TECHNICAL DATASHEET

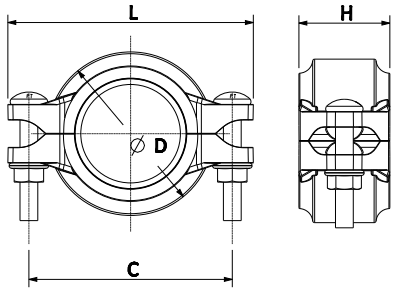
GROOVED FLEXIBLE COUPLING | TYPE GKF

Size range: 1" - 24"

FM APPROVED

UL

CNBOP-PIB







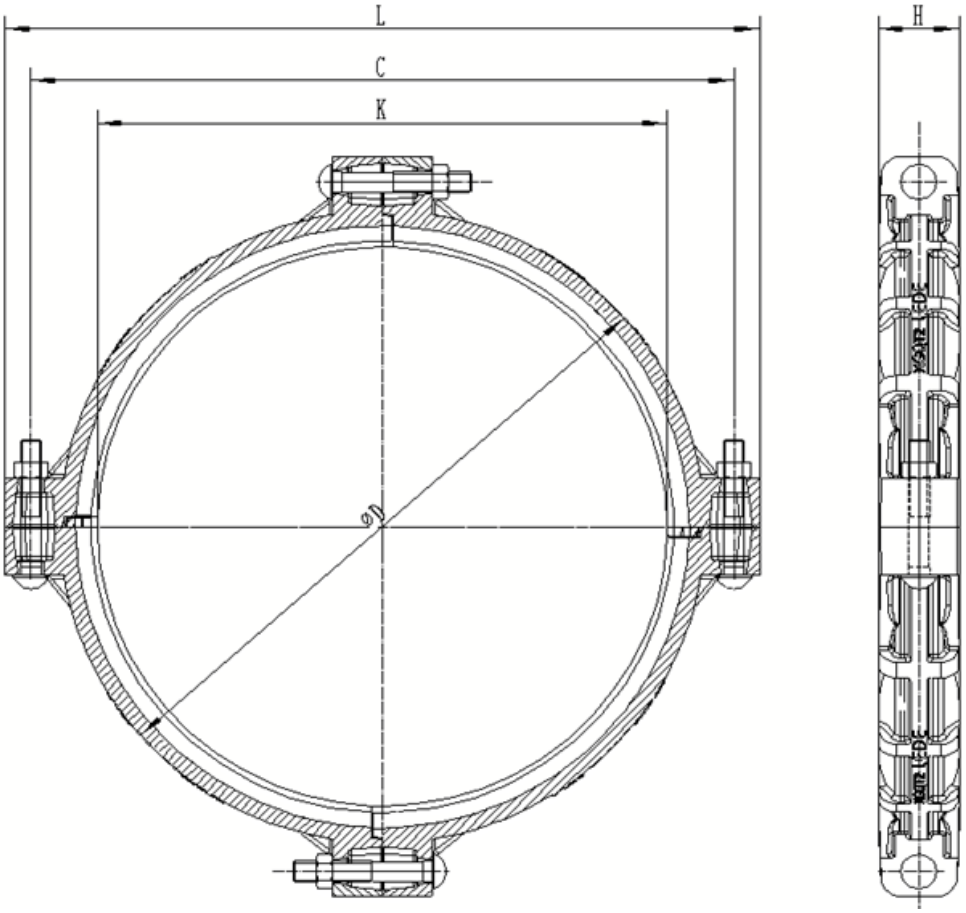
Flexible couplings are designed to allow axial displacement, rotation and some angular movement. The coupling can accommodate angular misalignments up to a few degrees. It can also accommodate parallel misalignment and / or thermal deformation when using two couplings with an intermediate pipe.

