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May 03, 2018

SUSAN TURNER
PARKER HANNIFIN INSTRUMENTATION GROUP CANADA
4635 DURHAM RD S
GRIMSBY ON L3M 4G4
CA

Service Request Type.: BPV-National MB
Service Request No.: 2234370
Your Reference No.:
Registered to.: PARKER HANNIFIN INSTRUMENTATION GROUP CANADA

Dear SUSAN TURNER,

Please find enclosed the original response from MB, registered under the CRN No.: 0C11191.54.

As all jurisdictional fees are handled by the Technical Standards and Safety Authority (TSSA), you do not pay any jurisdictions directly.

Should you have any questions or require further assistance, I will be happy to assist you.
For general enquiries, please contact a Customer Service Advisor at 1.877.682.TSSA (8772) or e-mail customerservices@tssa.org. When contacting TSSA regarding this file, please refer to the Service Request number provided above.

Yours truly,

Tanya Francis
Administrative Assistant_ BPV Engineering
Tel. : 416-734-3423
Fax : 416-231-6183
Email : tfrancis@tssa.org



Inspection and Technical Services Manitoba

508 - 401 York Avenue

Winnipeg Manitoba R3C 0P8

T (204) 945-3373

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www.firecomm.gov.mb.ca/codes_steam_pressure.html

March 27, 2018

TSSA

345 Carlingview Drive

Toronto, ON

M9W 6N9

Attn: Joanna Karpinski

REGISTRATION OF VALVES AND FITTINGS

Manufacturer: PARKER HANNIFIN INSTRUMENTATION

The design(s) for the following Valves/Fittings has been received by us and has been examined and accepted for registration in the Province of Manitoba as follows.

DRAWING / CATALOGUE	CRN	FILE
ADD2: ADDITIONAL "H-SERIES MONIFOLD PRODUCTS" AS PER SCOPE	0C11191.54	38692

An invoice covering survey and registration fees is enclosed.

NOTES:

1. CRN registered under reciprocal agreement & is conditional based on compliance with the notes set by the original issuing Jurisdiction: **TSSA**. This registration expires **October 20, 2026**.

This registration is valid until the indicated expiry date only if the Manufacturer maintains a valid quality management system approved by an acceptable third-party agency until that date. Should the approval of the quality management system lapse before the expiry date indicated above, this registration shall become void.

The registration of this design does not relieve the manufacturer, the owner or his agent of the responsibility for the design or construction of a fitting in accordance with the applicable Acts, Codes and Standards. Inspection and Technical Services assumes no responsibility by registering designs, examining plans and/or inspecting equipment or facility.

Regards,

Ryan Orlesky, C.E.T.

Design Surveyor

Office of the Fire Commissioner

Inspection and Technical Services Manitoba

508 - 401 York Avenue

Winnipeg, Manitoba, R3C 0P8

Phone: 204-945-3373

Email: ryan.orlesky@gov.mb.ca

NOTE: You cannot save the DATA you entered on this form, you must print a copy and FAX it or MAIL it!



Technical Standards and Safety Authority
345 Carlingview Drive
Toronto, Ontario M9W 6N9
www.tssa.org

Show facsimile of manufacturer's logo or trademark, as it will appear on the fitting, in the space below



STATUTORY DECLARATION

Registration of Fittings

I, Marcus Ashford, Engineering Manager

(Name and Position, e.g. President, Plant Manager, Chief Engineer)

of Parker Hannifin IPDE

(Name of Manufacturer)

Located at Riverside Road, Barnstaple, Devon, UK EX31 1NP

(Plant Address)

01271313271

(Telephone No.)


01271 373636

(Fax No.)

☐ do solemnly declare that the fittings listed hereunder, which are subject to the **Technical Standards and Safety Act**, Boilers and Pressure Vessels Regulation, comply with all of the requirements of

(Title of recognized North American Standard)

which specifies the dimensions, materials of construction, pressure/temperature ratings, identification marking the fittings and service;

☒ or are not covered by the provisions of a recognized North American standard and are therefore manufactured to comply with MSSSP99, ASME B16.34, ASME  as supported by the attached data which identifies the dimensions, material of construction, pressure/temperature ratings and the basis for such ratings, the marking of the fitting for identification and service.

I further declare that the manufacture of these fittings is controlled by a quality system meeting the requirements of ISO9001:2015 which has been verified by the following authority, DNV Management Systems

The items covered by this declaration, for which I seek registration, are category C type fittings. In support of this application, the following information and/or test data are attached as follows:

Design Verification - Manifold Products

(drawings, calculations, test reports, etc.)

Declared before me at Barnstaple in the County of Devon
the 30th day of October AD 2018

Commissioner for Oaths:

MARICE CHAZEL
(Printed name)
[Signature]
(Signature)

[Signature]
(Signature of Declarer)

FOR OFFICE USE ONLY

To the best of my knowledge and belief, the application meets the requirements of the **Technical Standards and Safety Act**, Boilers and Pressure Vessels Regulation, and CSA Standard B51 and is accepted for registration in Category C

CRN: XC11191.54

Registered by: RYAN ORLESKY

Dated: MAR 27, 2018

NOTE: This registration expires on: OCT 20, 2026



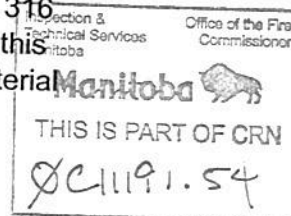
DESIGN VERIFICATION

'H-Series Manifold Products'



Foreword

The H-Series Needle Valve currently holds CRN under design verification in 316 Stainless Steel material in 6,000 PSI and 10,000 PSI forms. The purpose of this document is to expand the CRN coverage to include other product form, material options and optional extras.



