
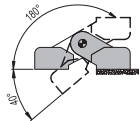

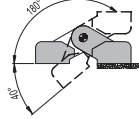

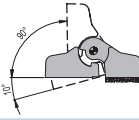

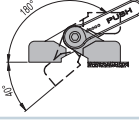

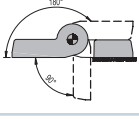

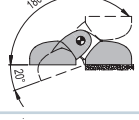

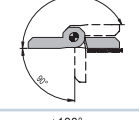

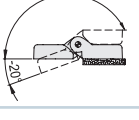

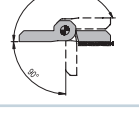

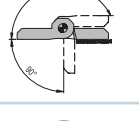

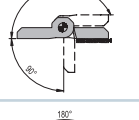

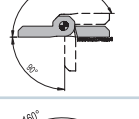

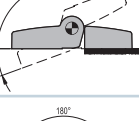

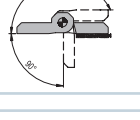

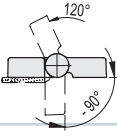

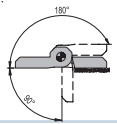

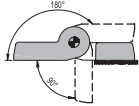

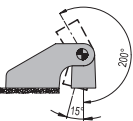

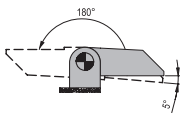

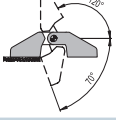

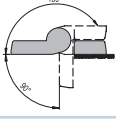

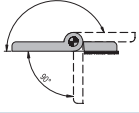

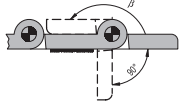

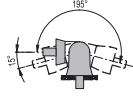

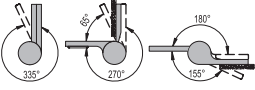

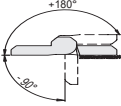



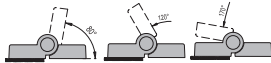

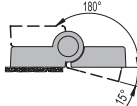

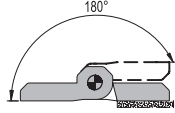

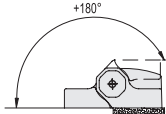

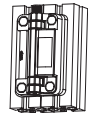

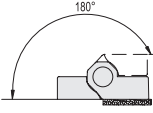

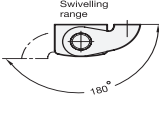

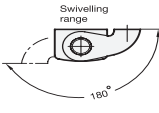

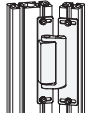

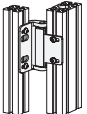

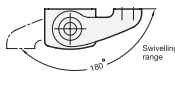

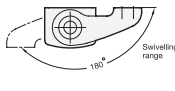


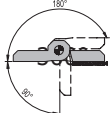





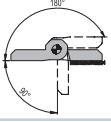

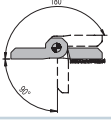




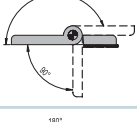

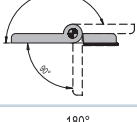

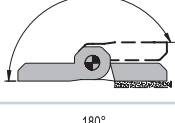

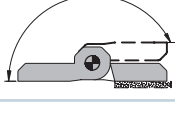



Hængsler



Series	Material		Rotation angle
CFA. page 10	Polyamide based (PA) technopolymer		
CFA-SL page 13	Polyamide based (PA) technopolymer		
CFA-F page 14	Polyamide based (PA) technopolymer		
CFA-ERS page 15	Polyamide based (PA) technopolymer		
CFU. page 16	Polyamide based (PA) technopolymer		
CFT. page 17	Polyamide based (PA) technopolymer		
CFM. page 19	Polyamide based (PA) technopolymer		
CFL. page 21	Polyamide based (PA) technopolymer		
GN 237-NI page 22	Stainless steel		
GN 237-AL page 23	Aluminium		
GN 237-A4 page 24	Stainless steel		
CMM-AL page 25	Aluminium		
GN 238 page 26	Zinc alloy die-cast		
CFR. page 28	Polyamide based (PA) technopolymer		

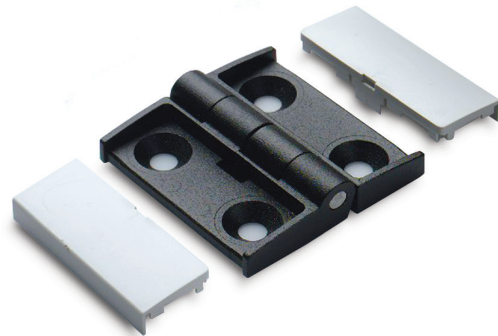
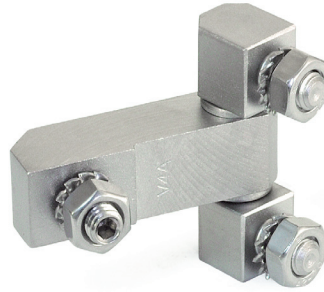
Series	Material		Rotation angle
CFV. page 29	Polyamide based (PA) technopolymer		
GN 127 page 30	Zinc alloy die-cast		
CFH. page 32	Polyamide based (PA) technopolymer		
CFD. page 33	Polyamide based (PA) technopolymer		
CMD-AL. page 36	Aluminium		
CFE. page 37	Polyamide based (PA) technopolymer		
CFJ. page 40	Polyamide based (PA) technopolymer		
CFG. page 42	Polyamide based (PA) technopolymer		
CFI. page 44	Polyamide based (PA) technopolymer		
CFB. page 47	Polyamide based (PA) technopolymer		
CFC. page 48	Polyamide based (PA) technopolymer		
CFMY. page 49	Polyamide based (PA) technopolymer		
CFN. page 50	Polyamide based (PA) technopolymer		360°
CFO. page 52	Polyamide based (PA) technopolymer		360°

Series	Material		Rotation angle
CFP. page 54	Polyamide based (PA) technopolymer		
CFQ. page 56	Zinc alloy die-cast		
CFSQ. page 58	Polyamide based (PA) technopolymer		
CFSW. page 62	Polyamide based (PA) technopolymer		
PMW. page 66	Polyamide based (PA) technopolymer		
CFMW. page 67	Polyamide based (PA) technopolymer		
GN 139.1 page 68	Zinc alloy die-cast		
GN 139.2 page 71	Zinc alloy die-cast		
GN 139.3 page 72	Steel		
GN 139.4 page 73	Zinc alloy die-cast		
GN 139.5 page 74	Stainless steel		
GN 139.6 page 76	Stainless steel		
GN 330 page 77	Cables		
GN 161 page 78	Zinc alloy die-cast		

Series	Material		Rotation angle
GN 161.1 page 79	Zinc alloy die-cast		360°
GN 161.2 page 80	Zinc alloy die-cast		360°
GN 337-ZD page 81	Zinc alloy die-cast		
GN 337-NI page 82	Stainless steel		
GN 128 page 83	Steel		360°
GN 128.2-AL page 85	Aluminium		360°
GN 128.2-NI/A4 page 86	Stainless steel		360°
GN 237-ZD page 87	Zinc alloy die-cast		
GN 237 page 88	Stainless steel		
GN 136-ST page 89	Zinc-plated steel		
GN 136-NI page 90	Stainless steel		
GN 129 page 91	Zinc-plated steel		360°
GN 129.2-ST page 92	Zinc-plated steel		360°
GN 129.2-A4 page 93	Stainless steel		360°

Series	Material		Rotation angle
GN 129.2-NI page 94	Stainless steel		360°
GN 129.3-ST page 95	Zinc-plated steel		360°
GN 129.5-A4 page 96	Stainless steel		360°
GN 129.5-NI page 97	Stainless steel		360°
GN 437-ZD page 98	Zinc alloy die-cast		





Guidelines for the right application of plastic hinges

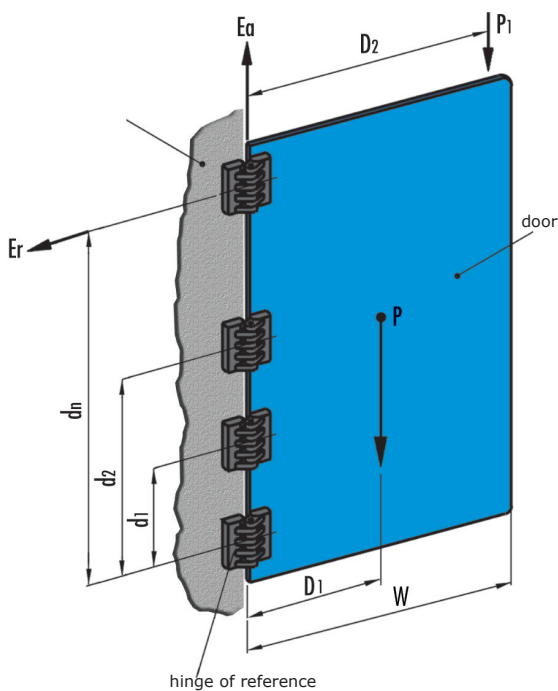
The following guidelines help you to choose the convenient type and the right number of hinges according to the door to be hinged. Technical designers should consider the values E_r , E_a , E_{90} reported in the table of every plastic hinge. Maximum working load (E_r , E_a , E_{90}) is the value at which elastic deformation remains neglectable during functioning. Load at breakage (R_r , R_a , R_{90}) should be used for safety verification, if required.

In case of use of CFN. and CFO. hinges, considering the geometry and the structure of such elements, E_{90} value is not to be taken into consideration. So the conditions here under reported, where E_{90} appears, are not valid.