Reference		Nominal size		Pipe Ø O.D.	Flexible coupling dimensions				Bolt size	Socket wrench	Torque	Weight	Marking
Red	Galva	NPS inch	DN mm	mm	Ø D mm	L mm	H mm	C mm	d1xL mm	mm	Nm	kg	
GKFR	GKFG	1	25	33,7	55,0	97	45	73	M10x40	15	44-54	0,44	GKF
GKFR	GKFG	1¼	32	42,4	63,5	110	45	84	M10x50	15	44-54	0,50	GKF
GKFR	GKFG	1½	40	48,3	69,0	116	45	90	M10x50	15	44-54	0,54	GKF
GKFR	GKFG	2	50	57,0	83,6	124	46	102	M10x60	15	44-54	0,68*	GKF
GKFR	GKFG	2	50	60,3	83,6	127	46	102	M10x60	15	44-54	0,68	GKF
GKFR	GKFG	2½	65	73,0	98,0	137	46	115	M10x60	15	44-54	0,82	GKF
GKFR	GKFG	2½	65	76,1	98,0	139	46	115	M10x60	15	44-54	0,79	GKF
GKFR	GKFG	3	80	88,9	114,0	156	46	132	M10x60	15	44-54	0,96	GKF
GKFR	GKFG	4	100	108,0	138,0	186	50	160	M12x70	18	90-100	1,44	GKF
GKFR	GKFG	4	100	114,3	142,0	189	50	162	M12x70	18	90-100	1,39	GKF
GKFR	GKFG	5	125	133,0	164,0	213	50	185	M12x70	18	90-100	1,90*	GKF
GKFR	GKFG	5	125	139,7	170,0	222	50	192	M12x70	18	90-100	1,92	GKF
GKFR	GKFG	5	125	141,3	170,0	218	50	190	M12x70	18	90-100	1,85	GKF
GKFR	GKFG	6	150	159,0	192,0	238	50	209	M12x75	18	90-100	2,05	GKF
GKFR	GKFG	6	150	165,1	196,0	244	50	215	M12x75	18	90-100	2,11	GKF
GKFR	GKFG	6	150	168,3	198,0	251	50	222	M12x75	18	90-100	2,12	GKF
GKFR	GKFG	8	200	216,3	254,0	340	60	294	M20x90	30	270-300	4,79*	GKF
GKFR	GKFG	8	200	219,1	256,0	316	60	282	M16x85	24	200-230	3,82	GKF
GKFR	GKFG	10	250	267,4	313,0	400	64	352	M20x90	30	270-300	6,74*	GKF
GKFR	GKFG	10	250	273,0	319,0	393	64	352	M20x110	30	270-300	6,52	GKF
GKFR	GKFG	12	300	318,5	368,0	464	65	416	M22x110	34	380-420	9,03*	GKF
GKFR	GKFG	12	300	323,9	374,0	453	65	410	M20x130	30	270-300	8,55	GKF
GKFR	GKFG	14	350	355,6	408,0	510	75	454	M22x110	34	270-300	11,70*	GKF
GKFR	GKFG	15	375	377,0	428,0	520	75	468	M22x140	34	270-300	12,80*	GKF
GKFR	GKFG	16	400[1)]	406,4	459,0	555	75	503	M22x140	34	270-300	15,80*	GKF
GKFR	GKFG	18	450[1)]	457,0	515,0	606	78	554	M22x140	34	380-420	19,00*	GKF
GKFR	GKFG	20	500[1)]	508,0	613,0	674	78	678	M22x140	34	270-300	26,00*	GKF
GKFR	GKFG	22	550[1)]	558,8	621,0	782	78	678	M22x140	34	270-300	29,05*	GKF
GKFR	GKFG	24	600[1)]	609,6	674,0	778	78	727	M24x150	36	320-340	32,50 *	GKF

[1)] Technical drawing on page 2
* No FM- and UL-approval.

Technical drawing for

- GKFR20 and GKFG20 (DN 500)
- GKFR22 and GKFG22 (DN 550)
- GKFR24 and GKFG24 (DN 600)



Function

Mechanical couplings are applied to make a safe, fast and reliable connection between grooved pipes and / or fittings. GKF is a flexible type of coupling and allows for small pipe movements when under pressure and in service. GKF couplings are designed to be used with the OGS groove system. Please read our installation instructions for carefree application.

Material specifications

Housing: ductile iron conform to ASTM A536 GR 65-45-12 (EN-GJS-450-10).
Coating:

- Hot dip galvanised.
- Red paint coating RAL 3000, EPD epoxy coating (any other colour on request).

Bolts and nuts: medium carbon steel, zinc electroplated, quenched and tempered (ISO 898).
Rubber gasket: 1) EPDM gaskets dispose of the international certifications and have undergone the aging test at 110°C / 230°F for a period of 45 days / 1080 hours and the freezing test at -40°C / -40°F for a period of 4 days / 96 hours.
2) NBR gaskets for special applications (see table).

