U.S. Department
of Transportation

Pipeline and Hazardous
Materials Safety Administration

East Building, PHH – 25
1200 New Jersey Avenue, Southeast
Washington, D.C. 20590

APPROVAL CA2009070017
(27th Revision)
ISSUED BY THE COMPETENT AUTHORITY OF THE UNITED STATES
EXPIRATION DATE: November 22, 2028

1. **APPROVAL HOLDER:** G-Shang Metal Corporation
No. 58 Fusiang Lane,
Chang-An Road, Tachia District,
Taichung City 43774, Taiwan

2. **REGULATORY AUTHORITY:** 49 CFR § 107.807

3. **SYNOPSIS:** G-Shang Metal Corporation is authorized to manufacture **DOT 3AL, DOT 39, UN ISO 7866, UN ISO 11118, UN ISO 11119-2, and DOT-SP 14932 (*as listed in Addendum A at the end of this approval letter*)**, cylinder specifications only by the **Backward Extrusion method of manufacturing** at the facility located at the address above, under the supervision of the Independent Inspection Agency identified under section 5(b) of this approval.

4. **BASIS:** This approval is issued in response to G-Shang Metal Corporation's application dated August 31, 2023, **requesting add a DOT 39 specification cylinder, drawing number: 1AW0017201 to** their current CA approval.

5. **PERIOD OF VALIDITY AND CONDITIONS OF APPROVAL:** This approval does not provide relief from any requirements of the Hazardous Materials Regulations except as stated herein. This approval is valid until the posted expiration date or until terminated by the Associate Administrator for Hazardous Materials Safety.

   a. **Approved Authority:** The holder of this approval is

authorized to manufacture and mark the above listed DOT, Special Permit and UN ISO cylinder type approval designs under the supervision of an independent inspection agency approved for that purpose in accordance with 49 CFR 178.35, 178.37, 178.45 and 178.69-71.

DOT 3AL, DOT 39, DOT-SP 14932, UN ISO 7866, UN ISO 11118, and UN ISO 11119-2 - Manufactured in accordance with §§ 178.35, 178.46, 178.65 and 178.69 through 178.70.

Only approved designs on file with the department may be manufactured and marked under the terms of this approval.

b. **Approved Independent Inspector (IIA):** Only the following IIA is currently authorized to conduct onsite inspections at your manufacturing facility:

TUV Rheinland Taiwan Ltd.
33F-3, No. 80, Min Tzu 1st Road,
Kaohsiung, Taiwan, People's Republic of China

c. **Registration number: M0816** is your assigned registration number and must be marked on all DOT specification cylinders manufactured under the terms of this approval.

6. **Safety Controls:**

a. If DOT, Special Permit and/or UN ISO specification cylinder production has not been undertaken for more than six months, the Office of Hazardous Materials Approvals and Permits must be notified prior to resumption of production. Additional sample testing and/or an onsite inspection may be required prior to resumption of production, at the discretion of PHMSA.

b. No deviation from designs, materials, method of manufacture, inspection procedures or any technical information submitted in support of the manufacturers or

inspector's applications for approval is authorized unless approved in accordance with 6.d. of this approval.

c. Failure to assure adequate independent inspection and verification will be grounds for termination or other enforcement action as provided for in the regulations. PHMSA must be notified in writing prior to a change in independent inspection agency service companies.

d. Advance notice and written approval is required before any of the following can be implemented:

   1) Technical changes in the manufacturing process or procedures are made.

   2) Changes in the approved designs on file. However, additional approval is not required for design changes to the UN ISO designs identified above, provided the changes to the design are within the previously approved design type family as identified in the applicable UN ISO specification on file with PHMSA, and as certified by the currently approved Independent Inspection Agency on file with PHMSA. New designs that fall outside the approved design type family, which are identified as a new design type family within the confines of the authorized UN ISO specification, or production of new UN ISO specification cylinder not currently authorized by PHMSA, must be approved prior to manufacture under the terms of this approval.

