



## Multidiagoparc

For monitoring wear elements. This service will help you to closely monitor the natural wear of your engine. It will help you to identify the origin of abnormal wear and will be a guide towards preventive actions. TOTAL's extensive expertise in the monitoring of engine lubricants has built up a large database for all types of piston engined aircraft. This gives a better and more accurate diagnosis.



## Aviation fuels

Airlines, flying clubs, professional/amateur stunt pilots, ... regardless of the branch of aeronautics involved, Air Total, the department that handles Total aviation fuels, has earned the trust of its customers. Serving 200 international airports throughout the world, from Johannesburg to Copenhagen, from Tokyo to Papeete, and more than 500 regional airfields in Europe, somewhere in the world Total's aviation crews refuel an aircraft with JET A-1 (for turbine engines) or with AVGAS 100LL (for piston engines) every 30 seconds on average.



TOTAL LUBRIFIANTS

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# Aviation

## Lubricants and Services



**TOTAL**



# PISTON ENGINES LUBRICANTS

APPLICATIONS	PRODUCTS	SPECIFICATIONS
<b>RUNNING-IN LUBRICANT</b>		
<ul style="list-style-type: none"> <li>Pure mineral oil for the running-in of piston engines</li> </ul>	<b>Aero 80</b>	France : AIR 3560/D grade 80 approved US : SAE J 1966 grade 40 (ex MIL-L-6082E grade 1080)* UK : DERD 2472 A/O* Joint Service Designation : OM-170 (obsolete) NATO code : O-115 (deleted)
<b>SERVICE LUBRICANTS</b>		
<ul style="list-style-type: none"> <li>Pure mineral oil for the lubrication of engines under average conditions.</li> <li>Lubrication of vintage aeroplanes (WW1 and WW2 warplanes).</li> </ul>	<b>Aero 80</b>	France : AIR 3560/D grade 80 approved US : SAE J 1966 grade 40 (ex MIL-L-6082E grade 1080)* UK : DERD 2472 A/O* Joint Service Designation : OM-170 (obsolete) NATO code : O-115 (deleted)
	<b>Aero 100</b>	France : AIR 3560/D grade 100 approved US : SAE J 1966 grade 50 (ex MIL-L-6082E grade 1100)* UK : DERD 2472 B/O* Joint Service Designation : OM-270 NATO code : O-117 (deleted)
	<b>Aero 120</b>	France / US : conform to SAE J 1966 grade 60 (ex MIL-L-6082E, grade 1120) NATO code : none
<ul style="list-style-type: none"> <li>Mineral oil containing dispersion additives for the lubrication of piston engines operating under <b>severe and very severe conditions</b>.</li> </ul>	<b>Aero D 80</b>	France : AIR 3570 grade 80 D approved US : SAE J 1899 grade 40 (ex MIL-L-22851D type III)* UK : DERD 2450 grade D 80 Joint Service Designation : OMD-160* NATO code : O-123 (deleted)
	<b>Aero D 100</b>	France : AIR 3570 grade 100 D approved US : SAE J 1899 grade 50 (ex MIL-L-22851D no type)* UK : DERD 2450 grade D 100 Joint Service Designation : OMD-250* NATO code : O-127 NATO code : O-128 (French Air Force specification)
	<b>Aero D 120</b>	France : AIR 3570 grade 100 D approved US : SAE J 1899 grade 60 (ex MIL-L-22851D type II)* UK : DERD 2450 grade D 120* Joint Service Designation : OMD-370 NATO code : O-128 (deleted)
<ul style="list-style-type: none"> <li>Synthetic-based multi-grade oil with dispersion additives for the lubrication of piston engines, operating under <b>severe and most severe conditions</b>. These oils can be used throughout the year in any climate and contain the necessary anti-wear additive based on recent technology, which is the equivalent to the Lycoming LW 16702. Using Aero DM 15W-50 or Aero DM 20W-60 <b>you do not need to add other additives to these lubricants like Lycoming additive</b>.</li> <li>The excellent quality of these lubricants makes it possible to extend the drain intervals under certain conditions. (Contact our technical-service department for advice).</li> </ul>	<b>Aero DM 15W-50</b>	France : autorisation from DGA/SPAé to supply to the DCSEA (French Air Force) according to MIL-L-22851D multi-grade, 15W-50. US : MIL-L-22851D multi-grade / SAE J 1899 grade 15W-50* UK : Joint Service Designation OMD 162 NATO code : O-162
	<b>Aero DM 20W-60</b>	France : conform to MIL-L-22851D multi-grade 20W-60* US : MIL-L-22851D multi-grade / SAE J 1899 grade 20W-60* NATO code : none
<ul style="list-style-type: none"> <li>Synthetic lubricant with dispersion additives, especially designed for automotive type of piston engines to be used in for light aircraft.</li> <li>Can be used throughout the year in any climate.</li> </ul>	<b>Aero DS 10W-50</b>	Recommended by JPX Approved by CEP and STPA (French Army).
<ul style="list-style-type: none"> <li>Synthetic-based oil for all <b>two stroke aircraft engines operating under the most severe conditions throughout the year</b>.</li> <li>To be mixed with petrol at the manufacturers recommended ratio.</li> </ul>	<b>Aero DT</b>	API TC/TSC3 JASO FC (033-TOL-038) ISO-L-EGD (GLOBAL GD)