Hinged door on a vertical axis

These are the three conditions to be verified:

$$\begin{aligned} [(P \cdot D_1) + (P_1 \cdot D_2)] / D_3 &\leq E_r && \text{with closed door} \\ (P + P_1) / N &\leq E_a \\ [(P \cdot D_1) + (P_1 \cdot D_2)] / D_3 &\leq E_{90} && \text{with } 90^\circ \text{ open door (*)} \end{aligned}$$

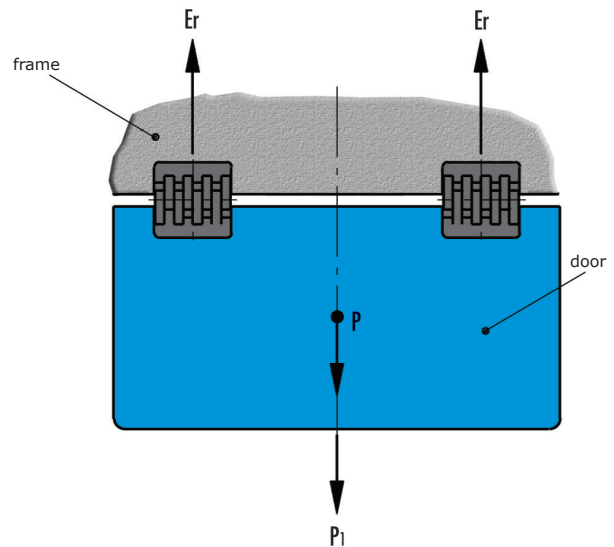


Hinged door on a horizontal axis

These are the two conditions to be verified:

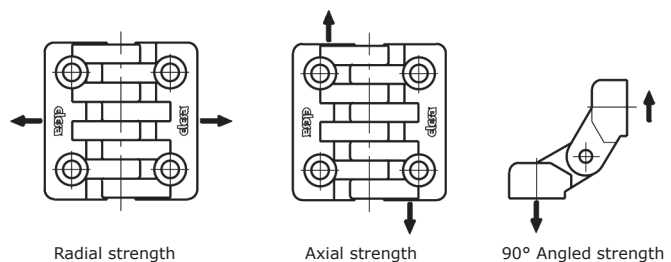
$$\begin{aligned} (P + P_1) / N &\leq E_r && \text{with closed door} \\ (P + P_1) / 2N &\leq E_{90} && \text{with } 90^\circ \text{ open door (*)} \end{aligned}$$

(in the case of balanced additional extra load on the door)



E_r = maximum working radial load of the hinge [Newton]
 E_a = maximum working axial load of the hinge [Newton]
 E_{90} = maximum working load with 90° open door hinge [Newton] (*)

P = weight of the door [Newton]
 P_1 = additional extra load applied (if any) [Newton]
 N = number of hinges
 W = width of the door
 D_1 = distance [metres] between the centre of gravity of the door and the hinge axis. In normal conditions $D_1 = W/2$
 D_2 = distance [metres] between the hinge axis and additional extra load application point
 D_3 = sum of the distances [metres] of all the hinges from the hinge of reference ($D_3 = d_1 + d_2 + \dots + d_n$). In case of only two hinges assembled D_3 is simply the distance between them.



NOTES

All the values reported in the tables are the result of tests carried out in our laboratories under controlled temperature and humidity ($23^\circ\text{C} - 50\% \text{RH}$) in given conditions of use and for a relatively limited time. The technical designer should consider to use an adequate safety factor for particularly heavy conditions of use.

(*) Not valid for CFN. and CFO. series.

SUGGESTIONS FOR DRILLING FITTING HOLES

The proper application of hinges with moulded-in studs or bushings requires a drilling on the mounting wall with diameter not wider than 0.5 mm of the major diameter of the assembling screw in order to guarantee an adequate shoulder of the metal insert on the wall itself.

EXAMPLE

$P = 10 \text{ Kg} = 98 \text{ N} (10 \cdot 9.81)$ weight of the door
 $P1 = 5 \text{ Kg} = 49 \text{ N} (5 \cdot 9.81)$ weight of the additional extra load
 applied (for example: handle + lock + machine controlpanel fitted onto the door)
 $N = 2$ (start evaluating two hinges)
 $W = 1.6 \text{ m}$ width of the door
 $D1 = W/2 = 1.6/2 = 0.8 \text{ m}$ distance between the centre of gravity of the door and the hinge axis.
 $D2 = 1.2 \text{ m}$ distance between the hinge axis and additional extra load application point
 $D3 = 1.8 \text{ m}$ (the example shows only the distance between the two assembled hinges).

$[(P \cdot D1) + (P1 \cdot D2)]/D3 \leq E_r$ with closed door
 $[(98 \cdot 0.8) + (49 \cdot 1.2)]/1.8 = 76 \text{ N} \leq E_r$
 $(P+P1)/N \leq E_a$
 $(98+49)/2 = 73.5 \text{ N} \leq E_a$
 $[(P \cdot D1) + (P1 \cdot D2)]/D3 \leq E_{90}$ with 90° open door
 $[(98 \cdot 0.8) + (49 \cdot 1.2)]/1.8 = 76 \text{ N} \leq E_{90} (*)$
 (*) Not valid for CFN. and CFO. series

Considering for example **CFD. series**, the right dimension can be chosen amongst the hinges with **E_r, E_a and E₉₀** values exceeding the values calculated, that are **CFD.40 B-M4, CFD.40 CH-4-B-M4, CFD.40 CH-4-p-M4x18** or any **CFD.48 and CFD.66**.
 Always check the maximum tightening torque specification before assembly.

Hinges which satisfy the three conditions mentioned above

Code	Description	RADIAL STRENGTH		AXIAL STRENGTH		90° ANGLED STRENGTH		Maximum tightening torque [Nm]		
		Maximum working load Er [N]	Load at breakage Rr [N]	Maximum working load Ea [N]	Load at breakage Ra [N]	Maximum working load E90 [N]	Load at breakage R90 [N]	SH/CH	B	p
422711	CFD.30 B-M3	70	490	60	690	60	500	-	1	-
422721	CFD.30 p-M3x13	40	340	70	750	30	390	-	-	1
422731	CFD.30 p-M3x13-B-M3	40	340	60	690	30	390	-	1	1
422741	CFD.30 B-M3-p-M3x13	40	340	60	690	30	390	-	1	1
422751	CFD.30 CH-3-B-M3	110	720	100	830	70	670	0.5	1	-
422761	CFD.30 CH-3-p-M3x13	50	450	60	730	30	350	0.5	-	1
422811	CFD.40 B-M4	150	1340	160	1710	100	700	-	4	-
422821	CFD.40 p-M4x18	140	880	110	1230	50	730	-	-	1.5
422831	CFD.40 p-M4x18-B-M4	140	880	110	1230	50	700	-	4	1.5
422841	CFD.40 B-M4-p-M4x18	140	880	110	1230	50	700	-	4	1.5
422851	CFD.40 CH-4-B-M4	150	1220	120	162	130	1110	1	4	-
422861	CFD.40 CH-4-p-M4x18	140	820	150	1480	100	860	1	-	1
422911	CFD.48 B-M5	260	1700	260	2440	120	1640	-	>5	-
422921	CFD.48 p-M5x17	240	1840	290	1770	110	1740	-	-	3
422931	CFD.48 p-M5x17-B-M5	240	1700	260	1770	110	1640	-	>5	3
422941	CFD.48 B-M5-p-M5x17	240	1700	260	1770	110	1640	-	>5	3
422951	CFD.48 CH-5-B-M5	240	1890	330	2530	290	1870	2	-	-
422961	CFD.48 CH-5-p-M5x17	120	1200	150	2170	110	970	2	-	3
423011	CFD.66 B-M6	320	2520	450	4130	220	2250	-	5	-
423021	CFD.66 p-M6x16	260	1700	470	3260	240	1580	-	-	>5
423031	CFD.66 p-M6x16-B-M6	260	1700	450	3260	220	1580	-	5	>5
423041	CFD.66 B-M6-p-M6x16	260	1700	450	3260	220	1580	-	5	>5
423051	CFD.66 CH-6-B-M6	410	2610	430	3660	310	2830	5	5	-
423061	CFD.66 CH-6-p-M6x16	280	1770	350	3090	180	1610	5	-	>5

Hinges

Material

High-resilience polyamide based (PA) technopolymer. Resistant to solvents, oils, greases and other chemical agents.

Colour

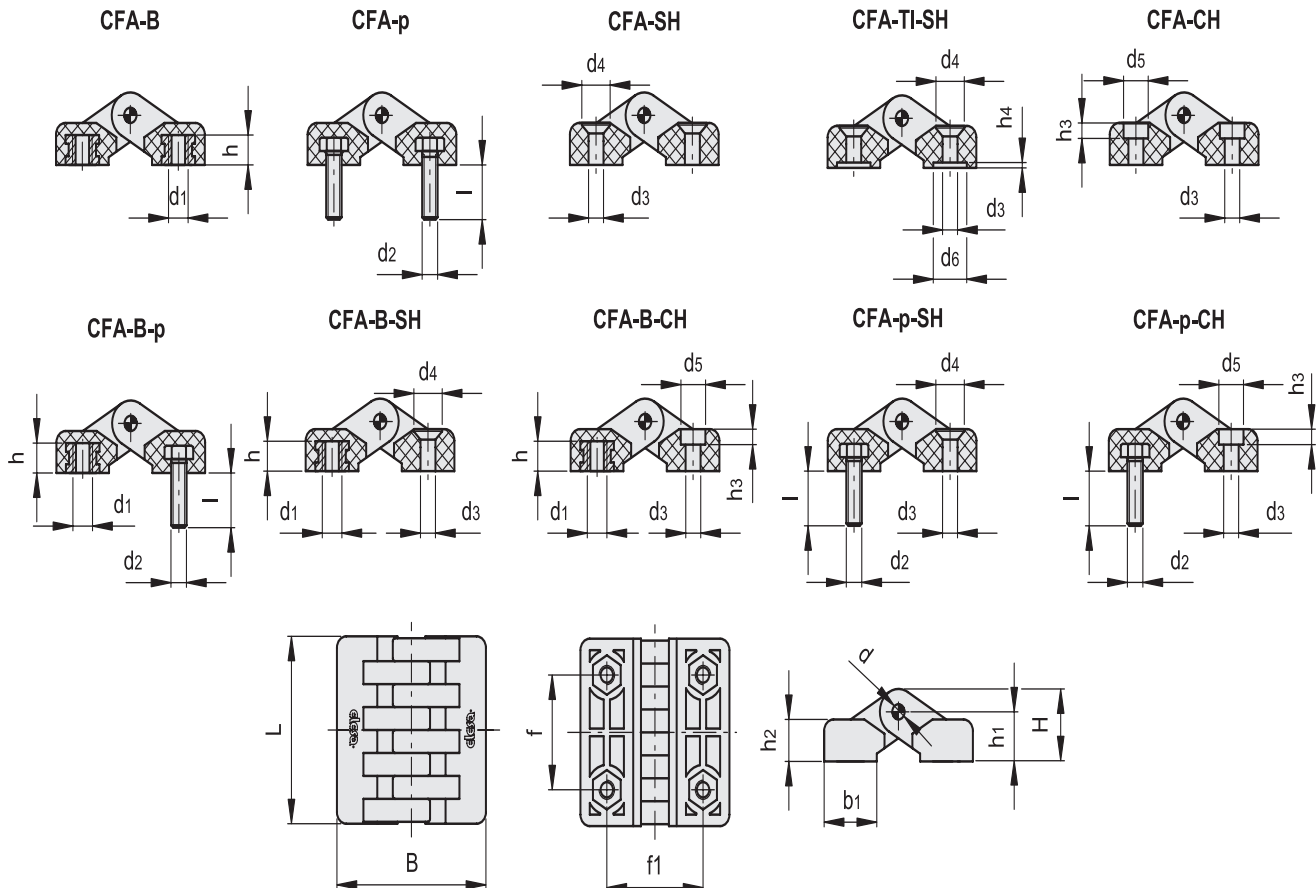
Black, matte finish. Grey RAL 7040 (C33) only for CFA-SH execution.