   3) Adding a new DOT or UN ISO specification design, not meeting the requirements above, or which does not currently have design change criteria listed in the respective UN ISO specification (i.e., **UN ISO 11120 tubes**), or authorization to manufacture a cylinder specification not currently authorized to be manufactured under the authority of this approval.

e. If non-technical information, submitted in your application for approval changes, Approvals and Permits must be notified, in writing, within 20 days.

7. **SPECIAL PROVISIONS:**

a. A current copy of this approval must be maintained and made available for examination at the location where cylinders are manufactured.

8. **GENERAL PROVISIONS:**

a. Failure by any person to comply with the terms and conditions of this approval and the Hazardous Materials Regulations, 49 CFR Parts 171-180, may result in the modification, suspension, or termination of that person's authority to use this approval. Failure to comply may also subject that person to penalties prescribed by 49 U.S.C. §§ 5123 and 5124. This approval may be modified, suspended, or terminated in its entirety if that action is justified in light of changes in circumstances or additional information not available when this approval was issued. Unless immediate modification, suspension or termination is necessary to avoid a risk of significant harm to persons or property, before action is taken, that person will be notified and provided with an opportunity to show why the proposed action should not be taken.

b. Each "Hazmat employee," as defined in § 171.8, who performs a function subject to this approval must be provided training on the requirements and conditions of this approval in addition to the training required by §§ 172.700 through 172.704.

c. Any person operating under the terms of this approval must comply with the security plan requirement in Subpart I of Part 172 of the HMR, when applicable.

d. This approval, as revised, supersedes all previous versions.

Issued in Washington, D.C.

Dated: November 30, 2023

for William Schoonover
Associate Administrator for Hazardous Materials Safety

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Pipeline and Hazardous Materials Safety Administration, Department of Transportation, Washington, D.C. 20590. Attention: PHH-30.

Addendum A

Item	Drawing No.	Service Pressure (PSI)	Test Pressure (PSI)	O.D (mm	OAL (mm)	Water Capacity (L)	Construction	Specification
48ci-3000psi	1AP0007901-DOT	3000	5000	110	190	0.79	AL6061-T6	DOT-3AL
62ci-3000psi	1AP0010101-DOT	3000	5000	110	215	1.01	AL6061-T6	DOT-3AL
0.8L-1800psi	1AW0008002-DOT	1800	3000	81	234	0.8	AL6061-T6	DOT-3AL
0.65L-1800psi	1AW0006501-DOT	1800	3000	81	200	0.65	AL6061-T6	DOT-3AL
0.94L-1800psi	1AW0009401-DOT	1800	3000	81	270	0.94	AL6061-T6	DOT-3AL
0.68L-1800psi	1AW0006801-DOT	1800	3000	81	208	0.68	AL6061-T6	DOT-3AL
1.0L-1800psi	1AW0010002-DOT	1800	3000	81	275	1.0	AL6061-T6	DOT-3AL
1.2L-1800psi	1AW0012003-DOT	1800	3000	81	332	1.2	AL6061-T6	DOT-3AL
0.79L-3000psi	1AP0007902-DOT	3000	5000	91.2	217	0.79	AL6061-T6	DOT-3AL
0.79L-3000psi(A)	1AP0007902-DOT(A)	3000	5000	91.2	220	0.79	AL6061-T6	DOT-3AL

