



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **P-14458**

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

with type designation(s)
IMM HIPAC 2SC, IMM KAIZEN 2SN

Manufactured by
I.M.M. HYDRAULICS SPA
ATESSA CH, Italy

is found to comply with
Det Norske Veritas' Rules for Classification of Ships
Det Norske Veritas' Standards for Certification 2.9 No. 5-791.70

Application

The hoses are approved for: Hydrocarbon based hydraulic-, fuel and lubricating oil systems, and sea water, water based hydraulic power and control, pneumatic power and control, compressed air, air conditioning, fresh water and sanitary systems.

Type:	Temperature range:	Max. working press.:	Sizes:
IMM HIPAC 2SC	-40°C to +100°C (+125°C Interm.)	65-430 bar (See certificate)	1/4" to 3"
IMM KAIZEN 2SN	-40°C to +100°C (+125°C Interm.)	90-420 bar (See certificate)	3/16" to 2"

This Certificate is valid until **2017-06-30**.

Issued at **Høvik** on **2013-07-24**

DNV local station: **Milan**

Approval Engineer: **Tom Berg-Nielsen**

for **Det Norske Veritas AS**

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On behalf of 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.

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.

Product description

Flexible hoses exceed DIN EN 857 2SC, EN 853 2SN manufactured by I.M.M. Hydraulics S.p.A..

NBR tube, oil resistant synthetic rubber.
 Outer cover of SBR/NBR/PVC, environment resistant rubber.

The hoses are reinforced by two high tensile steel wire braids.

Swaged couplings of carbon steel (11SMnPb37) or INOX fittings of stainless steel (AISI 316L).

Hose manufacturer: I.M.M. Hydraulics S.p.A

Stainless steel couplings are manufactured by M.C.S. Hydraulics S.r.L

Carbon steel coupling are manufactured by I.M.M. Hydraulics S.p.A.

Application/Limitation

HYPRESS HIPAC 2SC					HYPRESS KAIZEN 2SN				
Part Number	ID		Pressure		Part number	ID		Pressure	
	Inch	mm	psi	bar		Inch	mm	psi	bar
THE002K-04	¼"	6,4	6235	430	THD0021-03	3/16"	4,8	6090	420
THE002K-05	5/16"	8,0	5800	400	THD0021-04	¼"	6,4	6090	420
THE002K-06	3/8"	9,5	5075	350	THD0021-05	5/16"	8,0	5220	360
THE002K-08	½"	12,7	4495	310	THD0021-06	3/8"	9,5	5075	350
THE002K-10	5/8"	16,0	4060	280	THD0021-08	½"	12,7	5075	350
THE002K-12	¾"	19,0	3480	240	THD0021-10	5/8"	16,0	3625	250
THE002K-16	1"	25,4	3045	210	THD0021-12	¾"	19,0	3118	215
THE002K-20	1 ¼"	31,8	2320	160	THD0021-16	1"	25,4	2538	175
THE002K-24	1 ½"	38,1	2175	150	THD0021-20	1 ¼"	31,8	2030	140
THE002K-32	2"	50,8	1450	100	THD0021-24	1 ½"	38,1	1813	125
THE002K-40	2 ½"	63,5	1160	80	THD0021-32	2"	50,8	1305	90
THE002K-48	3"	76,2	943	65	-	-	-	-	-

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.

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.

Hose assemblies delivered from the certificate holder shall be delivered with the following documentation:

- Pressure test report with reference to the type approval certificate.

The hose assemblies covered by this type approval may be assembled and delivered by other than the certificate holder under the following conditions:

- The assembler is authorised by a written authorization from the certificate holder. The certificate holder shall keep record of all assembler authorisations.
- Hose assemblies are in accordance with an assembly procedure issued by the certificate holder and the assembler has proved their qualifications by burst testing of a selection of hose/coupling combinations.
- One sample of each hose type is to be burst tested and the testing is to be witnessed by DNV. This testing is to be performed at least once a year.

For compressed air or gases above 16 bar the cover should be pin prickled.

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.

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 compressed air, lube oil, fuel oil and petroleum base hydraulic oil.

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

Certificate retention survey

For retention of the Type Approval, DNV 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/Diameter (as applicable)
- Leakage test
- Burst test

The tests shall be performed in accordance with procedures given in Det Norske Veritas' Certification Notes no. 2.9 - 103, "Type Approval of Flexible Hoses of Non-Metallic Material", or another recognised standard. The tests are to be performed with the type of couplings fitted that are Type Approved with the hoses.

END OF CERTIFICATE