Rotation pin

AISI 303 stainless steel.

Standard executions

- CFA-B: nickel-plated brass bosses with threaded hole.
- CFA-p: nickel-plated steel threaded studs.
- CFA-SH: pass-through holes for countersunk head screws.
- CFA-TI-SH: pass-through holes for countersunk head screws and rear housing to accommodate the head of threaded inserts.
- CFA-CH: pass-through holes for cylindrical head screws.
- CFA-B-p: nickel-plated brass bosses with threaded hole and nickel-plated steel threaded studs.
- CFA-B-SH: nickel-plated brass bosses with threaded hole and pass-through holes for countersunk head screws.
- CFA-B-CH: nickel-plated brass bosses with threaded hole and pass-through holes for cylindrical head screws.
- CFA-p-SH: nickel-plated steel threaded studs pass-through holes for countersunk head screws.
- CFA-p-CH: nickel-plated steel threaded studs and pass-through holes for cylindrical head screws.



Rotation angle (approximate value)

Max 215° (-35° and + 180° being 0° the condition where the two inter-connected surfaces are on the same plane).

Do not exceed the rotation angle limit so as not to prejudice the hinge mechanical performance.

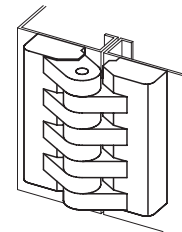
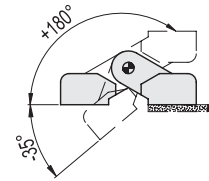
To choose the convenient type and the right number of hinges for your application, see the Guidelines.

Execution CFK.

False hinge made up of a single body without rotation pin. It can be used for blocking fixed panels, when you want to obtain the same general aesthetical effect.

Assembly instructions for CFA-TI-SH

1. Drill a hole in the door/doorframe with a diameter corresponding to the threaded insert used.
2. Fix the threaded insert on the door/doorframe with a riveter.
3. Fit the hinge on the door/doorframe tightening the screw into the threaded insert.



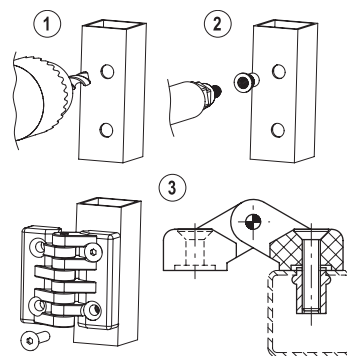
Standard Elements		Main dimensions										Fitting											
												Bosses		Studs		Pass-through holes						C [Nm] #	
Code	Description	L	B	f ±0.25	f1 ±0.25	H	h1	h2	b1	d	d1	h	d2	l	d3	d4	d5	h3	d6	h4	B	p	SH/CH
422391	CFA.40 B-M4	39.5	38.5	25.1	25	14	9.5	9.5	14	3	M4	6.5	-	-	-	-	-	-	-	-	5	-	-
422411	CFA.40 SH-4	39.5	38.5	25.1	25	14	9.5	9.5	14	3	-	-	-	-	4.5	8.5	-	-	-	-	-	-	1
422412	CFA.40 CH-4	39.5	38.5	25.1	25	14	9.5	9.5	14	3	-	-	-	-	4.5	-	8.5	4.5	-	-	-	-	1
422416	CFA.40 TI-SH-4	39.5	38.5	25.1	25	14	9.5	9.5	14	3	-	-	-	-	4.5	8.5	-	-	10	1.3	-	-	1
422111	CFA.49 B-M5	49.5	48	30.5	31	19	13	11	17	4	M5	8.5	-	-	-	-	-	-	-	-	5	-	-
422113	CFA.49 B-M6	49.5	48	30.5	31	19	13	11	17	4	M6	8	-	-	-	-	-	-	-	-	5	-	-
422121	CFA.49 p-M5x14	49.5	48	30.5	31	19	13	11	17	4	-	-	M5	14	-	-	-	-	-	-	-	5	-
422131	CFA.49 SH-5	49.5	48	30.5	31	19	13	11	17	4	-	-	-	-	5.5	10	-	-	-	-	-	-	2
422132	CFA.49 CH-5	49.5	48	30.5	31	19	13	11	17	4	-	-	-	-	5.5	-	10	5.5	-	-	-	-	2
422141	CFA.49 B-M5-p-M5x14	49.5	48	30.5	31	19	13	11	17	4	M5	8.5	M5	14	-	-	-	-	-	-	5	5	-
422151	CFA.49 B-M5-SH-5	49.5	48	30.5	31	19	13	11	17	4	M5	8.5	-	-	5.5	10	-	-	-	-	-	-	2
422152	CFA.49 B-M5-CH-5	49.5	48	30.5	31	19	13	11	17	4	M5	8.5	-	-	5.5	-	10	5.5	-	-	-	-	2
422161	CFA.49 p-M5x14-SH-5	49.5	48	30.5	31	19	13	11	17	4	-	-	M5	14	5.5	10	-	-	-	-	-	5	2
422162	CFA.49 p-M5x14-CH-5	49.5	48	30.5	31	19	13	11	17	4	-	-	M5	14	5.5	-	10	5.5	-	-	-	5	2
422136	CFA.49 TI-SH-5	49.5	48	30.5	31	19	13	11	17	4	-	-	-	-	5.5	10	-	-	11	1.5	-	-	2
422211	CFA.65 B-M6	65	64	40	40	23	15	13.5	24	5	M6	9	-	-	-	-	-	-	-	-	5	-	-
422221	CFA.65 p-M6x18	65	64	40	40	23	15	13.5	24	5	-	-	M6	18	-	-	-	-	-	-	-	5	-
422231	CFA.65 SH-6	65	64	40	40	23	15	13.5	24	5	-	-	-	-	6.5	12.5	-	-	-	-	-	-	3
422232	CFA.65 CH-6	65	64	40	40	23	15	13.5	24	5	-	-	-	-	6.5	-	11	6.5	-	-	-	-	5
422241	CFA.65 B-M6-p-M6x18	65	64	40	40	23	15	13.5	24	5	M6	10.5	M6	18	-	-	-	-	-	-	5	5	-
422251	CFA.65 B-M6-SH-6	65	64	40	40	23	15	13.5	24	5	M6	10.5	-	-	6.5	12.5	-	-	-	-	5	-	3
422252	CFA.65 B-M6-CH-6	65	64	40	40	23	15	13.5	24	5	M6	10.5	-	-	6.5	-	11	6.5	-	-	5	-	5
422261	CFA.65 p-M6x18-SH-6	65	64	40	40	23	15	13.5	24	5	-	-	M6	18	6.5	12.5	-	-	-	-	-	5	3
422262	CFA.65 p-M6x18-CH-6	65	64	40	40	23	15	13.5	24	5	-	-	M6	18	6.5	-	11	6.5	-	-	-	5	5
422237	CFA.65 TI-SH-6	65	64	40	40	23	15	13.5	24	5	-	-	-	-	6.5	12.5	-	-	13	1.8	-	-	3
422311	CFA.97 B-M10	96.5	97.5	59.5	62.5	35	23	20.5	35	8	M10	15	-	-	-	-	-	-	-	-	5	-	-
422321	CFA.97 p-M10x20	96.5	97.5	59.5	62.5	35	23	20.5	35	8	-	-	M10	20	-	-	-	-	-	-	-	5	-
422331	CFA.97 SH-10	96.5	97.5	59.5	62.5	35	23	20.5	35	8	-	-	-	-	10.5	20	-	-	-	-	-	-	5
422332	CFA.97 CH-10	96.5	97.5	59.5	62.5	35	23	20.5	35	8	-	-	-	-	10.5	-	17	10.5	-	-	-	-	5
422341	CFA.97 B-M10-p-M10x20	96.5	97.5	59.5	62.5	35	23	20.5	35	8	M10	15	M10	20	-	-	-	-	-	-	5	5	-
422351	CFA.97 B-M10-SH-10	96.5	97.5	59.5	62.5	35	23	20.5	35	8	M10	15	-	-	10.5	20	-	-	-	-	5	-	5
422352	CFA.97 B-M10-CH-10	96.5	97.5	59.5	62.5	35	23	20.5	35	8	M10	15	-	-	10.5	-	17	10.5	-	-	5	-	5
422361	CFA.97 p-M10x20-SH-10	96.5	97.5	59.5	62.5	35	23	20.5	35	8	-	-	M10	20	10.5	20	-	-	-	-	-	5	5
422362	CFA.97 p-M10x20-CH-10	96.5	97.5	59.5	62.5	35	23	20.5	35	8	-	-	M10	20	10.5	-	17	10.5	-	-	-	5	5

Execution CFA.

