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JAPANESE INDUSTRIAL STANDARD

**Hose Assemblies for Liquefied
Petroleum Gas**

JIS B 8261—1980

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In the event of any doubt arising,
the original Standard in Japanese is to be final authority.

JAPANESE INDUSTRIAL STANDARD

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Hose Assemblies for
Liquefied Petroleum GasB 8261-1980
(Reaffirmed: 1985)1. Scope

This Japanese Industrial Standard specifies the rubber hose assemblies used for liquefied petroleum gas, hereinafter referred to as the "LP gas", hereinafter referred to as the "hose assemblies".

Remark: The units and numerical values given in { } in this standard are in accordance with the International System of Units (SI), and are appended for informative reference.

2. Classification and Symbols

2.1 Classification and Nominal Symbols of Hose Assemblies Hose assemblies shall be classified, with nominal symbols, as shown in Table 1 according to their maximum working pressure, working temperature range, kind of LP gas rubber hose, hereinafter referred to as the "hose", used, coupling used, and accessory metal fitting used.

The hoses used shall be as specified in JIS K 6347.

Applicable Standards:

JIS B 0203-Taper Pipe Threads

JIS B 0207-Metric Fine Screw Threads

JIS B 0211-Limits of Sizes and Tolerances for Metric Fine Screw
Threads

JIS B 2203-Tolerances for Pipe Flanges

JIS B 2224-20 kgf/cm² Slip-on Welding Steel Pipe Flanges

JIS B 2401-O Rings

JIS B 8246-Valves for High Pressure Gas Cylinder

JIS G 3101-Rolled Steel for General Structure

JIS G 3141-Cold Rolled Carbon Steel Sheets and Strip

JIS G 3454-Carbon Steel Pipes for Pressure Service

JIS G 4804-Free Cutting Carbon Steels

JIS H 3250-Copper and Copper Alloy-Rods and Bars

JIS H 5301-Zinc Alloy Die Castings

JIS H 5302-Aluminium Alloy Die Castings

JIS H 8610-Electroplated Coatings of Zinc on Iron and Steel

JIS K 6301-Physical Testing Methods for Vulcanized Rubber

JIS K 6347-Liquefied Petroleum Gas Hoses

Table 1. Classification of Hose Assemblies

Class	Nominal symbol	Maximum working pressure kgf/cm ² {MPa}	Working temperature range °C	Kind of hose	Symbols of coupling used (as specified in Table 2)	Symbols of accessory metal fitting used (as specified in Table 3)	Remark (main application)
High-pressure hose assembly for general equipment	H	21.6 {2.16}	-25 to +40	H	O ₁ , D, G, M, T	K, Y C ₁ , C ₂	Used for high-pressure piping from LP gas container to regulator for general domestic use or the like
High-pressure hose assembly for automobiles	A		-30 to +60	A	O ₂ , M, T	—	Used for high-pressure piping from charging mouth to LP gas container or from LP gas container to regulator for automobiles
High-pressure hose assembly for plants	P		-25 to +40	P	M, T, F	—	Used for high-pressure piping in high-pressure gas equipment, tank lorries, gas stands, in LP gas plants and for other industries
	PE			Hose for nominal symbol P but with conductor incorporated			Used in the similar way to nominal symbol P but where static electricity removal is required
Low-pressure hose assembly	HL	2.0 {0.2}		HL	MU, T	J	Used in the part between domestic or the like regulator to outdoor low-pressure piping unit

2.2 Coupling Couplings shall be classified into the eight types shown in Table 2 according to their shape.

Table 2. Classification of Couplings

Shape of coupling		Appended figure No.	Symbol of coupling	Remark
Spanner-tightened charging mouth external thread coupling	O ring seal (with spherical groove)	1	O ₁	Using O ring in spherical groove of coupling seat surface
	O ring seal (with square groove)	2	O ₂	Using O ring in square groove of coupling seat surface
	Metal seal	3	D	Coupling seal consisting of metal
Handle-tightened charging mouth external thread coupling		4	G	Using square ring on coupling seat surface
Metric external thread coupling		5	M	Using metric external thread
PT external thread coupling		6	T	Using taper pipe external thread
Metric internal thread union coupling		7	MU	Using packing on seat surface
Flange coupling		8	F	With flange

2.3 Accessory Metal Fittings Accessory metal fittings shall consists of connection adaptors, hereinafter referred to as the "adaptors", and check-valved regulator connection fittings, hereinafter referred to as the "fittings", and be classified into the five types shown in Table 3 according to their shape.

