60-408-2026-IT
Certificate Number

Dati Fabbricante		**Manufacturer identification**
Sede Legale / Unità Operativa **Head Office / Plant**	I.B.C. Praha spol. s.r.o. Karlštejnská 9, 252 25 Jinočany, Czech Republic	
Dati Prodotto		**Product identification**
Tipologia / Type:	BALL VALVES - SPLIT-BODY AND ALL-WELDED DESIGNS	
Descrizione / Description	I.B.C. BALL VALVES K82 / K84 / K89 K82: DN 25-1000, PN 16-160 | K84: NPS 1-56, Class 150-2500 K89: NPS 2-56 (DN 50-1200) Class 150-600 (PN 16-100) Clean natural gas service - close-on-trip isolation safety function	
Denominazione **Denomination**	**Marchio / Trademark:**	I.B.C. Praha spol. s.r.o.
	Modelli / Models:	K82 / K84 / K89

Norma di riferimento **Reference standard**	**Prova / Test**	**Risultato / *Result***
IEC 61508-1:2010 IEC 61508-2:2010 IEC 61508-6:2010	Functional Safety Product Capability assessment of Type A mechanical final elements in low-demand mode. Component FMEDA, SFF, PFDavg and PFH assessed against IEC 61508 quantitative ranges for 1oo1 (HFT=0) and two-valve series 1oo2 success architecture (HFT=1).	*Satisfactory** *SIL 2: 1oo1 / HFT=0* *SIL 3: 1oo2 / HFT=1*
IEC 61511-1:2016 + A1:2017	Application of the FMEDA results to process-industry SIF verification, proof testing and illustrative LOPA. Capability is conditional on the stated service, diagnostic, proof-test, architecture and common-cause assumptions. Complete SIF and systematic-capability verification remain required.	*Applicable** *Subject to stated assumptions*

Laboratorio di prova: **Test location:**	TC2 Global Register - documentary engineering assessment based on I.B.C. technical documentation and publicly available mechanical-valve reliability literature (published exida material and ISO 14224/OREDA taxonomy). No licensed OREDA numerical records were used.
Risultato dell'esame: **Examination result:**	This Functional Safety Product Capability Certificate is based on review of the K82/K84/K89 catalogues, drawings V460-158-V1 to V6, component FMEDA and calculation workbook. The assessed valve bodies demonstrate random-hardware capability up to SIL 2 as a single Type A final element (1oo1, HFT=0), and up to SIL 3 when two independently actuated valves are installed in series and either valve can achieve the required safe isolation (1oo2 success logic, HFT=1).
Parametri di Esame: **Examination parameters:**	Clean, dry natural gas; normally open / close on trip; low-demand mode; monthly automated PST with verified position and movement signature; enhanced full proof test <= 36 months including seat-leakage verification; PTC 90%; mission time 10 years; MTTR 24 h; beta <= 5%. Generic failure rates are engineering estimates derived from public mechanical-valve FMEDA/reliability literature and conservative size/pressure factors. Valid only within the listed product envelopes. Scope excludes actuator, solenoid, sensors, logic solver, utilities and complete-SIF verification.
Data di Emissione: **Issue Date:**	06/08/2026
Data di Scadenza: **Expiring Date:**	05/08/2029
Test Report No.:	FMEDA-IBC-BV-001 Rev. 0 - Functional Safety Product Capability Assessment - 05/08/2026
Allegati / Annexes:	IBC_Ball_Valves_K82_K84_K89_FMEDA_Calculations.xlsx; I.B.C. catalogues K82/K84/K89; drawings V460-158-V1 to V460-158-V6; public reliability references and limitations listed in FMEDA-IBC-BV-001 Rev. 0.

Date	Expiring Date	Issued by	Approved by
06-08-2026	05-08-2029	Antonio Borraccino	Gianluca Borraccino

T-60-408-2026-IT

SUMMARY OF RANDOM-HARDWARE PRODUCT CAPABILITY - T-60-408-2026-IT				
Model	**Size / pressure scope**	**Base λD / SFF**	**PFDavg 1oo1 / HFT=0**	**PFDavg 1oo2 / HFT=1**
K82	DN 25-1000 | PN 16-160	500 FIT | 68.70%	4.154E-3 | SIL 2	2.233E-4 SIL 3 | PFH 3.884E-8/h | RRF 4,479
K84	NPS 1-56 | Class 150-2500	520 FIT | 68.70%	4.695E-3 | SIL 2	2.547E-4 SIL 3 | PFH 4.391E-8/h | RRF 3,927
K89	DN 50-1200 (NPS 2-56) PN 16-100 (Class 150-600)	450 FIT | 69.72%	3.467E-3 | SIL 2	1.842E-4 SIL 3 | PFH 3.343E-8/h | RRF 5,428

** Functional Safety Product Capability Certificate based on a documentary engineering assessment and generic publicly available reliability literature. It is not an accredited IEC 61508 product certification and does not establish Systematic Capability SC3. SIL 2 applies to one valve (1oo1/HFT=0); SIL 3 applies only to two independent valves in series (1oo2/HFT=1) under the stated service, testing, beta and proof-test assumptions. Complete SIF verification remains required.*

Date	Expiring Date	Issued by	Approved by
06-08-2026	05-08-2029	Antonio Borraccino	Gianluca Borraccino