

DOT/TC8515C
Part No.: Composite
Cylinder
Rev.: 0.1/0.1
Report Date: 05/20/21

ARROWHEAD INDUSTRIAL SERVICES USA, INC.
Compressed Gas Container Specialists
3537 S. NC 119, PO Box 1000
Graham, NC 27253-1000

Report: 14821017
Sheet No.: 1 of 14

**REPORT OF MANUFACTURE OF CARBON-FIBER REINFORCED FULL WRAPPED SEAMLESS ALUMINUM-LINED
COMPOSITE GAS CONTAINERS**

Manufactured for Location BeiJing TianHai Industry Co.,Ltd
NO 2 South 3rd HuoXian Street,HuoXian Town,TongZhou District
BeiJing,China

Manufactured by Location Shanghai Tianhai Composite Cylinders Co.,Ltd
Jiuting,Songjiang Hi-Tech Park
Shanghai 201615, China

Consigned to: Location N/A

Part Number: DOT/TC8515C Composite Cylinder

Quantity: 130 **Size:** 6.81 inch/ 173.0 mm. outside diameter by 19.56 inch/ 497.0 mm. long.
519 cuin./ 8.5 Liter


MARKS PLACED ON IMBEDDED LABELS ARE:

TC-3CCM-153 BAR
DOT-SP14621-2216 PSI

Serial Number: C284001 to C284131 inclusive except as noted on hydrostatic test sheet

Identifying Symbol (registered) M0807

Inspector's Mark: 

Test Date: 04  21 **REE:** 121 cc

Other Marks: Label details see Attachment A

Each composite cylinder was made by completely overwrapping a seamless aluminum liner with resin impregnated filament reinforcement. Liners were made by forming a shoulder and neck on the open end of an aluminum seamless shell. Composite overwrap was made by winding resin impregnated Toray T700 carbon continuous filament over the liner in both longitudinal and circumferential directions, followed by curing of the resin at controlled temperature.

The aluminum liner was identified by heat number(s) and verified as to chemical analysis; record thereof is attached hereto. Liners fabricated from the aluminum were solution treated and artificially aged to T-6 temper. Physical tests were made in the presence of the inspector and report of results is attached hereto.

Each liner was inspected both before and after closing in the ends. All that were inspected were found to be free from seam, cracks, laminations and other defects that might prove injurious to the strength of the cylinder.

Certifying Inspector: Joe Cassidy
Director of Quality Assurance
ARROWHEAD INDUSTRIAL SERVICES USA, INC.

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Report Date: 05/20/21

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**REPORT OF MANUFACTURE OF CARBON-FIBER REINFORCED FULL WRAPPED SEAMLESS ALUMINUM-LINED
COMPOSITE GAS CONTAINERS**

Liner walls were measured and the minimum was found to be at least equal to the minimum design thickness of 0.055 inch/ 1.4 mm. The outside diameter was found by a close approximation to be 6.50 inch/ 165 mm.

Filament and resin components were certified by the manufactures, and identified by package/lot number. Filament was verified as to strand strength. Composite was verified as to shear strength. After wrapping composite was cured per manufacturer's specification as follows:

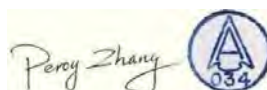
First raise temperature up to 176 °F, hold temperature for 2 hours,
Then raise temperature up to 257 °F, hold temperature for 3 hours

Prescribed autofrettage and hydrostatic tests were made in the presence of the Inspector. All cylinders accepted conform to the specification requirements. Results of autofrettage and hydrostatic tests are attached hereto.

Tensile stress on the aluminum liner in the hoop direction is calculated to be
9863 psi/ 68 N/mm² and 10443 psi/ 72 N/mm² in longitudinal direction at service pressure.

Carbon fiber stress is calculated to be 142572 psi/ 983 N/mm² in the hoop direction and
83687 psi/ 577 N/mm² in the longitudinal direction at service pressure.

I hereby certify that all of these cylinders proved satisfactory in every way and conform with the requirements of DOT-CFFC, DOT-SP14621 and TC-3CCM.



Certifying Inspector: Percy Zhang
ARROWHEAD INDUSTRIAL SERVICES USA, INC.

