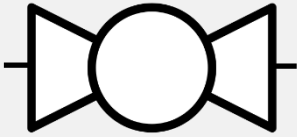


Berghagan 4A N-1405 LANGHUS

Switchboard +47 64 85 86 00
 E. Post Firmapost(at)hydac.no
 Web www.hydac.no

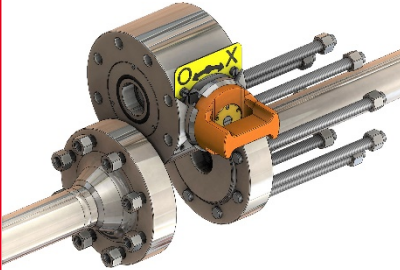
KHS SUBSEA BALL VALVE, Wafer body

Bi-directional floating ball with soft seating. Wafer style body with thru going bolts for stackable, sandwich or multi block configuration.



PN 345
 DN / .. / 46 / .. /

RF & RTJ WAFER STYLE BODY



MODEL CODE

K H S - T [] - [] - D N [] [] - P N [] [] - [] [] [] [] - [] - []

(ordering example)

K H S - T D - 1 - D N 4 6 - P N 3 4 5 - 3 3 3 2 3 0 2 - O -

Designation

KHS = Subsea ball valve

Ball to seat design

T = Floating ball (*Traveling*)

Stem Design

FIG. 1 (a)

S = Single stem

D = Dual stem

ISO 10423 / API6A Product Specification Level (PSL)

1 = PSL 1 3G = PSL 3G
 2 = PSL 2 4 = PSL 4
 3 = PSL 3 X = Special Requirements

Normal Bore Diameter [mm]

FIG. 1

DN = .. / 46 / .. /

Normal Pressur [bar]

PN = .. / 345 / .. / .. / ..

Material

FIG. 2

PART's ->	BODY & LID (b)	BALL (c)	STEM (d)
3	= AISI 316, MDS S01	AISI 316, MDS S01	AISI 316, MDS S01
5	= 6 Mo, MDS R17	6 Mo, MDS R17	6 Mo, MDS R17
6	= 22 Cr Duplex, MDS D47	22 Cr Duplex, MDS D47	22 Cr Duplex, MDS D47
7	= 25 Cr Duplex, MDS D57	25 Cr Duplex, MDS D57	25 Cr Duplex, MDS D57
X	= Special Requirements	Special Requirements	Special Requirements

BALL SEAT

(e)

2	= POM (<i>Polyoxymethylene</i>)	9	= DEVLON V-API© (<i>Nylon</i>)
8	= PEEK (<i>Polyether ether ketone</i>)	X	= Special Requirements

STEM SEAL, Primary

(f)

3O	= PTFE o-ring energized
8O	= PEEK o-ring energized
3V	= PTFE V seal spring energized
8V	= PEEK V seal spring energized
X	= Special Requirements

ELASTOMER

(g)

2	= NBR
4	= FKM
8	= HNBR
9	= HNBR (LT)
X	= Special Requirements

Body to flange sealing

FIG. 1

O	= O-ring, Raised Face - elastomer	X	= Special Requirements
B	= BX Ring type joint - metal to metal		

Surface Protection

	= None
A	= Norsok M-501
X	= Special Requirements

Series

(determined by manufacturer)

