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Annex to certificate

Parker Hannifin 080228 P0001 C01.06

List of covered Solenoid Valves types F, V, X and N

Customer:

Parker Hannifin Manufacturing Switzerland SA
Carouge / Geneva
Switzerland



Contract No.: Parker Hannifin 0802-28-C

Report No.: Parker Hannifin 0802-28-C R006 Certificate Annex

Version V2, Revision R2, January 2015

Purpose and scope

This annex to the certificate Parker Hannifin 080228 P0001 C01.06 contains the listing of all the certified combinations of the Solenoid Valves types F, V, X and N together with their electrical parts.

	
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1 Type overview with failure rates according to IEC 61508:2010

Profile 3: Mechanical field products have minimal self heating and are subjected to daily temperature swings.

Valves series F & V

Solenoid			Failure Rate in FIT [:= 10 ⁻⁹ /h]		
			Profile 3		
Valve Body	Electrical Part	Power	λ_{safe}	λ_{dang}	
U131F5695 U131F5295 U121V5595 U121V7595 U133V5595 U133V7595 U133V5695 U133V7695	492965	2.3W	150	66	
	496565	2.3W	150	66	
	492210	2.3W	150	66	
	492310	6W	107	66	
	496555	6W	107	66	
	496700	6W	107	66	
	496560	8W	107	66	
	496800	8W	107	66	
	497105	8W	107	66	
	U121V5596	492310	6W	107	66
		496555	6W	107	66
496700		6W	107	66	
496560		8W	107	66	
496800		8W	107	66	
U131F5695 1D U121V5596 1D U133V5595 1D U133V5695 1D	483270	9W	107	66	
	483270.02	9W	107	66	

Valves series X

Solenoid			Failure Rate in FIT [:= 10 ⁻⁹ /h]	
			Profile 3	
Valve Body	Electrical Part	Power	λ_{safe}	λ_{dang}
U131X1201 (U)131X1101	492965	2.3W	119	168
	496565	2.3W	119	168
	492210	2.3W	119	168
	492310	6W	76	168
	496555	6W	76	168
	496700	6W	76	168
	496560	8W	76	168
	496800	8W	76	168
U133X5156	492965	2.3W	119	168
U133X7156	496565	2.3W	119	168
U133X5195	492210	2.3W	119	168
U133X7195	492310	6W	76	168
U133X5196	496555	6W	76	168
U133X7196	496700	6W	76	168
U133X5296	496560	8W	76	168
U133X7296	496800	8W	76	168
(U)133X01	497105	8W	76	168
U133X0111				
131X1131	492310	6W	76	168
	496555	6W	76	168
	496700	6W	76	168
	496560	8W	76	168
	496800	8W	76	168
U133X5152 U133X5192	492310	6W	76	168
	496555	6W	76	168
	496700	6W	76	168
	496560	8W	76	168
	496800	8W	76	168

Solenoid			Failure Rate in FIT [:= 10 ⁻⁹ /h]	
			Profile 3	
Valve Body	Electrical Part	Power	λ_{safe}	λ_{dang}
U133X5156 1D U133X5195 1D U133X5196 1D U133X5296 1D	483270	9W	76	168
U033X5156 1D U033X5256 1D U133X0111 1D 133X0100 1D	483270.02	9W	76	168
U033X5152 U033X5156 U033X7156 U033X5256 U033X5195 U033X7195	482870	3W	76	168
	492310	6W	76	168
	496555	6W	76	168
	496700	6W	76	168
	496560	8W	76	168
	496800	8W	76	168
	497105	8W	76	168

Valves series N

Solenoid			Failure Rate in FIT [:= 10 ⁻⁹ /h]	
			Profile 3	
Valve Body	Electrical Part	Power	λ_{safe}	λ_{dang}
341 N31 341 N32	483371	8W	107	654
	495905	8W	107	654
	481000	8W	107	654
	481865	8W	107	654
	482725	8W	107	654
	496110	9W	107	654
	483510	9W	107	654
341 N32	496155	14W	332	654
341 N3102	483371	8W	107	654
	481000	8W	107	654
	481865	8W	107	654
	482725	8W	107	654
341 N3108	495905	8W	107	654
	481000	8W	107	654
	481865	8W	107	654
	482725	8W	107	654
341 N3130	495905	8W	107	654
	481865	8W	107	654
	482725	8W	107	654
341 N3190 341 N3290	483580..	2.3W	107	654
	483960..	2.3W	107	654
	488650..	3W	107	654
	488660..	3W	107	654
341 N3197 341 N3297	496125	1.6W	57	654
	482740	1.6W	57	654
	482745	1.6W	57	654
341 N3197 341 N3297	495910	2.3W	150	654
341 N3197 341 N3297	495900	2.5W	107	654

2 Type overview with corresponding failure rates and partial valve stroke testing (PVST)

Partial Valve Stroke testing of the SIF provides a full cycle test of the solenoid valve. Further information about PVST can be found in the draft technical report ISA-TR96.05.01-200_. As the diagnostic coverage (DC) depends on the quality of the PVST (time measurement) for certain failure modes only a DC of 75% was assumed.