1.01L-3000psi	1AP0010102-DOT	3000	5000	91.2	255	1.01	AL6061-T6	DOT-3AL
1.01L-3000psi(A)	1AP0010102-DOT(A)	3000	5000	91.2	255	1.01	AL6061-T6	DOT-3AL
0.62L-3000psi	1AP0006201-DOT	3000	5000	91.2	180	0.62	AL6061-T6	DOT-3AL
2.8L-2175psi	1AM0028003-DOT(A)	2175	3625	115.2	408	2.8	AL6061-T6	DOT-3AL
2.8L-2175psi(A)	1AM0028004-DOT	2175	3625	115.2	399	2.8	AL6061-T6	DOT-3AL
9.0L-3000psi	1AS0090001-DOT	3000	5000	185	555	9	AL6061-T6	DOT-3AL
9.3L-3000psi	1AS0093001-DOT	3000	5000	185	574	9.3	AL6061-T6	DOT-3AL
11.1L-3000psi	1AS0111001-DOT	3000	5000	185	665	11.1	AL6061-T6	DOT-3AL
12L-3000psi	1AI0120001-DOT	3000	5000	185	712	12	AL6061-T6	DOT-3AL
Light 68ci-4500psi	G410CTP0006802- DOT	4500	7500	4.33	9.06	68	AA6061-T6 Carbon fiber Glass fiber	DOT-SP 14932
Light 48ci-4500psi	G410CTP0004801- DOT	4500	7500	4.33	7.09	48	AA6061-T6 Carbon fiber Glass fiber	DOT-SP 14932
72ci-4500psi	G410CTP0007201- DOT	4500	7500	4.33	9.21	72	AA6061-T6 Carbon fiber Glass fiber	DOT-SP 14932

77ci-4500psi	G410CTP0007701- DOT	4500	7500	4.33	9.68	77	AA6061-T6 Carbon fiber Glass fiber	DOT-SP 14932
88ci-4500psi	G410CTP0008804-DOT	4500	7500	4.33	10.67	88	AA6061-T6 Carbon fiber Glass fiber	DOT-SP 14932
12L-3000psi(A)	1AI0120002-DOT	3000	5000	185	712	12	AL6061-T6	DOT-3AL
0.5L-1800psi(A)	1AS0005001-DOT(A)	1800	3000	64	243	0.5	AL6061-T6	DOT-3AL
0.6L-1800psi	1AW0006002-DOT	1800	3000	60	332	0.6	AL6061-T6	DOT-3AL
0.4L-1800psi	1AW0004001-DOT	1800	3000	64	200	0.4	AL6061-T6	DOT-3AL
0.5L-3000psi	1AS0005002-DOT	3000	5000	64	264	0.5	AL6061-T6	DOT-3AL
0.5L-3000psi(A)	1AW0005003-DOT	3000	5000	60	300	0.5	AL6061-T6	DOT-3AL
0.36L-3000psi	1AW0003601-DOT	3000	5000	60	230	0.36	AL6061-T6	DOT-3AL

0.4L-3000psi	1AP0004002-DOT	3000	5000	60	250	0.40	AL6061-T6	DOT-3AL
0.42L-3000psi	1AS0004201-DOT	3000	5000	64	230	0.42	AL6061-T6	DOT-3AL
0.375L-3000psi	1AS0003701-DOT	3000	5000	64	206	0.375	AL6061-T6	DOT-3AL
0.87L-3000psi	1AS0008701-DOT(A)	3000	5000	81	290	0.87	AL6061-T6	DOT-3AL
1.9L-3000psi	1AS0019001-DOT(A)	3000	5000	111	340	1.9	AL6061-T6	DOT-3AL
3.4L-2175psi	1AM0034001-DOT(A)	2175	3625	101.6	591	3.4	AL6061-T6	DOT-3AL
4.6L-2015psi	1AM0046001-DOT(A)	2015	3358	111.3	647	4.6	AL6061-T6	DOT-3AL
4.6L-2175psi	1AM0046002-DOT	2175	3625	111.3	655	4.6	AL6061-T6	DOT-3AL
13L-1800psi	1AW0130001-DOT(A)	1800	3000	204	585	13	AL6061-T6	DOT-3AL

0.22L-3000psi	1AP0002201-DOT	3000	5000	50	194	0.22	AL6061-T6	DOT-3AL
0.19L-3000psi	1AS0001901-DOT	3000	5000	50	180	0.19	AL6061-T6	DOT-3AL
0.16L-3000psi	1AP0001601-DOT	3000	5000	50	152	0.16	AL6061-T6	DOT-3AL
3.0L-1800psi	1AW0030002-DOT	1800	3000	115.2	410	3.0	AL6061-T6	DOT-3AL
2.2L-1800psi	1AW0022001-DOT	1800	3000	115.2	314	2.2	AL6061-T6	DOT-3AL
2.0L-1800psi	1AW0020003-DOT(A)	1800	3000	115.2	291	2.0	AL6061-T6	DOT-3AL
0.29L-3000psi	1AP0002901-DOT	3000	5000	50.5	235	0.29	AL6061-T6	DOT-3AL
0.36L-3000psi(A)	1AP0003601-DOT	3000	5000	50.5	290	0.36	AL6061-T6	DOT-3AL
0.5L-1800psi(B)	1AS0005001-DOT(B)	1800	3000	64	238	0.5	AL6061-T6	DOT-3AL