Order data

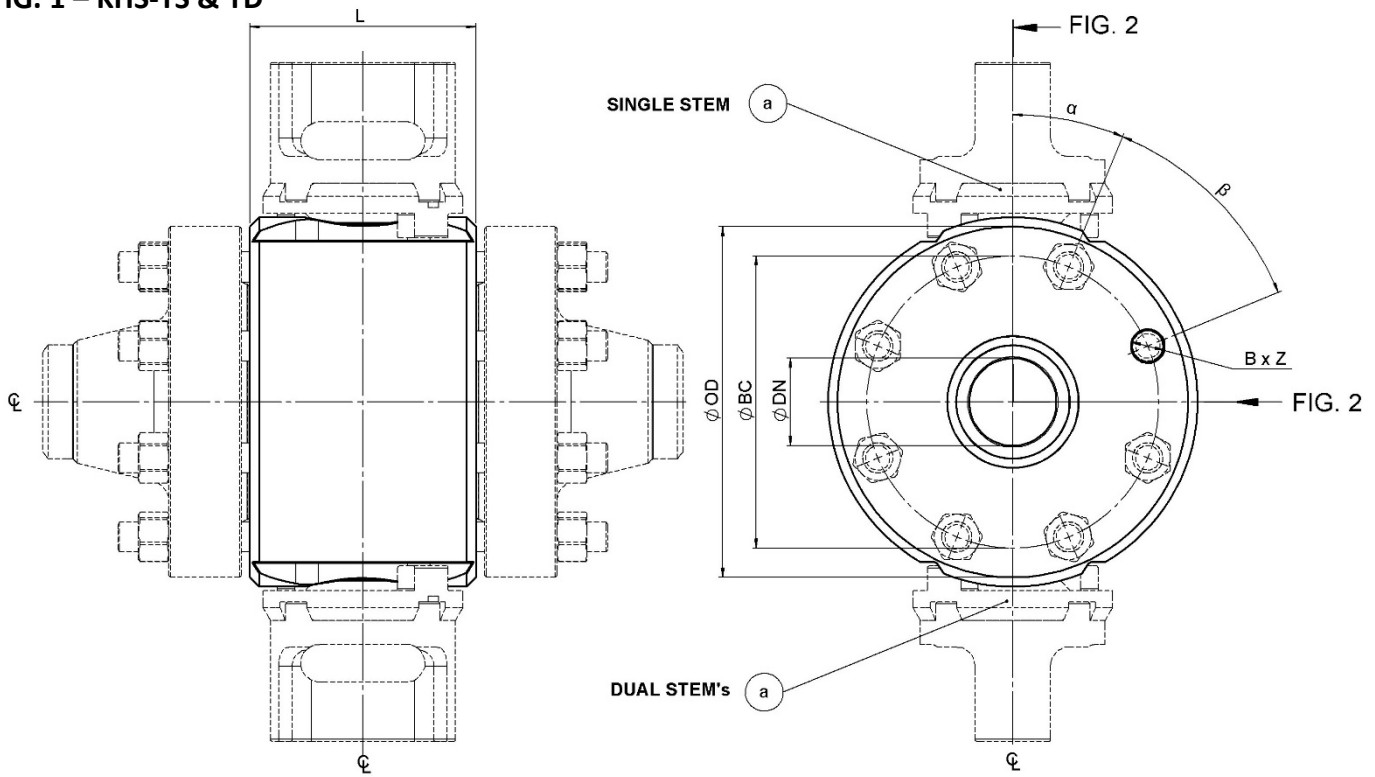
- Nominal bore size
- Nominal pressure
- Product Specification Level
- Material
- Body to flange sealing
- Surface Protection



Technical specifications

Design	<ul style="list-style-type: none"> • Quarter turn operation • Bi-directional floating ball with soft seats • Wafer style body, stackable allowing sandwiched or multi block configuration, featuring thru going holes for stud joint. • Stem seal system contain of three individual seal. Two primary, single acting PTFE seals, to sealing respectively media in cavity and towards sea. One redundant, dual acting PTFE seal, is fitted between the primaries as an secondary barrier. • Torque train and bearings endure full load, in case of maximum differential pressure across ball. • Single or dual stem • Pressure equalized ball cavity to up stream pressure • Static device to maintain electrical continuity to all internal and external metal parts • Ball scraping feature, to increase service life • Solid travel end stop, none adjustable and always reliable
Applicable design codes and guideline	<ul style="list-style-type: none"> • ISO 10423 / API6A • ISO 13628-4 / API 17D • ISO 14723 / API6DSS • BS PD 5500 & ASME VIII • Forschungskuratorium Maschinenbau (FKM)
)Product Specification Level (PSL)	ISO 10423 - PSL 1 to PSL 4
Qualification record	<ul style="list-style-type: none"> • ISO 10423 / API6A - PR1 (DNV) • ISO 10423 / API6A - PR2 (factory) none temperature cycling included
Nominals bore diameter (DN)	.. / 46 / ..
Nominals pressure (PN)	... / 345 / ... / ...
Design & test pressure	<ul style="list-style-type: none"> • Seat static design pressure (SSP) 125% of PN • Hydrostatic body test pressure (TP) 150% of PN
Material <i>For selection see fig. 2</i>	<ul style="list-style-type: none"> • Wetted valve parts: Body, Lid, Stem and Ball, Is selectable from NORSOK M630 MDS, material inspection certificate according to EN 10204-3.1 option 3.2 • Seals, seat and elastomer is selectable to fit services and certification requirements.
Typical operating media <i>(But not limited to)</i> <i>Depends on material selection</i>	<ul style="list-style-type: none"> • Seawater • MEG • Glycol • Oil • Gases ...etc.
Temperature range	-18 °C to+121 °C <i>(Depends on material selection)</i>
Design Life	5 to 20 years <i>(Depends on elastomer selection and service)</i>
Maximum installation depth	<ul style="list-style-type: none"> • 3400 meter <i>(Depends on material selection)</i>
Valve Body to Flange interface	<ul style="list-style-type: none"> • RF - raised face, easy to slip in between flange. The O-ring seal is securely held in place in the valve body with a V-groove • RTJ - Ring Type, maintain a metal seal between body and flange or valve bodies stacked for block function. BX seal groove in valve body and flange
Other technical product advantages	<ul style="list-style-type: none"> • Compact overall valve design, due to direct weld neck flange interface. • None internal pressure containing valve bolting, welding or cladding • Broad material selection for valve parts and seal, to fit your requirements. • Adaptive to customize, your applications • Recyclable in refurbishment program
NOTE.:	<ul style="list-style-type: none"> • Flange stud's and nut's to be ordered separately, from own model code • Operation interface to be ordered separately, from own model code • Valve can be mounted in any direction • Seal kit available on request • Subject to technical modifications

