RENTALS

PRODUCT DATA SHEET

# Solvent Varnish Removal

## Description

The HY-PRO Soluble Varnish Removal (SVR) is a comprehensive recovery and maintenance solution designed for mineral-based turbine lubricants. It effectively targets and eliminates dissolved varnish precursors which the primary cause of varnish formation. By removing these oxidation byproducts, SVR restores the oil's original solvency properties, allowing existing solid varnish deposits to dissolve back into the oil and be permanently removed.

## Arrest varnish formation

SVR directly targets the root cause of varnish by breaking down oxidation by-products at the molecular level. Instead of relying on traditional chemical treatments, SVR restores the oil's integrity, effectively dissolving and removing varnish deposits through-out the system. By eliminating these harmful contaminants, it enhances lubrication performance, prevents bearing failures, improves oil flow, and ensures servo valves operate with maximum efficiency. The result is a cleaner, more reliable system that minimizes downtime and extends the lifespan of critical components.

## Acid management

Oxidation in turbine oil results in acid formation, a key driver of varnish buildup. SVR removes these acidic byproducts, enhancing the oil's oxidation stability and slowing down the degradation process. This effectively minimises the primary cause of varnish formation.

## Lube systems for extended reliability

Turbine oil is often deemed unfit for use when antioxidant additives are depleted or when current results are off their minimum limits. SVR works in tandem with antioxidants to slow their depletion, significantly extending oil life. Beyond being an advanced varnish recovery solution, SVR restores and protects oil health, actively preventing new varnish deposits. Once varnish is brought under control, the extended oil life and improved system performance can be fully realised.

## Lubrigard has your back...

With our cutting-edge solutions and unwavering commitment to excellence, you can trust us to keep your operations running smoothly and efficiently. No matter the challenge, we've got you covered - because your success is our priority!

## Specifications

| Model | Height | Length | Width | Weight |
|---|---|---|---|---|
| SVR1200 | 58" (147 cm) | 48" (122 cm) | 26" (66 cm) | 700 lbs (318 kg) |
| SVR2400 | 98" (249 cm) | 70" (178 cm) | 30" (76 cm) | 1000 lbs (454 kg) |

### Connections
- Inlet: 1.5" FNPT with locking ball valve
- Outlet: 1" FNPT with locking ball valve

### Reservoir capacity
- SVR1200 + SVR1200X: up to 8,000 gal (30,000 L)
  SVR2400: up to 16,000 gal (60,000 L)

### Element configuration
- Particulate filter: HP107L18-VTM710-C-V (SVR1200 & SVR2400)

### Main filter
- SVR1200: ICB600524-V × 2
- SVR2400: ICB600524-V × 4
- SVR1200X: ICB600524-V × 2 (no particulate filter)

### Operating temperature
- Fluid: 86°F to 176°F (30°C to 80°C)
- Ambient: -4°F to 104°F (-20°C to 40°C)

### System flow rates
- SVR1200: 7–11 gpmSVR2400: 14–16 gpmICB Flow Rate: SVR1200 & 1200X – 5 gpm; SVR2400 – 10 gpm

### Pneumatic option
- Air consumption: ~40 cfm @ 80 psi

### Material construction
- Housings & tray: carbon steel with industrial coating
- Fittings: swagelok® stainless
- Electric motor: TEFC, 1–1.5 hp, 1150–1750 RPMMotor starter: IP65 aluminum enclosure
- Pump: cast iron, positive displacement, 15 psi max inlet
- Pump bypass: 90 psi (6.2 bar)

### Media descriptions
- VTM: β0.9[C] ≥ 4000, removes particulates, oxidation by-products, waterICB®: Ion-exchange media for acids, varnish, metal ions

### Fluid compatibility
- Petroleum & mineral oils (standard) for synthetic fluids, refer to FSA or contact factory

### Hazardous Environment Options
- Explosion proof (NEC Article 501, class 1, div 1, group C+D) pneumatic powered units available

## Figure 1

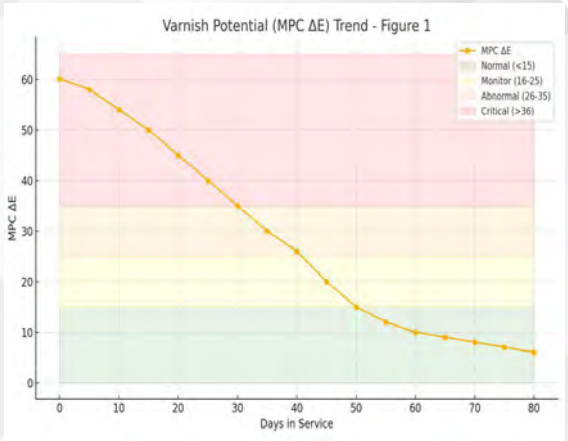


**Figure 1:** depicts SVR1200 on a 7FA gas turbine with critically high varnish potential (MPC ΔE) experiencing slow servo valve response time and sticking. SVR® had an immediate impact on the 6,200 gallon / 24,000 liter lube reservoir. Within 45 days MPC values were reduced to condition normal. Starting RULER was 5 meaning only 5% AO remained in the oil, below condemning level. By installing SVR® before a fluid change, all varnish deposits were removed before the oil change which allowed new oil to be added to a clean reservoir. If not for the deposit removal, AO in the new oil could have immediately depleted to as low as 65%.

## Figure 2

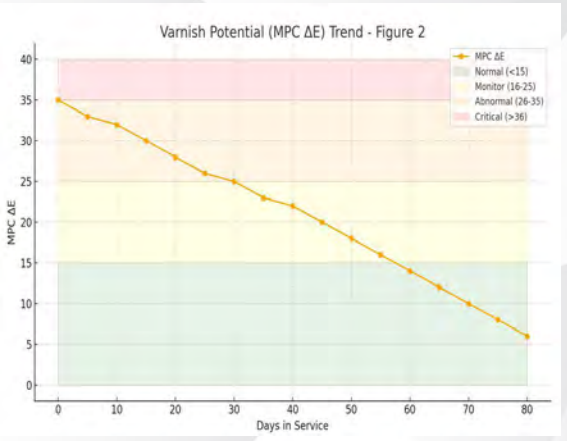


**Figure 2:** is the restoration of a combustion turbine with heavy varnish deposits where MPC varnish potential dropped to 35 after SVR® installation. 40 days into service, the ICB® elements were changed as they were fully loaded with oxidation by-product. Once changed, MPC dropped to single digits. In the case of a heavily varnished turbine, 2 to 3 sets of ICB® elements might be required to achieve condition normal. Once MPC drops to single digits, the ICB® elements would normally be replaced annually to maintain the lubricant in optimal condition.