\* performs to



# TURBINE ENGINES LUBRICANTS

APPLICATIONS	PRODUCTS	SPECIFICATIONS
<ul style="list-style-type: none"><li>• Mineral oil for lubrication of turbine engines</li><li>• Bearings and gearboxes.</li><li>• Hydraulic transmissions</li></ul>	<b>Aeroturbine 222</b>	France : AIR 3516/A approved US : MIL-PRF-6081D grade 1010* Joint Service Designation : OM-10* NATO code : O-133
	<b>Aeroturbine 331</b>	France : AIR 3515/B approved UK : DEF STAN 91-99* Joint Service Designation : OM-11 NATO code : O-135
	<b>Aeroturbine 921</b>	France : AIR 3512/A approved UK : BA-PO-103* NATO code : O-138
<ul style="list-style-type: none"><li>• Mineral based turbine engine oil.</li></ul>	<b>Royco Turbine Oil 481</b>	France : AIR 3516/A approved US : Qualified MIL-PRF-6081D Grade 1010 NATO code : O-133
<ul style="list-style-type: none"><li>• Type II synthetic lubricating oil for aircraft turbine engines, 2 nd. generation</li></ul>	<b>Royco Turbine Oil 500</b>	France : MIL-PRF-23699F-STD* US : Qualified MIL-PRF-23699F-STD UK : DEF STAN 91-101 grade Joint Service Designation : OX-27 NATO code : O-156
<ul style="list-style-type: none"><li>• Synthetic turbine engine oil, 5 cSt, 2nd generation.</li></ul>	<b>Aeroturbine 535</b>	France : MIL-PRF-23699F-STD / Turboméca US : Qualified MIL-PRF-23699F-STD UK : DEF STAN 91-101* Joint Service Designation : OX-27* NATO code : O-156
<ul style="list-style-type: none"><li>• Synthetic helicopter gearbox, transmission and turbine engine oil.</li></ul>	<b>Royco Turbine Oil 555</b>	US : Qualified DOD-L-85734A UK : DEF STAN 91-100/3 Joint Service Designation : OX-26* NATO code : O-160
<ul style="list-style-type: none"><li>• Type II, synthetic lubricating oil for aircraft turbine engines, 3rd generation</li></ul>	<b>Royco Turbine Oil 560</b>	US : Qualified MIL-PRF-23699-HTS NATO code : O-154
<ul style="list-style-type: none"><li>• Synthetic turbine engine oil, 3 cSt.</li></ul>	<b>Royco Turbine Oil 808</b>	US & UK : Qualified MIL-PRF-7808L Grade 3 NATO code : O-148

\* performs to



# HYDRAULIC FLUIDS

APPLICATIONS	PRODUCTS	SPECIFICATIONS
<ul style="list-style-type: none"><li>• Mineral hydraulic oil for hydraulic systems operating under :<ul style="list-style-type: none"><li>- high pressure,</li><li>- low pressure and extremely low temperatures.</li></ul></li></ul>	<b>Aerohydraulic 520</b>	France : AIR 3520/B H-520 obsolete US : MIL-L-5606A* obsolete UK : DEF STAN 91-48 (ex. DTD 585)* Joint Service Designation : OM-18* NATO Code : H-520
<ul style="list-style-type: none"><li>• “Super clean” mineral hydraulic fluid operating under :<ul style="list-style-type: none"><li>- high pressure,</li><li>- low pressure and extremely low temperatures.</li></ul></li></ul>	<b>Royco Hydraulic Oil 756</b>	France : DCSEA 415/A (ex AIR 3520/H-515) US : Qualified MIL-PRF-5606H UK : DEF STAN 91-48* Joint Service Designation OM-15 NATO Code : H-515
<ul style="list-style-type: none"><li>• Synthetic fire resistant low temperature hydraulic fluid, super clean.</li></ul>	<b>Royco Hydraulic Oil 777</b>	US & UK : Qualified MIL-PRF-87257A Joint Service Designation : OX-538 NATO Code : H-538
<ul style="list-style-type: none"><li>• Synthetic fire resistant “super clean” hydraulic fluid.</li></ul>	<b>Royco Hydraulic Oil 782</b>	France : DCSEA 437/A approved US & UK : Qualified MIL-PRF-83282D UK : Joint Service Designation OX-19* NATO Code : H-537
<ul style="list-style-type: none"><li>• Mineral based hydraulic fluid preservative grade.</li></ul>	<b>Royco Hydraulic Oil 783</b>	France : DCSEA 535/A (ex AIR 1506/B) approved US : Qualified MIL-PRF-6083F UK : DEF STAN 80-142* Joint Service Designation PX-26 NATO Code : C-635
<ul style="list-style-type: none"><li>• Mineral based hydraulic fluid for aircraft landing gear systems.</li></ul>	<b>Royco Hydraulic Oil LGF</b>	Approved : <ul style="list-style-type: none"><li>- AIRBUS</li><li>- BOEING BMS 3-32 type II</li><li>- McDONNELL DOUGLAS conform to DPM-6177</li><li>- Many other manufacturers of commercial transports.</li></ul>
<ul style="list-style-type: none"><li>• Mineral based hydraulic fluid for shock struts.</li></ul>	<b>Royco Hydraulic Oil SSF</b>	Approved : <ul style="list-style-type: none"><li>- AIRBUS</li><li>- BOEING BMS 3-32 type I</li><li>- McDONNELL DOUGLAS conform to DPM-6177</li><li>- Many other manufacturers of commercial transports.</li></ul>

