

Product Compatibility List for In-Service Robotic Inspection

The below list of products have been evaluated for submerged operations of SR Inspection Robots. Square Robot is continually investigating material compatibility with new products and expanding this list. If your tank product is not on the list please contact Square Robot for more information or to discuss your specific tank inspection needs.

Compatibility Ratings and Definitions	
Compatible	Robot ops are approved in fluid product.
Compatible*	Robot ops are approved in fluid product. *Robot maintenance required.
Under Consideration	Robot ops are possible with design changes and/or maintenance intervals.
Incompatible	Robot is ineligible for operations in fluid product.
Material Soak Test Required	Unknown compatibility requires soaking materials.
Needs to be Evaluated	Compatibility with this product has not yet been evaluated.

Product	SR-1 Inspection Robot	SR-3 Inspection Robot
Acetone	Incompatible	Incompatible
Acetic Anhydride	Incompatible	Incompatible
Acetophenone	Incompatible	Material Soak Test Required
Acrylonitrile	Incompatible	Incompatible
Adipate DPM	Needs to be Evaluated	Needs to be Evaluated
Ammonia	Needs to be Evaluated	Needs to be Evaluated
Ammonium Nitrate	Material Soak Test Required	Material Soak Test Required
Amodrill 1000	Incompatible	Material Soak Test Required
Base Oil	Compatible	Compatible
Benzene	Incompatible	Material Soak Test Required
Bis (2-EthylHexyl) DB	Needs to be Evaluated	Needs to be Evaluated
Brine	Compatible	Compatible
Butanediol (1,4-)	Material Soak Test Required	Material Soak Test Required
Butoxyethyl Acetate, 2-	Needs to be Evaluated	Needs to be Evaluated
Butyl Alcohol	Material Soak Test Required	Material Soak Test Required

Chlorine	Needs to be Evaluated	Needs to be Evaluated
Corn Oil, Crude (CD)	Compatible	Compatible
Crude Oil Hexanol	Needs to be Evaluated	Needs to be Evaluated
Cumene	Incompatible	Material Soak Test Required
Di-2-Ethyhexyl	Needs to be Evaluated	Needs to be Evaluated
Diesel	Compatible	Compatible
Diesel - Low Sulfur Diesel	Compatible	Compatible
Diesel - No. 1 Diesel Fuel	Compatible	Compatible
Diesel - No. 2 Diesel Fuel	Compatible	Compatible
Diesel - Ultra Low Sulfur Diesel	Compatible	Compatible
Diethylene Glycol	Compatible	Compatible
Dimethyl-Propanediol	Needs to be Evaluated	Needs to be Evaluated
Eastman DBP / DEP / DIBK / DOP	Needs to be Evaluated	Needs to be Evaluated
Eastman EB / PG / N-Butanol	Needs to be Evaluated	Needs to be Evaluated
Ethanol	Incompatible	Compatible
Ether Ethyl 3 Ethoxy	Needs to be Evaluated	Needs to be Evaluated
Ethyl Hexanol, 2-	Material Soak Test Required	Material Soak Test Required
Ethylene Glycol	Compatible	Compatible
Exxal 10	Compatible	Compatible
Exxal L9	Compatible	Compatible
Exxsol D60	Material Soak Test Required	Material Soak Test Required
Exxsol D95	Material Soak Test Required	Material Soak Test Required
Gasoline	Incompatible	Compatible
Herbicide, 2,4 D Technical Esther	Under Consideration	Under Consideration
Herbicide, Buccaneer 5 Extra	Under Consideration	Under Consideration
Herbicide, Credit Xtreme	Under Consideration	Under Consideration
Herbicide, Credit 5.4 Extra	Under Consideration	Under Consideration
Herbicides Containing 80-84% 2,4D dissolved in petroleum distillates	Under Consideration	Under Consideration
Herbicides Containing 30%-60% Dicamba dissolved in anhydrous dimethylamine	Under Consideration	Under Consideration
Herbicide, Glyphosate, IPA Salt 53.8%	Under Consideration	Under Consideration

