

Introduction

The mobile engine compressor washing rig (JMP/T800/D/4796) consists of two stainless steel pressure tanks, each having a capacity of 34 litres (9 US gal) mounted in tandem on a transportation trolley, together with a nitrogen cylinder. Each of the stainless steel pressure tanks is equipped with a sight glass indicating the level of fluid, a filler cap, gauze strainer, pressure relief valve, nitrogen inlet valve, fluid outlet valve and drain valve.

The rig comprises a welded, tubular steel frame, which forms a transportation trolley for the two pressure tanks and a single nitrogen cylinder. Two wheels, with urethane filled tyres, run on a solid axle which is bolted to the frame. At the front, two rubber feet support the trolley.

Operation

The fluid in each of the pressure tanks is pressurised by nitrogen, which is contained in a cylinder mounted in the upright position at the front of the rig. The nitrogen supply to the pressure tanks is controlled by a pressure regulator, the pressure in the tanks being indicated by pressure gauges located on each of the tanks. The reduced nitrogen pressure from the pressure regulator is distributed to the top of the rinse and wash solution pressure tanks via an air inlet manifold. A non-return valve, fitted prior to the inlet valve on each tank, prevents fluid entering the pressure supply lines should the rig be tilted rearwards during operation.

When the tanks are pressurized, fluid is forced up an outlet stack pipe to an outlet ball valve. During pressurization and during the washing process, the nitrogen bubbles through the fluid creating agitation. This is particularly useful if the solution being used requires extra mixing. A 4.57m (15 ft) long, ½ in. nominal bore fluid delivery hose terminates in a ½ in x ¾ in. swivel hose end union. A protective collar is fitted to the end of the delivery hose. The delivery hose is stowed around brackets mounted on the right hand side of the frame.

Development



This rig was originally produced for use with the Westland Super Lynx helicopter.

Size: (L) 1245mm x (W) 610mm x (H) 1118mm **Weight:** (Dry) 100Kg

Accessories: Contact us or refer to our website for a full list of lances.

Rig Variations

JMP/T800/D/4796 (First appeared - 2004)

The standard version of the rig. Specification as detailed above

JMP/T800/D/4796/C200

Modified for use with the P&W 125B

JMP/T800/D/4796/C300

Modified for use in the Eurofighter EJ200 test cell

JMP/T800/D/4796/C400

Modified for use with Rolls Royce Avon industrial gas turbines

JMP/T800/D/4796/C500

Modified for use with P&W 100 series engines



Contractors to
H.M. Government Departments
Approved to BS EN ISO 9001:2008

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DESCRIPTION

JUNIPER LIGHTWEIGHT COMPRESSOR WASHING RIGS

Product Guide

Featured here is the T800 lightweight washing rig (JMP/T800/D/4796) which was originally designed for use with the Westland Super Lynx. Like all of Juniper's rigs they can be modified to suit most applications.



DETAILS



Our full range of lightweight washing rigs is featured inside together with a brief product history, schematic diagrams and applications.

**Robust,
manoeuvrable and
adaptable - Juniper's
Lightweight Washing
Rigs are a favourite
with our customers
around the world.**

The first of these rigs appeared in the 1960's and designated a Ministry of Defence reference number 4G4421115, together with the Juniper drawing number, JWR 7014 (the letters JWR referring to Juniper Washing Rig). Mr. Albert Thomas Juniper invented the original rigs and when he died shortly after their introduction, his wife Helena Grace, took out a United Kingdom patent (1,023,402) on the design and followed this up with foreign patents in Australia, Canada, India, Germany and The United States. In 1979 the company was purchased outright by Tony Jennings, Steve Marshall and Malcolm Pennington and a new drawing system was established using the prefix JMP.

The lightweight rigs were initially developed to wash the Rolls Royce Gem engine fitted in the Lynx helicopter with the rear tank being used for compressed air. This was then regulated to pressurise the front tank (filled with the washing solution), enabling the required optimum constant flow rate to be achieved.



These sturdy and manoeuvrable little rigs were beginning to get noticed and Shell in Brunei became our first commercial customer when they bought a rig to be used on the Sikorsky CT58. This rig was designated SHWR (Shell Washing Rig) in the product code JMP/SHWR/D/4796. Westland helicopters were also impressed, and ordered rigs for use on their Wessex and Sea King Helicopters, following this up in the late 1990's by specifying Juniper rigs for the GE CT7 fitted in the EH101 and the alternative Rolls Royce Turbomeca engine, the RTM322. The Super Lynx helicopter fitted with the T800 engine was next in line for these rigs, and a new product code was initiated: JMP/T800/D/4796.