DOT/TC8515C
 Part No.: Composite Cylinder
 Rev.: 0.1/0.1
 Report Date: 05/20/21

ARROWHEAD INDUSTRIAL SERVICES USA, INC.
 Compressed Gas Container Specialists
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REPORT OF MANUFACTURE OF CARBON-FIBER REINFORCED FULL WRAPPED SEAMLESS ALUMINUM-LINED COMPOSITE GAS CONTAINERS


RECORD OF CHEMICAL ANALYSIS FOR CYLINDER LINERS

MANUFACTURED BY: Shanghai Tianhai Composite Cylinders Co.,Ltd
 FOR: BeiJing TianHai Industry Co.,Ltd
 PLATE SIZE:
 SERIAL NUMBER: C284001 to C284131 inclusive ALUMINUM ALLOY: 6061

Mill Heat Code	Cast Code	Check Analysis Date	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Pb	Bi	Other Each	Other Total
03-0231	6G	27-Nov-20	0.66	0.45	0.22	0.04	1.00	0.19	0.00	0.02	0.001	0.001	/	/
			0.61	0.44	0.22	0.03	1.00	0.18	0.00	0.02	0.001	0.001	0.01	0.02
03-0722	6K	17-Mar-21	0.63	0.56	0.23	0.07	0.95	0.17	0.00	0.02	0.001	0.001	/	/
			0.66	0.54	0.24	0.07	0.95	0.17	0.00	0.04	0.001	0.001	0.01	0.02

The material were manufactured and mill analysis were made by: MEYER ALUMINIUM LIMITED.HONG KONG

The check analysis were made by: Beijing Tianhai Industry Co.,Ltd. Beijing, P.R.China

Percy Zhang 

Certifying Inspector: Percy Zhang
 ARROWHEAD INDUSTRIAL SERVICES USA, INC.

DOT/TC8515C
 Part No.: Composite Cylinder
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 Report Date: 05/20/21

ARROWHEAD INDUSTRIAL SERVICES USA, INC.
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REPORT OF MANUFACTURE OF CARBON-FIBER REINFORCED FULL WRAPPED SEAMLESS ALUMINUM-LINED COMPOSITE GAS CONTAINERS

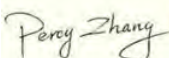

RECORD OF PHYSICAL TESTS OF MATERIAL FOR CYLINDER LINERS

MANUFACTURED BY: Shanghai Tianhai Composite Cylinders Co.,Ltd
 FOR: BeiJing TianHai Industry Co.,Ltd

SERIAL NUMBER: C284001 to C284131 inclusive ALUMINUM ALLOY: 6061

Test Specimen: 6T width by 24T gauge length

LOT NUMBER	CYLINDERS REPRESENTED BY TEST (SERIAL NUMBER)		YIELD STRENGTH AT 0.2 PERCENT OFFSET (Psi/Mpa)	TENSILE STRENGTH (Psi/Mpa)	ELONGATION (PERCENT)
6GP6	C284001	to	46412 (320)	50618 (349)	12.6
	C284131		45832 (316)	51488 (355)	12.4
6K4M	C284001	to	42786 (295)	47862 (330)	15.0
	C284131		42786 (295)	48443 (334)	14.5

Percy Zhang  

 Certifying Inspector: Percy Zhang
 ARROWHEAD INDUSTRIAL SERVICES USA, INC.

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REPORT OF MANUFACTURE OF CARBON-FIBER REINFORCED FULL WRAPPED SEAMLESS ALUMINUM-LINED COMPOSITE GAS CONTAINERS

RECORD OF COMPOSITE ANALYSIS

MANUFACTURED BY: Shanghai Tianhai Composite Cylinders Co.,Ltd
 FOR: BeiJing TianHai Industry Co.,Ltd

SERIAL NUMBER: C284001 to C284131 inclusive

Filament designation and specification: * T700SC-12000-50C
 ** E-Glass
 Filament manufactured by: * TORAY, JAPAN
 ** Chongqing International Composite Co.,Ltd


MANUFACTURING LOT NUMBER	NUMBER TENSILE STRENGTH (Psi/Mpa)	INTERLAMINAR SHEAR (Psi/Mpa)	RESULT
*J7120A4	608433 (4195)	N/A	OK
**BE20122800301	248014 (1710)	N/A	OK
***PH0G1123	N/A	5716 (39.41)	OK

RESIN SYSTEMS COMPONENTS AND MANUFACTURING LOT NUMBERS

Resin Type: EPIKOTE / RESIN 828
 Resin designation: Momentive
 Resin manufactured by: Hexion B.V, Seattleweg 17 3195 ND, Pernis, Rotterdam, Netherlands.