\* performs to



## ENGINES PROTECTION LUBRICANTS

APPLICATIONS	PRODUCTS	SPECIFICATIONS
<ul style="list-style-type: none"><li>Internal protective oil for piston engines.</li></ul>	<b>Aeroprotective 219</b>	France : AIR 1503/B type A grade SAE 50 approved UK : DEF STAN 91-40/2* Joint Service Designation : PX-27 NATO code : C-615
<ul style="list-style-type: none"><li>Reciprocating aircraft engine preservative oil Flyaway oil (&lt; 50 hours)</li></ul>	<b>Royco Preventive Oil 482</b>	France : AIR 1503/B type B SEA 50* US : Qualified MIL-C-6529C Type II approved NATO code : C-609
<ul style="list-style-type: none"><li>Turbine engine and fuel system preservative oil</li></ul>	<b>Royco Turbine Oil 483</b>	France : AIR 1504/B* US : Qualified MIL-C-6529C Type III UK : Joint Service Designation ZX-17 NATO code : C-610

\* performs to



## GEAR-OIL LUBRICANTS

APPLICATIONS	PRODUCTS	SPECIFICATIONS
<ul style="list-style-type: none"><li>Mineral oil for highly stressed gearboxes such as helicopter gearboxes</li></ul>	<b>Aerogear 823</b>	France : DCSEA 255/A (ex AIR 3525/B) and EUROCOPTER approved US : MIL-PRF-6086E (medium grade)* UK : DEF STAN 91-112/1* Joint Service Designation : OEP-70 NATO code : O-155
<ul style="list-style-type: none"><li>Synthetic-based oil for highly stressed gearboxes such as last generation Eurocopter helicopter gearboxes.</li></ul>	<b>Aerogear 1032</b>	EUROCOPTER approved AIR 3525/B approved - NATO code : O-155