FIG. 1 – KHS-TS & TD

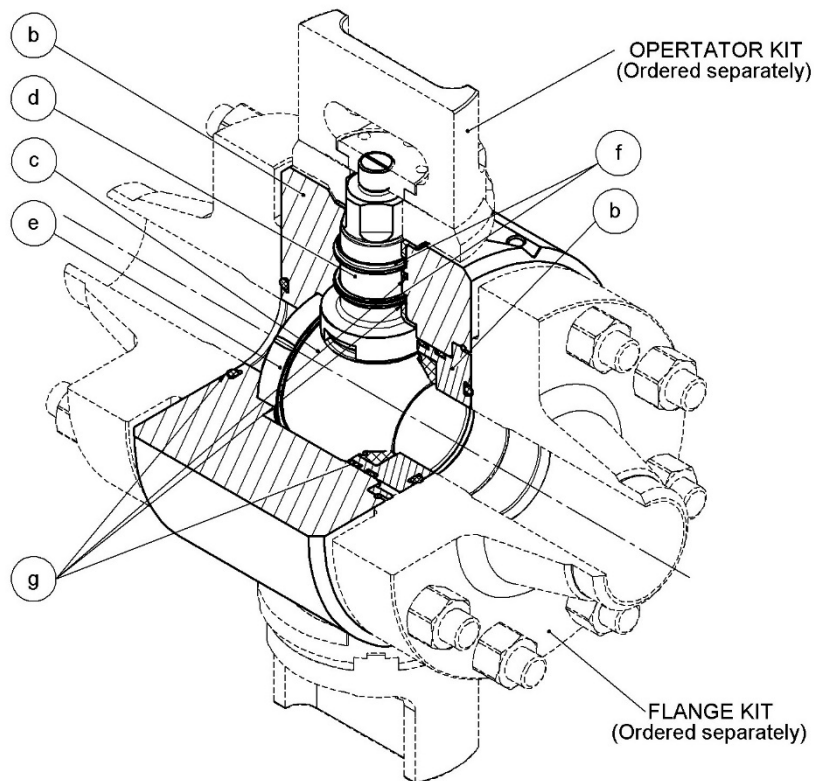


BODY DIMENSION KHS-TS & TD

VALVE BODY TO FLANGE INTERFACE

DN [mm]	TYPE	OD [mm]	L [mm]	MASS [kg]	BC [mm]	Z x β - α	B [mm]
46	O (RF, O-ring)	Ø196	120	24	155	8 x 45° - 22,5°	Ø17 Thru all
	B (RTJ, BX-ring)	Ø196	140	27	155	8 x 45° - 22,5°	Ø17 Thru all
TBA	-	-	-	-	-	-	-

FIG. 2 – KHS-T MATERIAL SELECTION



MATERIAL SELECTION (continue)

Below table show material selection taking operating pressure and installation depth in to effect. (-) reference to fig. 2

PART	MAIN PART MATERIAL				(e) SEAT MATERIAL		(f) STEM SEAL MATERIAL		(g) BODY LID
	AISI 316, MDS S01	6 Mo, MDS R17	22 Cr Duplex, MDS D47	25 Cr Duplex, MDS D57	POM & DEVLON	PEEK	PTFE, o-ring energized	PTFE V-seal, spring energized	Dual O-ring with backup ring
(b) BODY & LID	X	XX	XX	XXX	X	X	X	X	X
(c) BALL	X	XX	XX	XXX		XX	XX	XX	XX
(d) STEM	X	XX	XX	XXX		XXX	XXX	XXX	XXX

Code explain, below:

Installation depth (EP)	Down to 2000 Meter (200 bar external)	Down to 3400 Meter (345 bar external)	
Operation pressure (PN)	$X = PN \leq 345 \text{ bar}$	$XX = PN \leq 517 \text{ bar}$ (investigation ongoing)	$XXX = PN \leq 690 \text{ bar}$ (investigation ongoing)

MATERIAL ELASTOMER (body lid static seal and PTFE stem seal energizer)

Below table show material selection taking temperature and Explosive Decompression Resistant (EDR) requirement in to effect.

(g) Elastomer	NBR	FKM (VITON)	FFKM	HNBR	HNBR (LT)
Temperature deg. C	-30 to +100	-20 to +200	-25 to +240	-30 to +140	-40 to +140
NORSOK M710, EDR option	NO	YES	YES	YES	YES

MAXIMUM ALLOWABLE STEM TORQUE – MAST

Below table show the MAST value for the selectable stem material – see diag. 1 below to determine BTO.

SIZE	STEM MATERIAL (d)			
	AISI 316, MDS S01	6 Mo, MDS R17	22 Cr Duplex, MDS D47	25 Cr Duplex, MDS D57
DN 46	540 Nm	820 Nm	1230 Nm	1510 Nm
TBA	-	-	-	-
TBA	-	-	-	-

DIAG. 1 – KHS-DN46 BREAK OPEN TORQUE (BTO) – Pressure related

