



User Manual



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1. Cylinder Specifications

The products are:

- **Carbon fully-wrapped composite cylinders, categorised as Type III cylinders**
- **Carbon hoop-wrapped composite cylinders, categorised as Type II cylinders**

The products are designed for use as a pressure cylinder for compressed gases. The main specifications and standards of composite cylinders are shown in Table 1-3.

WARNING

Do not overfill the cylinder. Overfilled cylinders must be retested before being returned to service.

Never remove the valve from the cylinder before it is fully discharged. Valve refitting should only be carried out by trained personnel.

Table 1. The main specifications of ISO 11119-2 Type III composite cylinders.

Product	Thread Type	Service Pressure (psi / bar)	Diameter (in. / mm)	Length (in. / mm)	Water Capacity (ci / L)	Empty Weight (lbs / kg)
2-C-100 / PF-011-01	0.625-18 UNF	4500 / 310	3.9 / 99.0	9.8 / 250.0	67 / 1.10	2.1 / 0.95
2-C-101 / PF-011-01a	0.625-18 UNF	4350 / 300	3.9 / 99.0	9.8 / 250.0	67 / 1.10	2.1 / 0.95
2-C-102 / PF-008-01	0.625-18 UNF	4500 / 310	3.9 / 99.0	7.7 / 195.5	48 / 0.79	1.8 / 0.80
2-C-103 / PF-008-01a	0.625-18 UNF	4350 / 300	3.9 / 99.0	7.7 / 195.5	48 / 0.70	1.8 / 0.80
2-C-104 / PF-009-01	0.625-18 UNF	4500 / 310	3.9 / 99.0	8.3 / 212.0	54 / 0.89	1.9 / 0.83
2-C-105 / PF-009-01a	0.625-18 UNF	4350 / 300	3.9 / 99.0	8.3 / 212.0	54 / 0.89	1.9 / 0.83
2-C-106	M18x1.5-6H	4350 / 300	3.9 / 99.0	9.3 / 235.0	61 / 1.00	1.9 / 0.84
2-C-107	17E	4350 / 300	3.9 / 99.0	9.3 / 235.0	61 / 1.00	1.9 / 0.84
2-C-108	17E	4350 / 300	3.9 / 99.0	12.8 / 325.0	92 / 1.50	2.7 / 1.20
2-C-109	M18x1.5-6H	4350 / 300	3.9 / 99.0	12.8 / 325.0	92 / 1.50	2.7 / 1.20
2-C-10A	M18x1.5-6H	4350 / 300	3.9 / 99.0	9.8 / 250.0	67 / 1.10	2.1 / 0.95
2-C-10B	17E	4350 / 300	3.9 / 99.0	9.8 / 250.0	67 / 1.10	2.1 / 0.95
2-C-10C	M18x1.5-6H	4350 / 300	3.9 / 99.0	7.7 / 195.5	48 / 0.79	1.8 / 0.80
2-C-10D	17E	4350 / 300	3.9 / 99.0	7.7 / 195.5	48 / 0.79	1.8 / 0.80
2-C-10E	M18x1.5-6H	4350 / 300	3.9 / 99.0	8.3 / 212.0	54 / 0.89	1.9 / 0.83
2-C-10F	17E	4350 / 300	3.9 / 99.0	8.3 / 212.0	54 / 0.89	1.9 / 0.83
2-C-10G	0.625-18 UNF	4350 / 300	3.9 / 99.0	9.3 / 235.0	61 / 1.00	1.9 / 0.86
2-C-10H	0.625-18 UNF	4350 / 300	3.9 / 99.0	12.8 / 325.0	92 / 1.50	2.7 / 1.20
2-C-10J	M18x1.5-6H	4500 / 310	3.9 / 99.0	9.8 / 250.0	67 / 1.10	2.1 / 0.95
2-C-10K	17E	4500 / 310	3.9 / 99.0	9.8 / 250.0	67 / 1.10	2.1 / 0.95
2-C-10L	M18x1.5-6H	4500 / 310	3.9 / 99.0	7.7 / 195.5	48 / 0.79	1.8 / 0.80
2-C-10M	17E	4500 / 310	3.9 / 99.0	7.7 / 195.5	48 / 0.79	1.8 / 0.80
2-C-10N	M18x1.5-6H	4500 / 310	3.9 / 99.0	8.3 / 212.0	54 / 0.89	1.9 / 0.83
2-C-10P	17E	4500 / 310	3.9 / 99.0	8.3 / 212.0	54 / 0.89	1.9 / 0.83
2-C-200 / PF-011-11	0.625-18 UNF	4500 / 310	4.3 / 109.0	8.9 / 225.0	67 / 1.10	2.1 / 0.95
2-C-201 / PF-011-11a	0.625-18 UNF	4350 / 300	4.3 / 109.0	8.9 / 225.0	67 / 1.10	2.1 / 0.95
2-C-202 / PF-008-11	0.625-18 UNF	4500 / 310	4.3 / 109.0	7.3 / 185.0	48 / 0.79	1.8 / 0.80
2-C-203 / PF-008-11a	0.625-18 UNF	4350 / 300	4.3 / 109.0	7.3 / 185.0	48 / 0.70	1.8 / 0.80
2-C-204 / PF-014-11	0.625-18 UNF	4500 / 310	4.3 / 109.0	10.8 / 275.0	88 / 1.44	3.0 / 1.32
2-C-205 / PF-014-11a	0.625-18 UNF	4350 / 300	4.3 / 109.0	10.8 / 275.0	88 / 1.44	3.0 / 1.32
2-C-206 / PF-016-11	0.625-18 UNF	4500 / 310	4.3 / 109.0	11.8 / 300.0	98 / 1.60	3.3 / 1.47
2-C-207 / PF-016-11a	0.625-18 UNF	4350 / 300	4.3 / 109.0	11.8 / 300.0	98 / 1.60	3.3 / 1.47
2-C-208	17E	4350 / 300	4.3 / 109.0	14.4 / 365.0	122 / 2.00	3.7 / 1.65
2-C-209	M18x1.5-6H	4350 / 300	4.3 / 109.0	14.4 / 365.0	122 / 2.00	3.7 / 1.65

Table 1. The main specifications of ISO 11119-2 Type III composite cylinders (cont.)

