

**Introduction**

The 2 x 25 gallon multi-engine compressor wash rig (JMP/CFM56/D/4777/C200) comprises two 115 litre stainless steel pressure vessels mounted on a rigid steel chassis, supported by three heavy duty wheels with 16" super elastic tyres, one of which is mounted on a heavy duty steering castor unit. A drawbar, which can be locked in the upright position for storage and safety, is attached to the steering castor unit with a drawbar operated parking brake acting on the front wheel when locked in the upright position.

Each tank is fitted with a filler cap, gauze strainer, pressure gauge, sight glass, pressure relief valve, 3/4" BSP drain valve and a 6kW immersion heater.

A 3/4", 20 ft long, outlet delivery hose is stowed on the right side of the rig as viewed from the front, with a 1/2", 20 ft long, outlet delivery hose, together with a 1/4", 20 ft long blow-off hose in the rear storage box for clearing the sensing tubes/hoses after a wash. Rubber protective collars are installed on the end of each hose to protect the couplings from damage.

**Operation**

The fluid in the tanks is pressurised by two rechargeable onboard nitrogen cylinders (a MS28889-2 Schrader charging valve is fitted to the rig for in-situ recharging) controlled by a regulator and distributed to the top of each pressure vessel via a nitrogen inlet manifold. There is also an optional Air Inlet Kit (JMP/CFM56/D/6612) available to enable the connection of offboard compressed air or nitrogen if required. Once pressurised, the fluid is forced up the outlet stack pipe to the appropriate fluid outlet isolation ball valve. From there it is directed through the filter, to the 3-way engine selection ball valve, which controls the output to the appropriate tooling via the outlet hose connection to the twin hose assembly.

The rig has two 6kW immersion heaters (one for each pressure vessel) requiring a 115V/200V, 3-phase, 400Hz electrical power supply to heat the tanks to a temperature of 70°C in one hour. The necessary power is supplied from a ground power unit (GPU) or hangar power supply. A 24V battery installed in the rig's electrical enclosure provides the power required for the interlock (necessary for the power to connect) to operate.

**Rig Variations**

These specifications apply to rigs constructed from 2008 onwards. Specifications on earlier rigs may differ. All rigs now feature the 115V/200V, 3-phase, 400Hz electrical system unless otherwise requested. When ordering one of these rigs, every effort will be made to accommodate any modifications required, please contact us for details.

**Size:** (L) 2515mm x (W) 1067mm x (H) 1296mm **Weight:** (Dry) 352Kg

**Packing crate dimensions:** (L) 2642mm x (W) 1093mm x (H) 1524mm **Weight:** (Gross) 601Kg

DESCRIPTION

**THE JUNIPER  
2X25 GALLON COMPRESSOR  
WASHING RIG  
JMP/CFM56/D/4777/C200**

**Quick Start Operation Guide**

Step by step instructions for the rig's set-up and operation together with our full list of wash probes, spray rings and lances.



**JUNIPER SHORT PROBES - GENERIC FITTING INSTRUCTIONS.**

**Engine Preparation - Refer to appropriate Aircraft Maintenance Manual.**

Open left and right thrust reversers on the engine to be washed in accordance with the instructions detailed in the appropriate AMM.

**CAUTION: Ensure the engine fan is held securely during the fitting of the engine probes.**

Attach the engine probe retention clamps to the fan reverser inner or outer support ring. Generally, for smaller fan engines (such as the CFM) this will be in the 10.00 and 2.00 o'clock positions, and for larger fan engines (such as the CF6) in the 8.00 and 4.00 positions, aft looking forward. Guide the probes through the fan outlet guide vanes (OGV's) from the aft end at locations adjacent to the retention clamps,

locating them over the booster / fan splitter so that the nozzles point between the booster inlet guide vanes into the booster.

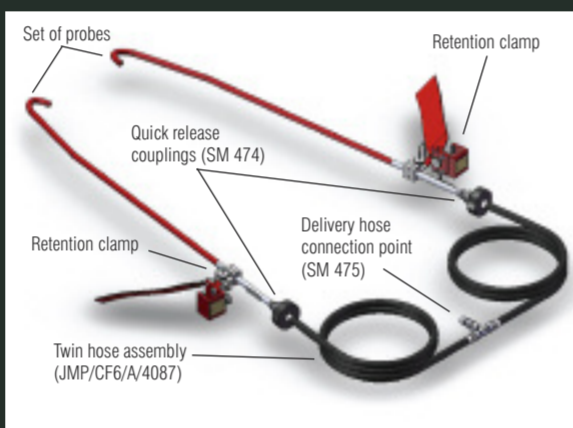
Put each probe aft mount on the probe retention clamp screw and fit the retention knobs.

Adjust each probe aft mount to hold the probes safely in place using the allen key provided.

Connect the twin hose assembly (provided with all compressor wash rigs) to both of the engine probes whilst holding the probes securely to avoid movement, making sure that the probes are attached securely to the

engine with the hoses attached. Connect delivery hose from the wash rig to the twin hose assembly. Probe installation is now complete.

**CAUTION: Check that probe nozzles are clear of the back of the fan.**



The twin hose assembly connected to the probes.