False hinge made up of a single body without rotation pin. It can be used for blocking fixed panels, when you want to obtain the same general aesthetical effect.

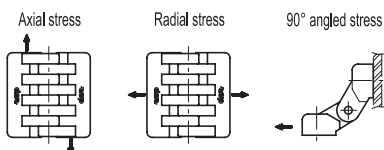
Assembly instructions for CFA-TI-SH

1. Drill a hole in the door/doorframe with a diameter corresponding to the threaded insert used.
2. Fix the threaded insert on the door/doorframe with a riveter.
3. Fit the hinge on the door/doorframe tightening the screw into the threaded insert.



Standard Elements		Main dimensions										Fitting		C #
Code	Description	L	B	f ^{+0.25}	f1 ^{+0.25}	H	h1	h2	b1	d	d3	d4	[Nm]	
422411-C33	CFA.40 SH-4-C33	39.5	38.5	25.1	25	14	9.5	9.5	14	3	4.5	8.5	1	
422131-C33	CFA.49 SH-5-C33	49.5	48	30.5	31	19	13	11	17	4	5.5	10	2	
422231-C33	CFA.65 SH-6-C33	65	64	40	40	23	15	13.5	24	5	6.5	12.5	3	
422331-C33	CFA.97 SH-10-C33	96.5	97.5	59.5	62.5	35	23	20.5	35	8	10.5	20	5	

Suggested tightening torque for assembly screws.



Resistance tests	AXIAL STRESS		RADIAL STRESS		90° ANGLED STRESS	
	Maximum working load Ea [N]	Load at breakage Ra [N]	Maximum working load Er [N]	Load at breakage Rr [N]	Maximum working load E90 [N]	Load at breakage R90 [N]
CFA.40 B-M4	200	2050	240	2220	100	730
CFA.40 SH-4	130	2080	290	2030	280	1520
CFA.40 CH-4	137	1800	230	1760	180	1330
CFA.40 TI-SH-4	130	2080	290	2030	280	1520
CFA.49 B-M5	400	3770	440	3070	170	1470
CFA.49 B-M6	330	3250	470	3250	110	1540
CFA.49 p-M5x14	370	3070	360	1970	200	1680
CFA.49 SH-5	300	2960	310	2880	320	2490
CFA.49 CH-5	360	3080	310	2530	250	1620
CFA.49 B-M5-p-M5x14	370	3070	360	1970	200	1470
CFA.49 B-M5-SH-5	400	2960	280	2880	170	1470
CFA.49 B-M5-CH-5	360	3080	320	2530	170	1470
CFA.49 p-M5x14-SH-5	370	2960	280	1970	200	1680
CFA.49 p-M5x14-CH-5	360	3070	320	1970	200	1620
CFA.49 TI-SH-5	300	2960	310	2880	320	2490
CFA.65 B-M6	640	4570	690	5670	220	2280
CFA.65 p-M6x18	510	5890	460	6620	220	3190
CFA.65 SH-6	520	4760	720	6270	240	4180
CFA.65 CH-6	510	5280	490	5790	260	3190
CFA.65 B-M6-p-M6x18	510	4570	460	5670	220	2280
CFA.65 B-M6-SH-6	640	4570	690	5670	220	2280
CFA.65 B-M6-CH-6	510	4570	490	5670	220	2280
CFA.65 p-M6x18-SH-6	510	4760	460	6270	220	3190
CFA.65 p-M6x18-CH-6	510	5280	460	5790	220	3190
CFA.65 TI-SH-6	520	4760	720	6270	240	4180
CFA.97 B-M10	970	7660	2120	17940	590	5210
CFA.97 p-M10x20	890	5950	1730	16190	460	3690
CFA.97 SH-10	1110	6730	1230	10460	510	4100
CFA.97 CH-10	1050	4860	2060	13670	540	4760
CFA.97 B-M10-p-M10x20	890	5950	1730	16190	460	3690
CFA.97 B-M10-SH-10	970	6730	1230	10460	510	4110
CFA.97 B-M10-CH-10	970	4860	2060	13670	540	4760
CFA.97 p-M10x20-SH-10	890	5950	1230	10460	460	3690
CFA.97 p-M10x20-CH-10	890	4860	1730	13670	460	3690

Hinges with slotted holed

PA

+80°
-20°

Material

High resilience polyamide based (PA) technopolymer. Resistant to solvents, oils, greases and other chemical agents.

Colour

Black, matte finish.

Rotation pin

AISI 303 stainless steel.

Assembly

Through slotted holes for cylindrical head screws which allow the adjustment during assembly.

- Execution H: for horizontal adjustments.
- Execution V: for vertical adjustments.
- Execution H-V: for both horizontal and vertical adjustments.

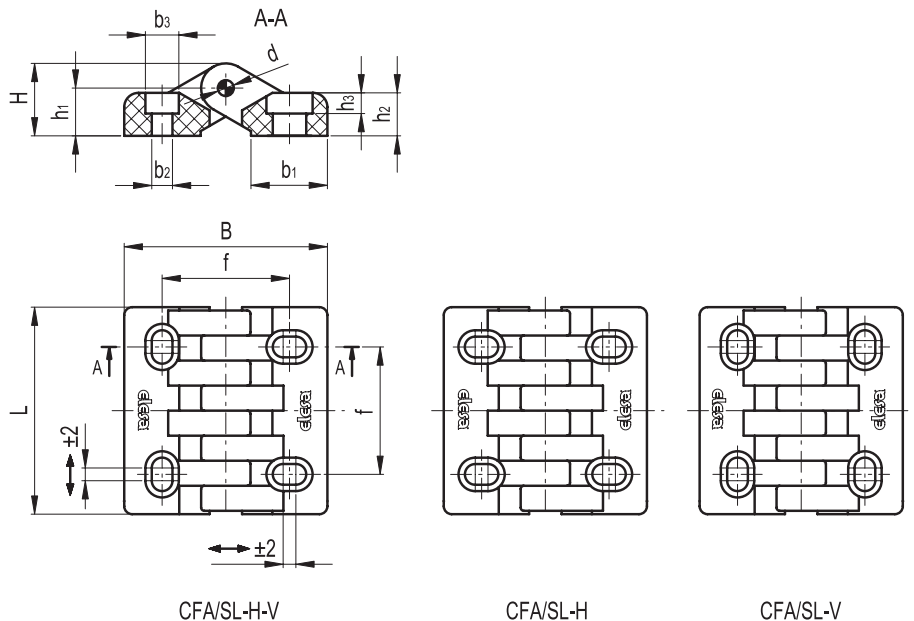
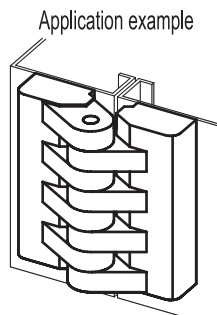


Rotation angle

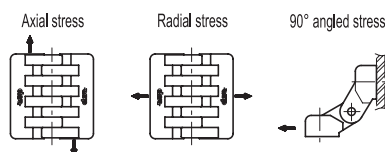
Max 220°, between 0° and -40° and between 0° and 180° (0° = condition where the two interconnected surfaces are on the same plane).

Do not exceed the rotation angle limit (see drawing) so as not to prejudice the hinge mechanical performance.

To choose the convenient type and the right number of hinges for your application, see the Guidelines.



Standard Elements		Main dimensions								Fitting		
Code	Description	L	B	f	H	h1	h2	b1	d	b2	b3	h3
422272	CFA.65-SL-H	65	64	40	23	15	13.5	24	5	6.5	10.5	6.5
422276	CFA.65-SL-V	65	64	40	23	15	13.5	24	5	6.5	10.5	6.5
422280	CFA.65-SL-HV	65	64	40	23	15	13.5	24	5	6.5	10.5	6.5



Standard Elements		AXIAL STRENGTH		RADIAL STRENGTH		90° ANGLED STRENGTH		Maximum tightening torque [Nm]
Code	Description	Maximum working load Ea [N]	Load at breakage Ra [N]	Maximum working load Er [N]	Load at breakage Rr [N]	Maximum working load E90 [N]	Load at breakage R90 [N]	H/V/H-V
422272	CFA.65-SL	510	5280	490	5790	260	3190	3

Hinges with detent position at 90°

Material

High-resilience polyamide based (PA) technopolymer. Resistant to solvents, oils, greases and other chemical agents.

Colour

Black, matte finish.

Rotation pin

AISI 303 stainless steel.

Standard executions

- CFA-F-B: nickel-plated brass bushings, tapped hole.
- CFA-F-CH: pass-through holes for cylindrical head screws.
- CFA-F-SH: through holes for countersunk head screws.

Features and applications

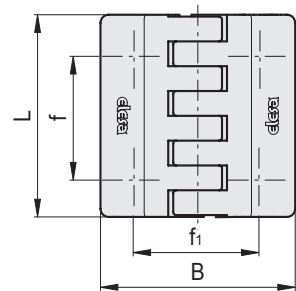
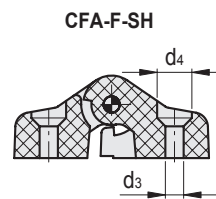
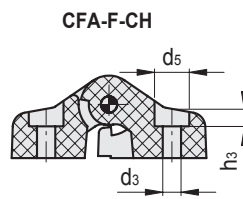
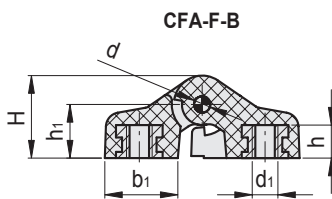
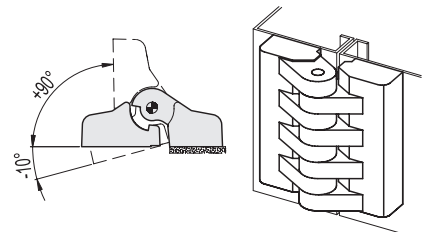
CFA-F hinges are recommended when the opening of the door must not exceed the limit of 90°.