Product	Thread Type	Service Pressure (psi / bar)	Diameter (in. / mm)	Length (in. / mm)	Water Capacity (ci / L)	Empty Weight (lbs / kg)
2-C-20A	M18x1.5-6H	4350 / 300	4.3 / 109.0	8.9 / 225.0	67 / 1.10	2.1 / 0.95
2-C-20B	17E	4350 / 300	4.3 / 109.0	8.9 / 225.0	67 / 1.10	2.1 / 0.95
2-C-20C	M18x1.5-6H	4350 / 300	4.3 / 109.0	7.3 / 185.0	48 / 0.79	1.8 / 0.80
2-C-20D	17E	4350 / 300	4.3 / 109.0	7.3 / 185.0	48 / 0.79	1.8 / 0.80
2-C-20E	M18x1.5-6H	4350 / 300	4.3 / 109.0	10.8 / 275.0	88 / 1.44	3.0 / 1.32
2-C-20F	17E	4350 / 300	4.3 / 109.0	10.8 / 275.0	88 / 1.44	3.0 / 1.32
2-C-20G	M18x1.5-6H	4350 / 300	4.3 / 109.0	11.8 / 300.0	98 / 1.60	3.3 / 1.47
2-C-20H	17E	4350 / 300	4.3 / 109.0	11.8 / 300.0	98 / 1.60	3.3 / 1.47
2-C-20J	0.625-18 UNF	4350 / 300	4.3 / 109.0	14.2 / 360.0	122 / 2.00	3.7 / 1.65
2-C-20K	M18x1.5-6H	4500 / 310	4.3 / 109.0	8.9 / 225.0	67 / 1.10	2.1 / 0.95
2-C-20L	17E	4500 / 310	4.3 / 109.0	8.9 / 225.0	67 / 1.10	2.1 / 0.95
2-C-20M	M18x1.5-6H	4500 / 310	4.3 / 109.0	7.3 / 185.0	48 / 0.79	1.8 / 0.80
2-C-20N	17E	4500 / 310	4.3 / 109.0	7.3 / 185.0	48 / 0.79	1.8 / 0.80
2-C-20P	M18x1.5-6H	4500 / 310	4.3 / 109.0	10.8 / 275.0	88 / 1.44	3.0 / 1.32
2-C-20Q	17E	4500 / 310	4.3 / 109.0	10.8 / 275.0	88 / 1.44	3.0 / 1.32
2-C-20R	M18x1.5-6H	4500 / 310	4.3 / 109.0	11.8 / 300.0	98 / 1.60	3.3 / 1.47
2-C-20S	17E	4500 / 310	4.3 / 109.0	11.8 / 300.0	98 / 1.60	3.3 / 1.47
2-C-400	M18x1.5-6H	4500 / 310 4350 / 300	6.3 / 160.0	20.6 / 524.0	415 / 6.80	9.1 / 4.1
2-C-401	M18x1.5-6H	4500 / 310 4350 / 300	6.3 / 160.0	20.6 / 524.0	415 / 6.80	9.1 / 4.1
2-C-410	M18x1.5-6H	4500 / 310 4350 / 300	6.9 / 176.0	22.2 / 563	549 / 9.00	11.3 / 5.10
2-C-411	M18x1.5-6H	4500 / 310 4350 / 300	6.9 / 176.0	22.2 / 563	549 / 9.00	11.3 / 5.10
2-C-412	M18x1.5-6H	4500 / 310 4350 / 300	6.9 / 176.0	24.4 / 620	610 / 10.0	12.2 / 5.5
2-C-413	M18x1.5-6H	4500 / 310 4350 / 300	6.9 / 176.0	24.4 / 620	610 / 10.0	12.2 / 5.5
2-C-417	M18x1.5-6H	4500 / 310 4350 / 300	6.9 / 176.0	21.6 / 548	549 / 9.00	11.3 / 5.10
2-C-500	M18x1.5-6H	4500 / 310 4350 / 300	4.0 / 101	15.2 / 386	122 / 2.00	2.9 / 1.30
2-C-501	0.625-18 UNF	4500/310 4350/300	4.0 / 101	15.2 / 386	122 / 2.00	2.9 / 1.30
2-C-502	17E	4500/310 4350/300	4.0 / 101	15.2 / 386	122 / 2.00	2.9 / 1.30

Table 1. The main specifications of ISO 11119-2 Type III composite cylinders (cont.)