Herbicide, MCPA Technical IOE	Under Consideration	Under Consideration
Herbicide, Rifle	Under Consideration	Under Consideration
Herbicide, Salvo Post-Emergence Broadleaf	Under Consideration	Under Consideration
Hexane	Incompatible	Compatible
Hexanol	Material Soak Test Required	Material Soak Test Required
Hydrochloric Acid (HCL)	Incompatible	Incompatible
Hydrocide	Needs to be Evaluated	Needs to be Evaluated
Hypochlorite	Needs to be Evaluated	Needs to be Evaluated
Isopar V	Compatible	Compatible
Jayflex L911P	Compatible*	Compatible
Jet A & Jet A-1	Compatible	Compatible
JP-3 & JP-4	Material Soak Test Required	Material Soak Test Required
JP-5 & JP-8	Compatible	Compatible
JP-9 & JP-10	Incompatible	Under Consideration
Kerosene	Compatible	Compatible
Ketone Naphtha	Needs to be Evaluated	Needs to be Evaluated
Light Cycle Oil	Material Soak Test Required	Material Soak Test Required
Lube Oil	Material Soak Test Required	Material Soak Test Required
Methane	Needs to be Evaluated	Needs to be Evaluated
Methanol	Incompatible	Compatible*
Methyl Ethyl Ketone (MEK)	Incompatible	Incompatible
Methyl Isobutyl Ketone (MIBK)	Needs to be Evaluated	Needs to be Evaluated
Methyl-N-Amyl (2-Heptanone)	Needs to be Evaluated	Needs to be Evaluated
Methyl Methacrylate	Incompatible	Incompatible
Methyltin Mercaptoester	Material Soak Test Required	Material Soak Test Required
Mineral Oil	Compatible	Compatible
Naphtha (petroleum hydrocarbons), Heavy Straight Run	Incompatible	Compatible
Naphtha (petroleum), full-range reformed: (Aromatic Concentrate / Heartcut Reformate)	Incompatible	Compatible
Naphtha (petroleum), Hydrotreated Heavy	Incompatible	Compatible
Naphtha (petroleum), light	Incompatible	Compatible

steam-cracked, debenzenized, C8-16-cycloalkadiene conc.		
Naphtha, Alkylate	Incompatible	Compatible
N Polymeric MDI	Needs to be Evaluated	Needs to be Evaluated
No. 1 Fuel Oil	Compatible	Compatible
No. 2 Fuel Oil	Compatible	Compatible
No. 4 Fuel Oil (Bunker A)	Material Soak Test Required	Material Soak Test Required
No. 5 Fuel Oil (Bunker B)	Material Soak Test Required	Material Soak Test Required
No. 6 Fuel Oil (Bunker C)	Incompatible	Incompatible
Oils: Diesel Fuel (SAE 20)	Material Soak Test Required	Material Soak Test Required
Oils: Diesel Fuel (SAE 30, 40, 50)	Incompatible	Incompatible
Ortho Dichloro Benzene (ODCB)	Needs to be Evaluated	Needs to be Evaluated
Orthoxylene	Incompatible	Compatible*
Palm Stearin, RBD	Material Soak Test Required	Material Soak Test Required
Phenol (Carbolic Acid)	Needs to be Evaluated	Needs to be Evaluated
Phenyl Isocyanate (Phenco)	Needs to be Evaluated	Needs to be Evaluated
Polyethylene Glycol	Material Soak Test Required	Material Soak Test Required
Propylene	Incompatible	Material Soak Test Required
Propylene Glycol	Material Soak Test Required	Material Soak Test Required
p-p-Diaminodiphenyl	Needs to be Evaluated	Needs to be Evaluated
Refino	Material Soak Test Required	Material Soak Test Required
Siloxane	Material Soak Test Required	Material Soak Test Required
Sodium Hydroxide (Caustic Soda)	Incompatible	Incompatible
Soybean Oil, Crude (CD)	Compatible	Compatible
Sulfuric acid (H2SO4)	Incompatible	Incompatible
Styrene	Incompatible	Material Soak Test Required
Tetrabromobisphenol A (TBBPA)	Needs to be Evaluated	Needs to be Evaluated
Terephthalate	Needs to be Evaluated	Needs to be Evaluated
Therminol 66	Needs to be Evaluated	Needs to be Evaluated
Toluene	Incompatible	Material Soak Test Required
Tolad 249 Fuel Additive	Needs to be Evaluated	Needs to be Evaluated
Topguard 1156 Neutralizer	Needs to be Evaluated	Needs to be Evaluated
Triethylene Glycol	Compatible	Compatible

