



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. E-8261

This Certificate consists of 9 pages

This is to certify that the

High Voltage Cable

with type designation(s)

**BOSTRIG MHV-5BS 1,8/3 kV, BOSTRIG MHV-8BS 3,6/6 kV,
BOSTRIG MHV-8aBS 6/10 kV, BOSTRIG MHV-15BS 8,7/15
kV, BOSTRIG MHV-15aBS 12/20 kV**

Holder of certificate

Draka Marine, Oil & Gas International

Houston, TX 77032, United States

is found to comply with

Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards

IEC 60092-354 (2003-06)

IEC 60502

IEC 60332-3-22 (2000-10)

Application

Type	Voltage (kV)	Temp. class (°C)
BOSTRIG MHV-5BS 1,8/3 kV	1,8/3	90
BOSTRIG MHV-8BS 3,6/6 kV	3,6/6	90
BOSTRIG MHV-8aBS 6/10 kV	6/10	90
BOSTRIG MHV-15BS 8,7/15 kV	8,7/15	90
BOSTRIG MHV-15aBS 12/20 kV	12/20	90

Place and date

Høvik, 2007-02-15

for DET NORSKE VERITAS AS

Frode Berntsen
Head of Section



Local Office
DNV New York

This Certificate is valid until

2010-12-31

Erik Hoffmann
Surveyor

Notice: This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.



Name and place of manufacturer

Draka Cableteq USA
North Dighton
MA 02764
USA

Product description

BOSTRIG MHV-5BS 1,8/3 kV
BOSTRIG MHV-8BS 3,6/6 kV
BOSTRIG MHV-8aBS 6/10 kV
BOSTRIG MHV-15BS 8,7/15 kV
BOSTRIG MHV-15aBS 12/20 kV

Construction:

Conductors: Tinned, rope stranded copper
Core insulation: EPR
Screening: Tinned copper wire braid
Inner sheath: SE1
Metal covering: Bronze wire braid
Outer sheath: SE1

BOSTRIG MHV-5BS 1,8/3 kV

mm ²	AWG/MCM	BIW Cable Type Designation	IEEE Cable Type Designation	Overall Diameter mm	Overall Diameter Inches
1 x 7,57	8	MHV-5BS-8	SENBS5KV-8	22,35	0,880
1 x 12,5	6	MHV-5BS-6	SENBS5KV-6	23,88	0,940
1 x 18,6	5	MHV-5BS-5	SENBS5KV-5	24,64	0,970
1 x 21,5	4	MHV-5BS-4	SENBS5KV-4	25,65	1,010
1 x 30,7	2	MHV-5BS-2	SENBS5KV-2	27,43	1,080
1 x 46,0	1	MHV-5BS-1	SENBS5KV-1	29,72	1,170
1 x 56,3	1/0	MHV-5BS-1/0	SENBS5KV-1/0	30,99	1,220
1 x 66,5	2/0	MHV-5BS-2/0	SENBS5KV-2/0	31,50	1,240
1 x 92,1	3/0	MHV-5BS-3/0	SENBS5KV-3/0	34,29	1,350
1 x 112,6	4/0	MHV-5BS-4/0	SENBS5KV-4/0	35,31	1,390
1 x 133,0	262	MHV-5BS-262	SENBS5KV-262	36,58	1,440
1 x 158,6	313	MHV-5BS-313	SENBS5KV-313	38,86	1,530
1 x 189,3	373	MHV-5BS-373	SENBS5KV-373	40,64	1,600
1 x 225,1	444	MHV-5BS-444	SENBS5KV-444	42,93	1,690
1 x 271,2	535	MHV-5BS-535	SENBS5KV-535	46,74	1,840
1 x 327,5	646	MHV-5BS-646	SENBS5KV-646	49,78	1,960
1 x 393,8	777	MHV-5BS-777	SENBS5KV-777	53,09	2,090
1 x 562,8	1111	MHV-5BS-1111	SENBS5KV-1111	59,44	2,340