RESIN		CURING AGENT		AIR RELEASE	
TYPE	LOT NUMBER	TYPE	LOT NUMBER	TYPE	LOT NUMBER
EPIKOTE / RESIN 828	PH0G1123	T-403	SC20M23S02	BYK-A-500	620B051

* Carbon Fiber
 ** Fiber Glass
 ***Resin

Percy Zhang 

 Certifying Inspector: Percy Zhang
 ARROWHEAD INDUSTRIAL SERVICES USA, INC.

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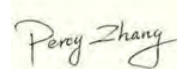

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REPORT OF MANUFACTURE OF CARBON-FIBER REINFORCED FULL WRAPPED SEAMLESS ALUMINUM-LINED COMPOSITE GAS CONTAINERS

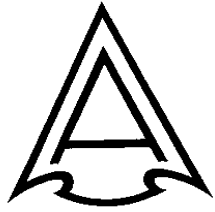
RECORD OF LOT QUALIFICATION TEST

MANUFACTURED BY: Shanghai Tianhai Composite Cylinders Co.,Ltd
 FOR: BeiJing TianHai Industry Co.,Ltd
 LOT No. C284
 SERIAL NUMBER: C284001 to C284131 inclusive

LOT TEST CYLINDER S/N	TEST CYLINDER WEIGHT lbs/kgs	PRESSURIZATION RANGE AND CYCLE NUMBERS >= 2216 psi (15.3Mpa)	PRESSURIZATION RANGE AND CYCLE NUMBERS >= 3693 psi (25.5Mpa)	ACHIEVED BURST PRESSURE >= 7540 psi (52Mpa)	BURST INITIATE LOCATION
C284101	6.9 (3.12)	10010	35	8898 (61.35)	CSW
C284101	6.9 (3.12)	NA	NA	8898 (61.35)	CSW

Percy Zhang  

 Certifying Inspector: Percy Zhang
 ARROWHEAD INDUSTRIAL SERVICES USA, INC.



Arrowhead Industrial Services USA Inc.

Manufactured By: Shanghai Tianhai Composite Cylinders Co.,Ltd

Autofrettage pressure: 3960 psi 27.3 Mpa

Hold for: 60 Seconds


Part Number: DOT/TC8515C Composite Cylinder Test Date: 20-Apr-21

Testing pressure: 3693 psi 25.5 Mpa

Serial Number: C284001 to C284017 inclusive.

Hold for: 60 Seconds

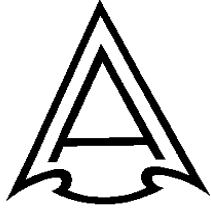
Cylinder Serial Number	Liner Cast Code/Lot No.	Weight				Volume cu. in	Autofrettage		Hydrostatic Test			Perm	Testing date
		Liner	Composite	Tare	Full		Total	Perm	Total	Perm	Elastic	Ratio	
		lbs	lbs	lbs	lbs		Expansion	Expansion	Expansion	Expansion	Expansion	to Ttl.	
C284001	6GP6089	3.9	3.0	7.0	25.7	520	146.0	31.7	111.0	1.6	109.4	1.4	20-Apr
C284002	6GP6090	3.9	3.0	7.0	25.7	520	147.9	32.4	111.5	1.5	110.0	1.3	20-Apr
C284003	6GP6091	3.9	3.0	6.9	25.7	519	144.7	30.8	110.5	1.1	109.4	1.0	20-Apr
C284004	6GP6092	3.9	3.1	7.0	25.8	520	149.4	33.7	111.5	1.2	110.3	1.1	20-Apr
C284005	6GP6093	3.9	3.0	7.0	25.8	520	159.7	45.9	108.4	1.6	106.8	1.5	20-Apr
C284006	6GP6094	3.9	3.0	6.9	25.7	519	153.2	37.4	107.9	1.3	106.6	1.2	20-Apr
C284007	6GP6095	3.9	2.9	6.9	25.7	521	156.3	39.1	109.3	2.1	107.2	1.9	20-Apr
C284008	6GP6096	3.9	3.0	7.0	25.7	519	162.4	44.6	108.3	0.7	107.6	0.6	20-Apr
C284009	6GP6097	3.9	2.9	6.9	25.7	521	146.2	34.1	108.7	2.0	106.7	1.8	20-Apr
C284010	6GP6098	3.9	2.9	6.9	25.7	521	152.0	39.9	108.8	2.1	106.7	1.9	20-Apr
C284011	6GP6099	3.9	3.0	6.9	25.7	521	151.1	38.6	108.9	1.6	107.3	1.5	20-Apr
C284012	6GP6100	3.9	2.9	6.9	25.7	521	152.3	38.6	108.9	1.2	107.7	1.1	20-Apr
C284013	6GP6101	3.9	3.1	7.0	25.8	520	159.5	44.5	109.8	0.7	109.1	0.6	20-Apr
C284014	6GP6102	3.9	2.9	6.9	25.7	521	150.6	36.8	107.6	0.3	107.3	0.3	20-Apr
C284015	6GP6103	3.9	3.0	7.0	25.8	520	157.4	41.3	110.1	0.4	109.7	0.4	20-Apr
C284016	6GP6104	3.9	3.0	6.9	25.8	521	154.8	39.3	109.3	0.8	108.5	0.7	20-Apr
C284017	6GP6105	3.9	3.0	7.0	25.7	520	161.0	43.1	110.1	0.9	109.2	0.8	20-Apr

