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JB/T 8727-2004

Replacing JB/T 8727-1998, JB/T 8885-1999

Hydraulic fluid power – Hose assemblies

液压软管 总成

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Foreword

This Standard is a revision of JB/T 8727-1998 *Hydraulic Fluid Power – Hose Assemblies.* During the revision, the contents of JB/T 8885-1999 *Technical Conditions for Hose Assemblies of Hydraulic Fluid Power* has been integrated into this Standard.

Compared with the previous edition, this Standard has the following changes:

- ADJUST S16, S18, S21, and S 24 in Table 1 of original JB/T 8727 standard into S14, S17, S19, and S22 respectively; ADJUST S16, S18, S21, S24, and S41 in Table 3 into S14, S17, S19, S22, and S36 respectively. ADJUST the L dimension in Figure 1 ~ 3 of the original standard.

- Compared with the original JB/T 8885 standard, this Standard proposes the tolerance requirements for the hose assemblies' flexural core.

- ADJUST the tensile strength of the connector materials of the hose assemblies to meet the requirements of swaging assembly and reliability of the hose assemblies. ADJUST the low-temperature bending test item in the Test Items and Test Methods into "Test can be conducted as required by the users, otherwise, there is no need to conduct the test".

- The newly-added flange hose assemblies and 24° cone sealing hose assemblies adopt the connector type specified in international standard ISO 6162:1994 and ISO 8434.4:1995.

- Annex A of this Standard specifies the size of mandrel or steel ball of the steel wire braided hose and steel wire wound hose respectively.

This Standard replaces and abolishes JB/T 8727-1998 and JB/T 8885-1999.

Annex A, Annex B, and Annex C of this Standard are normative.

This Standard was proposed by China Machinery Industry Federation.

This Standard shall be under the jurisdiction of the National Technical Committee for Standardization of Hydraulics & Pneumatics (SAC/TC3).

Main drafting organizations of this Standard: Tianjin Research Institute of Construction Machinery, Ningbo Yonghua Hydraulic Equipment Co., Ltd., and Ansteel Hydraulic Accessory Factory.

Main drafters of this Standard: Feng Guoxun, Zhou Shunhua, and Liu Xiaoping.

The previous editions replaced by this Standard are as follows:

- JB/T 8727-1998;

Hydraulic fluid power – Hose assemblies

1 Scope

This Standard specifies the product classification, basic parameters, connection dimension, usability, technical conditions, test methods, inspection rules, marking, packaging, storage, transportation, etc. of flared (nominal inner-diameter of 5mm~31.5mm), ferrule (nominal inner-diameter of 5mm~38mm), welding (or quick-change, nominal inner-diameter of 5mm~51mm), flange, and 24° cone sealing steel wire reinforced hydraulic rubber hose assemblies (hereinafter referred to as “steel-wire-braided hydraulic hose assemblies”) and steel-wire-wound reinforced hydraulic rubber hose assemblies (hereinafter referred to as “steel-wire-wound hydraulic hose assemblies”).

This Standard applies to the steel-wire-braided hydraulic hose assemblies (working temperature range of -40°C ~ +100°C), Type 1 ~ 5 steel-wire-wound hydraulic hose assemblies (working temperature range of -40°C ~ +100°C), and Type 6 steel-wire-wound hydraulic hose assemblies (working temperature range of -10°C ~ +121°C) with hydraulic oil (fluid) as the working medium.