Following positive feedback, when Rolls Royce required a similar rig for their Gnome engines fitted in the Wessex helicopters, they turned to Juniper to come up with a solution. Initially, a higher capacity hand pump was experimented with, but the required constant flow rate couldn't be achieved, so a small nitrogen cylinder was fitted instead. The resulting trials (of what became known in the RAF as the 'Super-Juniper') at RAF Finningley in Yorkshire were a great success and marked the birth of a new range of Juniper lightweight rigs.

These new rigs were proving a great success and modified rigs soon followed for the Rolls Royce Pegasus engine fitted in the Sea Harrier, the RB199 fitted in the RAF Tornado and the Adour fitted in the RAF Jaguar aircraft, as well as the T55 and T56 engines fitted respectively in the Chinook and Hercules C130.



1 Customer Alliance Solutions in Sweden, a division of SAAB, using our 19ltr. wash rig (JMP/CWR/D/6828) on one the three Dash8 Q300 aircraft used by the Swedish Coast Guard.

2 A compressor wash and inhibiting rig (JMP/RAN/D/4509) being functionally tested by the Royal Australian Navy.

3 Chinook compressor washing rigs (JMP/SHWR/D/0376/C800BH) on final inspection before dispatch to the US Army. Over 300 of these machines have been delivered to date.

4 Juniper's first lightweight compressor washing rig for commercial engines (JMP/CFM56/D/1535), in use at ATC Lasham Limited, Hampshire on an Air UK Leisure Boeing 737-400 (CFM56-3 engine).

5 Compressor wash and inhibiting rig (JMP/PW/D/1705) being used on a PW125 series engine at Leeds Bradford Airport.

6 Juniper lightweight rig (JMP/JWR/RR/0432/C800) being functionally tested on a Royal Netherlands Navy Lynx at their Den Helder base in the north of the country.

7 First trial of the Juniper rig (JMP/SHWR/D/0376/C800BH) on a US Army Chinook Helicopter.

Juniper lightweight washing rigs - Our range at a glance.

Juniper produces a lightweight wash rig to suit most requirements. From the sturdy little electrically powered, single tank Cougar rig (1) and the twin tanked, hand operated 0432 rig (2), right up to the sophisticated T800 rigs (3&4) featuring twin pressurised tanks and, in the case of the C300 variant shown here, it's own onboard nitrogen supply. For a list of our full range including product part numbers and the applications for which each rig was developed please see the chart on the right.