mm ²	AWG/MCM	BIW Cable Type Designation	IEEE Cable Type Designation	Overall Diameter mm	Overall Diameter Inches
3 x 7,57	8	MHV3-5BS-8	TENBS5KV-8	38,61	1,520
3 x 12,5	6	MHV3-5BS-6	TENBS5KV-6	41,91	1,650
3 x 18,6	5	MHV3-5BS-5	TENBS5KV-5	45,72	1,800
3 x 21,5	4	MHV3-5BS-4	TENBS5KV-4	47,50	1,870
3 x 30,7	2	MHV3-5BS-2	TENBS5KV-2	51,56	2,030
3 x 46,0	1	MHV3-5BS-1	TENBS5KV-1	54,86	2,160
3 x 56,3	1/0	MHV3-5BS-1/0	TENBS5KV-1/0	57,91	2,280
3 x 66,5	2/0	MHV3-5BS-2/0	TENBS5KV-2/0	58,93	2,320
3 x 92,1	3/0	MHV3-5BS-3/0	TENBS5KV-3/0	65,02	2,560
3 x 112,6	4/0	MHV3-5BS-4/0	TENBS5KV-4/0	68,07	2,680
3 x 133,0	262	MHV3-5BS-262	TENBS5KV-262	72,64	2,860
3 x 158,6	313	MHV3-5BS-313	TENBS5KV-313	77,72	3,060
3 x 189,3	373	MHV3-5BS-373	TENBS5KV-373	81,79	3,220
3 x 225,1	444	MHV3-5BS-444	TENBS5KV-444	85,85	3,380
3 x 271,2	535	MHV3-5BS-535	TENBS5KV-535	91,19	3,590
3 x 327,5	646	MHV3-5BS-646	TENBS5KV-646	98,04	3,860
3 x 393,8	777	MHV3-5BS-777	TENBS5KV-777	103,38	4,070
3 x 562,8	1111	MHV3-5BS-1111	TENBS5KV-1111	118,36	4,660
4 x 7,57	8	MHV4-5BS-8	FENBS5KV-8	42,42	1,670
4 x 12,5	6	MHV4-5BS-6	FENBS5KV-6	47,75	1,880
4 x 18,6	5	MHV4-5BS-5	FENBS5KV-5	50,29	1,980
4 x 21,5	4	MHV4-5BS-4	FENBS5KV-4	52,83	2,080
4 x 30,7	2	MHV4-5BS-2	FENBS5KV-2	56,39	2,220
4 x 46,0	1	MHV4-5BS-1	FENBS5KV-1	60,20	2,370
4 x 56,3	1/0	MHV4-5BS-1/0	FENBS5KV-1/0	63,75	2,510
4 x 66,5	2/0	MHV4-5BS-2/0	FENBS5KV-2/0	64,77	2,550
4 x 92,1	3/0	MHV4-5BS-3/0	FENBS5KV-3/0	73,91	2,910
4 x 112,6	4/0	MHV4-5BS-4/0	FENBS5KV-4/0	77,22	3,040
4 x 133,0	262	MHV4-5BS-262	FENBS5KV-262	80,77	3,180
4 x 158,6	313	MHV4-5BS-313	FENBS5KV-313	86,36	3,400
4 x 189,3	373	MHV4-5BS-373	FENBS5KV-373	91,19	3,590
4 x 225,1	444	MHV4-5BS-444	FENBS5KV-444	95,50	3,760
4 x 271,2	535	MHV4-5BS-535	FENBS5KV-535	101,60	4,000
4 x 327,5	646	MHV4-5BS-646	FENBS5KV-646	109,22	4,300
4 x 393,8	777	MHV4-5BS-777	FENBS5KV-777	115,32	4,540
4 x 562,8	1111	MHV4-5BS-1111	FENBS5KV-1111	132,33	5,210