Product	Thread Type	Service Pressure (psi / bar)	Diameter (in. / mm)	Length (in. / mm)	Water Capacity (ci / L)	Empty Weight (lbs / kg)
2-C-503	25E	4500/310 4350/300	4.0 / 101	15.3 / 388	122 / 2.00	2.9/1.30
2-C-510	0.625-18 UNF	4500 / 310	4.4 / 112	8.2 / 208	67.1 / 1.10	1.8 / 0.80
2-C-513	0.625-18 UNF	4500 / 310	4.4 / 112	6.6 / 167	48.2 / 0.79	1.5 / 0.67
2-C-516	0.625-18 UNF	4500 / 310	4.4 / 112	9.0 / 228	76.8 / 1.26	1.9/0.86
2-C-519	0.625-18 UNF	4500 / 310	4.4 / 112	10.0 / 252	87.8 / 1.44	2.1/0.94
2-C-51C	0.625-18 UNF	4500 / 310	4.4 / 112	10.6 / 270	97.6 / 1.6	2.3/1.00
2-C-51F	0.625-18 UNF	4500 / 310	4.4 / 112	8.2 / 208	67.1 / 1.10	1.8/0.80
2-C-51L	0.625-18 UNF	4500 / 310	4.4 / 112	9.0 / 228	76.8 / 1.26	1.9/0.86
2-C-51P	0.625-18 UNF	4500 / 310	4.4 / 112	10.0 / 252	87.8 / 1.44	2.1/0.94
2-C-51S	0.625-18 UNF	4500 / 310	4.4 / 112	10.7 / 273	97.6 / 1.6	2.3/1.00
2-C-520	M18x1.5-6H	4500/310 4350/300	4.5 / 115.3	16.7 / 425	183 / 3.00	3.8/1.70
2-C-521	0.625-18 UNF	4500/310 4350/300	4.5 / 115.3	16.7 / 425	183 / 3.00	3.8/1.70
2-C-522	17E	4500/310 4350/300	4.5 / 115.3	16.7 / 425	183 / 3.00	3.8/1.70
2-C-523	17E	4500/310 4350/300	4.5 / 115.3	16.7 / 425	183 / 3.00	3.8/1.70
2-C-530	0.625-18 UNF	4500 / 310	4.4 / 112	8.2 / 208	67.1 / 1.10	1.8 / 0.80
2-C-536	0.625-18 UNF	4500 / 310	4.4 / 112	9.0 / 228	76.8 / 1.26	1.9/0.86
2-C-539	0.625-18 UNF	4500 / 310	4.4 / 112	10.0 / 252	87.8 / 1.44	2.1/0.94
2-C-53C	0.625-18 UNF	4500 / 310	4.4 / 112	10.6 / 270	97.6 / 1.6	2.3/1.00
2-C-600	M18x1.5-6H	4500 / 310	3.9 / 99.2	15.1 / 385.0	122 / 2.00	2.8 / 1.27
2-C-601	M18x1.5-6H	4500 / 310	4.5 / 113.6	16.8 / 426.0	183 / 3.00	3.6 / 1.62
2-C-602	M18x1.5-6H	4500 / 310	3.7/ 93.0	13.6 / 345.0	94.5 / 1.55	1.9 / 0.82
2-C-603	M18x1.5-6H	5076 / 350	3.9 / 100.0	15.3 / 389.0	122 / 2.00	3.1 / 1.39
2-C-605	M18x1.5-6H	4500 / 310	4.5 / 113.6	17.0 / 432.0	183 / 3.00	3.8 / 1.70
2-C-630	0.625-18 UNF	4500 / 310	4.3 / 110.0	7.8 / 198.5	67.1 / 1.10	1.8 / 0.80
2-C-636	0.625-18 UNF	4500 / 310	4.3 / 110.0	8.7 / 220.0	77.0 / 1.26	1.8 / 0.78
2-C-639	0.625-18 UNF	4500 / 310	4.3 / 110.0	9.6 / 243.0	88.0 / 1.44	1.9/ 0.86
2-C-63C	0.625-18 UNF	4500 / 310	4.3 / 110.0	10.4 / 264.0	98.0 / 1.60	2.0/ 0.90
2-C-700	M18x1.5-6H	1850/127.5	3.6 / 90.35	9.2 / 232.5	58.0 / 0.95	1.28/0.58
2-C-701	M18x1.5-6H	1850/127.5	3.6 / 90.35	13.5 / 341	94.6 / 1.55	1.78/0.81
2-C-702	M18x1.5-6H	1850/127.5	3.6 / 90.35	19.0 / 481	140.4 / 2.30	2.38/1.1
2-C-800	0.625-18 UNF	4500 / 310	2.7 / 68.0	6.6 / 166.0	19.5 / 0.32	0.78/0.35
2-C-801	0.625-18 UNF	4500 / 310	2.7 / 68.0	9.3 / 234.0	30. 5/ 0.50	1.11/0.50

Table 1. The main specifications of ISO 11119-2 Type III composite cylinders.

Product	Thread Type	Service Pressure (psi / bar)	Diameter (in. / mm)	Length (in. / mm)	Water Capacity (ci / L)	Empty Weight (lbs / kg)
2-C-802	0.625-18 UNF	4500 / 310	2.7 / 68.0	5.7 / 144.0	15.3 / 0.25	0.64/0.29
2-C-803	0.625-18 UNF	4500 / 310	2.7 / 68.0	13.0 / 331.0	45.8 / 0.75	1.31/0.60
2-C-804	0.625-18 UNF	4500 / 310	2.4 / 61.0	7.6 / 192.0	24.4 / 0.40	0.90/0.37
2-C-805	0.625-18 UNF	4500 / 310	2.4 / 61.0	10.5 / 267.0	36.6 / 0.60	1.10/0.49
2-C-810	0.75-16 UNJF	4500 / 310	2.76 / 70.0	8.7 / 220.0	30.5 / 0.50	0.9 / 0.40
2-C-811	0.75-16 UNJF	4500 / 310	2.76 / 70.0	6.4 / 162.0	20.1 / 0.33	0.7 / 0.31
2-C-812	0.75-16 UNJF	4500 / 310	2.76 / 70.0	11.0 / 280.0	40.8 / 0.67	1.1 / 0.49

Table 2. The main specifications of EN 12245 Type III composite cylinders.

