



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. P-12411

This Certificate consists of 4 pages

This is to certify that the
Pipe Couplings, Bite and Compression Type
with type designation(s)
Gyrolok, twin ferrule design


Manufactured by
Hoke Incorporated, Spartanburg SC U.S.A

is found to comply with
Det Norske Veritas' Rules for Classification of Ships
Det Norske Veritas' Standards for Certification 2.9 No. 5-792.20

Application
The couplings may be used in the following: Central heating, fresh water, compressed air, air conditioning, hydraulic, steam and condensate, lubricating oil, fuel oil (not high pressure fuel injection), sanitary and sea water systems

Temperature range:	-55 to 426°C
Max. working press.:	350 - 870 bar (dep. size, see cert)
Sizes:	1/8" to 1"

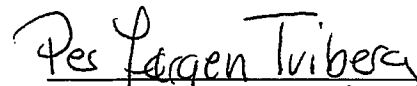
Place and date
Høvik, 2007-02-20
for DET NORSKE VERITAS AS


Hanne Anita Hjerpetjønn
Head of Section



Local Office
DNV Norfolk

This Certificate is valid until
2010-12-31


Per Jørgen Tviberg
Surveyor

Notice: 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.



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 File No.: 792.21
 Case No.: 262.1-002749-1

Product description

Pipe couplings, cutting ring type with double ferrule.

Material: AISI 316

Tapered connecting threads type: NPT, ISO 7/1, BS 21, JIS B0203 and DIN 2999

Types and design:

Standard Fittings		Pre-setting Tool	PST
Male Conn.	CM	Fittings with O-ring Seals	
Male Thermocouple Conn.	CMT	O-ring Male Conn.	COM
Female Conn.	CF	O-ring Straight Conn.	COS
Union	U	O-ring Male Adapter	AOM
Red. Union	RU	O-ring Straight Adapter	AOS
Reducer	R	Fittings with Weld Ends	
Male Adapter	AM	Socket Weld Conn.	CW
Female Adapter	AF	Butt Weld Conn.	CBW
Port Conn. and Red. Port Conn.	PC	Socket Weld Elbow	LW
Bulkhead Adapter	BA	Butt Weld Elbow	LBW
Male Bulkhead Conn.	BCM	Fittings with AN Ends	
Female Bulkhead Conn.	BCF	AN Union	UAN
Bulkhead Union	BU	Bulkhead AN Union	BUAN
Male Elbow	LM	O-ring AN Union	UANO
Female Elbow	LF	AN Adapter	AAN
Union Elbow	LU	Fittings with BSP/ISO Threads	
Male Run Tee	TMT	Male Conn. with RP End	CM/RP
Male Branch Tee	TTM	Male Conn. with RS End	CM/RS
Female Run Tee	TFT	Male Conn. with RT End	CM/RT
Female Branch Tee	TTF	Female Conn. with RG End	CF/RG
Union Tee	TTT	Female Conn. with RT End	CF/RT
Heat Exchanger Tee	XT	Male Adapter with RS End	AM/RS
Union Cross	C	Male Adapter with RT End	AM/RT
Cap	CP	Female Adapter with RG End	AF/RG
Plug	P	Female Adapter with RT End	AF/RT
Lapped Flange Conn.	CLF	Male Elbow with RT End	LM/RT

Application/Limitation

Couplings with studded ends with threads where packing is performed on threads or by packing ring of artificial material are not accepted for fuel systems.

The approval is only valid when the couplings are assembled with tubing of correct temper and tolerances as recommended by the manufacturer.

These couplings are not to be used on tubes in cold fabricated (hard temper) conditions.

Couplings are to be lubricated with FLUORLUBE T80 or equivalent according to manufacturer's instructions.

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The wall thickness and material of the tubes to be in accordance with the current Rules of Det Norske Veritas.

Sizes and maximum working pressure:

Tube O.D.	Pressure
1/8"	870 bar
3/16"	810 bar
1/4"	810 bar
3/8"	520 bar
1/2"	500 bar
5/8"	450 bar
3/4"	470 bar
1"	350 bar

For couplings at elevated temperatures, the maximum working pressure has to be reduced with the following factors:

Temp. .	20°C	50°C	100°C	150°C	200°C	250°C	300°C	350°C	400°C	426°C
Reduction factor	1	0,95	0,85	0,77	0,71	0,67	0,63	0,6	0,58	0,57

No product certificate will be required.

Type Approval documentation

- Manufacturer's catalogues "Hoke Gyrolok® Tube Fittings 79002R029825K0298SP Fractional sizes" and "Hoke Gyrolok® Tube Fittings 79021-R0397-25K0398SP Metric sizes"
- Oxygen-shock test report no. 86-0058 dated 18.03.86 from Det Norske Veritas.
- Test Report from Associated Testing Laboratories Inc dated 03.05.1972, test report no. NT-8562-22 and test report dated 22.12.1966.
- Test report from American Environments Company Inc. No. STR-28694-1, dated 13. December 1994, (Hoke document ER-633).
- DNV's retention survey report dated 2006-12-14

Tests carried out

Assembly, leakage, repeated assembly, burst, pull-out, vibration and pulsation test

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Marking of product

For traceability to this type approval, each coupling is at least to be marked with:

- Manufacturer's trade mark:
- Type designation
- Size

Certificate retention survey

For retention of the Type Approval, a DNV Surveyor shall perform a survey – every second year and before the expiry date of this certificate – to verify that the conditions for the type approval are complied with and to witness burst testing of samples of couplings selected at random from stock or from the running production.

END OF CERTIFICATE

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