0.6L-1800psi(A)	1AW0006003-DOT	1800	3000	60	332	0.6	AL6061-T6	DOT-3AL
0.38L-1800psi	1AW0003801-DOT	1800	3000	54	238	0.38	AL6061-T6	DOT-3AL
UN 0.6L-2416psi	1AW0006002-ISO	2416	3625	60	332	0.6	AL6061-T6	ISO-7866
UN 0.29L-3000psi	1AP0002901-ISO	3000	4500	50.5	235	0.29	AL6061-T6	ISO-7866
UN 0.36L-3000psi	1AP0003601-ISO	3000	4500	50.5	290	0.36	AL6061-T6	ISO-7866
UN 62ci-3000psi	1AP0010101-ISO	3000	4500	110	215	1.01	AL6061-T6	ISO-7866
UN 0.22L-3000psi	1AP0002201-ISO	3000	4500	50	194	0.22	AL6061-T6	ISO-7866
UN 0.14L-3000psi	1AP0001401-ISO	3000	4500	50	135	0.14	AL6061-T6	ISO-7866
UN 0.38L-1800psi	1AW0003801-ISO	1800	2700	54	238	0.38	AL6061-T6	ISO-7866

UN 0.5L-1800psi	1AS0005001-ISO	1800	2700	64	238	0.5	AL6061-T6	ISO-7866
UN 0.79L-3000psi(A)	1AP0007902-ISO	3000	4500	91.2	220	0.79	AL6061-T6	ISO-7866
UN 0.8L-1800psi	1AW0008002-ISO	1800	2700	81	234	0.8	AL6061-T6	ISO-7866
UN 0.96L-1800psi	1AW0009601-ISO	1800	2700	81	275	0.96	AL6061-T6	ISO-7866
0.55L-2175psi	1AW0005501-DOT	2175	3625	70.6	246	0.55	AL6061-T6	DOT-3AL
0.4L-2175psi	1AW0004002-DOT	2175	3625	64	200	.4	AL6061-T6	DOT-3AL
UN 0.55L-2420psi	1AW0005503-ISO	2420	3625	70.6	246	0.55	AL6061-T6	ISO-7866
0.3L-1800psi	1AW0003001-DOT	1800	3000	60	185	0.3	AL6061-T6	DOT-3AL
0.29L-2175psi	1AW0002901-DOT	2175	3625	50.5	224	0.29	AL6061-T6	DOT-3AL

UN d50.5-2175psi	1AW0002901-ISO	2175	3263	50.5	112 ~336	0.121 ~0.476	AL6061-T6	ISO-7866
UN d64-3000psi	1AS0005002-ISO	3000	4500	64	132~ 396	0.212~0.812	AL6061-T6	ISO-7866
0.5L-3625psi	1AP0005002-DOT	3625	6042	60	315	0.5	AL6061-T6	DOT-3AL
UN 0.5L-3625psi	1AP005002-ISO	3625	5438	60	315	0.5	AL6061-T6	ISO-7866
0.18L1800 psi	1AW0001801	1800	3000	40	220	0.18	AL6061-T6	ISO-11118
DOT d50-3000psi (0.5L M18)	1AP0005003-DOT	3000	5000	50	295~ 500	0.36~0.64	AL6061-T6	DOT-3AL
DOT d50-3000psi (0.5L 5/8)	1AP0005004-DOT	3000	5000	50	295~ 500	0.36~0.64	AL6061-T6	DOT-3AL
UN d50-3000psi	1AP0005003/004-ISO	3000	4500	50	150~ 600	0.16~ 0.78	AL6061-T6	ISO-7866
UN 68ci4500psi	G410CTP0006802-ISO	4500 (310bar)	6750 (465bar)	110 or 4.33”	230 or 9.06”	1.11 or 68ci	AA6061-T6 Carbon fiber	ISO-11119-2