Product	Thread Type	Service Pressure (psi / bar)	Diameter (in. / mm)	Length (in. / mm)	Water Capacity (ci / L)	Empty Weight (lbs / kg)
4-C-106	M18x1.5 6H	4500 / 310	3.85 / 97.8	9.3 / 235.0	61 / 1.00	1.9 / 0.86
4-C-107	17E	4500 / 310	3.85 / 97.8	9.3 / 235.0	61 / 1.00	1.9 / 0.86
4-C-208	17E	4500 / 310	4.17 / 105.8	14.2 / 361.0	122 / 2.00	3.7 / 1.65
4-C-209	0.625-18 UNF	4500 / 310	4.17 / 105.8	14.2 / 361.0	122 / 2.00	3.7 / 1.65
4-C-300 / SF-068-01	M18x1.5 6H	4350 / 300	6.2 / 158.0	20.5 / 521.0	415 / 6.80	8.6 / 3.90
4-C-500	M18x1.5 6H	4500 / 310	4.0 / 101.0	15.2 / 386.0	122 / 2.00	2.9 / 1.30
4-C-501	0.625-18 UNF	4500 / 310	4.0 / 101.0	15.2 / 386.0	122 / 2.00	2.9 / 1.30
4-C-502	17E	4500 / 310	4.0 / 101.0	15.2 / 386.0	122 / 2.00	2.9 / 1.30
4-C-503	25E	4500 / 310	4.0 / 101.0	15.2 / 386.0	122 / 2.00	2.9 / 1.30
4-C-520	M18x1.5 6H	4500 / 310	4.54 / 115.2	16.7 / 425.0	183 / 3.00	4.0 / 1.80
4-C-523	17E	4500 / 310	4.54 / 115.2	16.7 / 425.0	183 / 3.00	4.0 / 1.80

Table 3. The main specifications of PED Type III composite cylinders.

Product	Thread Type	Service Pressure (psi / bar)	Diameter (in. / mm)	Length (in. / mm)	Water Capacity (ci / L)	Empty Weight (lbs / kg)
P-C-400	M18x1.5-6H	4500 / 310 4350 / 300	6.3 / 160.0	20.6 / 524.0	415 / 6.80	9.1 / 4.1
P-C-401	M18x1.5-6H	4500 / 310 4350 / 300	6.3 / 160.0	20.6 / 524.0	415 / 6.80	9.1 / 4.1
P-C-410	M18x1.5-6H	4500 / 310 4350 / 300	6.9 / 176.0	22.2 / 563	549 / 9.00	11.0 / 5.00
P-C-411	M18x1.5-6H	4500 / 310 4350 / 300	6.9 / 176.0	22.2 / 563	549 / 9.00	11.0 / 5.00
P-C-412	M18x1.5-6H	4500 / 310 4350 / 300	6.9 / 176.0	24.4 / 620	610 / 10.0	11.3 / 5.1
P-C-413	M18x1.5-6H	4500 / 310 4350 / 300	6.9 / 176.0	24.4 / 620	610 / 10.0	11.3 / 5.1
P-C-700	M18x1.5-6H	1850/127.5	3.6/90.35	9.2/232.5	58.0/0.95	1.28/0.58
P-C-701	M18x1.5-6H	1850/127.5	3.6/90.35	13.5/341	94.6/1.55	1.78/0.81
P-C-702	M18x1.5-6H	1850/127.5	3.6/90.35	19.0/481	140.4/2.30	2.38/1.1
P-C-800	0.625-18 UNF	4500 / 310	2.7/68.0	6.6/166.0	19.5/0.32	0.78/0.35
P-C-801	0.625-18 UNF	4500 / 310	2.7/68.0	9.3/234.0	30.5/0.50	1.11/0.50
P-C-802	0.625-18 UNF	4500 / 310	2.7/68.0	5.7/144.0	15.3/0.25	0.64/0.29
P-C-803	0.625-18 UNF	4500 / 310	2.7/68.0	13.0/331.0	45.8/0.75	1.31/0.60

Table 4. The main specifications of EN12257 Type II composite cylinders.

Product	Thread Type	Service Pressure (psi / bar)	Diameter (in. / mm)	Length (in. / mm)	Water Capacity (ci / L)	Empty Weight (lbs / kg)
9-H-900	M18x1.5-6H	4350 / 300	3.9 / 100.0	15.6 / 395.0	122 / 2.00	4.6 / 2.10
9-H-901	25E	4350 / 300	3.9 / 100.0	15.7 / 400.0	122 / 2.00	4.6 / 2.10
9-H-902	25E	4350 / 300	4.0 / 100.7	15.4 / 390.0	122 / 2.00	4.6 / 2.10
9-H-903	17E	4350 / 300	4.0 / 100.7	15.4 / 390.0	122 / 2.00	4.6 / 2.10
9-H-904	25E	4350 / 300	4.0 / 100.7	15.4 / 390.0	122 / 2.00	4.7 / 2.15
9-H-910	25E	4350 / 300	5.5 / 140.0	36.0 / 915.0	610 / 10.0	19.8 / 9.0
9-H-911	1.125-18UNF	4350 / 300	5.5 / 140.0	36.0 / 915.0	610 / 10.0	19.8 / 9.0
9-H-912	M25x2-6H	4350 / 300	5.5 / 140.0	36.0 / 915.0	610 / 10.0	19.8 / 9.0

