



Certificate no. TAI-FS-C-23-0052

WE HEREBY CERTIFY THAT

Product description ELECTRO-HYDRAULIC SCOTCH-YOKE SPRING RETURN ACTUATOR

Models BIFFI™ SERIES EHO SA

Manufacturer BIFFI ITALIA S.r.l.
Strada Biffi 165
I-29017 Fiorenzuola d'Arda (PC)

IS IN COMPLIANCE WITH THE REQUIREMENTS OF THE STANDARDS

IEC 61508 Parts 1–7:2010

AS RESULT OF THE ASSESSMENT ACCORDING TO THE PROVISION SET OUT IN THE ABOVE-MENTIONED STANDARDS

Summary Report no. TAI-FS-R-23-0103

Expiry date 09.10.2026

Issue date 10.10.2023

TUV AUSTRIA ITALIA
10.10.2023, Monte Roberto (AN)

Ing. Crescenzo Di Fratta

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C.F./P. IVA IT01055750333 - Cap. Soc. i.v. € 400.000,00 - REA AN n. 211030
Società a socio unico, soggetta a controllo e coordinamento di:
TÜV AUSTRIA HOLDING AG Deutschstrasse 10, A-1230, Vienna, Austria
www.tuvaustraliaitalia.com

Annex to certificate no. TAI-FS-C-23-0052

Type	A
HFT	0
Safety functions	1. Delivery of a full stroke driven by the spring, with power fluid exhausted from the cylinder through the control system
Mode of operation	Low Demand Mode

Random failure rates					
Schematic	λ_D [1/h]	$\lambda_{DD(PS)}$ [1/h]	PFD _{AVG} (T _F =12 m, MRT=24 h)	PFD _{AVG} (T _F =12 m, T _b =1 m, MRT=24 h)	PFD _{AVG} (T _F =12 m, T _b =3 m, MRT=24 h)
SHARB005, SHARB010, SHARB007 with SOV Hawe series G actuator series OLGAS-H	5,79E-08	5,63E-08	2,55E-04	2,88E-05	6,99E-05
SHARB005, SHARB010, SHARB007 with SOV Bifold Fluidpower series FP05 and actuator series OLGAS-H	1,49E-07	1,47E-07	6,57E-04	6,80E-05	1,75E-04
SHARB005, SHARB010, SHARB007 with SOV Bifold Fluidpower series FP15 and actuator series OLGAS-H	2,39E-07	2,36E-07	1,05E-03	1,07E-04	2,79E-04
SHARB005, SHARB010, SHARB007 with SOV Thompson Valves series ICO and actuator series OLGAS-H	1,72E-08	1,61E-08	7,59E-05	1,13E-05	2,31E-05
SHARB008, SHARB006, SHARB009 with redundant SOVs Hawe series G and actuator series OLGAS-H	1,68E-08	1,56E-08	7,38E-05	1,11E-05	2,25E-05
SHARB008, SHARB006, SHARB009 with redundant SOVs Bifold Fluidpower series FP05 and actuator series OLGAS-H	2,59E-08	2,47E-08	1,14E-04	1,50E-05	3,30E-05
SHARB008, SHARB006, SHARB009 with redundant SOVs Bifold Fluidpower series FP15 and actuator series OLGAS-H	3,49E-08	3,36E-08	1,54E-04	1,89E-05	4,34E-05
SHARB008, SHARB006, SHARB009 with redundant SOVs Thompson Valves series ICO and actuator series OLGAS-H	1,27E-08	1,16E-08	5,59E-05	9,38E-06	1,78E-05
SHARB011 with SOV Hawe series G, quick exhaust valve Bifold Fluidpower and actuator series OLGAS-H	1,11E-07	1,09E-07	4,88E-04	5,15E-05	1,31E-04
SHARB011 with SOV Bifold Fluidpower series FP05, quick exhaust valve Bifold Fluidpower and actuator series OLGAS-H	2,02E-07	1,99E-07	8,90E-04	9,07E-05	2,36E-04
SHARB011 with SOV Bifold Fluidpower series FP15, quick exhaust valve Bifold Fluidpower and actuator series OLGAS-H	2,92E-07	2,88E-07	1,29E-03	1,29E-04	3,40E-04