Gasket compound grade	Temperature range (°C)	MEDIUM						
		Cold water	Hot water	Air (oil-free)	Nitrogen	Glycol / water mixtures	Air (with oil vapor)	Hydrocarbons
NBR-TL	-29 / +83°C				✔		✔	✔
NBR-TL	-29 / +63°C	✔	✔	✔				
NBR-TL	-29 / +20°C					✔		

Applications

- Wet & dry fire sprinkler pipe systems
- Glycol / water mixed systems
- Compressed air systems
- Exhaust systems
- HVAC
- Heating systems
- Industrial applications
- Drain pipe systems
- Cooling systems

Working pressure

- Cold water sprinkler applications DN 25 to DN 300: 2,07 MPa / 20,7 bar / 300 psi.
- Other media & applications: we refer to CSTB ATT-21/034_V2 table page 9*
- Vacuüm-resistance (all applications & media except from gas group 1): -0,55 bar (+0,45 bara)**

- *Mechanical couplings are not CE-marked. We recommend the use within SEP category of the PED.
- **GKF couplings have been leak-tested up to -0,85 bar (0,15 bara) according to FM standard 1920.
- Working pressure for 20", 22" and 24": 1,60 MPa / 16,0 bar / 232 psi. Maximum test pressure = 3,20 MPa / 32 bar / 470 psi.

Approvals***

- Sprinkler-specific:

FM APPROVED
FM standard
1920

UL 213

CNBOP-PIB

EN10311
(CPR305/2011)

- Other qualifications:

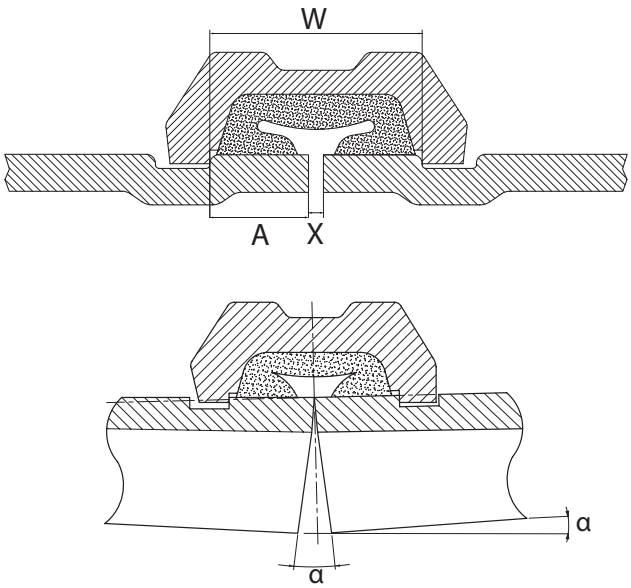
CSTB
ATT 21/034

Becetel

KOMO

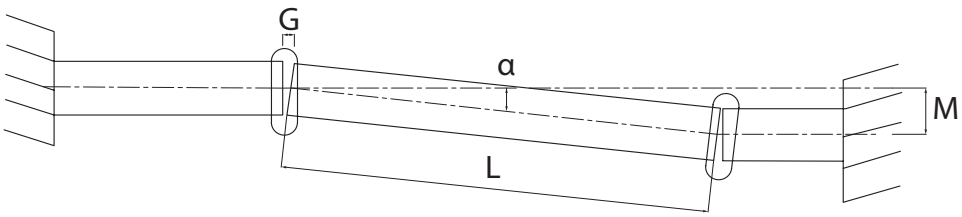
- KOMO: test comprise 3000 hours compression set test at 110°C.
- CSTB: test comprise 1000 hours leak-free service at 110°C.
- Becetel: test comprise vacuum tests and glycol / water mixture pressure tests.