Additionally, TPED cylinders are designed and verified according to regulations shown as below:

- **ADR 2017**
- **ADR 2019**
- **ADR 2021**
- **Directive 2010/35/EU(TPED)**
- **Directive 2008/68/EC(Annex 1), 2016/2309/EU, 2018/1846/EU and 2020/1833/EU**

PED cylinders are designed and verified according to the regulation shown as below:

- **Directive 2014/68/EU (PED)**

DOT & TC cylinders are designed and verified according to regulations and standards shown as below:

- **49 CFR§178.71**
- **CSA B342-18**

Marking

Each finished Type III cylinder has a marking on the lateral surface of the cylinder.

Marking damage or illegibility can cause the cylinder to be rejected. If the serial number is no longer legible, the cylinder must be rejected - or contact AMS for advice.

An AMS cylinder with a legible serial number can be returned to service only after all the other product information is legible. For instance, an illegible part of a composite cylinder marking with the part identification can be corrected by putting that information back on the cylinder only if the serial number is still legible on the marking. Contact AMS for further advice if needed.

The marking contains the following information:

TPED UN Cylinder

17E TW AMS BU##### SERVICE OOOO/OO

PW300PH450BAR 0.86KG 1L

 ISO11119-2 B   YYY/MM  0029





Row 1

- Thread specification: e.g. 17E
- Country of manufacture: TW
- Cylinder manufacturer: AMS
- Cylinder serial number: e.g. BU#####
- SERVICE Life Date: SERVICE OOOO/OO




Row 2

- Working pressure: e.g. PW300
- Test pressure: e.g. PH450BAR
- Empty weight of cylinder only: e.g. 0.86KG
- Minimum water capacity of cylinder: e.g. 1L

Row 3

- UN symbol: 
- Design specification: e.g. ISO 11119-2
- Country of approval and mark of notified body: B (Belgium APRAGAZ) 
- Mark of In-House inspection: (AMS) 
- Year/month of initial hydrostatic test: YYYY/MM
- TPED notified body ID: 0029 

TPED Non-UN Cylinder

M18x1.5	TW	AMS	#####	
PW300	PH450BAR	3.90KG	6.80L	
 0029	EN12245	B 		YYYY/MM




Row 1

- Thread specification: e.g. M18x1.5
- Country of manufacture: TW
- Cylinder manufacturer: AMS
- Cylinder serial number: e.g. #####

Row 2

- Working pressure: e.g. PW300
- Test pressure: e.g. PH450BAR
- Empty weight of cylinder only: e.g. 3.90KG
- Minimum water capacity of cylinder: e.g. 6.80L

Row 3

- TPED notified body ID: 0029 
- Design specification: e.g. EN12245(Type III), EN12257(Type/II)
- Country of approval and mark of notified body: B (Belgium APRAGAZ) 
- Mark of In-House inspection: (AMS) 
- Year/month of initial hydrostatic test: YYYY/MM

PED Cylinder

M18x1.5 EN12245 TW AMS V##### UN1002 BREATHING AIR
3.90KG V6.80L PS300BAR at 15°C PT450BAR AA6061 TS-50°C TO 70°C
[B] YYYY/MM FIN YYYY/MM CE 0029
AMS SF-068-01

Row 1

- Thread type: e.g. M18x1.5
- Design specifications: e.g. EN12245
- Country of manufacture: TW
- Manufacturer: AMS
- Cylinder serial number: e.g. V#####
- UN number (Gas content): e.g. UN1002
- Gas content: BREATHING AIR

Row 2

- Empty weight: e.g. 3.90KG
- Minimum water capacity: e.g. V6.80L
- Filling pressure in bar: e.g. PS300BAR at 15°C
- Test pressure in bar: e.g. PS450BAR
- Liner material: AA6061
- Service temperature range: TS -50°C TO 70°C

Row 3

- Notified body (APRAGAZ): [B]
- First hydrostatic test date (Year and month): YYYY/MM
- End of life date: FIN YYYY/MM
- Mark of directive and notified Body ID: CE 0029

Row 4

- AMS part number: SF-068-01

M18x1.5 EN12245 TW AMS V##### GROUP2 BREATHING GASES
3.90KG V6.80L PS300BAR at 15°C PT450BAR AA6061 TS-50°C TO 70°C
Ⓡ YYYY/MM FIN YYYY/MM Ⓒ 0029
AMS SF-068-01

Row 1

- Thread type: e.g. M18x1.5
- Design specifications: e.g. EN12245
- Country of manufacture: TW
- Manufacturer: AMS
- Cylinder serial number: e.g. V#####
- Gas content: GROUP2 BREATHING GASES

Row 2

- Empty weight: e.g. 3.90KG
- Minimum water capacity: e.g. V6.80L
- Filling pressure in bar: e.g. PS300BAR at 15°C
- Test pressure in bar: e.g. PS450BAR
- Liner material: AA6061
- Service temperature range: TS -50°C TO 70°C

Row 3

- Notified body (APRAGAZ): Ⓡ
- First hydrostatic test date (Year and month): YYYY/MM
- End of life date: FIN YYYY/MM
- Mark of directive and notified Body ID: Ⓒ 0029

Row 4

- AMS part number: SF-068-01

M18x1.5 EN12245 TW AMS V##### GROUP1 NITROX
3.90KG V6.80L PS300BAR at 15°C PT450BAR AA6061 TS-50°C TO 70°C
Ⓡ YYYY/MM FIN YYYY/MM C€0029
AMS SF-068-01