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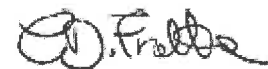
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SHARB011 with SOV Thompson Valves series ICO, quick exhaust valve Bifold Fluidpower and actuator series OLGAS-H	7,02E-08	6,86E-08	3,09E-04	3,41E-05	8,41E-05
SHARB011 with SOV Hawe series G, quick exhaust valve SigmaHLR and actuator series OLGAS-H	9,39E-08	9,19E-08	4,13E-04	4,42E-05	1,11E-04
SHARB011 with SOV Bifold Fluidpower series FP05, quick exhaust valve SigmaHLR and actuator series OLGAS-H	1,85E-07	1,82E-07	8,16E-04	8,34E-05	2,17E-04
SHARB011 with SOV Bifold Fluidpower series FP15, quick exhaust valve SigmaHLR and actuator series OLGAS-H	2,75E-07	2,71E-07	1,21E-03	1,22E-04	3,20E-04
SHARB011 with SOV Thompson Valves series ICO, quick exhaust valve SigmaHLR and actuator series OLGAS-H	5,32E-08	5,17E-08	2,34E-04	2,68E-05	6,45E-05
SHARB012 with redundant SOVs Hawe series G, quick exhaust valve Bifold Fluidpower and actuator series OLGAS-H	6,98E-08	6,81E-08	3,07E-04	3,39E-05	8,36E-05
SHARB012 with redundant SOVs Bifold Fluidpower series FP05, quick exhaust valve Bifold Fluidpower and actuator series OLGAS-H	7,89E-08	7,71E-08	3,47E-04	3,78E-05	9,41E-05
SHARB012 with redundant SOVs Bifold Fluidpower series FP15, quick exhaust valve Bifold Fluidpower and actuator series OLGAS-H	8,79E-08	8,60E-08	3,87E-04	4,16E-05	1,04E-04
SHARB012 with redundant SOVs Thompson Valves series ICO, quick exhaust valve Bifold Fluidpower and actuator series OLGAS-H	6,57E-08	6,41E-08	2,89E-04	3,21E-05	7,89E-05
SHARB012 with redundant SOV Hawe series G, quick exhaust valve SigmaHLR and actuator series OLGAS-H	5,28E-08	5,13E-08	2,32E-04	2,66E-05	6,40E-05
SHARB012 with redundant SOVs Bifold Fluidpower series FP05, quick exhaust valve SigmaHLR and actuator series OLGAS-H	6,19E-08	6,03E-08	2,73E-04	3,05E-05	7,45E-05

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SHARB012 with redundant SOVs Bifold Fluidpower series FP15, quick exhaust valve SigmaHLR and actuator series OLGAS-H	7,09E-08	6,92E-08	3,12E-04	3,44E-05	8,49E-05
SHARB012 with redundant SOVs Thompson Valves series ICO, quick exhaust valve SigmaHLR and actuator series OLGAS-H	6,57E-08	6,41E-08	2,89E-04	3,21E-05	7,89E-05
SHARB001, SHARB003, SHARB002, SHARB004 with SOV Hawe series G and actuator series RPHS	7,50E-08	7,19E-08	3,30E-04	4,14E-05	9,39E-05
SHARB001, SHARB003, SHARB002, SHARB004 with SOV Bifold Fluidpower series FP05 and actuator series RPHS	1,66E-07	1,62E-07	7,32E-04	8,06E-05	1,99E-04
SHARB001, SHARB003, SHARB002, SHARB004 with SOV Bifold Fluidpower series FP15 and actuator series RPHS	2,56E-07	2,51E-07	1,13E-03	1,19E-04	3,03E-04
SHARB001, SHARB003, SHARB002, SHARB004 with SOV Thompson Valves series ICO and actuator series RPHS	3,43E-08	3,17E-08	1,51E-04	2,40E-05	4,71E-05

Systematic capability	3 (Route 1s applied)			
Architectural constraints	Route 1H:	Applied	Route 2H:	Applied
	The product can be used in: <ul style="list-style-type: none"> • single channel configuration: <ul style="list-style-type: none"> ○ up to SIL 2 without external diagnostic tests ○ up to SIL 3 considering external diagnostic tests • double channel configuration: up to SIL 3 			

Remarks:

- Modifications of the schemes, which do not involve the safety function, do not impair the validity of the present certificate
- The above values of PFD_{AVG} are calculated for MRT=24 h and Proof Test Coverage=100%. For other values of MRT, T_F, T_{IPS} and/or non-perfect Proof Test, the PFD_{AVG} values must be re-calculated
- For further details, including environmental conditions, limitations of use, lifetime, failure rates traceability, mean repair times, common cause factors and systematic capability constraints, make reference to Safety Manual SM 032

END OF CERTIFICATE

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