BOSTRIG MHV-8BS 3,6/6 kV

mm ²	AWG/MCM	BIW Cable Type Designation	Overall Diameter mm	Overall Diameter Inches



mm ²	AWG/MCM	BIW Cable Type Designation	Overall Diameter	Overall Diameter
			mm	Inches
1 x 12,5	6	MHV-8BS-6	25,15	0,990
1 x 18,6	5	MHV-8BS-5	26,16	1,030
1 x 21,5	4	MHV-8BS-4	26,92	1,060
1 x 30,7	2	MHV-8BS-2	29,46	1,160
1 x 46,0	1	MHV-8BS-1	30,99	1,220
1 x 56,3	1/0	MHV-8BS-1/0	32,26	1,270
1 x 66,5	2/0	MHV-8BS-2/0	32,77	1,290
1 x 92,1	3/0	MHV-8BS-3/0	35,31	1,390
1 x 112,6	4/0	MHV-8BS-4/0	36,58	1,440
1 x 133,0	262	MHV-8BS-262	37,85	1,490
1 x 158,6	313	MHV-8BS-313	40,13	1,580
1 x 189,3	373	MHV-8BS-373	41,91	1,650
1 x 225,1	444	MHV-8BS-444	45,21	1,780
1 x 271,2	535	MHV-8BS-535	47,75	1,880
1 x 327,5	646	MHV-8BS-646	51,56	2,030
1 x 393,8	777	MHV-8BS-777	54,10	2,130
1 x 562,8	1111	MHV-8BS-1111	60,20	2,370
3 x 12,5	6	MHV3-8BS-6	46,74	1,840
3 x 18,6	5	MHV3-8BS-5	48,77	1,920
3 x 21,5	4	MHV3-8BS-4	50,55	1,990
3 x 30,7	2	MHV3-8BS-2	54,36	2,140
3 x 46,0	1	MHV3-8BS-1	57,91	2,280
3 x 56,3	1/0	MHV3-8BS-1/0	60,96	2,400
3 x 66,5	2/0	MHV3-8BS-2/0	61,72	2,430
3 x 92,1	3/0	MHV3-8BS-3/0	67,82	2,670
3 x 112,6	4/0	MHV3-8BS-4/0	72,39	2,850
3 x 133,0	262	MHV3-8BS-262	75,44	2,970
3 x 158,6	313	MHV3-8BS-313	80,52	3,170
3 x 189,3	373	MHV3-8BS-373	84,33	3,320
3 x 225,1	444	MHV3-8BS-444	88,39	3,480
3 x 271,2	535	MHV3-8BS-535	93,98	3,700
3 x 327,5	646	MHV3-8BS-646	100,08	3,940
3 x 393,8	777	MHV3-8BS-777	105,16	4,140
3 x 562,8	1111	MHV3-8BS-1111	120,40	4,740
4 x 12,5	6	MHV4-8BS-6	52,32	2,060
4 x 18,6	5	MHV4-8BS-5	54,61	2,150
4 x 21,5	4	MHV4-8BS-4	56,39	2,220
4 x 30,7	2	MHV4-8BS-2	59,94	2,360
4 x 46,0	1	MHV4-8BS-1	64,26	2,530
4 x 56,3	1/0	MHV4-8BS-1/0	67,56	2,660
4 x 66,5	2/0	MHV4-8BS-2/0	68,58	2,700
4 x 92,1	3/0	MHV4-8BS-3/0	77,22	3,040



		BIW Cable Type Designation	Overall Diameter	Overall Diameter
mm ²	AWG/MCM		mm	Inches
4 x 112,6	4/0	MHV4-8BS-4/0	80,77	3,180
4 x 133,0	262	MHV4-8BS-262	83,82	3,300
4 x 158,6	313	MHV4-8BS-313	89,41	3,520
4 x 189,3	373	MHV4-8BS-373	94,23	3,710
4 x 225,1	444	MHV4-8BS-444	98,81	3,890
4 x 271,2	535	MHV4-8BS-535	104,90	4,130
4 x 327,5	646	MHV4-8BS-646	111,76	4,400
4 x 393,8	777	MHV4-8BS-777	117,60	4,630
4 x 562,8	1111	MHV4-8BS-1111	134,62	5,300