Row 1

- Thread type: e.g. M18x1.5
- Design specifications: e.g. EN12245
- Country of manufacture: TW
- Manufacturer: AMS
- Cylinder serial number: e.g. V#####
- Gas content: GROUP1 NITROX

Row 2

- Empty weight: e.g. 3.90KG
- Minimum water capacity: e.g. V6.80L
- Filling pressure in bar: e.g. PS300BAR at 15°C
- Test pressure in bar: e.g. PS450BAR
- Liner material: AA6061
- Service temperature range: TS -50°C TO 70°C

Row 3

- Notified body (APRAGAZ): Ⓡ
- First hydrostatic test date (Year and month): YYYY/MM
- End of life date: FIN YYYY/MM
- Mark of directive and notified Body ID: C€0029

Row 4

- AMS part number: SF-068-01

All the PED markings indicated above are marked according to the standard, some contents might be added in the marking per customer's requirement. For example: the "underwater use" is applied in the marking for the scuba cylinder.

DOT & TC UN Cylinder

0.625-18 UNF TW DB##### UW FINAL XXXX/XX SERVICE OOOO/OO
PW310 PH465BAR 0.95KG 1.1L
Ⓜ ISO11119-2 USA/M0812 IA18 YYYY/MM

Row 1

- Thread specification: e.g. 0.625-18 UNF
- Country of manufacture: TW
- Cylinder serial number: e.g. DB#####
- UW: For underwater use (if applicable)
- Limited Design Date: FINAL XXXX/XX
- Service Life Date: SERVICE OOOO/OO





Row 2

- Working pressure: e.g. PW310
- Test pressure: e.g. PH465BAR
- Empty weight of cylinder only: e.g. 0.95KG
- Minimum water capacity of cylinder: e.g. 1.1L

Row 3

- UN symbol: Ⓜ
- Design specification: e.g. ISO 11119-2
- Country of approval/Manufacturer approval number: USA/M0812
- Independent inspector: IA18
- Year/month of initial hydrostatic test: YYYY/MM


Global UN Cylinder

0.625-18 UNF TW AMS DB##### FINAL XXXX/XX SERVICE OOOO/OO
PW310 PH465BAR 0.95KG 1.10L  0029
 ISO11119-2 USA/M0812 IA18 B   YYYY/MM




Row 1

- Thread specification: e.g. 0.625-18 UNF
- Country of manufacture: TW
- Cylinder manufacturer: AMS
- Cylinder serial number: e.g. DB#####
- Limited Design Date: FINAL XXXX/XX
- Service Life Date: SERVICE OOOO/OO

Row 2

- Working pressure: e.g. PW310
- Test pressure: e.g. PH465BAR
- Empty weight of cylinder only: e.g. 0.95KG
- Minimum water capacity of cylinder: e.g. 1.10L
- TPED notified body ID:  0029

Row 3

- UN symbol: 
- Design specification: e.g. ISO 11119-2
- Country of approval/Manufacturer approval number: USA/M0812
- Independent Inspector: IA18
- Country of approval and mark of notified body: B  (Belgium APRAGAZ)
- Mark of In-House inspection: (AMS) 
- Year/month of initial hydrostatic test: YYYY/MM

TPER/TPED EN Cylinder

17E TW AMS WT#####
PW300 PH450BAR 1.65KG 2L
ρ8516π0029 EN12245 GB B [B] ΔΔΔS B [B] ΔΔΔS YYYY/MM

Row 1

- Thread specification: e.g. 17E
- Country of manufacture: TW
- Cylinder manufacturer: AMS
- Cylinder serial number: e.g. WT#####

Row 2

- Working pressure: e.g. PW300
- Test pressure: e.g. PH450BAR
- Empty weight of cylinder only: e.g. 1.65KG
- Minimum water capacity of cylinder: e.g. 2L

Row 3

- RHO and TPED notified body ID: ρ8516π0029
- Design specification: e.g. EN12245
- Great British: GB
- Notified body: (Belgium APRAGAZ) [B]
- In-House Inspection mark: ΔΔΔS
- Country of approval: B [B]
- Notified body: (Belgium APRAGAZ)
- In-House Inspection mark: ΔΔΔS
- Year/month of initial hydrostatic test: YYYY/MM

2. Cylinder Use

General

These cylinders can only be filled with compatible gases as per ISO 11114-1 and packing Instruction P200 of ADR 4.1.4.1. Check the specification packing provision column of external Table P200 before filling gases in these cylinders. If it has not been performed by AMS, the marking and labelling (See ADR pt.5.2) must also be considered by the user before putting the cylinders on the marker.

Maintenance

Check for cylinder damage after each use. Clean the cylinder and components. If using water to clean, allow enough time for all components to dry and don't reassemble until all components are thoroughly dried. Do not apply heat higher than steam temperature (212°F/100°C) to dry a wet cylinder.

Storage

Tightly close the cylinder valve. Leave some pressure in the cylinder (between 2 and 3 bar). Secure the cylinder and assembly from rolling loose, tipping over or falling. Store the cylinder in a dry place at room temperature, and avoid chemicals, artificial heat sources and corrosive environments.

Handling

Cylinders should never be dragged or dropped. When transporting cylinders, make sure that the valve is well protected and the cylinder is well secured.