Yin. Zhang 

Accepted by: _____ on behalf of Arrowhead

Date 20-May-21

Arrowhead Industrial Services USA Inc.



Manufactured By: Shanghai Tianhai Composite Cylinders Co.,Ltd

Autofrettage pressure: 3960 psi 27.3 Mpa

Hold for: 60 Seconds

Part Number: DOT/TC8515C Composite Cylinder Test Date: 20-Apr-21

Testing pressure: 3693 psi 25.5 Mpa

Serial Number: C284018 to C284034 inclusive.

Hold for: 60 Seconds

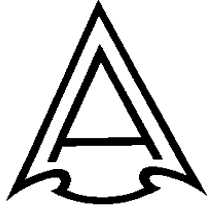
Cylinder Serial Number	Liner Cast Code/Lot No.	Weight				Volume cu. in	Autofrettage		Hydrostatic Test			Perm	Testing date
		Liner	Composite	Tare	Full		Total	Perm	Total	Perm	Elastic	Ratio	
		lbs	lbs	lbs	lbs		Expansion	Expansion	Expansion	Expansion	Expansion	to Ttl.	
C284018	6GP6106	3.9	3.0	6.9	25.7	521	161.1	43.5	109.8	0.7	109.1	0.6	20-Apr
C284019	6GP6107	3.9	2.9	6.9	25.7	521	153.9	38.1	108.2	0.9	107.3	0.8	20-Apr
C284020	6GP6108	3.9	3.0	6.9	25.7	521	159.6	43.4	108.3	1.0	107.3	0.9	20-Apr
C284021	6GP6109	3.9	3.1	7.0	25.8	521	148.5	33.8	111.1	2.2	108.9	2.0	20-Apr
C284022	6GP6110	3.9	2.9	6.9	25.7	521	151.3	38.7	108.2	1.0	107.2	0.9	20-Apr
C284023	6GP6111	3.9	3.0	7.0	25.7	520	154.5	40.9	109.6	1.2	108.4	1.1	20-Apr
C284024	6GP6112	3.9	3.0	6.9	25.7	521	147.9	34.3	109.5	1.1	108.4	1.0	20-Apr
C284025	6GP6113	3.9	3.1	7.0	25.8	520	160.1	44.7	111.2	1.2	110.0	1.1	20-Apr
C284026	6GP6114	3.9	3.0	6.9	25.7	521	148.9	36.8	108.9	1.3	107.6	1.2	20-Apr
C284027	6GP6115	3.9	3.0	6.9	25.7	520	148.9	35.4	110.5	2.7	107.8	2.4	20-Apr
C284028	6GP6116	3.9	3.0	6.9	25.7	520	154.4	39.8	109.6	1.2	108.4	1.1	20-Apr
C284029	6GP6117	3.9	2.9	6.9	25.7	521	151.2	34.1	107.7	0.5	107.2	0.5	20-Apr
C284030	6GP6118	3.9	3.0	6.9	25.7	521	158.9	42.3	107.8	0.7	107.1	0.6	20-Apr
C284031	6GP6119	3.9	3.0	6.9	25.7	520	161.7	42.8	109.0	0.4	108.6	0.4	20-Apr
C284032	6GP6120	3.9	3.0	6.9	25.7	521	154.7	38.5	107.4	1.5	105.9	1.4	20-Apr
C284033	6GP6121	3.9	3.0	6.9	25.7	520	150.9	38.5	108.6	2.6	106	2.4	20-Apr
C284034	6GP6122	3.9	3.0	7.0	25.7	520	147.3	35.8	107.1	1.5	105.6	1.4	20-Apr

Yim. Zhang

Accepted by: _____ on behalf of Arrowhead

Date 20-May-21

Arrowhead Industrial Services USA Inc.