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. For dated references, the subsequent amendments (excluding corrections) or revisions do not apply to this Standard, however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB/T 3 Run-outs, undercuts and chamfers for general purpose metric screw threads (GB/T 3-1997, eqv ISO 3508:1976, ISO 4755:1983)

GB/T 196 General purpose metric screw threads - Basic dimensions

GB/T 197 General purpose metric screw threads - Tolerances

GB/T 699 Quality carbon structural steels

GB/T 1184-1996 Geometrical tolerancing - Geometrical tolerances for features without individual tolerance indications (eqv ISO 2768-2:1989)

GB/T 1804-2000 General tolerances - Tolerances for linear and angular dimensions without individual tolerance indications (eqv ISO 2768-1:1989)

GB/T 2828.1 Sampling procedures for inspection by attributes - Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection

GB/T 3103.1 Tolerances for fasteners - Bolts, screws, studs and nuts (GB/T 3103.1-2002, ISO 4759-1:2000, IDT)

GB/T 3683 Rubber hoses and hose assemblies - Wire-braid-reinforced hydraulic types for oil-based or water-based fluids - Specification

GB/T 7935 Hydraulic fluid power - General requirements for hydraulic components

GB/T 7939 Hydraulic fluid power - Hose assemblies - Test methods (GB/T 7939-1987, neq ISO 6605:1986)

GB/T 9576 Rubber and plastics hoses and hose assemblies - Guide to selection, storage, use and maintenance (GB/T 9576-2001, idt ISO 8331:1991)

GB/T 9577 Rubber and plastics hoses and hose assemblies - Rules for marking, package and transportation

GB/T 10544 Rubber hoses and hose assemblies - Rubber-covered, spiral wire reinforced, hydraulic type

GB/T 17446 Fluid power systems and components - Vocabulary

JB/T 7858 Method to determine cleanliness and acceptance criterions for hydraulic components

ISO 6162:1994 Hydraulic fluid power - Four-screw split-flange connections for use at pressures of 2.5 MPa to 40 MPa (25 bar to 400 bar) - Type I metric series and type II inch series

ISO 8434-4:1995 Metallic tube connections for fluid power and general use - Part 4: 24 degree cone connectors with O-ring weld-on nipples

3 Terms and definitions

The following terms and definitions AND those defined in GB/T 17446 apply to this Standard.

3.1 Maximum working pressure

The maximum working pressure of the hydraulic hose assemblies that ensures the system’s normal operation under specified operational conditions.

3.2 Change length

The amount of axial length change of the hydraulic hose assemblies under the

	10	7.5	12	16.0	28.0	31.0	38.0	51.5	69.0		27.6	M18×l. 5	2.5	22
	12.5	10	15	14.0	25.0	27.5	34.5	43.0	51.5	55.0	27.6	M22×l. 5	2.5	27
	16	13	18	10.5	20.0	22.5	27.5	38.0	48.0	—	—	M27×l. 5	2.5	32
	19	15	22	9.0	16.0	20.5	34.5	34.5	43.0	42.0	27.6	M30×2	4	36
	25	21	28	7.0	14.0	20.5	27.5	27.5	34.5	38.0	27.6	M36×2	4	41
	31.5	27.0	35	4.4	11.0	17.0	—	20.5	24.0	32.5	20.7	M45×2	4	50
	38	33	42	3.5	9.0	14.0	—	17.0	20.5	29.0	17.2	M52×2	4	60

Table 5 Basic parameters and connection dimension of 24° cone sealing hydraulic hose assemblies (continued)

Series	Hose inner-diameter mm	d_0 (reference) mm	d_1 (reference) mm	Max working pressure of steel-wire-braided hose assemblies MPa		Max working pressure of steel-wire-wound hose assemblies MPa						D_0	*l* (reference) mm	s mm
				Type-1 Type-1T	Type-2, 2T, Type-3, 3T	Type-1	Type-2	Type-3	Type-4	Type-5	Type-6			
Heavy Type	5	3.5	6	21.0	35.0	—	—	69.0	86.0	—	—	M14×1.5	1.5	17
	6.3	4	8	20.0	35.0	—	42.0	60.5	77.5	—	—	M16×1.5	1.5	19
			10									M18×1.5	2	22
	8	6.0	12.0	17.5	32.0	36.0	—	56.0	71.5	—	—	M20×1.5	2.5	24
	10	7.5	14.0	16.0	28.0	31.0	38.0	51.5	69.0	—	27.6	M22×1.5	2.5	27
	12.5	10.0	16.0	14.0	25.0	27.5	34.5	43.0	51.5	55.0	27.6	M24×1.5	3	30
	16	13.0	20.0	10.5	20.0	22.5	27.5	38.0	48.0	—	—	M30×2	3	36
	19	15.0	25.0	9.0	16.0	20.5	34.5	34.5	43.0	42.0	27.6	M36×2	3	46
	25	21.0	30.0	7.0	14.0	20.5	27.5	27.5	34.5	38.0	27.6	M42×2	4	50
	31.5	27.0	38.0	4.4	11.0	17.0	—	20.5	24.0	32.5	20.7	M52×2	4.5	60