Painting

Retouch damaged paint areas with air drying paint, but if damage has been done to the cylinder metal or composite materials, have it visually inspected first by an authorised technician. Never use corrosive, caustic, or acid paint strippers, burning techniques or solvents to remove paints from aluminium or composite surfaces.

Chemical Exposure

Composite materials can be attacked by chemicals or treated water. If the cylinder has been exposed to chemicals or aggressive fluids, the external composite surfaces must be checked for any visible signs of damage.

REJECT composite cylinders known to have been covered, splashed or left standing or soaked in unknown chemicals.

REJECT composite cylinders if the composite surface is blotchy or the paint and resin shows signs of chemical attachment (e.g. paint or resin has softened, smeared, bubbled, etc.).

HOLD composite cylinders if the composite portion has come into contact with a type of chemical not listed below and if you are unsure of its effects on the composite material. Contact AMS for advice.

CAUTION

Any cylinder composite material coming into prolonged contact with these types of chemicals and materials must be rejected:

Solvents

Paint thinners, kerosene, turpentine, paint solvents, paint cleaners, epoxy solvents, resin removers, organic solvents, etc.

Vehicle Fluids

Materials that contain benzene, glycol (anti-freeze), battery acids/alkalis, window washer fluids, oils containing solvents, flammable materials, organic volatile materials, gasoline and oil additives, fuels(gasoline, gasohol, methanol, etc.).

Strong Bases

Materials that contain medium to high concentrations of sodium hydroxide, potassium or hydroxides, materials that contain strong soap solutions, cleaning (soap) solutions, etc.

Acids

Materials that contain any concentration of acids like hydrochloric, sulphuric, nitric, phosphoric, etc.

Corrosives

Materials that contain corrosive components or that are corrosive themselves, such as the chemicals mentioned above and cleaners, glass cleaners, metal cleaners, resin cleaners/removers, drain openers/cleaners, glues, rubber and other chemical cements and atmospheres containing corrosive gases.



Valve Installation

The recommended torque for the fitting value of products is shown in Table 3, which is referred to in CGA C-6.1 and ISO 13341:

Table 3. Recommended torque for composite cylinder threads.

Threads size	Recommended torque	
	lbs-ft	N·m
0.625-18 UNF	40-50	54-68
0.875-14 UNF	40-60	54-81
M18x1.5	63-70	85-95
17E	55-63	75-85
25E	70-77	95-105

Note: If the recommended torque in the certificate is different from the above, please follow the certificate. For paintball cylinders, the thread locker might be applied before installation.

Cylinder Filling

The settled pressure of the filled cylinder must not exceed the filling pressure indicated on the cylinder marking.

Slow Filling

Filling the cylinder(s) slowly will significantly reduce the heat generated in the filling process. A maximum charging rate of 30 bar/min or less is recommended.

Fast Filling

AMS composite cylinders can be fast-filled and re-used if the cylinder is correctly cared for, well maintained and undamaged. However, the filler should ensure the settled pressure at 15°C does not exceed the rated charging pressure.

Higher Filling Pressure

It is possible to compensate for the higher temperatures during the filling process by filling to a higher pressure. A cylinder filled to 300 bar at 15°C will develop a pressure of 324 bar at 30°C. Or if a cylinder were filled under ambient conditions of 30°C, it would be necessary to fill the cylinder to 324 bar to achieve a full charge.

AMS carbon cylinders can be filled to a higher pressure up to a maximum of 10% above settled filling pressure (service pressure) as long as the settled pressure is at the correct, marked service pressure.

Approved Gases

AMS Composite Cylinders are approved for air and oxygen use in pressure receptacles in the USA, Canada and Europe. The cylinders are marked on the cylinder label with the name of the appropriate gas and should only be filled with the indicated gas.

Oxygen

Do not mix gases. This can cause catastrophic failure, loss of life or serious injury. Air cylinders, valves and other components are not specifically cleaned for oxygen or oxygen-enriched use. Please note, some lubricants used in the industry are not compatible with pure oxygen, or oxygen-enriched air, possibly resulting in a fire or rupture. Any equipment that comes into contact with oxygen including the cylinder interior, valve threads and the "O" ring of cylinders, must be clean and free of any contaminants which may react with the oxygen.

Compressed Air

When filling aluminium cylinders with compressed air, follow EN 12021 and make sure the compressor is well-maintained to meet the air quality standard.

3. Periodic Examination and Testing

General

Cylinders must be subjected to thorough periodic inspections in accordance with ISO 11623. The inspection period for this composite cylinder is five years for non-toxic gases or three years for toxic gases*. Check the specification packing provision column before filling gases in the composite cylinder with an aluminium liner.

* The test period of some TPED cylinders may be extended to 10 years depending on the conditional approval by the notified body with a specific gas company/user, intended carriage of gases and if equipped with a "Residual Pressure Valve".

The periodic requalification requires each cylinder to be examined internally and externally for defects, then subjected to a hydrostatic pressure test to the design test pressure. Only by completing these procedures satisfactorily can the cylinder be returned to service.

The cylinder should be examined for defects externally and internally before continuing in service, subject to a hydrostatic pressure test as per the relevant regulations and the manufacturer's recommended procedure by the manufacturer or a station authorised to test composite cylinders on behalf of the manufacturer.

The inspector must follow regulatory authority requirements and criteria in the country where the periodic inspection and testing occurs. If the following guidelines are less stringent than the regulatory requirements, apply the regulatory authority criteria.

Cylinders shall be rejected if they do not meet the volumetric expansion criteria or if any flaw has grown following repair and testing. Rejected cylinders shall be rendered unable to hold gas under pressure. In case of doubt or dispute regarding re-testing, consult AMS and, if necessary, the approved Inspection Body.