This resource is intended as a guide only. For more detailed instructions please refer to the accompanying CD or the rig's operation manual.

**LIST OF WASHING PROBES FOR USE WITH JUNIPER'S 2 X 25 AND 2 X 50 GALLON COMPRESSOR WASHING RIGS**

Each Juniper Part Number refers to a set of two probes. Long probe sets, to be used with thrust reversers closed, are shaded blue.

Aircraft Type	Engine Probes	Juniper Part Number
Boeing 737-300-400	CFM56-3	JMP/CFM56/D/4538
Airbus A320	CFM56-2 & 5A	JMP/CFM56/D/4435
RE-Engined DC8, AWACS	CFM56-5B (89")	JMP/CFM56/D/6527
Airbus A321	CFM56-5B/C	JMP/CFM56/D/4605
Airbus A320, A340	CFM56-7	JMP/CFM56/D/4462
Boeing 737-700/800	CFM56-7B	JMP/CFM56/D/6645
Boeing 737-700/800	SaM 146	JMP/SaM146/D/6797
Sukhoi Superjet 100		
(MDC)DC-10-30	CF6-50	JMP/CF6/D/4966
(MDC)DC-10-10/DC-10-30	CF6-6D/6K/-50	JMP/CF6/D/4510
Boeing 747/767	CF6-80C2	JMP/CF6/D/4037
(MDC)MD-11, Airbus A300, A310	CF6-80C2 D1F/A5F/A5/A3	JMP/CF6/D/6418
Airbus A310	CF6-80A2/A3	JMP/CF6/D/4247
Boeing 747/767	CF6-80C2	JMP/CF6/D/6511
Airbus A330-200	CF6-80E1	
(MDC)MD-11	CF6-80C2 D1F	
Airbus A300-600F	CF6-80C2 A5F	
Airbus A310-200F	CF6-80C2 A3	
Airbus A330	CF6-80E1	JMP/CF6/D/4947
Boeing 777	GE90	JMP/GE90/D/4081
Boeing 777	GE90 (127")	JMP/GE90/D/4599
Boeing 777-300ER	GE90-115B	JMP/GE90-115B/D/4949
Boeing 777-300ER	GE90-115B (135")	JMP/GE90-115B/D/4948
Airbus A380	GP7200	JMP/GP7200/D/6836
Boeing 787	GEEx	JMP/GEEx/D/6783 (11C4308P01)
Boeing 787	GEEx	JMP/GEEx/D/6698 (11C4308P02)
Bombardier CRJ100	CF34-3A1	JMP/CF34-3A1/D/6850
Bombardier CRJ700, 900	CF34-8C5	JMP/CF34-8C5/D/6844
Embraer 170 & 175	CF34-8E	JMP/CF34-8E/D/6940
Embraer 170 & 175		
Bombardier CRJ700, CRJ900, CRJ1000		
Bombardier Challenger, 870, 890	CF34-8C/E	JMP/CF34/D/6553
Embraer 190 & 195	CF34-10E	JMP/CF34/D/6000
Embraer 190 & 195	CF34-10E	JMP/CF34/D/6932
Fokker 100	TAY 650-15	JMP/TAY/D/6800
Boeing 757	RB211-535E4	JMP/RB211/D/4153
Boeing 747-100B	RB211-524C2	JMP/RB211/D/6889
Boeing 747-400	RB211-524 G&H (178")	JMP/RB211/D/4249
Airbus A320	V2500	JMP/V2500/D/4040
Airbus A320	V2500 (160")	JMP/V2500/D/6561
(MDC)MD-90	V2525 D5	JMP/V2500/D/4703/MD
(MDC)MD-90	V2525 D5	JMP/V2500/D/6562/MD
Airbus A340-600	TRENT 500	JMP/TRENT/D/6188
Airbus A340-600	TRENT 500	JMP/TRENT/D/6615
Airbus A330	TRENT 772	JMP/TRENT/D/4702
Airbus A330	TRENT 772 (185")	JMP/TRENT/D/6592
Boeing 777-200ER	TRENT 800	JMP/TRENT/D/6328
Boeing 777-200ER	TRENT 800	JMP/TRENT/D/6935
Airbus A380-800/900	TRENT 900 (133")	JMP/TRENT/D/6776
Boeing 787	TRENT 1000	JMP/TRENT/D/6754
Airbus A350	TRENT XWB	JMP/TRENT-XWB/D/6834
Airbus A350	TRENT XWB/900 (hook only)	JMP/TRENT-XWB/D/6834/01A

