	Slight haze or sediment	Separated phases, sludge, a mineral-oil layer or strong odour
Filters	Normal intervals	Blocking faster than usual	Repeated rapid blocking with sludge in the element

Note: the above is a field-screening reference only. It is not a product guarantee or a universal scrap criterion. Your fluid supplier's or laboratory's limits take precedence.

8 Shutdown and abnormal-condition handling

Where a situation involves a leak or spray near a hot surface, site fire-safety rules take precedence over this table.

Situation	Primary action
Water content far outside the reference	Stop, trace evaporation, water ingress or leakage, correct and re-test before restart
Cavitation noise or foam	Reduce load; check level, suction line, inlet strainer and air leaks; check water content
Seal or hose leakage, swelling or cracking	Check material compatibility; replace with a material approved for HFC fluid
Mineral oil found in the reservoir	Find the source; remove the oil layer; assess whether the fluid must be changed
Leak near a hot surface	Isolate and shut down; treat as a fire risk even with a fire-resistant fluid; clean up per the SDS

9 Reference values — indicative, not a MOTTA specification

The figures below are published industry references, given so that a reading can be judged on site when the machine documentation is not to hand. They are screening prompts, not scrap limits. Where the equipment manufacturer, the component manufacturer or your oil analysis laboratory states a figure, that figure governs and this table does not apply.

Specification reference

Reference	What it covers	Published by
ISO 6743-4	Classification of hydraulic fluids — HFC is the water-polymer (water-glycol) fire-resistant type	ISO
ISO 12922	Specifications for fire-resistant hydraulic fluids, including HFC	ISO
ISO 7745	Guidelines for the use of fire-resistant fluids in hydraulic systems	ISO

When a reading is worth investigating

What is measured	Prompt to investigate	Why this figure
Water content	Any sustained move away from the new-fluid reference of the batch in use	Viscosity, wear protection and fire resistance all depend on it; the data sheet gives 44 % as typical
Kinematic viscosity at 40 °C	More than ± 10 % from the new-fluid reference	Common condition-monitoring screening value; in this fluid it is also the quickest check on water balance
pH	Below 8.5, or falling steadily from the new-fluid value	A commonly used lower screening value for water-glycol fluids; low pH points at depleted corrosion inhibitor
Sustained reservoir temperature	Above 50 °C	A common upper limit for water-glycol fluids: water evaporates faster and cavitation risk rises
Mineral oil in the reservoir	Any separate oil layer	Mineral oil does not mix with water-glycol fluid; it loads filters and points at a leak from another system
Filter differential indicator	In the bypass or alarm band	Once filtration is bypassed the cleanliness target above is no longer being held

Measure water content by the method your supplier or laboratory specifies, and keep to one method so results can be trended.

A single result is a reason to look, not a reason to drain. Establish the new-oil reference for the product actually in use, trend against it, and find the cause before changing the oil — changing the oil does not remove a contamination source or a mechanical fault.

10 Storage and disposal

- Keep containers tightly closed so water does not evaporate; store under cover, away from heat and frost.
- Do not use galvanised containers or containers that have held mineral oil or another hydraulic fluid.
- Label stock and transfer containers clearly for F3000 to prevent mixing with oil-based fluids.

- Collect used F3000 separately from waste mineral oil — it is an aqueous glycol waste. Never discharge it to drains or soil; hand it to a compliant disposal organisation under local regulations.

Use and document information

Caution: this document provides general operating guidance. It is not engineering design, a fire-safety procedure, legal advice or a guarantee of results for any specific equipment, process, country or site.

- Conditions of use: confirm material compatibility, pump suitability and fire-safety requirements before use. Any unconfirmed substitution or mixing requires a written technical assessment first.
- Data and limits: water content, viscosity, pH and other figures are governed by the product TDS and SDS, the equipment manufacturer's documents and your laboratory. This document sets no general guaranteed values.
- Safety and environment: this product is fire resistant, not fireproof, and does not replace other fire-protection measures. Storage, handling, filling and disposal must follow the SDS, site rules and local law.
- Limitation: to the extent permitted by applicable law, MOTTA gives no warranty for loss arising from material incompatibility, inadequate water management, unconfirmed mixing or failure to follow mandatory requirements. This does not exclude liability that cannot be excluded or limited by law.

Revision 02: moved to the current MOTTA document format; corrected seal, metal, coating and filter-media compatibility; separated make-up for evaporation loss from make-up for leakage; added temperature, suction-side and conversion guidance; added reference values, the table of MOTTA products covered, and the copyright and trademark notice.

Recommended Records to Retain

Record	Details to retain
Equipment	Unit number, manufacturer, pump type, HFC approval reference, reservoir volume.
Product	Full product name, batch number, fill quantity, new-fluid water content, viscosity and pH.
Conversion	Date, previous fluid, parts replaced, flushing record, person responsible.
Monitoring	Date, water content, viscosity, pH, temperature, appearance.
Make-up	Date, deionised water or F3000, quantity, reason.
Abnormal event	Leaks, cavitation, contamination, filter blocking, action taken.

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