Once the hinge is fitted onto the machine/door, the teeth of the detent system remain inside the hinge. Thus the operator cannot reach them for the safety of his hands.

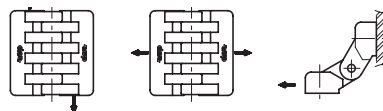
Rotation angle

Max 100° (-10° and +90° being 0° the condition where the two interconnected surfaces are on the same plane).

To choose the convenient type and the right number of hinges for your application, see the Guidelines.



Standard Elements		Main dimensions								Fitting						
Code	Description	L	B	f ±0.25	f1 ±0.25	H	h1	b1	d	Bosses	Pass-through holes	C #				
										d1	h	d3	d4	d5	h3	[Nm]
422114	CFA.49-F-B-M6	49.5	48	30.2	31	20	13	18	4	M6	8	-	-	-	-	5
422135	CFA.49-F-CH-5	49.5	48	30.2	31	20	13	18	4	-	-	5.5	-	10	5.5	2
422133	CFA.49-F-SH-5	49.5	48	30.2	31	20	13	18	4	-	-	5.5	10	-	-	2
422212	CFA.65-F-B-M6	65	63.5	40	40	25	16	24	5	M6	9	-	-	-	-	5
422235	CFA.65-F-CH-6	65	63.5	40	40	25	16	24	5	-	-	6.5	-	11	6.5	3
422236	CFA.65-F-SH-6	65	63.5	40	40	25	16	24	5	-	-	6.5	12.5	-	-	3



Resistance tests	AXIAL STRESS		RADIAL STRESS		90° ANGLED STRESS	
Description	Maximum working load Ea [N]	Load at breakage Ra [N]	Maximum working load Er [N]	Load at breakage Rr [N]	Maximum working load E90 [N]	Load at breakage R90 [N]
CFA.49-F-B-M6	330	3250	470	3250	110	1540
CFA.49-F-CH-5	380	3600	370	3300	320	2490
CFA.49-F-SH-5	300	2960	310	2880	320	2490
CFA.65-F-B-M6	1150	5780	1550	7780	760	3820
CFA.65-F-CH-6	810	5410	1000	6550	720	3980
CFA.65-F-SH-6	840	5680	1010	7010	790	3960

Hinges with friction brake

Hinge body

High resilience polyamide based (PA) technopolymer. Resistant to solvents, oils, greases and other chemical agents.

Colour

Black, matte finish.

Rotation pin

Black-oxide steel.

Assembly

Through holes for countersunk head screws.

Adjustable handle

Glass-fibre reinforced polyamide based (PA) technopolymer. Red writing "PUSH" tampoprinted on the lever body (avoid contact with solvents, alcohol or detergents containing alcohol).

Black-oxide steel retaining screw, AISI 302 stainless steel return spring.

Lever colour

Grey-black, matte finish.

Lever assembly

Black-oxide steel bushing, tapped blind hole (CFA.49 and CFA.65).

Brass bushing, tapped blind hole (CFA.97).



Rotation angle

Max 220°, between 0° and -40° and between 0° and 180° (0° = condition where the two interconnected surfaces are on the same plane).

Do not exceed the rotation angle limit (see drawing) so as not to prejudice the hinge mechanical performance.

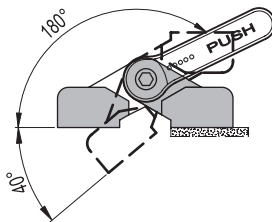
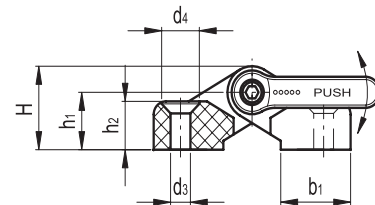
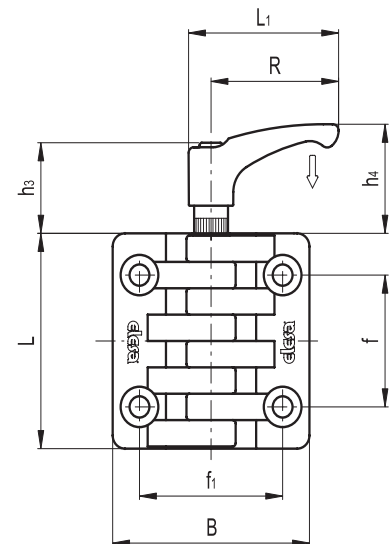
Features and applications

CFA+ERS hinge has been developed to offer an unlimited number of door-stop positions within the rotation angle of 220°. The friction between the two hinge bodies controls the speed of opening and closing operations.

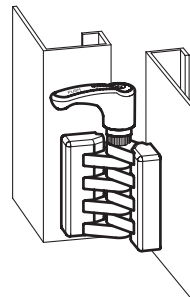
Instructions of use

The friction effect is obtained by clamping the two hinged bodies using the special adjustable handle. To operate the adjusting mechanism, push down the lever (PUSH). By releasing the lever, the spring releases the tothing, thus the handle can return to its starting position and the lever can rotate freely together with the door without obstacles for the operator manoeuvres, even in case of accidental shock. The high number of teeth within the adjustable handle guarantees rotation even in case of very limited movement of the lever arm. To choose the convenient type and the right number of hinges for your application, see the Guidelines.

Strength values: see the corresponding models of CFA.



Application example



Standard Elements		Main dimensions												Fitting	
Code	Description	L	B	f ±0.25	f1 ±0.25	H	h1	h2	b1	R	L1	h3	h4	d3	d4
422134	CFA.49-ERS-SH-5	49.5	48	30.5	31	19	13	11	17	44	52	29	36	5.5	10
422234	CFA.65-ERS-SH-6	65	64	40	40	23	15	13.5	24	44	52	29	36	6.5	11.5
422334	CFA.97-ERS-SH-10	96.5	97.5	59.5	62.5	35	23	20.5	35	63	73.5	37	48	10.5	20

Hinges with adjustable friction

Material

Acetal-resin based technopolymer (POM). Resistant to oils, greases and other chemical agents. Flammability class UL94-HB.

Pin

Polycarbonate based (PC) technopolymer, black colour (white for CLEAN execution). Flammability class UL94-V2.

Adjusting boss and screw

AISI 304 stainless steel screw.

AISI 303 stainless steel adjusting boss.

Standard executions

Assembly by means of pass-through holes for cylindrical head screws.

- CFU: black colour, matte finish.
- CFU-CLEAN: white colour similar to RAL 9002, matte finish.

Features and applications

The main feature of CFU. hinge is the possibility to adjust the resistant torque of the door on which it is assembled, facilitating the door clamping in the various positions of opening, partial opening and closing. To adjust the friction force, simply turn the screw on the hinge body, clockwise to increase the friction and anti-clockwise to reduce it.

Rotation angle (approximate value)

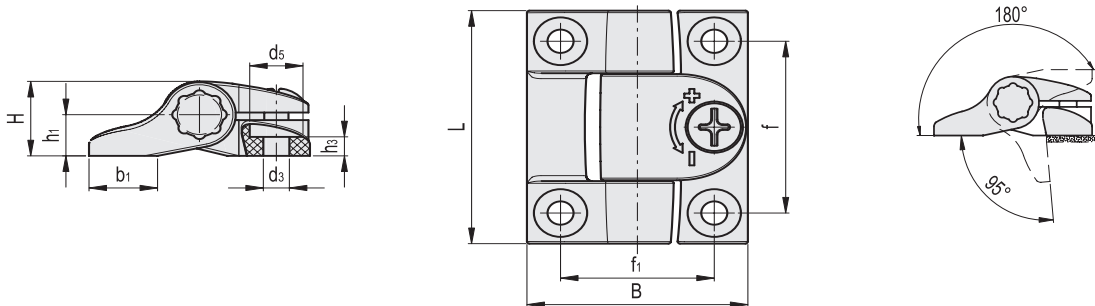
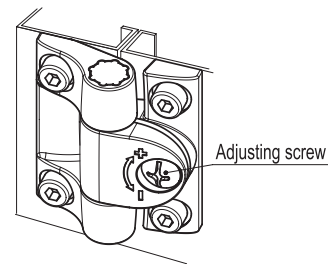
Max 275° (-95° and +180° being 0° the condition where the two interconnected surfaces are on the same plane).

Do not exceed the rotation angle limit so as not to prejudice the hinge mechanical performance.

Resistant torque

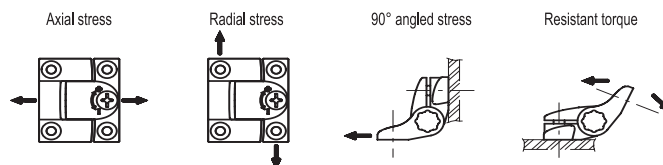
The resistant torque values of 1.4 and 4 Nm can be obtained by applying a maximum tightening torque of 0.8 Nm (CFU.40) and 4 Nm (CFU.60) on the adjusting screw.

The hinge had been tested with more than 60.000 opening and closing cycles and the values of the resistant torques were unchanged.



Standard Elements		Main Dimensions							Fitting			
Code	Description	L	B	f ±0.25	f1±0.25	H	h1	b1	d3	h3	d5	C [Nm] #
427512	CFU.40 CH-4	43	36.5	31.7	25.5	14	7.5	11.5	4.5	3.5	9	1
427522	CFU.60 CH-6	63.5	56.5	47.5	38	21	11.5	17.5	6.5	6.5	12.5	3
427513	CFU.40 CH-4 CLEAN	43	36.5	31.7	25.5	14	7.5	11.5	4.5	3.5	9	1
427523	CFU.60 CH-6 CLEAN	63.5	56.5	47.5	38	21	11.5	17.5	6.5	6.5	12.5	3

Suggested tightening torque for assembly screws.