5 Usability

5.1 Length changes

The length change of the hydraulic hose assemblies under the maximum working pressure is in accordance with the specifications in Table 6.

Table 6 Length changes

Hose types	Steel-wire-braided hydraulic hoses			Steel-wire-wound hydraulic hoses					
	Type-1, Type-1T	Type-2, 3	Type-2T, 3T	Type-1	Type-2	Type-3	Type-4	Type-5	Type-6
Length changes	-4% ~ +2%								±2%

Figure 7 Bending cross section of joint cores

6.3.8 When the front end surface of six-party of the external thread connection type hose assemblies has a sealing effect, the perpendicularity tolerance between its end surface and the thread axis is ±0.05mm.

6.3.9 For bending joint cores, after bending, the deviation of included angle between two axes is ±3°.

6.3.10 The surface of metal parts shall be processed, the processing method can be negotiated by the supplier and purchaser.

6.4 Hydraulic hoses

The hydraulic hose assemblies shall select the hydraulic rubber hoses which comply with the specifications in GB/T 3683 and GB/T 10544. If there are special requirements, it shall reach an agreement through negotiation of the purchaser and manufacturer, and shall be indicated in the order contract.

6.5 Assembly quality

The assembly requirements of hose assemblies is in accordance with the specifications of GB/T 7935.

6.5.1 The joint parts surface of hose assemblies is prohibited to have defects which affect the product quality, such as cracks, burrs, flashing, concave-convex traces, scratches, and corrosion.

6.5.2 The swaging joint position of hoses and joints shall be flat, the inner surface shall be smooth, unblocked and have no phenomenon of straining the inner rubber layer.

6.5.3 During the cutting, rubber stripping, and assembling process of hoses, it is prohibited to damage the reinforced layer of steel wire or appear the phenomenon of steel wire exposed.

6.5.4 The inner cleanliness requirement of hydraulic hose assembly products is in accordance with the specifications in JB/T 7858.

7 Test items and test methods

Test items and test methods are in accordance with specifications in Table 12.

Table 12 Test items and test methods

Number	Test items	Test methods
1	Length change test	According to the specifications of GB/T 7939
2	Low-temperature bending test	

9.2 Sampling

The sampling inspection plan of batched products is in accordance with the specifications of GB/T 2828.1.

Note: Sampling for quality supervision and inspection shall be in accordance with the relevant specifications.

9.2.1 Sampling inspection of test items

a) The value of acceptable quality level AQL is 2.5;

b) Type of sampling scheme: single sampling scheme for the normal inspection;

c) The sample amount n is 8, the minimum sampling batch shall not be less than 40.

Note 1: The sample amount of durability test is 4.

Note 2: The sampling scheme of exit-factory proof pressure test shall be in accordance with the specifications of Annex B.

9.2.2 Sampling inspection of joint processing quality

9.2.2.1 Critical characters (class-A)

a) The value of acceptable quality level AQL is 1.0;

b) Type of sampling scheme: double sampling scheme for the normal inspection;

c) Inspection level: general inspection level I.

9.2.2 Important characters (class-B)

a) The value of acceptable quality level AQL is 6.5;

b) Type of sampling scheme: double sampling scheme for the normal inspection;

c) Inspection level: general inspection level I.