BOSTRIG MHV-8aBS 6/10 kV

		BIW Cable Type Designation	Overall Diameter	Overall Diameter
mm ²	AWG/MCM		mm	Inches
1 x 18,6	5	MHV-8aBS-5	28,45	1,120
1 x 21,5	4	MHV-8aBS-4	29,21	1,150
1 x 30,7	2	MHV-8aBS-2	30,73	1,210
1 x 46,0	1	MHV-8aBS-1	32,26	1,270
1 x 56,3	1/0	MHV-8aBS-1/0	33,53	1,320
1 x 66,5	2/0	MHV-8aBS-2/0	34,04	1,340
1 x 92,1	3/0	MHV-8aBS-3/0	36,58	1,440
1 x 112,6	4/0	MHV-8aBS-4/0	38,10	1,500
1 x 133,0	262	MHV-8aBS-262	39,88	1,570
1 x 158,6	313	MHV-8aBS-313	41,66	1,640
1 x 189,3	373	MHV-8aBS-373	44,96	1,770
1 x 225,1	444	MHV-8aBS-444	46,99	1,850
1 x 271,2	535	MHV-8aBS-535	49,28	1,940
1 x 327,5	646	MHV-8aBS-646	52,83	2,080
1 x 393,8	777	MHV-8aBS-777	55,63	2,190
1 x 562,8	1111	MHV-8aBS-1111	61,21	2,410
3 x 18,6	5	MHV3-8aBS-5	52,32	2,060
3 x 21,5	4	MHV3-8aBS-4	53,85	2,120
3 x 30,7	2	MHV3-8aBS-2	56,90	2,240
3 x 46,0	1	MHV3-8aBS-1	60,45	2,380
3 x 56,3	1/0	MHV3-8aBS-1/0	63,50	2,500
3 x 66,5	2/0	MHV3-8aBS-2/0	64,52	2,540
3 x 92,1	3/0	MHV3-8aBS-3/0	72,14	2,840
3 x 112,6	4/0	MHV3-8aBS-4/0	74,93	2,950
3 x 133,0	262	MHV3-8aBS-262	78,99	3,110
3 x 158,6	313	MHV3-8aBS-313	83,06	3,270
3 x 189,3	373	MHV3-8aBS-373	87,38	3,440
3 x 225,1	444	MHV3-8aBS-444	91,44	3,600



mm ²	AWG/MCM	BIW Cable Type Designation	Overall Diameter	Overall Diameter
			mm	Inches
3 x 271,2	535	MHV3-8aBS-535	96,77	3,810
3 x 327,5	646	MHV3-8aBS-646	102,36	4,030
3 x 393,8	777	MHV3-8aBS-777	108,71	4,280
3 x 562,8	1111	MHV3-8aBS-1111	121,92	4,800
4 x 18,6	5	MHV4-8aBS-5	57,66	2,270
4 x 21,5	4	MHV4-8aBS-4	59,18	2,330
4 x 30,7	2	MHV4-8aBS-2	62,74	2,470
4 x 46,0	1	MHV4-8aBS-1	66,80	2,630
4 x 56,3	1/0	MHV4-8aBS-1/0	71,88	2,830
4 x 66,5	2/0	MHV4-8aBS-2/0	73,15	2,880
4 x 92,1	3/0	MHV4-8aBS-3/0	80,26	3,160
4 x 112,6	4/0	MHV4-8aBS-4/0	83,57	3,290
4 x 133,0	262	MHV4-8aBS-262	88,14	3,470
4 x 158,6	313	MHV4-8aBS-313	92,46	3,640
4 x 189,3	373	MHV4-8aBS-373	97,28	3,830
4 x 225,1	444	MHV4-8aBS-444	101,85	4,010
4 x 271,2	535	MHV4-8aBS-535	107,95	4,250
4 x 327,5	646	MHV4-8aBS-646	114,55	4,510
4 x 393,8	777	MHV4-8aBS-777	121,92	4,800
4 x 562,8	1111	MHV4-8aBS-1111	136,40	5,370