Resistance tests	AXIAL STRESS		RADIAL STRESS		90° ANGLED STRESS		Resistant torque
Description	Maximum working load Ea [N]	Load at breakage Ra [N]	Maximum working load Er [N]	Load at breakage Rr [N]	Maximum working load E90 [N]	Load at breakage R90 [N]	[Nm]
CFU.40 CH-4	700	1100	1400	1800	500	1000	1.4
CFU.60 CH-6	1500	2350	2250	3200	1500	2500	4

Hinges with screw-covers

Material

Glass-fibre reinforced polyamide based (PA) technopolymer. Resistant to solvents, oils, greases and other chemical agents.

Colour

Black, matte finish.

Rotation pin

Acetal-resin based (POM) technopolymer, black colour.

Screw-covers

Polyester based (PBT) technopolymer, black colour, glossy finish, snap-in assembly.

Standard executions

- CFT-SH: pass-through holes for countersunk head screws.
- CFT-EH: hexagonal pass-through holes for cylindrical head screws, hexagonal head nuts or screws. CFT. hinge with boss or stud can be obtained by means of hexagonal head nuts or screws fitted into the assembly hole.

Rotation angle (approximate value)

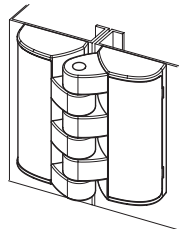
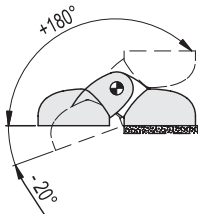
Max 200° (-20° and +180° being 0° the condition where the interconnected surfaces are on the same plane).

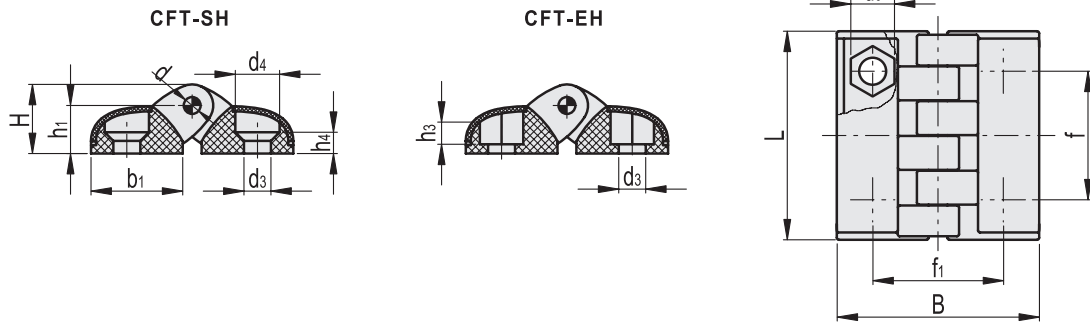
Do not exceed the rotation angle limit so as not to prejudice the hinge mechanical performance.

To choose the convenient type and the right number of hinges for your application, see the Guidelines.

Special executions on request

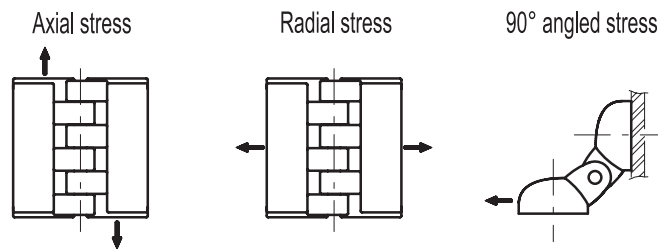
Screw-covers in different RAL colours.





Standard Elements		Main dimensions								Fitting					
Code	Description	L	B	f ±0.25	f1 ±0.25	H	h1	b1	d	d3	d4	h3	h4	d6	C [Nm] #
427111-C9	CFT.40 EH-4-C9	39.5	38	25	25	13	9	17.5	3	4.5	-	4	-	7	2
427112-C9	CFT.40 SH-4-C9	39.5	38	25	25	13	9	17.5	3	4.5	8.5	-	4.5	-	2
427131-C9	CFT.49 EH-5-C9	49.5	48	30.5	31	16.5	11.5	21.5	4	5.5	-	5	-	8.5	2
427132-C9	CFT.49 SH-5-C9	49.5	48	30.5	31	16.5	11.5	21.5	4	5.5	10.5	-	5	-	2
427133-C9	CFT.49 EH-6-C9 *	49.5	48	30.5	31	16.5	11.5	21.5	4	6.5	-	5	-	10	2
427151-C9	CFT.65 EH-6-C9	65	63	40	40	21.5	15	29	5	6.5	-	7	-	10	2
427152-C9	CFT.65 SH-6-C9	65	63	40	40	21.5	15	29	5	6.5	12.5	-	7.5	-	2

* In case of assembly with cylindrical screw, use a shorted head screw.
 # Suggested tightening torque for assembly screws.



Resistance tests	AXIAL STRESS		RADIAL STRESS		90° ANGLED STRESS	
	Maximum working load Ea [N]	Load at breakage Ra [N]	Maximum working load Er [N]	Load at breakage Rr [N]	Maximum working load E90 [N]	Load at breakage R90 [N]
CFT.40	300	2100	300	1500	200	750
CFT.49	500	2900	400	3000	300	1600
CFT.65	800	5000	800	4400	500	3000

Hinges

Material

Glass-fibre reinforced polyamide based (PA) SUPER-technopolymer. Resistant to solvents, oils, greases and other chemical agents.

Colour

- CFM: black, matte finish.
- CFM-CLEAN: white similar to RAL 9002, matte finish.

Rotation pin

AISI 303 stainless steel.

Standard executions

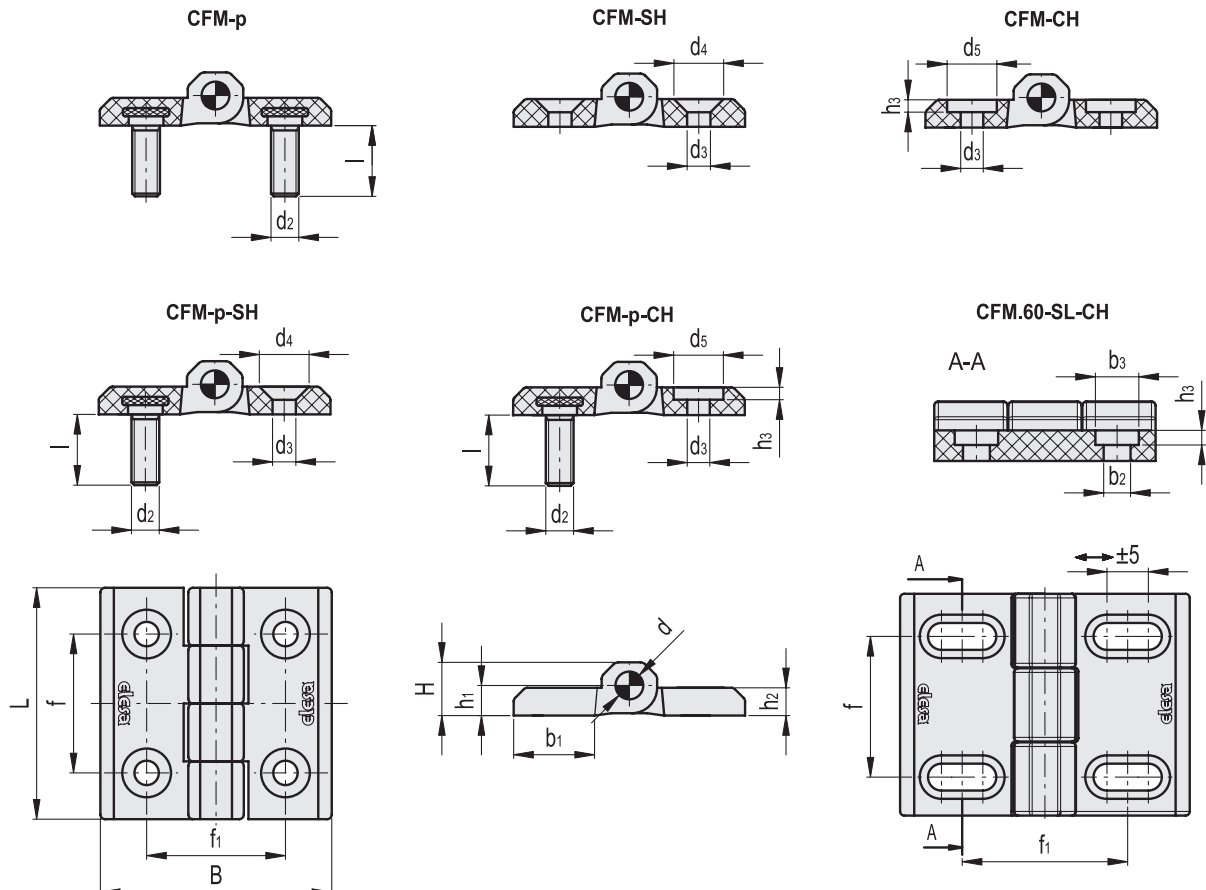
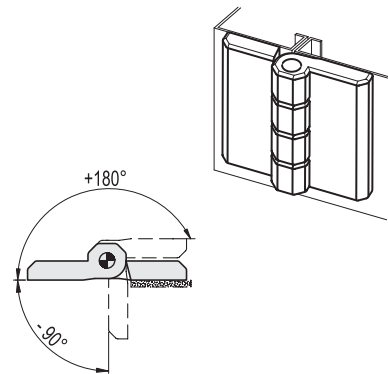
- CFM-p: nickel-plated steel threaded studs.
- CFM-SH: pass-through holes for countersunk head screws.
- CFM-CH: pass-through holes for cylindrical head screws with washer type UNI 6592.
- CFM-p-SH: nickel-plated steel threaded studs and pass-through holes for countersunk head screws.
- CFM-p-CH: nickel-plated steel threaded studs and pass-through holes for cylindrical head screws with UNI 6592 washer.
- CFM.60-SL-CH: pass-through slotted hole for shorted cylindrical head screws UNI 9327 which allow adjustment during clamping.