Manufactured By: Shanghai Tianhai Composite Cylinders Co.,Ltd

Autofrettage pressure: 3960 psi 27.3 Mpa

Hold for: 60 Seconds

Part Number: DOT/TC8515C Composite Cylinder Test Date: 20-Apr-21

Testing pressure: 3693 psi 25.5 Mpa

Serial Number: C284035 to C284051 inclusive.

Hold for: 60 Seconds

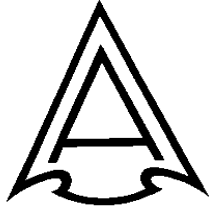
Cylinder Serial Number	Liner Cast Code/Lot No.	Weight				Volume cu. in	Autofrettage		Hydrostatic Test			Perm	Testing date
		Liner	Composite	Tare	Full		Total	Perm	Total	Perm	Elastic	Ratio	
		lbs	lbs	lbs	lbs		Expansion	Expansion	Expansion	Expansion	Expansion	to Ttl.	
C284035	6GP6123	3.9	3.0	6.9	25.7	521	155.1	42.1	107.4	0.6	106.8	0.6	20-Apr
C284036	6GP6124	3.9	3.0	6.9	25.7	521	148.1	36.6	106.7	1.1	105.6	1.0	20-Apr
C284037	6GP6125	3.9	2.9	6.9	25.7	521	153.6	40.0	108.2	1.3	106.9	1.2	20-Apr
C284038	6GP6126	3.9	3.0	6.9	25.7	521	153.8	39.6	108.1	1.6	106.5	1.5	20-Apr
C284039	6GP6127	3.9	3.0	6.9	25.7	520	145.1	33.3	107.1	1.5	105.6	1.4	20-Apr
C284040	6GP6128	3.9	3.0	7.0	25.8	520	151.8	37.6	107.9	1.4	106.5	1.3	20-Apr
C284041	6GP6129	3.9	2.9	6.9	25.7	520	155.6	40.3	108.9	1.3	107.6	1.2	20-Apr
C284042	6GP6130	3.9	3.0	6.9	25.7	520	160.6	43.8	109.4	1.4	108.0	1.3	20-Apr
C284043	6GP6131	3.9	3.0	6.9	25.7	519	158.9	41.7	110.1	1.1	109.0	1.0	20-Apr
C284044	6GP6132	3.9	3.0	6.9	25.7	520	154.1	36.9	110.2	1.8	108.4	1.6	20-Apr
C284045	6GP6133	3.9	3.0	6.9	25.7	519	163.2	45.0	111.0	2.0	109.0	1.8	20-Apr
C284046	6GP6134	3.9	3.0	6.9	25.7	520	157.4	41.5	109.5	1.6	107.9	1.5	20-Apr
C284047	6GP6135	3.9	2.9	6.9	25.7	520	160.3	42.4	109.9	1.0	108.9	0.9	20-Apr
C284048	6GP6136	3.9	3.0	6.9	25.7	520	160.2	42.2	110.6	1.7	108.9	1.5	20-Apr
C284049	6GP6137	3.9	3.0	6.9	25.7	521	151.1	36.4	109.4	1.3	108.1	1.2	20-Apr
C284050	6GP6138	3.9	3.0	6.9	25.7	520	155.9	39.7	109.5	1.2	108.3	1.1	20-Apr
C284051	6GP6139	3.9	2.9	6.9	25.7	521	158.3	41.7	109.9	1.3	108.6	1.2	20-Apr

Yim. Zhang

Accepted by: _____ on behalf of Arrowhead

Date 20-May-21

Arrowhead Industrial Services USA Inc.



Manufactured By: Shanghai Tianhai Composite Cylinders Co.,Ltd

Autofrettage pressure: 3960 psi 27.3 Mpa

Hold for: 60 Seconds

Part Number: DOT/TC8515C Composite Cylinder Test Date: 20-Apr-21

Testing pressure: 3693 psi 25.5 Mpa

Serial Number: C284052 to C284068 inclusive.

