DNV·GL

Certificate No:
TAP00000KX

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pipe Couplings

with type designation(s)
20" APL Swivel 150#
20" APL Swivel 300#
20" APL Swivel (long version) 150#
20" APL Swivel (long version) 300#

Issued to
APL Norway AS
Kolbjørnsvik, Norway

is found to comply with
DNVGL-OS-E201 – Oil and gas processing systems, Edition July 2015

Application :

The swivel is limited to use in APL Loading and Offloading Systems

Type:	Temperature range:	Max. working press.:	Sizes:
20" APL Swivel 150#	**-20°C to +70°C**	**30 bar**	**20"**
20" APL Swivel 300#	**-20°C to +70°C**	**30 bar**	**20"**
20" APL Swivel (long version) 150#	**-20°C to +70°C**	**30 bar**	**20"**
20" APL Swivel (long version) 300#	**-20°C to +70°C**	**30 bar**	**20"**

This Certificate is valid until **2021-10-04**.

Issued at **Høvik** on **2016-10-05**

for **DNV GL**

DNV GL local station: **Kristiansand S**

Approval Engineer: **Sindre Bauck Sole**

Inger-Helene Hals
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

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Job Id: **262.1-024018-1**
Certificate No: **TAP00000KX**

Manufactured by

BMS Kuhn Steel
Møllevegen 18, 4353 Klepp stasjon, Norway

HSM Industrie AS
Bredstrupvej 50, 8500 Grenaa, Denmark

Vrena Mekaniske Verksted AB
Oppundavegen 21, 64033 Bettna, Sweden

Panterra AS
Bedriftsveien 16, Krøgenes Industriområde, 4841 Arendal, Norway

Reference standards

- EN 1474-1 – "Design and Testing of Tranfer Arms", 2008
- ASME VIII DIV 2, Edition 2007

Design loads

$P_{Internal}$ = 30 bar
F_{Axial} = 100 kN
F_{Radial} = 50 kN
$M_{Horizontal}$ = 140 kNm

Type Approval documentation

Materials

Description	Material	Minimum yield strength	Minimum tensile strength	Impact test Requirements
Body	SS2387/165M	615 MPa	850 MPa	32J @ -25°C
Sleeve	SS2387/165M	615 MPa	850 MPa	32J @ -25°C
Flange	SS2387/165M	615 MPa	850 MPa	32J @ -25°C
Piping Flanges	SS2387/165M	615 MPa	850 MPa	32J @ -25°C

Manufacturing
The ball race shall be surface treated as described in 90-MOT-M-KA-0001.

Testing
The swivel joint shall be pressure tested at 1.5 times the design pressure for each delivery.

Marking of product
Documents, Signboards etc. which are to accompany each product / delivery:
Manufacturing report including product certificate, material certificates, NDT and heat treatment reports.

For traceability to this type approval certificate, the products are to be marked:
Manufacturers name, type designation, cetificate number (TAP00000KX), model size and pressure rating.

Certificate retention survey
For retention of the Type approval, DNVGL Surveyor shall perform a survey - every year and before the expiry date of this certificate. This is in order to verify that the conditions for the type approval are complied with.

END OF CERTIFICATE