Table 3. Classification of Accessory Metal Fittings

Shape of accessory metal fitting		Appended figure No.	Symbol of accessory metal fitting	Remark
Adaptor	Charging mouth internal-thread adaptor	9	K	One side: charging mouth internal thread (W 22.5, 14 threads, left-hand); other side: PT 1/4 internal thread
	Charging mouth internal-thread three-way adaptor	10	Y	One side: charging mouth internal thread (W 22.5, 14 threads, left-hand); other two sides: PT 1/4 internal thread
	Male to male adaptor	11	J	One side: PT 1/2 external thread; other side: M 18 x 1.5 external thread or M 24 x 1.5 external thread
Connection fitting	For one side	12	C ₁	Having a valve which changes gas flow by differential pressure and attached with hose assembly on one side.
	For both sides	13	C ₂	The same type as the connection fitting for one side, attached with hose assembly on both sides.

3. Performance

3.1 Performance of Hose Assembly The performance of hose assemblies shall be examined according to 10.1 to 10.8 and comply with the specifications of Tables 4.1 to 4.4.

Table 4.1. Class H

Item	Test	Performance	Main test conditions	Applicable item
Pressure resistance	Airtightness	No leakage nor other abnormalities	Apply 21.6 kgf/cm ² {2.16 MPa} for 1 min.	10.1
	Proof pressure resistance	No leakage nor other abnormalities	Apply 36 kgf/cm ² {3.6 MPa} for 1 min.	10.2
	Breaking pressure	No abnormalities such as detachment of coupling and bursting of hose	Apply 90 kgf/cm ² {9 MPa} or higher at a rate of within 500 kgf/cm ² {50 MPa} per minute.	10.3
Cold resistance	Cold bending	No breakdown, cracking, nor other abnormalities	Let stand at -25°C for 5 h. Bend through 180° with minimum bending radius of Table 9.	10.4
	Airtightness	No leakage nor other abnormalities	After cold bending test, apply 21.6 kgf/cm ² {2.16 MPa} for 1 min.	
Weathering resistance	Ozone deterioration	No cracking nor other abnormalities	Expose to concentration of 50 pphm at 40°C for 96 h. Bend with minimum bending radius of Table 9.	10.5
	Airtightness	No leakage nor other abnormalities	After ozone deterioration test, apply 21.6 kgf/cm ² {2.16 MPa} for 1 min.	
Tensile strength	Tensile	No abnormalities such as detachment of coupling or accessory metal fittings and fracture of hose	Apply 100 kgf {980 N} for 5 min.	10.6
	Airtightness	No leakage nor other abnormalities	After tensile test, apply 21.6 kgf/cm ² {2.16 MPa} for 1 min.	
Impact resistance	Impact	No abnormalities such as damage of coupling or accessory metal fittings	Applicable to products having connection fittings. Drop a 1.5 kg steel ball from a height of 1 m.	10.7
			Applicable to products without connection fittings. Drop specimen from a height of 2 m.	
	Airtightness	No leakage nor other abnormalities	After impact test, apply 21.6 kgf/cm ² {2.16 MPa} for 1 min.	