BOSTRIG MHV-15BS 8,7/15 kV

mm ²	AWG/MCM	BIW Cable Type Designation	Overall Diameter	Overall Diameter
			mm	Inches
1 x 30,7	2	MHV-15BS-2	32,26	1,270
1 x 46,0	1	MHV-15BS-1	33,78	1,330
1 x 56,3	1/0	MHV-15BS-1/0	35,31	1,390
1 x 66,5	2/0	MHV-15BS-2/0	35,81	1,410
1 x 92,1	3/0	MHV-15BS-3/0	38,86	1,530
1 x 112,6	4/0	MHV-15BS-4/0	40,13	1,580
1 x 133,0	262	MHV-15BS-262	41,66	1,640
1 x 158,6	313	MHV-15BS-313	44,70	1,760
1 x 189,3	373	MHV-15BS-373	46,99	1,850
1 x 225,1	444	MHV-15BS-444	48,77	1,920
1 x 271,2	535	MHV-15BS-535	52,07	2,050
1 x 327,5	646	MHV-15BS-646	54,61	2,150
1 x 393,8	777	MHV-15BS-777	57,40	2,260
1 x 562,8	1111	MHV-15BS-1111	62,99	2,480
3 x 30,7	2	MHV3-15BS-2	60,96	2,400
3 x 46,0	1	MHV3-15BS-1	64,52	2,540



		BIW Cable Type Designation	Overall Diameter	Overall Diameter
mm ²	AWG/MCM		mm	Inches
3 x 56,3	1/0	MHV3-15BS-1/0	67,82	2,670
3 x 66,5	2/0	MHV3-15BS-2/0	68,83	2,710
3 x 92,1	3/0	MHV3-15BS-3/0	77,47	3,050
3 x 112,6	4/0	MHV3-15BS-4/0	80,77	3,180
3 x 133,0	262	MHV3-15BS-262	83,57	3,290
3 x 158,6	313	MHV3-15BS-313	87,38	3,440
3 x 189,3	373	MHV3-15BS-373	91,44	3,600
3 x 225,1	444	MHV3-15BS-444	95,50	3,760
3 x 271,2	535	MHV3-15BS-535	101,09	3,980
3 x 327,5	646	MHV3-15BS-646	106,93	4,210
3 x 393,8	777	MHV3-15BS-777	113,54	4,470
3 x 562,8	1111	MHV3-15BS-1111	126,24	4,970
4 x 30,7	2	MHV4-15BS-2	68,07	2,680
4 x 46,0	1	MHV4-15BS-1	73,66	2,900
4 x 56,3	1/0	MHV4-15BS-1/0	77,22	3,040
4 x 66,5	2/0	MHV4-15BS-2/0	78,23	3,080
4 x 92,1	3/0	MHV4-15BS-3/0	86,61	3,410
4 x 112,6	4/0	MHV4-15BS-4/0	90,17	3,550
4 x 133,0	262	MHV4-15BS-262	93,47	3,680
4 x 158,6	313	MHV4-15BS-313	97,54	3,840
4 x 189,3	373	MHV4-15BS-373	102,36	4,030
4 x 225,1	444	MHV4-15BS-444	107,19	4,220
4 x 271,2	535	MHV4-15BS-535	113,03	4,450
4 x 327,5	646	MHV4-15BS-646	119,63	4,710
4 x 393,8	777	MHV4-15BS-777	127,00	5,000
4 x 562,8	1111	MHV4-15BS-1111	142,24	5,600

BOSTRIG MHV-15aBS 12/20 kV

		BIW Cable Type Designation	Overall Diameter	Overall Diameter
mm ²	AWG/MCM		mm	Inches
1 x 30,7	2	MHV-15aBS-2	34,54	1,360
1 x 46,0	1	MHV-15aBS-1	36,07	1,420
1 x 56,3	1/0	MHV-15aBS-1/0	37,34	1,470
1 x 66,5	2/0	MHV-15aBS-2/0	37,85	1,490
1 x 92,1	3/0	MHV-15aBS-3/0	41,40	1,630
1 x 112,6	4/0	MHV-15aBS-4/0	42,67	1,680
1 x 133,0	262	MHV-15aBS-262	45,47	1,790
1 x 158,6	313	MHV-15aBS-313	47,50	1,870
1 x 189,3	373	MHV-15aBS-373	49,28	1,940
1 x 225,1	444	MHV-15aBS-444	52,07	2,050
1 x 271,2	535	MHV-15aBS-535	54,61	2,150