0.18L3000psi	1AP0001801-DOT	3000	5000	50.5	170	0.18	AL6061-T6	DOT-3AL
UN 0.18L3000ps	1AP0001801-ISO	3000	4500	50.5	170	0.18	AL6061-T6	ISO-7866
DOT d111.3-2015psi	1AM0029001-DOT	2015	3358	111.3	336~534	2.1~3.7	AL6061-T6	DOT-3AL
DOT d70.6-2175psi	1AW0005501-DOT(A)	2175	3625	70.6	178.6~283.6	0.39~.071	AL6061-T6	DOT-3AL
DOT d90-1800psi	1AW0013401-DOT	1800	3000	90	238~411	0.94~1.74	AL6061-T6	DOT-3AL
UN d90-2420psi	1AW0013401-ISO	2420	3625	90	272~482	1.06~2.08	AL6061-T6	ISO-7866
D50 -3000psi (0.36L 5/8)	1AP0003604-DOT	3000	5000	50	231~382	0.26~0.46	AL6061-T6	DOT-3AL
D50 -3000psi (0.36L M18)	1AP0003605-DOT	3000	5000	50	231~382	0.26~0.46	AL6061-T6	DOT-3AL
D50 -3000psi (0.22L 5/8)	1AP0002202-DOT	3000	5000	50	159~248	0.16~0.28	AL6061-T6	DOT-3AL
D50 -3000psi (0.22L M18)	1AP0002203-DOT	3000	5000	50	159~248	0.16~0.28	AL6061-T6	DOT-3AL

UN 48ci4500psi	G410CTP0004801-ISO	4500 (310bar)	6750 (465bar)	110 or 4.33”	180 or 7.09”	0.79 or 48c	AA6061-T6 Carbon fiber Glass fiber	ISO-11119-2
3.4L-1800psi	1AI0034001-DOT	1800	3000	133.4	273~443	2.4~4.4	AL6061-T6	DOT 3AL
UN d60-2420psi	1AW0006004-ISO	2420	3625	60	180~482	0.29~0.99	AL6061-T6	ISO-7866
D81-2216 psi	1AW0010004-DOT	2216	3694	81	225~368	0.7~1.3	AL6061-T6	DOT 3AL
UN 68ci4500psi SL	G410CTP0006803-ISO	4500 (310bar)	6750 (465bar)	110 or 4.33”	207 or 8.15”	1.11 or 68ci	AA6061-T6 Carbon fiber	ISO-11119-2
D64-1800psi	1AW0005001-DOT	1800	3000	64	168~280	0.35~0.65	AL6061-T6	DOT-3AL
D50.5-3000psi	1AP0002204-DOT	3000	5000	50.5	145~230	0.16~0.28	AL6061-T6	DOT-3AL
D91.2-3000psi	1AP0007903-DOT	3000	5000	91.2	164~265	0.56~1.04	AL6061-T6	DOT-3AL
D111.3-2015psi	1AW0017001-DOT	2015	3358	111.3	214~338	1.2~2.2	AL6061-T6	DOT-3AL

UN D64-1800psi	1AW0005001-ISO	1800	2700	64	119~357	0.22~0.85	AL6061-T6	ISO-7866
UN D50.5-3000psi	1AP0002204-ISO	3000	4500	50.5	93~277	0.09~0.35	AL6061-T6	ISO-7866
UN D91.2-3000psi	1AP0007903-ISO	3000	4500	91.2	107~273	0.28~1.08	AL6061-T6	ISO-7866
UN 1.6L1300psi	1AI0016001-ISO	1300	1950	89	355	1.6	AL6061-T6	ISO-7866
1.72L500psi	**1AW0017201**	**500**	**750**	**89**	**346**	**1.72**	**AL3003-H185**	**DOT-39**