Nominal size		Pipe Ø O.D.	W	A mm			X mm
NPS inch	DN mm	mm	mm	basic	max.	min.	max.
1	25	33,7	35,0	15,9	16,6	15,1	1,6
1¼	32	42,4	35,0	15,9	16,6	15,1	1,6
1½	40	48,3	35,0	15,9	16,6	15,1	1,6
2	50	57,0	35,0	15,9	16,6	15,1	1,6
2	50	60,3	35,0	15,9	16,6	15,1	1,6
2½	65	73,0	35,0	15,9	16,6	15,1	1,6
2½	65	76,1	35,0	15,9	16,6	15,1	1,6
3	80	88,9	35,0	15,9	16,6	15,1	1,6
4	100	108,0	37,0	15,9	16,6	15,1	3,2
4	100	114,3	37,0	15,9	16,6	15,1	3,2
5	125	133,0	37,0	15,9	16,6	15,1	3,2
5	125	139,7	37,0	15,9	16,6	15,1	3,2
5	125	141,3	37,0	15,9	16,6	15,1	3,2
6	150	159,0	37,5	15,9	16,6	15,1	3,2
6	150	165,1	37,5	15,9	16,6	15,1	3,2
6	150	168,3	37,5	15,9	16,6	15,1	3,2
8	200	216,3	44,5	19,1	19,8	18,3	3,2
8	200	219,1	44,5	19,1	19,8	18,3	3,2
10	250	267,4	47,0	19,1	19,8	18,3	3,2
10	250	273,0	47,0	19,1	19,8	18,3	3,2
12	300	318,5	48,0	19,1	19,8	18,3	3,2
12	300	323,9	48,0	19,1	19,8	18,3	3,2



General notes:

- ***All tests have been carried out with standard EPDM-gaskets.
- The maximum axial and angular movement values shown in the table are valid for rolled groove, they may be doubled for cut groove. For design and installation purposes, we recommend to reduce these values by 50% (1"-3") and by 25% (4"-10").
- Combined maximum angular and maximum axial movement are not allowed. Contact us for more information.
- Our flexible couplings meet the minimum required allowable angular movements according to NFPA 13-3.5.8.
- Profit flexible couplings provide cost-effective solutions for expansion problems, vibrations, pipe stress, seismic loads etc.
- Independent technical datasheet for bolts, nuts and rubber gaskets.



Reference		Nominal size		Pipe Ø O.D.	Deflection		Max. end load N
Red	Galva	NPS inch	DN mm	mm	α (°)	M* mm	
GKFR1	GKFG1	1	25	33,7	2,3	40	1800
GKFR1¼	GKFG1¼	1¼	32	42,4	2	34	2920
GKFR1½	GKFG½	1½	40	48,3	2	34	3790
GKFR2	GKFG2	2	50	57,0	1,5	26	5270
GKFR2	GKFG2	2	50	60,3	1,5	26	5910
GKFR2½	GKFG2½	2½	65	73,0	1	17	8640
GKFR2½	GKFG2½	2½	65	76,1	1	17	9410
GKFR3	GKFG3	3	80	88,9	1	17	12840
GKFR4	GKFG4	4	100	108,0	1	17	18940
GKFR4	GKFG4	4	100	114,3	1	17	21220
GKFR5	GKFG5	5	125	133,0	1	17	28780
GKFR5	GKFG5	5	125	139,7	1	17	31700
GKFR5	GKFG5	5	125	141,3	1	17	32430
GKFR6	GKFG6	6	150	159,0	1	17	41060
GKFR6	GKFG6	6	150	165,1	1	17	44131
GKFR6	GKFG6	6	150	168,3	1	17	46000
GKFR8	GKFG8	8	200	216,3	1	17	75990
GKFR8	GKFG8	8	200	219,1	1	17	77970
GKFR10	GKFG10	10	250	267,4	0,5	8	116130
GKFR10	GKFG10	10	250	273,0	0,5	8	121050
GKFR12	GKFG12	12	300	318,5	0,5	8	164760
GKFR12	GKFG12	12	300	323,9	0,5	8	170390

* When L = 1m
Above 12": data on request

General notes:

- The maximum axial and angular movement values shown in the table are valid for rolled groove, they may be doubled for cut groove. For design and installation purposes, we recommend to reduce these values by 50% (1"-3") and by 25% (4"-10").
- Combined maximum angular and maximum axial movement are not allowed. Contact us for more information.
- Our flexible couplings meet the minimum required allowable angular movements according to NFPA 13-3.5.8.
- Profit flexible couplings provide cost-effective solutions for expansion problems, vibrations, pipe stress, seismic loads etc.

MINIMUM PIPE WALL THICKNESS

Allowable minimum pipe wall thickness combinations with PROFIT - couplings GKS and GKF and rolled grooves.