mm ²	AWG/MCM	BIW Cable Type Designation	Overall Diameter mm	Overall Diameter Inches
1 x 327,5	646	MHV-15aBS-646	57,40	2,260
1 x 393,8	777	MHV-15aBS-777	59,94	2,360
1 x 562,8	1111	MHV-15aBS-1111	65,53	2,580
3 x 30,7	2	MHV3-15aBS-2	66,04	2,600
3 x 46,0	1	MHV3-15aBS-1	69,85	2,750
3 x 56,3	1/0	MHV3-15aBS-1/0	74,42	2,930
3 x 66,5	2/0	MHV3-15aBS-2/0	75,44	2,970
3 x 92,1	3/0	MHV3-15aBS-3/0	82,80	3,260
3 x 112,6	4/0	MHV3-15aBS-4/0	85,85	3,380
3 x 133,0	262	MHV3-15aBS-262	88,39	3,480
3 x 158,6	313	MHV3-15aBS-313	92,71	3,650
3 x 189,3	373	MHV3-15aBS-373	96,77	3,810
3 x 225,1	444	MHV3-15aBS-444	100,84	3,970
3 x 271,2	535	MHV3-15aBS-535	106,17	4,180
3 x 327,5	646	MHV3-15aBS-646	113,54	4,470
3 x 393,8	777	MHV3-15aBS-777	118,62	4,670
3 x 562,8	1111	MHV3-15aBS-1111	131,83	5,190
4 x 30,7	2	MHV4-15aBS-2	74,93	2,950
4 x 46,0	1	MHV4-15aBS-1	79,50	3,130
4 x 56,3	1/0	MHV4-15aBS-1/0	82,80	3,260
4 x 66,5	2/0	MHV4-15aBS-2/0	84,07	3,310
4 x 92,1	3/0	MHV4-15aBS-3/0	92,20	3,630
4 x 112,6	4/0	MHV4-15aBS-4/0	95,50	3,760
4 x 133,0	262	MHV4-15aBS-262	98,81	3,890
4 x 158,6	313	MHV4-15aBS-313	103,63	4,080
4 x 189,3	373	MHV4-15aBS-373	107,95	4,250
4 x 225,1	444	MHV4-15aBS-444	112,52	4,430
4 x 271,2	535	MHV4-15aBS-535	118,62	4,670
4 x 327,5	646	MHV4-15aBS-646	126,75	4,990
4 x 393,8	777	MHV4-15aBS-777	132,59	5,220
4 x 562,8	1111	MHV4-15aBS-1111	147,32	5,800

Application/Limitation

The requirements of SOLAS Amendments Chapter II-1, Part D, Reg. 45, 5.2 (provision to be taken to limit Fire Propagation along Bunches of Cables or Wires) are fulfilled without any additional measures.

Type Approval documentation

Data sheets:



Cert. No.: E-8261
File No.: 827.30

BIW MHV-5BS and BIW MHV3-5BS sheet B, F, J, N and R dated 98-03-30
BIW MHV4-5BS sheet B, F, J, N and R dated 98-04-23

Test reports:
ITS no 98004047 dated 98-01-30

Tests carried out

Type tests according to:
IEC 60092-354, IEC 60332-3-22, ICEA S93-639 and UL 1072.

Marking of product

Product marking: Draka USA/BIW Cables - Type designation – Size - Voltage class.

Certificate retention survey

The scope of the retention/renewal survey is to verify that the conditions stipulated for the Type approval is complied with and that no alterations are made to the product design or choice of materials.

The main elements of the survey are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Production Sample Tests (PST) and Routines (RT) checked (if not available tests according to PST and RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Survey to be performed at least every second year.

END OF CERTIFICATE