Hold for: 60 Seconds

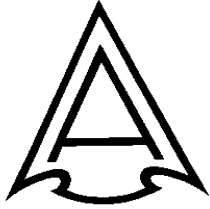
Cylinder Serial Number	Liner Cast Code/Lot No.	Weight				Volume cu. in	Autofrettage		Hydrostatic Test			Perm	Testing date
		Liner	Composite	Tare	Full		Total	Perm	Total	Perm	Elastic	Ratio	
		lbs	lbs	lbs	lbs		Expansion	Expansion	Expansion	Expansion	Expansion	to Ttl.	
C284052	6GP6140	3.9	2.9	6.8	25.7	521	159.9	42.5	110.5	0.9	109.6	0.8	20-Apr
C284053	6GP6141	3.9	2.9	6.9	25.7	520	148.8	35.4	113.0	2.4	110.6	2.1	20-Apr
C284054	6GP6142	3.9	2.9	6.8	25.6	520	145.3	31.4	110.8	0.2	110.6	0.2	20-Apr
C284055	6GP6143	3.9	3.0	6.9	25.7	519	152.1	37.9	111.1	0.4	110.7	0.4	20-Apr
C284056	6GP6144	3.9	2.9	6.9	25.7	520	147.1	34.1	110.9	1.9	109.0	1.7	20-Apr
C284057	6GP6145	3.9	2.9	6.8	25.6	521	161.3	45.5	111.6	1.2	110.4	1.1	20-Apr
C284058	6GP6146	3.9	2.9	6.8	25.6	521	154.8	40.6	110.6	1.0	109.6	0.9	20-Apr
C284059	6GP6147	3.9	3.0	6.9	25.7	520	155.4	40.1	110.0	0.7	109.3	0.6	20-Apr
C284060	6GP6148	3.9	3.0	7.0	25.8	521	159.1	43.8	109.8	1.1	108.7	1.0	20-Apr
C284061	6GP6149	3.9	2.9	6.8	25.7	521	159.1	45.8	106.9	0.3	106.6	0.3	20-Apr
C284062	6GP6150	3.9	3.0	6.9	25.7	520	147.0	36.0	107.0	1.9	105.1	1.8	20-Apr
C284063	6GP6151	3.9	2.9	6.9	25.7	520	154.9	41.4	106.6	0.0	106.6	0.0	20-Apr
C284064	6GP6152	3.9	2.9	6.9	25.7	521	144.7	31.5	105.6	0.0	105.6	0.0	20-Apr
C284065	6GP6153	3.9	3.0	7.0	25.7	519	156.9	43.8	111.4	2.2	109.2	2.0	20-Apr
C284066	6GP6154	3.9	2.9	6.9	25.7	520	154.5	40.2	112.7	2.3	110.4	2.0	20-Apr
C284067	6GP6155	3.9	2.9	6.9	25.7	521	153.1	38.2	112.1	1.9	110.2	1.7	20-Apr
C284068	6GP6156	3.9	2.9	6.8	25.6	521	153.7	38.5	111.9	1.5	110.4	1.3	20-Apr

Yim. Zhang

Accepted by: _____ on behalf of Arrowhead

Date 20-May-21

Arrowhead Industrial Services USA Inc.



Manufactured By: Shanghai Tianhai Composite Cylinders Co.,Ltd

Autofrettage pressure: 3960 psi 27.3 Mpa

Hold for: 60 Seconds

Part Number: DOT/TC8515C Composite Cylinder Test Date: 20-Apr-21

Testing pressure: 3693 psi 25.5 Mpa

Serial Number: C284069 to C284085 inclusive.

