



Technical Bulletin

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Mixing Imperial and Metric Air Fittings

Introduction:

Through the work of its Industry Technical Council, the ATA has been alerted to a number of instances where newly purchased and installed fittings/airlines have failed to seal correctly.

These installations leaked excessively while the vehicle was under test in the workshop and were replaced without further incident. However, if undetected, these leaks could cause on-road complications such as the unintended activation of emergency braking systems.

The Problem:

Metric airlines and their fittings have become more broadly available through a range of parts networks to support European models. However, the Australian market typically uses imperial sizes of airlines and fittings.

Confusion and mismatching can arise given the similar, but not exactly equivalent, sizes of these airlines. By example, a 12^{mm} metric airline will accept the imperial ½" olive, but which has a 12.7^{mm} inside diameter.

This mismatch of fittings and airlines will result in a loss of integrity of the assembly. Additionally, the metric line has a smaller inside diameter restricting air flow, which potentially results in the vehicle not being ADR (Australian Design Rules) compliant.

Solutions:

It is essential that airlines and fittings use the compatible applicable standard (metric or imperial) for the airline size. Workshop staff should review the size printed on the airline before selecting matching fittings.

- Separate imperial/metric fittings
- Separate imperial/metric airlines
- Label stores correctly
- Educate workshop personnel and staff of the differences.

Ensure that complete and comprehensive testing is completed after all airline and air system repairs.

Comparison Table:

	Nom OD	Metric Dimensions		Imperial Dimensions		Standard
		Actual OD	Actual ID	OD	ID	
Imperial	1/8"	3.18	2.03	0.125	0.080	SAE J844
Imperial	5/32"	3.97	2.39	0.156	0.094	
Metric	4x2	4.00	2.00	0.157	0.08	DIN 74324
Imperial	3/16"	4.78	2.97	0.188	0.117	SAE J844
Metric	6x4	6.00	4.00	0.236	0.16	DIN 74324 SAE J844
Imperial	1/4"	6.35	4.34	0.250	0.171	SAE J844
Imperial	5/16"	7.95	5.99	0.313	0.236	SAE J844
Metric	8x6	8.00	6.00	0.315	0.24	DIN 74324 SAE J844
Imperial	3/8"	9.53	6.40	0.375	0.252	SAE J844
Metric	10x7	10.00	7.00	0.394	0.28	SAE J844
Metric	10x7.5	10.00	7.50	0.394	0.30	DIN 74324
Metric	10x8	10.00	8.00	0.394	0.31	DIN 74324
Metric	12x9	12.00	9.00	0.472	0.35	DIN 74324 SAE J844
Imperial	1/2"	12.70	9.53	0.500	0.375	SAE J844
Metric	14x10	14.00	10.00	0.551	0.39	DIN 74324
Metric	15x12	15.00	12.00	0.591	0.47	DIN 74324
Imperial	5/8"	15.88	11.20	0.625	0.441	SAE J844
Metric	16x12	16.00	12.00	0.630	0.47	DIN 74324 SAE J844
Imperial	3/4"	19.05	14.38	0.750	0.566	SAE J844

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Further Considerations:

- Maintenance personnel need to be mindful of their ADR obligations for the lines and fittings. Refer to ADR38/05 Clause 6.9. the ADR's are available at https://www.infrastructure.gov.au/vehicles/design/adr_online.aspx and,
- Consider compliance obligations, maintain colour code identification for airlines: