International Standard 6807

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Rubber hoses and hose assemblies for rotary drilling and vibration applications — Specification

Tuyaux et flexibles en caoutchouc pour forage rotatif et amortissement des vibrations — Spécifications

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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

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0 Introduction

In rotary drilling for oil, fluid muds are pumped at high pressure in large volumes to drilling heads. High pressure hoses are used as flexible connectors in the mud supply circuit.

Rotary drilling hoses are used between the top of the standpipe and the swivel. They are also used between barges and off-shore drilling rigs.

Rotary vibrator hoses are shorter (9 m or less) hoses used between the pump and derrick manifolds to accommodate misalignment and to isolate vibration.

1 Scope and field of application

This International Standard specifies requirements for textile- and steel-reinforced rubber hoses and hose assemblies for use with water- and/or oil-based muds having a minimum aniline point of 66 °C (150 °F) pumped at high pressure in large volumes in rotary drilling service.

The hoses are suitable for use at temperatures up to 80 °C and are resistant to ageing, to tropical conditions and to ambient temperatures down to −30 °C.

2 References

ISO 1402, *Rubber and plastics hoses and hose assemblies — Hydrostatic testing.*

API Specification 5B, *Specification for threading, gaging and thread inspection of casing, tubing and line pipe threads* (10th edition, 1979).

3 Designation

Hose assemblies are classified into five grades according to the manufacturer's specified proof pressure. The working pressure, including surges, shall not exceed one-half of the manufacturer's specified proof pressure. (See table 1.)

Table 1 — Grades and pressure requirements

Grade	Maximum working pressure		Proof pressure		Minimum burst pressure	
	MPa	PSI	MPa	PSI	MPa	PSI
A	11	1 500	22	3 000	27	3 750
B	14	2 000	28	4 000	35	5 000
C	28	4 000	56	8 000	70	10 000
D	35	5 000	70	10 000	87	12 500
E	52	7 500	104	15 000	130	18 750

4 Requirements

4.1 Materials and construction

4.1.1 Hoses

The hoses shall consist of an oil- and water-resistant synthetic rubber lining, layers of reinforcing plies of textile/steel materials, and an oil- and weather-resistant rubber cover.

4.1.2 Couplings

Rotary and vibrator hoses shall be furnished with external couplings threaded with API Specification 5B line pipe threads.

4.2 Dimensions

4.2.1 The internal diameter of the hose and the line pipe thread size of the couplings shall comply with the requirements given in table 2. Other couplings may be specified by agreement between purchaser and manufacturer.

4.2.2 The standard length of rotary hoses and of vibrator hoses shall be the overall length for the assembly, measured from nipple end to nipple end (see the figure and table 2).

4.2.3 Non-standard lengths may be furnished by agreement between the manufacturer and the user, provided that the hose assembly complies with all the other requirements of this International Standard.

4.2.4 The tolerance on hose length shall be as follows :

Hoses 6 m and under : ± 64 mm.

Hoses over 6 m : $^{+2\ \%}_{-1\ \%}$.

4.3 Pressure test requirements

4.3.1 Each hose shall be individually tested by the manufacturer to the proof pressure specified in table 1 by the method given in ISO 1402.

4.3.2 The assembly shall not twist more than 3 degrees per metre in a direction that will not loosen the couplings when tested to the working pressure specified in table 1.

4.3.3 The hoses shall not move in a lateral or vertical direction by more than one hose diameter of lateral or vertical movement when subjected to the proof pressure specified in table 1. (This requirement applies to rotary drilling hoses only.)

4.3.4 All grades of hoses shall neither contract nor elongate by more than 2 % when tested at the working pressure specified in table 1.

4.4 Minimum bend radii

All grades of hoses shall be capable of being bent to the minimum radius specified in table 3.

5 Hydrostatic test

Lay out a hose as straight as possible. Fill it with water, vent at the exit end to remove all air, and apply a pressure of 0,07 MPa (0,7 bar).

Mark the top of each coupling for observation of twist. Measure the length of the hose.

Increase the pressure to the proof pressure specified in table 1 for the grade of hose concerned over a period not exceeding 5 min. Maintain the proof pressure for a minimum of 1 min.

Examine the hose for signs of leakage or pressure drop. Reduce the pressure to zero.

Raise the pressure to the working pressure specified for the grade of hose over a period not exceeding 5 min. Examine the hose for twisting, elongation or concentration, and lateral or vertical displacement. Reduce the pressure to zero.

6 Marking

6.1 Rotary hoses complying with the requirements of this International Standard shall be marked at each end, not further than 1 200 mm from the couplings, with the manufacturer's name or mark and serial number, and the working pressure. Markings shall be vulcanized into the cover with either an embossed rubber label or a distinctively coloured, printed rubber label.

6.2 Each length of hose shall have a straight, longitudinal lay line, of a distinctive colour, vulcanized into a cover for the full length of the hose.

6.3 All hoses shall be marked with the number of this International Standard and the grade.

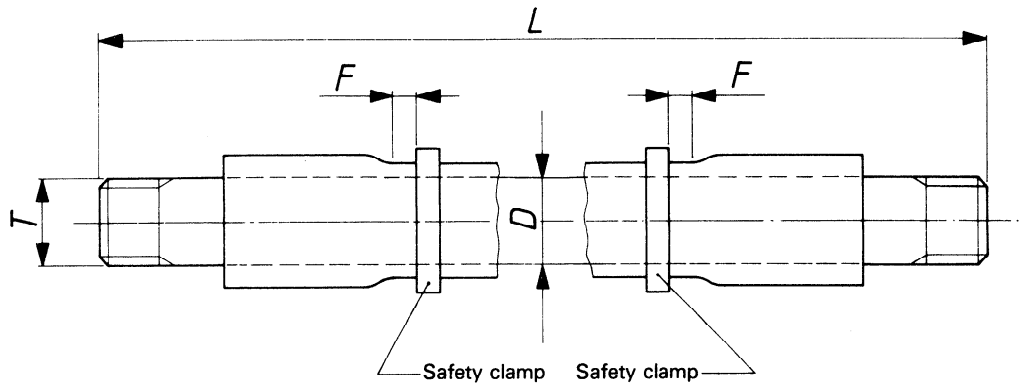

Figure — Rotary drilling and vibrator hose dimensions

NOTES

1 For rotary hose, dimension F shall be 6 to 18 in from the inboard end of the coupling. For vibrator hose, this dimension shall be 6 to 10 in from the inboard end of the coupling. Hose manufacturers shall mark the hose with the words

"ATTACH SAFETY CLAMP HERE."

2 For dimensions D, L and T, see table 2.

Table 2 — Dimensions

Internal diameter D		Standard length L		Nominal thread size T	Grade of hose
mm	in	m	ft	in	
51	2	10,7 12,2	35 40	2.5	A, B, C, D
63	2 1/2	3,1 3,7 4,6 6,1 9,1 15,2 16,8	10 12 15 20 30 50 55	3	A, B, C, D, E
76	3	3,1 3,7 4,6 6,1 9,1 16,8 18,3 21,3 22,9	10 12 15 20 30 55 60 70 75	4	C, D, E
89	3 1/2	3,1 3,7 4,6 6,1 9,1 16,8 18,3 21,3 22,9	10 12 15 20 30 55 60 70 75	4	C, D, E
102	4	3,1 3,7 4,6 6,1 9,1 16,8 18,3 21,3 22,9	10 12 15 20 30 55 60 70 75	5	C, D

Table 3 — Minimum bend radii

Internal diameter mm	Minimum bend radius m
51	1
63	1,2
76	1,2
89	1,4
102	1,5

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