Before an internal inspection can be carried out, the cylinder must be emptied of its pressurised gas and the valve must be removed. Consult the valve supplier's recommendations before performing this operation.

AMS recommends checking the valve at this stage. Contact the manufacturer for the correct valve inspection procedure. Inspect the valve and cylinder threads for damage. Clean the O-ring groove, taking care not to remove metal and damage the groove.

IMPORTANT

Records of all periodic examinations and testing shall be sent to the manufacturer on completion of the examinations for storage together with materials and test certificates, and inspection reports relating to the manufacture of the cylinder and its lifetime.

The manufacturer recommends that if there is evidence a cylinder has been exposed to overheating but the temperature of the liner is not believed to have reached 350°F (176°C) for any duration of time, the cylinder must still be subjected to hydrostatic testing or condemned. A cylinder exposed to temperatures significant enough to change the temper of the liner could show an increase in total or permanent expansion as measured during hydrostatic testing.

Cylinders showing unusually high total expansion or exceeding the regulatory limits for the relationship between permanent and total expansion (i.e. 5%) should be condemned.

Exterior Inspection

Composite cylinders are very resistant to impact damage and a significant impact is required to cause damage sufficient to warrant condemning a cylinder.

Acceptance criteria are demonstrated below. In other cases of damage, contact AMS Composite Cylinders for further inspection and service.

Abrasion and Cut Damage

Type III cylinders: minor abrasions including scuffs less than 0.005 in. (0.127mm) deep are acceptable.

Type II cylinders: minor abrasion with depths less than or equal to 1% of the hoop thickness is acceptable. If the abrasion has depths between 1% and 3% of hoop thickness, the cylinders should be repaired and the pressure test should be performed before returning to the market. For any abrasion with a depth greater than 3% of the thickness of the hoop, the cylinder must be rejected.

Impact damage

Impact damage is a white, frosted area that shows no indication of cutting, delaminated peeling of the fibres or indentation. The relatively slight damage causes only a frosted appearance in the impact area with no other evidence of damage. A cylinder in such a condition may be returned to service.

Heat exposure

Light discolouration of the clear coat or painted surface may be evaluated using a fine grit scrubbing pad and liquid dish detergent mixed with warm water to clean the surface. An immediate colour change back to an off-white colour indicates that the cause of discolouration has no significant depth and is acceptable. This also applies to a painted surface where there is no evidence of blistering or charring.

Resin expansion and surface cracks

Fully-wrapped cylinders (Type III) have fibres running in the longitudinal direction that stack up and cross each other in the neck or base area, where there are most voids or surface cracks. Filler material can be used to fill any surface voids before the final process. After subjecting expansion and age effects, cracking may appear in the neck or base area, which does not contribute to the strength of the cylinder, therefore no repair is necessary.

Label hairline cracks

Hairline cracks may appear in the label area which does not impact the cylinder's integrity and does not need repair. If the label is difficult to distinguish, please contact the supplier.



Repair Instructions

IMPORTANT

Only minor damage of a depth less than 0.005 in. (0.127mm), and length less than 1.0 in. (25.4mm) is repairable for Type III cylinders. Repairs must be carried out by AMS, an approved repair shop or well-trained personnel and subjected to a hydrostatic test before returning to service.

A typical commercial room temperature cure two-component epoxy shall be used for repair.

The recommended procedure for repair is:

- Check the damage within the allowable repair limits.
- Remove the fluffy or loose fibre and roughen the repair area with sandpaper (> P150).
- Mix two-component epoxy resin in compliance with the manufacturer's instructions.
- Apply the mixed epoxy on the damaged area and even the coated surface using a soft pad or brush, making sure the damaged area is filled with resin.



- Attach a glass fibre cloth and apply the resin until the glass fibre cloth becomes translucent.
- Make sure the resin is fully cured (follow the resin manufacturer's instructions).
- Use sandpaper (> P150) to polish unsmooth area.



Boot removal and installation

When removing a boot, ensure the fibre layer has not been damaged.

Boot removal procedure:

1. Find an appropriate tool i.e. a thin and flexible metal strip.
2. Slip the metal strip between the boot and the cylinder to a depth of 25-30mm.
3. Slide the metal strip in between the cylinder and boot circumferentially.



4. Lift the boot to remove.
5. Remove the remaining adhesive on the cylinder and the boot using organic solvent cloth.

(Please wear the appropriate personal protective equipment when using chemicals)



Boot installation procedure

When removing a boot, ensure the fibre layer has not been damaged.

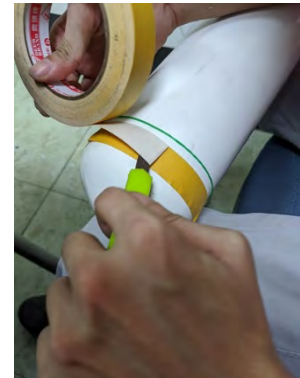
Boot removal procedure:

1. Material required: JC DS-17B double-sided tape (<http://www.jctape.com/en/index.htm>) or equivalent tape.

2. Preassemble the cylinder and boot. Mark the boot position.



3. Remove the boot and apply the tape so the tape edge is close to the marking position. Make sure that the tape covers the whole circumference.



4. Remove the release film and assemble the cylinder and boot. Press the tape region for 30 seconds until the tape is fully in contact with the boot.



Note: All required materials and tools can be purchased from AMS Composite Cylinders.



**PLEASE CONTACT AMS
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FURTHER INFORMATION.**

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