	Part number	Engine	Aircraft	Customer Ref./NSN
	JMP/HAR/001	Rolls-Royce Pegasus	Sea Harrier 4G7954520	4G7954520
2	JMP/JWR/RR/0432 JMP/JWR/RR/0432/C300 JMP/JWR/RR/0432/C400 JMP/JWR/RR/0432/C500-600 JMP/JWR/D/0432/C800 JMP/JWR/D/0432/C900	Rolls-Royce Gem Rolls-Royce Gnome Pratt & Whitney PT6 Pratt & Whitney PT6 Rolls-Royce Gem Rolls-Royce Gem	Westland Lynx/WG30 SRN 6-1/SRN 6-8 Hovercraft Beechcraft King Air Shorts 330 and 360 Westland Lynx PE58965 Westland Lynx PE58965	PE58965 PE58965 PE58965
	JMP/SHWR/D/0376 JMP/SHWR/D/0376/C200 JMP/SHWR/D/0376/C300 JMP/SHWR/D/0376/C400 JMP/SHWR/D/0376/C500 JMP/SHWR/D/0376/C600 JMP/SHWR/D/0376/C700NL JMP/SHWR/D/0376/C700NL JMP/SHWR/D/0376/C800 JMP/SHWR/D/0376/C800BH	CT58 Turboshaft Rolls-Royce Gnome Rolls-Royce Gnome Turbo Union RB199 Alison 501 DB Rolls-Royce Dart Alison T56 Avco Lycoming T55 Rolls Royce Dart Avco Lycoming T55	Sikorsky S61N Seaking and Commando Seaking and Commando Panavia Tornado Lockheed Electra Fokker F27 C130 Hercules Boeing Chinook Helicopter Fokker F27 Boeing Chinook Helicopter	1730-99-234-1481 1730-99-056-3466 1730-99-056-3466 4940-99-701-8332 1730-99-243-1856
	JMP/JWR/D/0456	Rolls-Royce Gnome Avco Lycoming T55 Astazo UXVID Pegasus 103,104	Seaking Helicopter Chinook Helicopter BAE Jetstream Harrier	1730-99-795-4519
	JMP/PT6/D/0787	Pratt & Whitney PT6 Pratt & Whitney 126 Garret APU	Shorts 360 BAE ATP DC9	
	JMP/EH/D/0760/C100/C300 JMP/EH/D/0760/C500 JMP/EH/D/0760/C600 JMP/EH/D/0760/C700 <i>(Mod kit) JMP/RTM322/D/6199</i> JMP/EH/D/0760/C800 <i>(c/w Flowmeter and 3 engine wash)</i>	GE CT7 Rolls-Royce Adour Rolls-Royce Pegasus RTM322 RTM322	EH101 Helicopter BAE Hawk Harrier EH101 Merlin Helicopter <i>Accessory kit for 3 engine wash</i> EH101 Merlin Helicopter <i>3 engine wash included</i>	1730-99-219-3761 1730-99-515-8101
	JMP/NAV/D/0909	Rolls-Royce Gnome Rolls-Royce Pegasus Rolls-Royce Gem	RN Seaking Sea Harrier RN Lynx	1730-99-962-4886
	JMP/BH/D/0769	Rolls-Royce Gnome	Hovercraft	
	JMP/GN/D/0974	Rolls-Royce Gnome	Kawasaki/Boeing Vertol 107	
	JMP/DART/D/1251	Rolls-Royce Dart	Fokker F27	
	JMP/CFM56/D/1535 JMP/CFM56/D/1535/C200 JMP/CFM56/D/1535/C300 JMP/CFM56/D/1535/C400 JMP/CFM56/D/1535/C500 JMP/CFM56/D/1535/C600	CFMI CFM56-3 CFMI CFM56-3 BMW/RR 710 BMW/RR 715 BMW/RR 715 BMW/RR 715 BMW/RR 715 CFMI CFM56-3 & -7 CFMI CFM56-3 CFMI CFM56-7	Boeing 737-300/400 Boeing 737-300/400 Nimrod Boeing 717 Gulfstream V Bombardier GX Boeing 737-300-400-700 Boeing 737-300 Boeing 737-700-800	
	JMP/EMB145/D/4813	Rolls-Royce AE 3007A	Embraer 145	
4 3	JMP/T800/D/4796 JMP/T800/D/4796/C200 JMP/T800/D/4796/C300 JMP/T800/D/4796/C400 JMP/T800/D/4796/C500	T800 P & W 125B EJ200 Rolls-Royce Avon P & W Series 100	Super Lynx Fokker 60 Eurofighter Industrial gas turbines Dash 8 Q300	
1	JMP/COUG/D/2046*	Makila	Cougar Helicopter	1730-99-810-6061
	JMP/RAN/D/4509	Rolls-Royce Gnome	Seaking Helicopter	4940-99-421-5202
	JMP/RGT/D/1052			
	JMP/AGT/D/6003 JMP/AGT/D/6003/C200	Tornado / Typhoon		
	JMP/AGT/D/6004	Tornado / Typhoon		
	JMP/PW/D/1705 JMP/PW/D/1705/C200/NL	P & W 123 P & W 118 P & W 120/124B/127 P & W 125B P & W 126 PT6T-3BE Twin Pack P & W 125B P & W 125B	DHC 8-311/DASH 8 Embraer 120RT ATR 42/72 Fokker 50 BAE ATP Bell 412HP Fokker 60 Fokker 50-F27	

*A variation of this rig, JMP/CWR/D/6828 was produced and is featured in the photo section.

JMP/HAR/001

JMP/JWR/RR/0432

JMP/SHWR/D/0376

JMP/JWR/D/0456

JMP/PT6/D/0787

JMP/EH/D/0760/C700*

*The rig shown here features the optional 3 engine wash kit JMP/RTM322/D/6199

JMP/NAV/D/0909

JMP/BH/D/0769

JMP/GN/D/0974

JMP/DART/D/1251

JMP/CFM56/D/1535

JMP/EMB145/D/4813

JMP/T800/D/4796

***JMP/CWR/D/6828**

JMP/RAN/D/4509

JMP/RGT/D/1052

JMP/AGT/D/6004

JMP/AGT/D/6003