1. Carbon steel pipes

Nominal pipe size		Minimum thickness T* (Not FM approved) MPW = 12 bar	Minimum thickness T** MWP = 20,7 bar	Minimum thickness T*** Only combined with FM-approved pipes	
NPS	DN	mm	mm	Thickness (mm)	MWP (Bar)
1	25	1,65	2,77	1,6	12
1¼	32	1,65	2,77	1,6	12
1½	40	1,65	2,77	1,6	12
2	50	1,65	2,77	1,6	12
2½	65	2,11	3,05	1,8	12
3	80	2,11	3,05	2,36	20,7
4	100	2,11	3,05	2,49	20,7
5	125	2,77	3,40	-	-
6	150	2,77	3,40	2,98	12
8	200	2,77	4,00	-	-
10	250	3,40	5,00	-	-
12	300	3,96	6,70	-	-
14	350	3,96	-	-	-
16	400	4,19	-	-	-
18	450	4,19	-	-	-
20	500	4,78	-	-	-
22	550	4,78	-	-	-
24	600	5,54	-	-	-

2. Stainless steel pipes[1, 2]

NPS Inch	DN mm	Minimum pipe thickness for MWP 10 bar mm (Not FM approved)	Minimum pipe thickness for MWP 16 bar mm (Not FM approved)
2"	50	2	2
2.5"	65	2	2
3"	80	2	2
4"	100	2	2,6
5"	125	2,6	2,6
6"	150	2,6	3
8"	200	3	4
10"	250	4	4
12"	300	4	4

T* According to standard AWWA-C606-2015 (Pipe Sch5-ASME B36).
T** For FM-application when couplings are combined with pipes with wall thickness bigger than the minimum thickness according to FM Property Loss Prevention datasheet 2-0.
T*** For FM-application only when combination of coupling and pipe are FM-listed.
MWP = maximum working pressure.
1) Test pressure = maximum 1,5 x MWP.
2) Special attention must be given to thin-walled stainless steel pipes. These require the use of appropriately selected groove rollers. Always refer to the technical specifications of the grooving equipment to ensure the correct roller type is used for thin-walled SS pipes. Profit does not guarantee the performance values stated in this datasheet if improper grooving tools are used.

For installations within Europe (EC) please note that the minimum pipe thickness in fire sprinkler piping should be according to standard EN 12845.

GENERAL INFO

- Installers should be trained or experienced to install and understand the product.
- Before installation, carefully check the product on any damage during shipment or handling.
- Read and understand all technical datasheets and installation instructions before attempting to install, remove or adjust any Profit products.
- Check if the pressure rating of the product is compatible with the service conditions.
- Depressurise and drain the sprinkler installation system before attempting to install, remove or adjust any Profit products.
- Never work on piping systems that are pressurised and / or filled with water or pressurised air.
- Piping Logistics reserves the right to change specifications, designs and / or standard equipment without notice and without incurring in any obligations.
- Use the necessary Personal Protection Equipment (PPE) to avoid personal injury (helmet, safety shoes, goggles and gloves).



- Profit paint coated products are intended for piping with category C1 and C2 environment (indoor). For installations in category C3 we advise the use of our hot dip galvanised couplings and fittings. For application in corrosivity category C4 (higher salinity climate) or higher, please contact info@pipinglogistics.eu. (Classification according to ISO 9223)
- Pressure ratings listed for fire sprinkler applications are CWP (cold working pressure) or MWP (maximum working pressure) at a maximum service temperature of 66°C. This rating may occasionally differ from maximum working pressure listed and / or approved by UL and / or FM, as testing conditions and test pipes can differ. For more information, please contact info@pipinglogistics.eu.
- Maximum working pressure listed is the total of internal and external pressures based on standard weight (ANSI) steel pipe and standard roll or cut groove in accordance with Profit specifications. For more information, please contact info@pipinglogistics.eu.
- For more information on allowed pressures and temperatures related to HVAC applications please contact info@pipingslogistics.eu.
- For a onetime commissioning test only, the maximum joint working pressure may be increased to 150% of the working pressure.
- Independent technical datasheet for bolts & nuts and rubber gaskets.

Failure to follow these instructions could result in property damage, serious injury or death.

Our product must always be stored in closed and dry environments. Once installed on an above ground sprinkler system, they require no specific maintenance.

REVISION TABLE

Date	△	Notes
12/05/2025		Page 1 - Clarification of the notes.
16/09/2025		Page 3 - Updated the name of the file we refer to.
16/09/2025		Page 6 - Addition of the minimum pipe wall thickness of sizes 14" to 24".
16/12/2025		Page 4 - New approval have been added.
29/05/2026	F	Page 6 - Correction of pipe thickness information.