Table 4.2. Class A

Item	Test	Performance	Main test conditions	Appli- cable item
Pressure resistance	Airtightness	No leakage nor other abnormalities	Apply 21.6 kgf/cm ² {2.16 MPa} for 1 min.	10.1
	Proof pressure resistance	No leakage nor other abnormalities	Apply 36 kgf/cm ² {3.6 MPa} for 1 min.	10.2
	Breaking pressure	No abnormalities such as detachment of coupling and breakage of hose	Apply 90 kgf/cm ² {9 MPa} or higher at a rate of within 500 kgf/cm ² {50 MPa} per minute.	10.3
Cold resistance	Cold bending	No breakdown, cracking, nor other abnormalities	Let stand at -30°C for 5 h. Bend through 180° with minimum bending radius of Table 9.	10.4
	Airtightness	No leakage nor other abnormalities	After cold bending test, apply 21.6 kgf/cm ² {2.16 MPa} for 1 min.	
Weathering resistance	Ozone deterioration	No cracking nor other abnormalities	Expose to 50 pphm concentration at 40°C for 96 h. Bend with minimum bending radius of Table 9.	10.5
	Airtightness	No leakage nor other abnormalities	After ozone deterioration test, apply 21.6 kgf/cm ² {2.16 MPa} for 1 min.	
Tensile strength	Tensile	No abnormalities such as detachment of coupling and breakdown of hose	Apply 100 kgf {980 N} for 5 min.	10.6
	Airtightness	No leakage nor other abnormalities	After tensile test, apply 21.6 kgf/cm ² {2.16 MPa} for 1 min.	
Vibration resistance	Vibration	No leakage nor other abnormalities	Apply vibration with an amplitude of 2 to 4 mm and a frequency of 2000 cycles/min at a pressure of 21.6 kgf/cm ² {2.16 MPa} for 4 h.	10.8

Table 4.3. Class P and Class PE

Item	Test	Performance	Main test conditions	Appli- cable item
Pressure resistance	Airtightness	No leakage nor other abnormalities	Apply 21.6 kgf/cm ² {2.16 MPa} for 1 min.	10.1
	Proof pressure resistance	No leakage nor other abnormalities	Apply 36 kgf/cm ² {3.6 MPa} for 1 min.	10.2
	Breaking pressure	No abnormalities such as detachment of coupling and breakage of hose	Apply 90 kgf/cm ² {9 MPa} or higher at a rate of within 500 kgf/cm ² {50 MPa} per minute.	10.3
Cold resistance	Cold bending	No breakdown, cracking, nor other abnormalities	Let stand at -25°C for 5 h. For nomination 19 and under, bend through 180° with minimum bending radius of Table 9; for nomina- tions of 25 to 50, bend through 90° with minimum bending radius of Table 9.	10.4
	Airtightness	No leakage nor other abnormalities	After cold bending test, apply 21.6 kgf/cm ² {2.16 MPa} for 1 min.	
Weathering resistance	Ozone deterioration	No cracking nor other abnormalities	Applicable only to nomination 12 and under. Expose to 50 pphm at 40°C for 96 h. Bend with minimum bending radius of Table 9.	10.5
	Airtightness	No leakage nor other abnormalities	After ozone deterioration test, apply 21.6 kgf/cm ² {2.16 MPa} for 1 min.	
Tensile strength	Tensile	No abnormalities such as detachment of coupling and breakdown of hose	Applicable only to nomination 12 and under. Apply 100 kgf {980 N} for 5 min.	10.6
	Airtightness	No leakage nor other abnormalities	After tensile test, apply 21.6 kgf/cm ² {2.16 MPa} for 1 min.	
Electric conduc- tivity	Electric conduction	Conduction feasible	Apply 4.5 V to examine for lighting of electric bulb.	10.9

- Remarks 1. The tensile test of Class PE hose assemblies shall be per-
formed by agreement between the parties concerned.
2. The conduction test shall be applied only to Class PE hose
assemblies.

Table 4.4. Class HL

Item	Test	Performance	Main test conditions	Applicable item
Pressure resistance	Airtightness	No leakage nor other abnormalities	Apply 3 kgf/cm ² {0.3 MPa} for 1 min.	10.1
	Proof pressure resistance	No leakage nor other abnormalities	Apply 8 kgf/cm ² {0.8 MPa} for 1 min.	10.2
Cold resistance	Cold bending	No breakdown, cracking, nor other abnormalities	Let stand at -25°C for 5 h. Bend through 180° with minimum bending radius of Table 9.	10.4
	Airtightness	No leakage nor other abnormalities	After cold bending test, apply 3 kgf/cm ² {0.3 MPa} for 1 min.	
Weathering resistance	Ozone deterioration	No cracking nor other abnormalities	Expose to 50 pphm at 40°C for 96 h. Bend with minimum bending radius of Table 9.	10.5
	Airtightness	No leakage nor other abnormalities	After ozone deterioration test, apply 3 kgf/cm ² {0.3 MPa} for 1 min.	
Tensile strength	Tensile	No abnormalities such as detachment of coupling or accessory metal fittings and breakdown of hose	Apply 100 kgf {980 N} for 5 min.	10.6
	Airtightness	No leakage nor other abnormalities	After tensile test, apply 3 kgf/cm ² {0.3 MPa} for 1 min.	
Impact resistance	Impact	No abnormalities such as damage of coupling or accessory metal fittings	Drop 1.5 kg steel ball from 1 m height.	10.7
	Airtightness	No leakage nor other abnormalities	After impact test, apply 3 kgf/cm ² {0.3 MPa} for 1 min.	

