

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Flexible Hoses of Non-Metallic Material with Permanently Fitted Couplings**

with type designation(s)

HIPAC 2SC - product code THE002K, KAIZEN 2SN - product code THD0021

Issued to

I.M.M. HYDRAULICS SPA
Atessa CH, Italy

is found to comply with

Det Norske Veritas' Standards for Certification 2.9 No. 5-791.70**Det Norske Veritas' Rules for Classification of Ships Pt.4, Ch.6 "Piping Systems"****Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**

Type:	Temperature range:	Max. working press.:	Sizes:
HIPAC 2SC - product code THE002K	-40°C to +100°C	65-430 bar (See certificate)	1/4" to 3"
KAIZEN 2SN - product code THD0021	-40°C to +100°C	90-420 bar (See certificate)	3/16" to 2"

This Certificate is valid until **2017-06-30**.Issued at **Høvik** on **2016-09-14**for **DNV GL**DNV GL local station: **Milan**Approval Engineer: **Adel Samiei**

Marianne Spæren Marveng
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.

Product description

Two type of flexible hose assemblies with below design:

NBR tube, oil resistant synthetic rubber
Outer cover of SBR/NBR/PVC, environment resistant rubber.
Reinforced by two high tensile steel wire braids.

Couplings: carbon steel (Ferrule Code 2SC:001C & 2SN:0022) or inox fittings of stainless steel
(Ferrule Code 2SC:X001C & 2SN:X0022)

Materials: 11SMnPb37 or AISI 316L

Hoses & Couplings are manufactured by: I.M.M. Hydraulics S.p.A

Application/Limitation

This certificate is valid for the specific assembly of hose and coupling type as specified, assembled and delivered by the holder (named as manufacturer) of this certificate.

Size		HIPAC 2SC - product code THE002K			KAIZEN 2SN - product code THD0021		
ID		Part Number	Pressure		Part number	Pressure	
Inch	mm		psi	bar		psi	bar
3/16"	4,8	-	-	-	THD0021-03	6090	420
1/4"	6,4	THE002K-04	6235	430	THD0021-04	6090	420
5/16"	8,0	THE002K-05	5800	400	THD0021-05	5220	360
3/8"	9,5	THE002K-06	5075	350	THD0021-06	5075	350
1/2"	12,7	THE002K-08	4495	310	THD0021-08	5075	290
5/8"	16,0	THE002K-10	4060	280	THD0021-10	3625	250
3/4"	19,0	THE002K-12	3480	240	THD0021-12	3118	215
1"	25,4	THE002K-16	3045	210	THD0021-16	2538	175
1 1/4"	31,8	THE002K-20	2320	160	THD0021-20	2030	140
1 1/2"	38,1	THE002K-24	2175	150	THD0021-24	1813	125
2"	50,8	THE002K-32	1450	100	THD0021-32	1305	90
2 1/2"	63,5	THE002K-40	1160	80	-	-	-
3"	76,2	THE002K-48	943	65	-	-	-

Hose assemblies covered by this certificate are suitable for petroleum base hydraulic fluids within a temperature range of -40°C to +100°C and water base hydraulic fluids within a temperature range of -40°C to +70°C. Operating temperatures in excess of maximum design temperature may materially reduce the life of the hose.

All hose assemblies delivered under this type approval certificate shall be in compliance with an assembly procedure issued by the certificate holder.

Each hose assembly is before delivery to be hydraulic pressure tested to 1.5 times the maximum working pressure and to be delivered with the pressure test report with reference to this type approval certificate.

The hose assemblies covered by this type approval may be assembled and delivered by other than the certificate holder (authorized by type approval holder) under the conditions described in type approval programme 5-791.70.

Flexible hoses are only to be used where it is necessary due to vibrations or flexible mounting of the machinery. The hoses shall not replace/be used where permanent piping is possible/required.

The hoses must only be fitted in places where they are always accessible.

Flexible hoses of these types are not to be used in boiler fronts.

Job Id: **262.1-015178-4**
Certificate No: **TAP00000D9**

The hoses are to be mounted in accordance with the manufacturer's instructions.

It must be possible to shut off from the system all flexible hoses used in systems for lube oil, fuel oil and petroleum base hydraulic oil.

Hose assemblies covered by this type approval certificate shall not be installed in systems subject to vacuum.

Type Approval documentation

Manufacturer's datasheets for couplings and hoses.

Manufacturer's hose assembly test reports.

Impulse and burst test reports MIL-08-0331-1.

Manufacturer's test reports dated 2006-01-13 and 2006-01-12 and 2012-08-27

LAPI test n° 1109-1110-1111. 0IS0110/12 and 889-890-891-892-893-894 0IS0110/13

Tests carried out

Fire, Burst, Impulse, Change in length, Abrasion, Adhesion, Oil resistance, Cold flexibility, Ozone resistance, Dimensional check.

Marking of product

For traceability to this type approval the products are at least to be marked with:

- Manufacturer's name or trade mark
- Type designation

Periodical assessment

For retention of the Type Approval, DNV GL Surveyor shall perform a survey every second year, to verify that the conditions for the type approval are complied with and to witness the following tests on a selection of sizes:

- Dimensional check.
- Change in length
- Leakage test
- Burst test

The tests are to be performed with the type of couplings fitted that are Type Approved with the hoses.