Rotation angle (approximate value)

Max 270° (-90° and +180° being 0° the condition where the two interconnected surfaces are on the same plane).

Do not exceed the rotation angle limit so as not to prejudice the hinge mechanical performance.

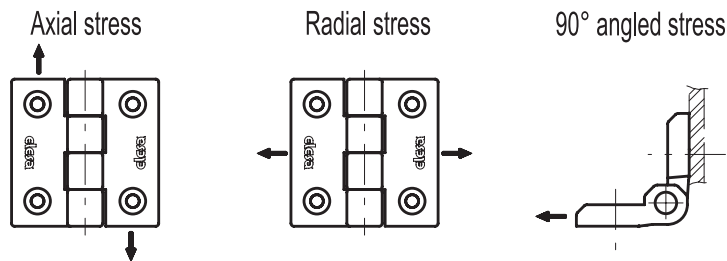
To choose the convenient type and the right number of hinges for your application, see the Guidelines.



Standard Elements		Main dimensions									Fitting									
											Studs		Pass-through holes					C [Nm] #		
Code	Description	L	B	f ±0.25	f1 ±0.25	H	h1	h2	b1	d	d2	l	d3	d4	d5	h3	b2	b3	p	SH/CH
425411	CFM.30 SH-4	30	30	18	18	7	4	3.5	10.5	2.5	-	-	4.5	8.5	-	-	-	-	-	3
425412	CFM.30 CH-4	30	30	18	18	7	4	3.5	10.5	2.5	-	-	4.5	-	8.5	1.3	-	-	-	3
425521	CFM.40 p-M5x12	40	40	25	25	9	5.5	5	14	4	M5	12	-	-	-	-	-	-	5	-
425511	CFM.40 SH-5	40	40	25	25	9	5.5	5	14	4	-	-	5.5	10.5	-	-	-	-	-	3
425512	CFM.40 CH-5	40	40	25	25	9	5.5	5	14	4	-	-	5.5	-	10.5	1.7	-	-	-	5
425531	CFM.40 p-M5x12-SH-5	40	40	25	25	9	5.5	5	14	4	M5	12	5.5	10.5	-	-	-	-	5	3
425532	CFM.40 p-M5x12-CH-5	40	40	25	25	9	5.5	5	14	4	M5	12	5.5	-	10.5	1.7	-	-	5	5
425621	CFM.50 p-M6x12	50	50	30	30	11.5	6.5	6	18	6	M6	12	-	-	-	-	-	-	5	-
425611	CFM.50 SH-6	50	50	30	30	11.5	6.5	6	18	6	-	-	6.5	12.5	-	-	-	-	-	5
425612	CFM.50 CH-6	50	50	30	30	11.5	6.5	6	18	6	-	-	6.5	-	12.5	3	-	-	-	5
425631	CFM.50 p-M6x12-SH-6	50	50	30	30	11.5	6.5	6	18	6	M6	12	6.5	12.5	-	-	-	-	5	5
425632	CFM.50 p-M6x12-CH-6	50	50	30	30	11.5	6.5	6	18	6	M6	12	6.5	-	12.5	3	-	-	5	5
425721	CFM.60 p-M8x14.5	60	60	36	36	15	8.5	8	21	8	M8	14.5	-	-	-	-	-	-	5	-
425711	CFM.60 SH-8	60	60	36	36	15	8.5	8	21	8	-	-	8.5	16.5	-	-	-	-	-	5
425712	CFM.60 CH-8	60	60	36	36	15	8.5	8	21	8	-	-	8.5	-	16.5	4	-	-	-	5
425731	CFM.60 p-M8x14.5-SH-8	60	60	36	36	15	8.5	8	21	8	M8	14.5	8.5	16.5	-	-	-	-	5	5
425732	CFM.60 p-M8x14.5-CH-8	60	60	36	36	15	8.5	8	21	8	M8	14.5	8.5	-	16.5	4	-	-	5	5
425812	CFM.60-45-SH-6	60	70	34	45	14.5	8	7.5	26	8	-	-	6.5	12.5	-	-	-	-	-	5
425822	CFM.60-SL-CH-6	60	70	34	40	14.5	8	7.5	26	8	-	-	-	-	-	4	6.5	10.5	-	4

Elesa Standards		Main dimensions									Fitting		
Code	Description	L	B	f±0.25	f1 ±0.25	H	h1	h2	b1	d	d3	d4	C [Nm] #
425441	CFM.30 SH-4-CLEAN	30	30	18	18	7	4	3.5	10.5	2.5	4.5	8.5	3
425541	CFM.40 SH-5-CLEAN	40	40	25	25	9	5.5	5	14	4	5.5	10.5	3
425641	CFM.50 SH-6-CLEAN	50	50	30	30	11.5	6.5	6	18	6	6.5	12.5	5
425741	CFM.60 SH-8-CLEAN	60	60	36	36	15	8.5	8	21	8	8.5	16.5	5

Suggested tightening torque for assembly screws.



Standard Elements	AXIAL STRESS	RADIAL STRESS	90° ANGLED STRESS
Description	Max static load Sa [N]	Max static load Sr [N]	Max static load S90 [N]
CFM.30 SH-4	1400	1700	1000
CFM.30 CH-4	1300	1700	850
CFM.40 p-M5x12	2000	1900	1000
CFM.40 SH-5	1900	1900	1280
CFM.40 CH-5	1900	1600	1000
CFM.40 p-M5x12-SH-5	1900	1900	1000
CFM.40 p-M5x12-CH-5	1900	1600	1000
CFM.50 p-M6x12	2340	2560	2100
CFM.50 SH-6	2630	2400	1720
CFM.50 CH-6	2860	2410	1360
CFM.50 p-M6x12-SH-6	2340	2400	1720
CFM.50 p-M6x12-CH-6	2340	2410	1360
CFM.60 p-M8x14.5	3000	3940	2130
CFM.60 SH-8	3320	2960	3070
CFM.60 CH-8	3440	2810	2170
CFM.60 p-M8x14.5-SH-8	3000	2960	2130
CFM.60 p-M8x14.5-CH-8	3000	2810	2130
CFM.60-45-SH-6	2920	3010	1310
CFM.60-SL-CH-6	960	1200	1360

Hinges

PA

+100°
-30°

Material

Glass-fibre reinforced polyamide based (PA) technopolymer. Resistant to solvents, oils, greases and other chemical agents.

Colour

Black, matte finish.

Rotation pin

AISI 303 stainless steel.

Standard execution

Pass-through holes for cylindrical head screws.

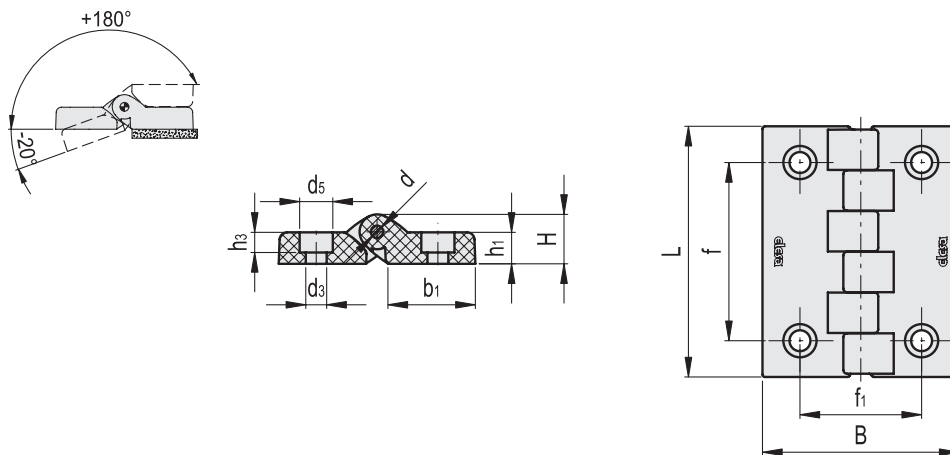


Rotation angle (approximate value)

Max 200° (-20° and + 180° being 0° the condition where the two interconnected surfaces are on the same plane).

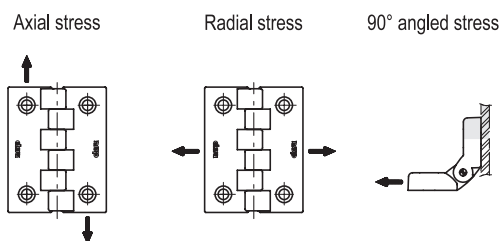
Do not exceed the rotation angle limit so as not to prejudice the hinge mechanical performance.

To choose the convenient type and the right number of hinges for your application, see the Guidelines.



Standard Elements		Main dimensions								Fitting			
Code	Description	L	B	f ±0.25	f1 ±0.25	H	h1	b1	d	d3	d5	h3	C [Nm] #
425201	CFL.102 CH-6	102	80	72.5	49.5	20.5	13	35.5	5	6.5	10.5	6.5	5
425202	CFL.102 CH-8	102	80	72.5	49.5	20.5	13	35.5	5	8.5	13.5	8	5

Suggested tightening torque for assembly screws.



Resistance tests	AXIAL STRESS		RADIAL STRESS		90° ANGLED STRESS	
	Maximum working load Ea [N]	Load at breakage Ra [N]	Maximum working load Er [N]	Load at breakage Rr [N]	Maximum working load E90 [N]	Load at breakage R90 [N]
CFL.102 CH-6	4000	10000	4500	10000	2000	4000
CFL.102 CH-8	3500	9000	4500	10000	2000	4000

GN 237-NI (Stainless)



INOX
Stainless Steel

Hinges

Material

AISI CF-8 stainless steel NI.