TXIB Ethylene Glycol Monopropyl Propionate	Needs to be Evaluated	Needs to be Evaluated
Urea	Material Soak Test Required	Material Soak Test Required
Urea Ammonium Nitrate	Compatible	Compatible
Water - Demineralized/Deionized	Compatible	Compatible
Water - Fire	Compatible	Compatible
Water - Fresh	Compatible	Compatible
Water - Olefin	Needs to be Evaluated	Needs to be Evaluated
Water - Process	Needs to be Evaluated	Needs to be Evaluated
Water - Sea	Compatible	Compatible
Water - Waste	Material Soak Test Required	Material Soak Test Required
Xylene	Material Soak Test Required	Material Soak Test Required

SR Inspection Robot Environmental Specifications

Specification	SR-1 Inspection Robot	SR-3 Inspection Robot
Operating Temperature Range	0°C to 35°C (32°F to 95°F)	0°C to 40°C (32°F to 104°F)
Storage Temperature Range	-10°C to 60°C (14°F to 140°F)	-10°C to 60°C (14°F to 140°F)
Vehicle Maximum Operating Depth	27.4 m (90-ft) in freshwater ($P_{abs} = 370$ kPa, $P_{gauge} = 269$ kPa)	27.4 m (90-ft) in freshwater ($P_{abs} = 370$ kPa, $P_{gauge} = 269$ kPa)
Minimum Fluid Product Density (ρ)	810 kg/m ³ (6.8 lbs/gal)	680 kg/m ³ (5.7 lbs/gal)
Minimum Product Fill Height (ρ specific)	For ρ 810 kg/m ³ : 4.8 m (15.9-ft) For ρ 1000 kg/m ³ : 4.0 m (13.2-ft)	For ρ 710 kg/m ³ : 5.4 m (17.9-ft) For ρ 1000 kg/m ³ : 4.0 m (13.2-ft)
Maximum Kinematic Viscosity (<i>with no robot performance loss</i>)	20 cSt	45 cSt
Hazardous Location	Certified for C1D2	Designed for C1D1

If your tank product falls outside the above environmental specification ranges please contact us for more information and to discuss your specific tank inspection needs.

Certifications

The SR-1 Inspection Robot is certified for use in Class I, Division 2, Group D, T6, or unclassified locations by FM Approvals. All model variants, including a robot equipped with a PAUT NDT payload, are independently certified and approved by FM Approvals for continued HazLoc conformance.