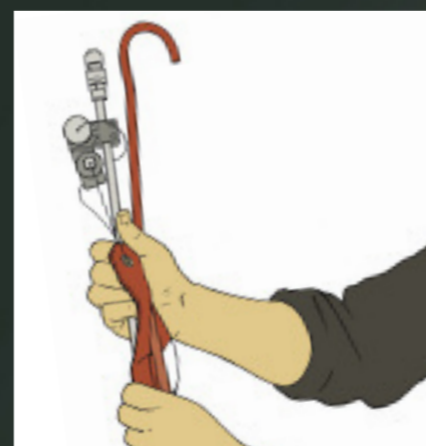
Aircraft Type	Engine Probes	Juniper Part Number
Boeing 757	P & W 2000	JMP/PW2000/D/6846
Boeing 767-200/300	P & W 4000-94" Fan (PW 4152/4158/4462)	JMP/PW4000/D/4856
Airbus A300/A310, (MDC)MD-11		
Boeing 767-300	P & W 4000-94" Fan (85")	JMP/PW4000/D/6601
Airbus A300/A310, (MDC)MD-11	P & W 4000-100" Fan	JMP/PW4000/D/6216
Boeing 747-400	P & W 4077-112" Fan	JMP/PW4000/D/6728
Airbus A330/200/300		
Boeing 777-200	P & W JT8D-219 (201")	JMP/JT8D/D/6627
(MDC)MD-83	P & W JT9D	JMP/JT9D/D/4154
Boeing 747-200		
BAE 146, RJ70/100	Allied Signal LF507	JMP/LF507/D/4809
Ilyushin IL96	PERM PS-90A 185"	JMP/PERM/D/6581

**SPRAY RINGS, WASHING WANDS & LANCES, RIG ACCESSORIES**

Aircraft Type	Accessory	Juniper Part Number
Puma Helicopter	Hand Washing Lance	JMP/PUMA/A/4470
Aircraft APU	Hand Washing Lance	JMP/APU/D/6598
Hercules C130	T56 Spray Ring	JMP/HER/D/1851
Hercules C130	T56 Spray Ring (Adjustable nozzle)	JMP/HER/D/1851/C200
P3 Orion	T56 Spray Ring	JMP/T56/D/1847
P3 Orion	T56 Spray Ring (Adjustable nozzle)	JMP/T56/D/1847/C200
Seaking Helicopter	RR Gnome Washing Lance	AND/AAC/911
Various Helicopters	P&W PT6 Washing Wand	JMP/PT6/D/1365
Tail mounted engines require an accessory delivery hose	1x 20 ft. Delivery hose complete with fittings	JMP/CF34/A/6569
No.2 engine on DC10 and DC11	1x 30 ft. Extension hose	JMP/MD11/D/6311
No.2 engine on DC10 and DC11	1x 50 ft. Extension hose	JMP/MD11/D/6716
Embraer 45	Compressor washing adaptor for AE3007A	JMP/STD/A/6877
P&W 100 Series engines	Compressor washing adaptor	JMP/PW/A/6798

**CAUTION: The probes should be handled carefully and stored in the following manner to avoid damage.**

When returning the probes to the correct compartment in the stowage box they should first be placed 'top to tail' into the supplied equipment bag after draining them thoroughly.



**NOTE:** The storage boxes are supplied in one of two standard sizes dependant on the size of probes ordered: **Small box:** (height) 39" x (width) 24" x (depth) 15 1/2" **Large box:** (height) 48 1/2" x (width) 24" x (depth) 15 1/2"

# The Juniper 2x25 Gallon Compressor Washing Rig (JMP/CFM56/D/4777/C200) Quick start guide

This resource is intended as a guide only. For more detailed instructions please refer to the accompanying CD or the rig's operation manual.



Position rig and apply brake



Fill tanks



Connect HP delivery hose and turn on donor regulator



Open rig's nitrogen cylinders and, using donor regulator, charge in 250psi stages to a maximum pressure of 2500psi

## Prepare the rig

## Charge the cylinders



Connect GPU



Turn on rig's isolation switch and switch on the GPU



Push on/off buttons to heat tanks 1 and 2

Heat both tanks to 70°C. While they are heating, prepare the engine as per the AMM and attach engine wash probes



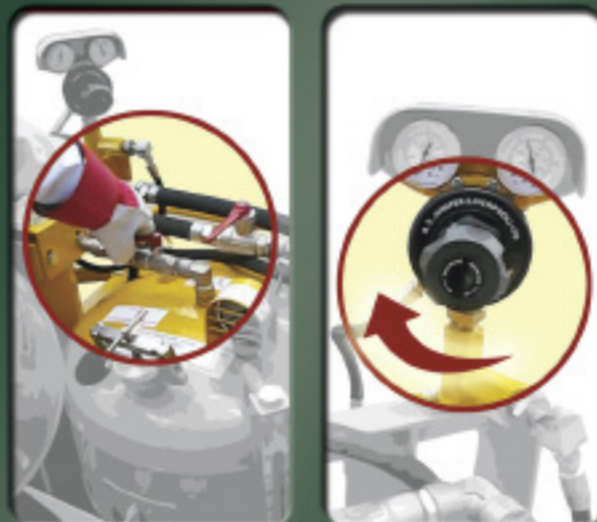
## Heat the tanks



Connect twin hose assembly to end of each probe



Connect delivery hose to twin hose assembly



Open tank 1 inlet valve and regulate pressure



Refer to wash probe list and choose hose position A or B

## Perform engine wash



Open outlet ball valve to begin engine wash



Connect blow-off hose to rig's nitrogen supply



Regulate pressure, clear lines, then vent tank



Disconnect blow-off hose and re-stow on the rig

## Clear engine pressure lines



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