Hold for: 60 Seconds

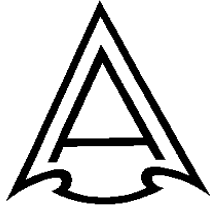
Cylinder Serial Number	Liner Cast Code/Lot No.	Weight				Volume cu. in	Autofrettage		Hydrostatic Test			Perm	Testing date
		Liner	Composite	Tare	Full		Total	Perm	Total	Perm	Elastic	Ratio	
		lbs	lbs	lbs	lbs		Expansion	Expansion	Expansion	Expansion	Expansion	to Ttl.	
C284069	6GP6157	3.9	2.9	6.9	25.7	521	148.9	35.2	112.4	2.6	109.8	2.3	20-Apr
C284070	6GP6158	3.9	3.0	6.9	25.7	519	153.8	39.0	113.1	2.2	110.9	1.9	20-Apr
C284071	6GP6159	3.9	3.0	6.9	25.7	520	152.1	37.2	112.5	1.9	110.6	1.7	20-Apr
C284072	6GP6160	3.9	2.9	6.9	25.7	520	152.2	37.3	113.6	2.9	110.7	2.6	20-Apr
C284073	6GP6161	3.9	2.9	6.9	25.7	520	148.6	36.4	112.1	2.1	110.0	1.9	20-Apr
C284074	6GP6162	3.9	3.0	7.0	25.7	519	152.9	40.8	111.4	1.9	109.5	1.7	20-Apr
C284075	6GP6163	3.9	3.0	6.9	25.7	520	144.0	31.0	111.8	2.1	109.7	1.9	20-Apr
C284076	6GP6164	3.9	2.9	6.9	25.7	521	146.8	35.1	111.7	2.1	109.6	1.9	20-Apr
C284077	6GP6165	3.9	3.0	6.9	25.7	520	160.1	45.4	110.9	2.9	108.0	2.6	20-Apr
C284078	6GP6166	3.9	3.0	6.9	25.7	519	158.5	44.1	109.3	1.5	107.8	1.4	20-Apr
C284079	6GP6167	3.9	3.0	6.9	25.7	520	152.4	37.7	110.3	2.4	107.9	2.2	20-Apr
C284080	6GP6168	3.9	3.0	6.9	25.7	520	157.8	43.1	110.6	2.5	108.1	2.3	20-Apr
C284081	6GP6169	3.9	3.0	6.9	25.7	521	145.4	31.1	106.9	0.5	106.4	0.5	20-Apr
C284082	6GP6170	3.9	2.9	6.9	25.7	521	156.6	42.2	107.4	0.9	106.5	0.8	20-Apr
C284083	6GP6171	3.9	3.0	6.9	25.7	520	155.5	41.0	106.7	0.7	106.0	0.7	20-Apr
C284084	6GP6172	3.9	2.9	6.9	25.7	521	148.5	33.9	107.4	1.0	106.4	0.9	20-Apr
C284085	6GP6173	3.9	3.0	7.0	25.8	521	150.8	39.7	107.2	2.2	105.0	2.1	20-Apr

Yim. Zhang

Accepted by: _____ on behalf of Arrowhead

Date 20-May-21

Arrowhead Industrial Services USA Inc.



Manufactured By: Shanghai Tianhai Composite Cylinders Co.,Ltd

Autofrettage pressure: 3960 psi 27.3 Mpa

Hold for: 60 Seconds


Part Number: DOT/TC8515C Composite Cylinder Test Date: 20-Apr-21

Testing pressure: 3693 psi 25.5 Mpa

Serial Number: C284103 to C284119 inclusive.