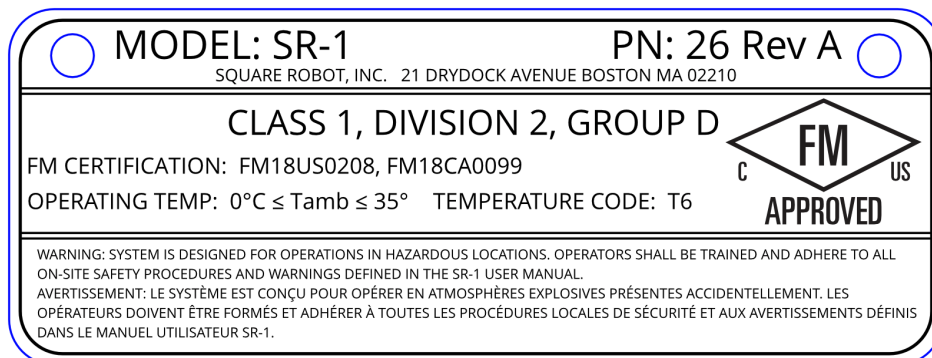


Figure 1 - SR-1 FM Approval Label

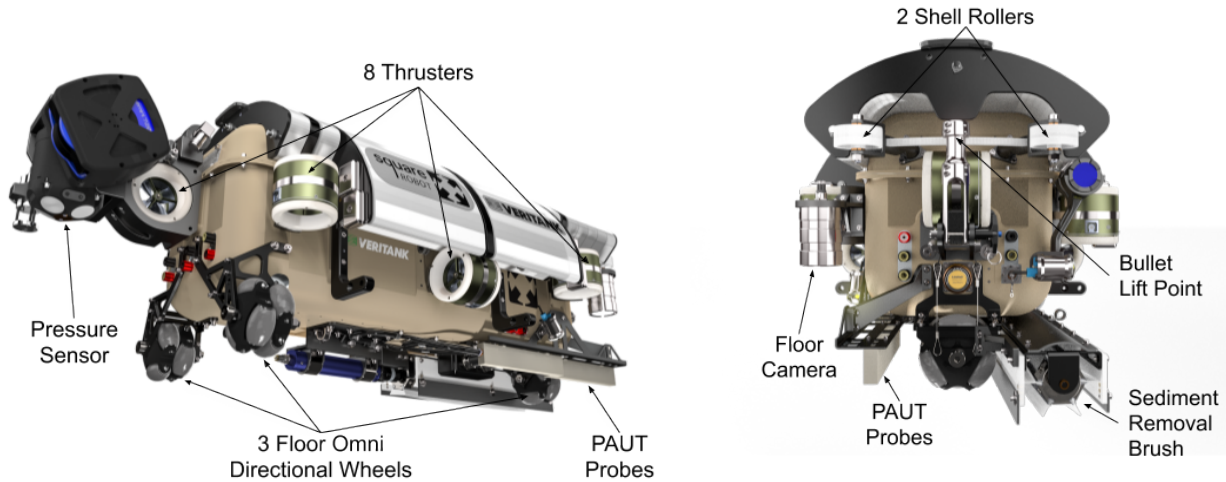


Figure 2 - ISO & AFT View of SR-1 Inspection Robot

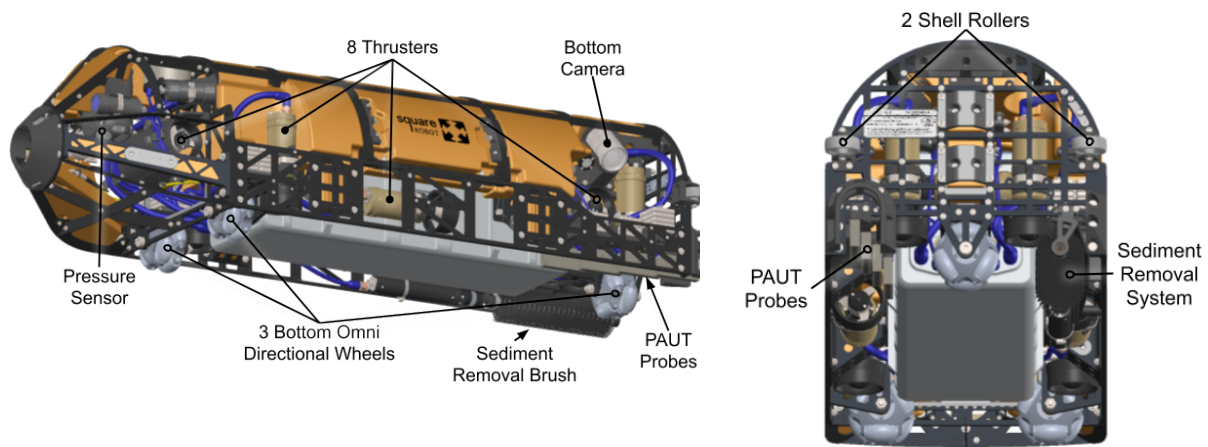


Figure 3 - ISO & AFT View of SR-3 Inspection Robot

Inspection Solutions from Square Robot

Square Robot offers Tank Bottom Thickness Surveys, Internal Visual Inspection, Tank Bottom Differential Elevation Surveys, as well as other tank inspection capabilities.

[Learn more about Square Robot here.](#)



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