9.2.3 Sampling inspection of inner cleanliness and the minimum pass-through

a) The value of acceptable quality level AQL is 2.5;

b) Type of sampling scheme: double sampling scheme for the normal inspection;

c) Inspection level: general inspection level I.

9.3 Determination rules

According to the specifications of GB/T 2828.1.

10 Marking, packaging, transportation, and storage

10.1 The two ends of qualified hydraulic hose assembly products shall be blocked off.

10.2 The marking, packaging, and transportation of hydraulic hose assembly products shall meet the requirements of GB/T 9577.

10.3 The storage of hydraulic hose assembly products shall meet the requirements of GB/T 9576. Manufacturers shall guarantee that within one-year storage period since the exit-factory date, the usability of products can still achieve the specifications of this Standard.

10.4 The product qualification certificate of hydraulic hose assemblies shall include:

a) Manufacturer name;

b) Hose assembly name and specification;

c) Date of manufacture;

d) Signature and seal of quality inspection department.

11 Annotation notes (reference this Standard)

If the manufacturer decides to comply with this Standard, it is recommended to apply the following note in test reports, product samples, and sales documents:

“Hydraulic hose assemblies comply with the specifications of JB/T 8727-2004 *Hydraulic fluid power - Hose assemblies*”.

Annex A

(Normative)
Size of mandrels or steel balls

A.1 See Table A.1 for the size of mandrels or steel balls.

Table A.1 Size of mandrels or steel balls In mm

Nominal inner-diameter of hoses	Size of mandrels or steel balls	
	Steel-wire-braided hydraulic hoses	Steel-wire-wound hydraulic hoses
5	$3^{0}_{-0.1}$	$3^{0}_{-0.1}$
6.3	$3.2^{0}_{-0.12}$	$3.2^{0}_{-0.12}$
8	$5.2^{0}_{-0.12}$	$5.0^{0}_{-0.12}$
10	$6.8^{0}_{-0.15}$	$6.5^{0}_{-0.15}$
12.5	$9^{0}_{-0.15}$	$8.8^{0}_{-0.15}$
16	$12^{0}_{-0.18}$ / 11.5[a]	$11.8^{0}_{-0.18}$ / 11.2[a]
19	$14^{0}_{-0.18}$	$13.8^{0}_{-0.18}$
22	$17^{0}_{-0.18}$	$16.8^{0}_{-0.18}$
25	$19.5^{0}_{-0.21}$	$18.5^{0}_{-0.21}$
31.5	$25^{0}_{-0.21}$	$24^{0}_{-0.21}$
38	$30^{0}_{-0.25}$	$29.5^{0}_{-0.25}$
51	$40.5^{0}_{-0.25}$	$40^{0}_{-0.25}$

[a] It is the minimum pass-through size of flange hose assemblies, the tolerance value is $^{0}_{-0.18}$.

Annex B

(Normative)

Sampling specifications for proof pressure inspection of hydraulic hose assemblies

B.1 See Table B.1 for sampling specifications for proof pressure inspection of hydraulic hose assemblies.

Table B. 1 Sampling of proof pressure inspection of hydraulic hose assemblies

Batch Piece	Acceptance standard	
	Amount of samples Piece	Acceptability rate %
≤25	Full inspection	100
26 ~ 50	8	100
51 ~ 90	13	100
91 ~ 150	20	100
151 ~ 280	32	100
281 ~ 500	50	100
501 ~ 1200	80	100

Annex C

(Normative)
Length tolerance of hydraulic hose assemblies

C.1 See Table C.1 for the allowable length tolerance of hydraulic hose assemblies.

Table C.1 The allowable length tolerance of hydraulic hose assemblies mm

Hose assembly length L	Length tolerance	
	Inner-diameter of hoses ≤25	Inner-diameter of hoses >25
L≤630	+7, -3	+12, -4
630<L≤1250	+12, -4	+20, -6
1250<L≤2500	+20, -6	+25, -6
2500<L≤8000	+1.5%L, -0.5%L	
L>8000	+3%L, -1%L	

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