3.2 Performance of Valve Body of Connection Fittings and Rubber Parts and the Like Excluding Hose The performance of the valve body of connection fittings and rubber parts, gaskets, and the like excluding the hose shall be examined according to the test of 10.10 to 10.13, and comply with the specifications of Table 5.

Table 5. Valve Body and Rubber Parts and the Like

Item	Test	Performance	Main test conditions	Applicable item
Operability of valve body	Valve body operation	Operable without leakage	Apply a differential pressure of 1 to 0.7 kgf/cm ² {100 to 70 kPa}.	10.10
Durability of valve body	Valve body durability	No leakage	360 times of repeated application of gas pressure of 1 to 0.7 kgf/cm ² {100 to 70 kPa}.	10.11
Cold resistance of valve body	Valve body cold resistance	Operable without leakage	Let stand at -25°C for 30 min. Apply 15.6 kgf/cm ² {1.56 MPa}.	10.12
LP gas resistance of rubber parts and the like	LP gas resistance of rubber parts and the like	No abnormalities such as embrittlement, swelling, and softening	Immerse in LP gas mixed liquid at -20°C and 40°C, respectively, for 24 h.	10.13

4. Construction

Hose assemblies shall be constructed as an integral body by attaching couplings to the hose or by attaching a coupling and accessory metal fittings to the hose.

In addition, hose assemblies shall be free from such defects as leakage from respective parts and detachment of couplings or accessory metal fittings, and have a sufficient function for the piping of the LP gas apparatus and circuit.

Hose assemblies of Class PE shall use a hose incorporating a conductor and be electrically connected with the coupling.

5. Dimensions

5.1 Nomination of Hose Assembly and Nomination of Thread and Flange
The nominations of hose assemblies shall accord with the nominations of the hoses used, and the nominations of threads and flanges shall be as shown in Table 6.

Table 6. Nominations of Hose Assemblies and Nominations of Threads and Flanges

Class	Nomination of hose assembly	Charging mouth thread	Nomination of taper pipe thread	Nomination of metric thread	Nomination of flange
H	5	W 22.5, 14 threads, left-hand	PT $\frac{1}{4}$	(M 14 × 1.5)	
	6			(M 14 × 1.5)	
A	6			(M 18 × 1.5)	
	9		PT $\frac{1}{2}$	(M 22 × 1.5)	
	12			(M 22 × 1.5)	
P, PE	6		PT $\frac{1}{4}$	M 14 × 1.5	15
	9		PT $\frac{3}{8}$	M 18 × 1.5	
	12		PT $\frac{1}{2}$	M 22 × 1.5	
	15		PT $\frac{3}{4}$	M 27 × 2	20
	19				
	25		PT 1	M 33 × 2	25
	38		PT 1 $\frac{1}{2}$	M 50 × 2	40
	50		PT 2	M 60 × 2	50
	75		PT 3	M 90 × 2	80
	100		PT 4	M 115 × 2	100
HL	10		PT $\frac{1}{2}$	M 18 × 1.5	
	12			M 24 × 1.5	
Applicable item	—	5.5	5.6	5.7	5.8

Remark: Those nominations of metric threads in parentheses indicate recommended dimensions.

5.2 Permissible Deviation for Length of Hose Assembly The permissible deviation for the length of hose assemblies shall be as shown in Table 7. Herein, the length of a hose assembly means the length measured from the end of the coupling or accessory metal fitting on one side to the end of the coupling or accessory metal fitting on the other side.