Profile 3: Mechanical field products have minimal self heating and are subjected to daily temperature swings.

Valves series F & V

Solenoid			Failure Rate in FIT [:= 10 ⁻⁹ /h]		
			Profile 3		
Valve Body	Electrical Part	Power	λ_{safe}	λ_{dd}	λ_{du}
U131F5695 U131F5295 U121V5595 U121V7595 U133V5595 U133V7595 U133V5695 U133V7695	492965	2.3W	150	61	5
	496565	2.3W	150	61	5
	492210	2.3W	150	61	5
	492310	6W	107	61	5
	496555	6W	107	61	5
	496700	6W	107	61	5
	496560	8W	107	61	5
	496800	8W	107	61	5
	497105	8W	107	61	5
	U121V5596	492310	6W	107	61
496555		6W	107	61	5
496700		6W	107	61	5
496560		8W	107	61	5
496800		8W	107	61	5
U131F5695 1D U121V5596 1D U133V5595 1D U133V5695 1D	483270	9W	107	61	5
	483270.02	9W	107	61	5

Valves series X

Solenoid			Failure Rate in FIT [:= 10 ⁻⁹ /h]		
			Profile 3		
Valve Body	Electrical Part	Power	λ_{safe}	λ_{dd}	λ_{du}
U131X1201 (U)131X1101	492965	2.3W	119	137	31
	496565	2.3W	119	137	31
	492210	2.3W	119	137	31
	492310	6W	76	137	31
	496555	6W	76	137	31
	496700	6W	76	137	31
	496560	8W	76	137	31
	496800	8W	76	137	31
U133X5156	492965	2.3W	119	137	31
U133X7156	496565	2.3W	119	137	31
U133X5195	492210	2.3W	119	137	31
U133X7195	492310	6W	76	137	31
U133X5196	496555	6W	76	137	31
U133X7196	496700	6W	76	137	31
U133X5296	496560	8W	76	137	31
U133X7296	496800	8W	76	137	31
(U)133X01	497105	8W	76	137	31
U133X0111	492310	6W	76	137	31
131X1131	496555	6W	76	137	31
	496700	6W	76	137	31
	496560	8W	76	137	31
	496800	8W	76	137	31
	492310	6W	76	137	31
U133X5152 U133X5192	496555	6W	76	137	31
	496700	6W	76	137	31
	496560	8W	76	137	31
	496800	8W	76	137	31
	492310	6W	76	137	31
U133X5156 1D U133X5195 1D U133X5196 1D U133X5296 1D	483270	9W	76	137	31
U033X5156 1D U033X5256 1D U133X0111 1D 133X0100 1D					
	483270.02	9W	76	137	31

Solenoid			Failure Rate in FIT [:= 10 ⁻⁹ /h]		
			Profile 3		
Valve Body	Electrical Part	Power	λ_{safe}	λ_{dd}	λ_{du}
U033X5152 U033X5156 U033X7156 U033X5256 U033X5195 U033X7195	482870	3W	76	137	31
	492310	6W	76	137	31
	496555	6W	76	137	31
	496700	6W	76	137	31
	496560	8W	76	137	31
	496800	8W	76	137	31
	497105	8W	76	137	31

Valves series N

Solenoid			Failure Rate in FIT [:= 10 ⁻⁹ /h]		
			Profile 3		
Valve Body	Electrical Part	Power	λ_{safe}	λ_{dd}	λ_{du}
341 N31 341 N32	483371	8W	107	507	147
	495905	8W	107	507	147
	481000	8W	107	507	147
	481865	8W	107	507	147
	482725	8W	107	507	147
	496110	9W	107	507	147
	483510	9W	107	507	147
341 N32	496155	14W	332	507	147
341 N3102	483371	8W	107	507	147
	481000	8W	107	507	147
	481865	8W	107	507	147
	482725	8W	107	507	147
341 N3108	495905	8W	107	507	147
	481000	8W	107	507	147
	481865	8W	107	507	147
	482725	8W	107	507	147
341 N3130	495905	8W	107	507	147
	481865	8W	107	507	147
	482725	8W	107	507	147
341 N3190 341 N3290	483580..	2.3W	107	507	147
	483960..	2.3W	107	507	147
	488650..	3W	107	507	147
	488660..	3W	107	507	147
341 N3197 341 N3297	496125	1.6W	57	507	147
	482740	1.6W	57	507	147
	482745	1.6W	57	507	147
341 N3197 341 N3297	495910	2.3W	150	507	147
341 N3197 341 N3297	495900	2.5W	107	507	147

3 Status of the document

3.1 Releases

Version History: V1, R0: Initial version 24 September 2009
V1, R1: Updated after review, 27 October 2009
V1, R2: Electrical part number 497105 added April 2014
V2, R0: Updated to IEC 61508:2010 September 2014
V2, R1: Minor typo corrected.
V2, R2: New certificate revision January 2015

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Review: V1, R0 Audun Opem, Certifying assessor,
Customer
V1, R2 Dr. Cornelius Rieß, Certifying assessor
V2, R0 Dr. Cornelius Rieß, Certifying assessor

Release status: Released