Scope

Product Variants

This design verification serves to demonstrate suitability of the manifold products as detailed within this document, which are also in line with the existing approval and calculations for the H-Series needle valve. It should be noted that the 'H-Series Needle Valve' is widely used in a range of products including Single Isolate valves, Manifold Products and Double Block and Bleed valves to name a few examples.

The products displayed in the referenced product catalogues are not exhaustive and there are many possible options which can be defined by the customer. These options would be engineered to follow the same principles and design considerations as detailed in this verification so we would propose they are also to be considered as verified for the purposes of CRN. Table 1 provides details of the catalogues we are referencing for this verification and lists exclusions for which we are not considering for verification on this occasion;

Catalogue Title	Catalogue Number	Exclusions
Instrumentation Hand Valves	4190-HV	HRPV Series HYNV Series
H' Series 3 and 5 Valve Differential Pressure Manifolds	4190-FM	No Exclusions
Instrumentation Solutions – MESC Compliant Modular Mounting Systems	4190-MESC	All products with Part numbers not commencing with MMHOMD or MMHOML

Table 1

Materials

Further to the above product coverage table we would propose the extension of the Stainless Steel verification by means of demonstrating that the mechanical properties used in the calculations, in this instance Tensile Strength (UTS) and Yield, are above that of Stainless Steel. As such we would propose that the material options as detailed in table 2 are suitable for approval also.

Materials that we are not proposing under this verification have been listed as N/A in table 2. This is because the material mechanical properties are below that of stainless steel and as such would require additional validation.

Material	Part Number Designator	Parker Material Standard	Material Grade	UTS (PSI)	Yield (PSI)
316/316L	S	ESSM019/1	ASTM A479 Grade UNS S31600/S31603, EN10088-3 Grade 1.4404	75000	30000
316L (Cast)	S	ESSM019/7	ASTM A351 CF3M	70000	30000
Monel	M	ESSM022/1	ASTM B164 Grade UNS N04400	84121	49602
Duplex	D1	ESSM051/1	ASTM A479 (UNS S31803)	90000	65000
Super Duplex	D2	Use ASTM	ASTM A479 UNS S32750/S22760	109000	75000
Hastelloy	HC	ESSM034/1	ASTM B574 Grade UNS N10276	100000	41000
Carbon Steel	C	N/A	N/A	N/A	N/A
6Mo	6MO	ESSM026/3	ASTM A479 Grade UNS S31254, EN10088-3 Grade 1.4547	95000	44000
Titanium	T	N/A	N/A	N/A	N/A
Incoloy 825	825	ESSM024	ASTM B425 UNS N8825	85572	31908
Inconel 625	625	ESSM056/3 or ESSM056/1	ASTM B446 Grade 1, UNS N06625, BS3076 NA21	120000	60000

Table 2

It is noted that material ASTM A351 CF3M in table 2 has a UTS value of less than 75,000 PSI and as such is not considered for use in manufacturing H-Series bonnet components. The material is however used to make manifold bodies on the HF, MMHOMD and MMHOML manifolds and calculation to validate the body requirements are carried out in addition to the H-Series calculations, these calculations are included in this submission and as such we would propose cast 316L manifolds be included in the design verification.



Connection Options (PTFree)

H-Series manifold products in the proposed materials and configurations have the option of a process connection option called PTFree. This is a Parker Hannifin design and has not previously be submitted for validation for CRN, however having said this the two major design elements that make up the product have separately received validation and as such we would propose that the design also be approved.

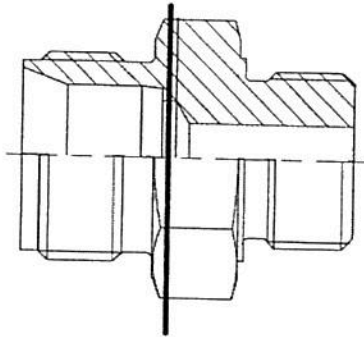
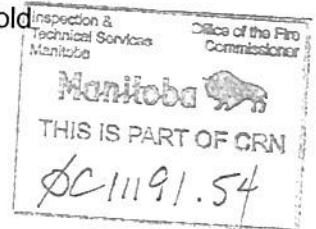


Fig 1

The PTFree design is a combination of the A-Lok / CPI Tube fitting design and the H-Series Needle Valve Bonnet Stud design. Fig 1 shows the body component of the PTFree fitting and demonstrates that detail to the left of the red line is common to the A-Lok / CPI design and detail to the right common to the H-Series bonnet stud.

The pressure boundary and retention calculations relevant to the product are covered either in the A-Lok / CPI validation or the Calculation Pack for the H-Series bonnet so we would propose that no further validation is required and manifold products with the PTFree option be covered under this verification.



Calculations

The relevant calculations for this verification can be found in the below listed documents which should be considered as justification for verification for the Parker H-Series manifold product range with exceptions as detailed.

CRN H-Series Needle Valve Calculation.xls

CRN H-Series Needle Valve Calculation Cast Body.xls

Conclusions

It can be adequately concluded that the H-Series manifold products utilising the H-Series needle valve head which are made with materials with UTS of 75,000 PSI and above with 0.2% Yield stress of 30,000 PSI and above which are within the Parker material options in Table 2 are safe for use to 6,000 PSI (Std. range) and 10,000 PSI (High pressure range).