\* performs to



# GREASES

APPLICATIONS	PRODUCTS	SPECIFICATIONS
<ul style="list-style-type: none"><li>• High temperature lithium complex soap grease with mineral oil basestocks.</li><li>• Especially recommended for lubrication of high speed roller bearings, small gears and other aircraft accessories within a temperature range from - 23°C to + 177°C.</li></ul>	<b>Aerogrease 5</b>	France : DCSEA 359/A approved (ex AIR 4205/B) US : MIL-G-3545C obsolete*. NATO code : G-359
<ul style="list-style-type: none"><li>• Lithium soap grease with graphite and mineral/synthetic basestocks.</li><li>• Recommended when the surfaces to be lubricated are subject to relatively slow sliding movements, without heavy loads.</li><li>• To be used in cases of temperatures under -20°C which prevents the use of Aerogrease 5.</li></ul>	<b>Aerogrease 6</b>	France : DCSEA 355/A (ex AIR 4206/B) US : MIL-G-7187 (obsolete)* UK : DEF STAN 91-54/1* Joint Service Designation : XG-285 NATO code : G-355
<ul style="list-style-type: none"><li>• Lithium soap grease in mineral oil basestocks, for the lubrication of roller bearings and mechanisms operating at a temperature under -20°C which prevents the use of a grease G-359.</li></ul>	<b>Aerogrease 15</b>	France : DCSEA 382/A (ex AIR 4215/B) US : MIL-PRF-24139** UK : DEF STAN 91-12/1* Joint Service Designation : XG-271 NATO code : G-382
<ul style="list-style-type: none"><li>• High temperature fluorosilicone bearing grease and gear lubricant.</li></ul>	<b>Royco Grease 10</b>	No specifications
<ul style="list-style-type: none"><li>• High load general purpose aircraft grease.</li></ul>	<b>Royco Grease 11 MS</b>	Specified for use in landing gear assemblies of Airbus, Boeing, McDonnell Douglas and other transport aircrafts.
<ul style="list-style-type: none"><li>• Aircraft ball and roller bearing grease.</li></ul>	<b>Royco Grease 13 CF</b>	US : Qualified MIL-G-25013E UK : Joint Service Designation : XG-300 NATO code : G-372
<ul style="list-style-type: none"><li>• High temperature fluorosilicone grease and spline lubricant.</li></ul>	<b>Royco Grease 201</b>	No specifications
<ul style="list-style-type: none"><li>• General purpose wide temperature range <b>synthetic based</b> grease.</li></ul>	<b>Royco Grease 22 CF</b>	France : DCSEA 395/B approved (ex AIR 4222/B) US : Qualified MIL-PRF-81322E grade A UK : DEF STAN 91-52 Is 1* Joint Service Designation : XG-293 NATO code : G-395
<ul style="list-style-type: none"><li>• High load capacity wide temperature range <b>synthetic based</b> grease.</li></ul>	<b>Royco Grease 22 MS</b>	US : Qualified MIL-G-81827A Nato code : none
<ul style="list-style-type: none"><li>• Advanced <b>synthetic</b> multi purpose aircraft grease.</li></ul>	<b>Royco Grease 27</b>	France : AIR 4210/B approved US : Qualified MIL-PRF-23827C Am 1 UK : DEF STAN 91-53/2* Joint Service Designation : XG-287 NATO code : G-354
<ul style="list-style-type: none"><li>• Fuel, solvent and oil resistant <b>synthetic based</b> plug valve grease.</li></ul>	<b>Royco Grease 32</b>	France : DCSEA 363/A (ex AIR 4214/B) approved US : Qualified SAE-AMS-G-6032D (ex MIL-G-6032D) UK : DEF STAN 91-6/3* Joint Service Designation : XG-235 NATO code : G-363
<ul style="list-style-type: none"><li>• General purpose, extreme pressure grease.</li></ul>	<b>Royco Grease 49</b>	US : Qualified MIL-DTL-23549C (ex MIL-G-23549C)
<ul style="list-style-type: none"><li>• <b>Synthetic</b> grease for high and low temperature molybdenum disulfide, lithium based.</li></ul>	<b>Royco Grease 64</b>	France : DCSEA 353/A (ex AIR 4217/A) approved US : Qualified MIL-G-21164D UK : DEF STAN 91-57 Is 2* Joint Service Designation : XG-276* NATO Code : G-353
<ul style="list-style-type: none"><li>• <b>Synthetic</b> high temperature lubricantmolybdenum, silicone based</li></ul>	<b>Royco Grease 81 MS</b>	US : Qualified DOD-L-25681D

\* performs to



## SPECIALTIES

APPLICATIONS	PRODUCTS	SPECIFICATIONS
<ul style="list-style-type: none"><li>US : DOD-L-25681D qualified silicone based, synthetic instrument oil.</li></ul>	<b>Royco Instrument Oil 885</b>	France : AIR 3511/A approved US : Qualified MIL-PRF-6085D UK : DEF STAN 91-49/1* Joint Service Designation : OX-14 NATO code : O-147
<ul style="list-style-type: none"><li>Mineral based oil for general purpose lubrication of instrument and airframe components in case a synthetic oil is not advised. Low temperature lubricant</li></ul>	<b>Royco Turbine Oil 363</b>	US : Qualified MIL-PRF-7870C UK : DEF STAN 91-47 Is 1* Joint Service Designation : OM-12 NATO code : O-142
<ul style="list-style-type: none"><li>Calibration fluid for fuel system components in aircraft turbine engines</li></ul>	<b>Royco Calibration Fluid 950</b>	US : MIL-PRF-7024E Type 2
<ul style="list-style-type: none"><li>Synthetic assembly fluid and O-ring lubricant</li></ul>	<b>Royco Grease HF 825</b>	No specifications NATO code : none
<ul style="list-style-type: none"><li>For application, please contact our technical service department</li></ul>	<b>Royco Turbine Oil 308</b>	US : Qualified VV-L-800C and MIL-PRF-32033 UK : DEF STAN 91-79 Is 1* Joint Service Designation : OX-18 NATO code : O-190

\* performs to



**P. Alajouanine,**  
together with **TOTAL Lubricants :**

- Aerobatics Team World Champion,
- Aerobatics individual Europe Champion,
- Aerobatics individual France Champion