Hold for: 60 Seconds

Cylinder Serial Number	Liner Cast Code/Lot No.	Weight				Volume cu. in	Autofrettage		Hydrostatic Test			Perm	Testing date
		Liner	Composite	Tare	Full		Total	Perm	Total	Perm	Elastic	Ratio	
		lbs	lbs	lbs	lbs		Expansion	Expansion	Expansion	Expansion	Expansion	to Ttl.	
C284103	6GP6191	3.9	3.0	6.9	25.7	521	158.6	42.7	113.1	2.6	110.5	2.3	20-Apr
C284104	6GP6192	3.9	3.0	6.9	25.7	521	155.2	39.1	111.6	1.1	110.5	1.0	20-Apr
C284105	6GP6193	3.9	3.0	6.9	25.7	520	154.6	39.8	111.3	1.7	109.6	1.5	20-Apr
C284106	6K4M001	3.9	3.0	6.9	25.7	521	156.3	40.2	109.2	1.7	107.5	1.6	20-Apr
C284107	6K4M002	3.9	3.0	6.9	25.7	519	158.4	42.3	110.4	2.7	107.7	2.4	20-Apr
C284108	6K4M003	3.9	3.0	7.0	25.7	519	158.1	41.0	111.9	3.0	108.9	2.7	20-Apr
C284109	6K4M004	3.9	3.0	7.0	25.7	520	155.7	39.1	110.0	2.6	107.4	2.4	20-Apr
C284110	6K4M005	3.9	3.1	7.0	25.7	519	156.9	40.0	112.4	2.1	110.3	1.9	20-Apr
C284111	6K4M006	3.9	3.0	6.9	25.7	520	156.5	39.4	111.8	2.7	109.1	2.4	20-Apr
C284112	6K4M007	3.9	3.0	6.9	25.7	520	168.0	47.6	114.1	2.2	111.9	1.9	20-Apr
C284113	6K4M008	3.9	3.1	7.0	25.8	520	169.6	49.3	113.7	1.5	112.2	1.3	20-Apr
C284114	6K4M009	3.9	3.0	6.9	25.7	520	155.8	42.1	113.2	1.4	111.8	1.2	20-Apr
C284115	6K4M010	3.9	3.0	6.9	25.7	521	159.5	43.3	113.7	1.4	112.3	1.2	20-Apr
C284116	6K4M027	3.9	3.0	6.9	25.7	520	158.1	41.5	113.8	1.4	112.4	1.2	20-Apr
C284117	6K4M012	3.9	3.0	6.9	25.7	520	159.4	43.8	114.9	2.2	112.7	1.9	20-Apr
C284118	6K4M013	3.9	3.1	7.0	25.8	519	159.2	44.7	114.4	2.5	111.9	2.2	20-Apr
C284119	6K4M014	3.9	3.0	7.0	25.8	521	154.2	40.9	113.1	1.4	111.7	1.2	20-Apr

Yim. Zhang 

Accepted by: _____ on behalf of Arrowhead

Date 20-May-21

THREAD CODE


WARNING:
 Training is REQUIRED BEFORE use or maintenance of this equipment. Inspect after each use. Repair only by properly trained personnel. Manufactured in PRC. IMPROPER USE OF THIS EQUIPMENT MAY RESULT IN DEATH OR SERIOUS INJURY. REINSPECT AND RETEST HYDROSTATICALLY EVERY 5 YEARS IN ACCORDANCE WITH DOT-SP 14621 AND TC-3CCM

- DO NOT fill if cylinder has visible damage, strand unraveling or charring of the carbon fibers has occurred.
- DO NOT fill if cylinder retest date is out of prescribed period.
- DO NOT exceed maximum charge pressure.
- DO NOT use unless cylinder is charged to the full pressure.
- DO NOT alter, modify or substitute any components.
- DO NOT carry the cylinder by the valve handwheel.
- DO NOT drop cylinder or bump handwheel. Valve could partially open causing cylinder to become an airborne projectile under its own pressure.


CAUTION:
 HIGH PRESSURE GAS-MAY ACCELERATE COMBUSTION.



- Keep oil and gas away.
- Use equipment rated for cylinder pressure.
- Cylinder temperature should not exceed 125°F or 52°C.
- CLOSE VALVE AFTER EACH USE AND WHEN EMPTY.


DOT-SP 14621-2216 PSI
TC-3CCM-153 BAR
XXXXXX ← THREAD CODE
8515C-XXXXXX M0807
30 MINUTES

MM  **YY**
 MANUFACTURE DATE

REE:XXX
AIR, COMPRESSED
Respirable D Air
CONTENTS: AIR, 45 SCF AT 2216 PSIG-153BAR


AIR, COMPRESSED
UN 1002


 


 XXXXXX

NOTES:

1. The size of the letters and numbers used those on the right must be at least 0.64cm(1/4inch) high if space permits.
2. The thread code are shown in the table below.

THREAD CODE
ISO M18x1.5-6H
3/4-16 UNF-2B
7/8-14 UNF-2B



Digitally signed by Bing Zhang
 DN: cn=Bing Zhang, o=AISL,
 ou=UK,
 email=bing.zhang@arrowhead.is.com, c=GB
 Reason: I have reviewed this document
 Date: 2019.12.17 11:34:27 +08'00'

REV	0.1			8.5L COMPOSITE CYLINDER LABEL DRAWING (FOR DOT-SP14621 AND TC-3CCM)	DOTTC8515C-M		
NO	INDEX	SIGN	DATE		QUANTITY	WEIGHT	SCALE
DESN	Wang.Y.X	REVD	F.W.Shi				
DRAN		APPD			BEIJING TIANHAI INDUSTRY CO., LTD.		
CHKD	Yue.Z.Z						
		DATE	2019.12.17	TOTAL 1 PAGE			