Finish

Sand-blasted, matte finish GS.

Rotation pin

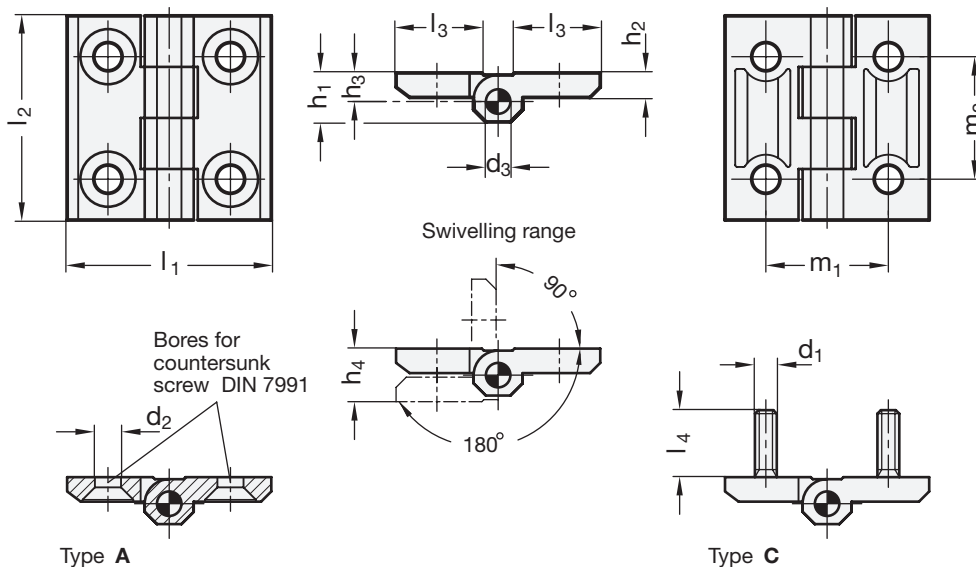
AISI 316Ti stainless steel (A4).

Assembly

- Type A: 2x2 bores for countersunk screws.

Rotation angle

Max. 270°, between 0° and -90° and between 0° and 180°.



Standard Elements	Main dimensions											Through holes		
	l1	l2	d3	h1	h2	h3	h4 +0.5	l3	m1	m2	d1	l4	d2	
GN 237-NI-30-30-A-GS	30	30	3	7.5	4	4.5	8.5	10.7	18	18	-	-	4.3	
GN 237-NI-40-40-A-GS	40	40	4	9	5	5.5	11	16	25	25	-	-	5.3	
GN 237-NI-50-50-A-GS	50	50	6	11.5	6	6.5	13	21	30	30	-	-	6.4	
GN 237-NI-60-60-A-GS	60	60	8	15	8	8.5	17	26	36	36	-	-	8.3	
GN 237-NI-40-40-C-GS	40	40	4	9	5	5.5	11	16	25	25	M5	11	-	
GN 237-NI-50-50-C-GS	50	50	6	11.5	6	6.5	13	21	30	30	M6	13	-	
GN 237-NI-60-60-C-GS	60	60	8	15	8	8.5	17	26	36	36	M8	17	-	

Standard Elements	Radial load in N		Axial load in N
	LR0	LR90	LA
GN 237-NI-30-30-A-GS	1700	750	750
GN 237-NI-40-40-A-GS	4000	1650	2100
GN 237-NI-50-50-A-GS	6500	2250	2550
GN 237-NI-60-60-A-GS	10000	5000	5000

Hinges

Material

Aluminium AL.

Finish

Anodised, natural colour, matte finish EL.

Rotation pin

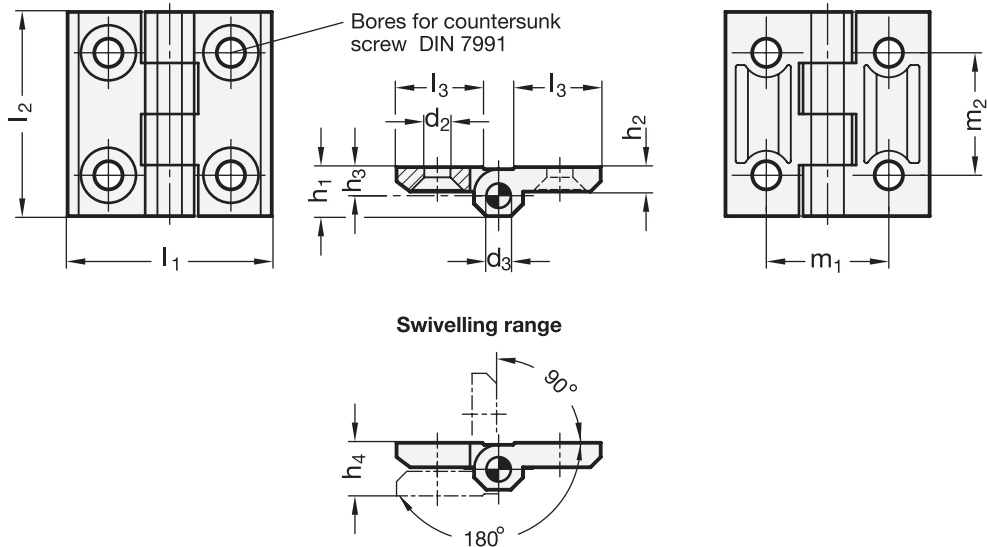
AISI 316Ti stainless steel (A4).

Assembly

Type A: two couples of through holes for countersunk-head screws.

Rotation angle

Max. 270°, between 0° and -90° and between 0° and 180°.



Standard Elements	Main dimensions										Through holes
Description	l1	l2	d3	h1	h2	h3	h4 +0.5	l3	m1	m2	d2
GN 237-AL-30-30-A-EL	30	30	3	7.5	4	4.5	8.5	10.7	18	18	4.3
GN 237-AL-40-40-A-EL	40	40	4	9	5	5.5	11	16	25	25	5.3
GN 237-AL-50-50-A-EL	50	50	6	11.5	6	6.5	13	21	30	30	6.4
GN 237-AL-60-60-A-EL	60	60	8	15	8	8.5	17	26	36	36	8.3

Standard Elements	Radial load in N		Axial load in N
Description	LR0	LR90	LA
GN 237-AL-30-30-A-EL	1200	750	550
GN 237-AL-40-40-A-EL	2000	2800	1060
GN 237-AL-50-50-A-EL	3000	4250	2250
GN 237-AL-60-60-A-EL	5000	5150	4050

GN 237-A4 (Stainless)



Hinges

Material

AISI 316 stainless steel A4.

Finish

Sand-blasted, matte finish GS.

Rotation pin

AISI 316Ti stainless steel (A4).

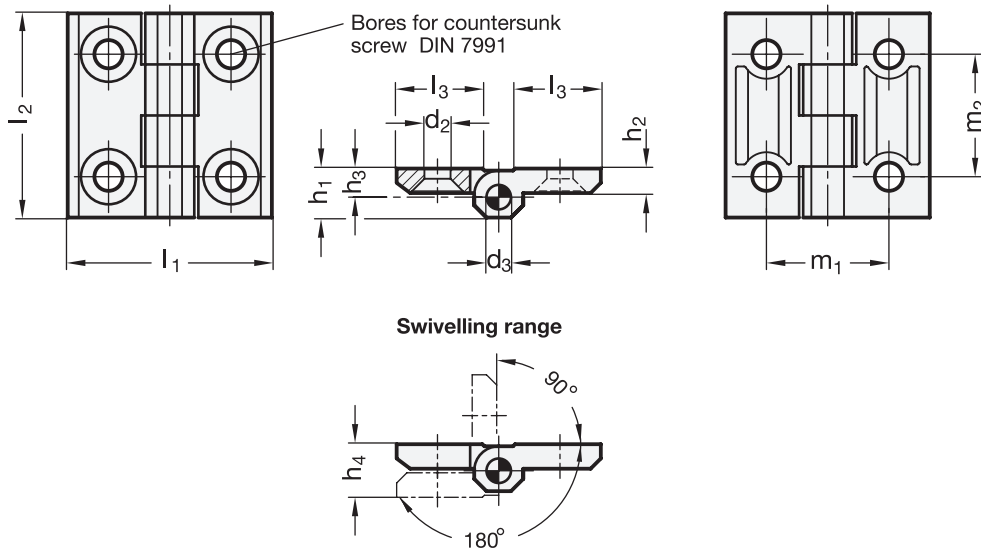
Assembly

Type A: two couples of through holes for countersunk-head screws.

Rotation angle

Max. 270°, between 0° and -90° and between 0° and 180°.

INOX
Stainless Steel



Standard Elements	Main dimensions										Through holes
	Description	l_1	l_2	d_3	h_1	h_2	h_3	h_4 +0.5	l_3	m_1	
GN 237-A4-30-30-A-GS	30	30	3	7.5	4	4.5	8.5	10.7	18	18	4.3
GN 237-A4-40-40-A-GS	40	40	4	9	5	5.5	11	16	25	25	5.3
GN 237-A4-50-50-A-GS	50	50	6	11.5	6	6.5	13	21	30	30	6.4
GN 237-A4-60-60-A-GS	60	60	8	15	8	8.5	17	26	36	36	8.3

Standard Elements	Radial load in N		Axial load in N
	Description	LR0	LR90
GN 237-A4-30-30-A-GS	1700	750	750
GN 237-A4-40-40-A-GS	4000	1650	2100
GN 237-A4-50-50-A-GS	6500	2250	2550
GN 237-A4-60-60-A-GS	10000	5000	5000

Hinge

Material

Anodised aluminium.

Colour

Natural, matte finish.

Rotation pin

AISI 304 stainless steel.

Assembly

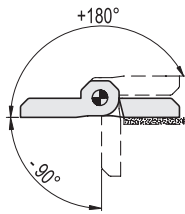
Through holes for countersunk head screws.

Rotation angle

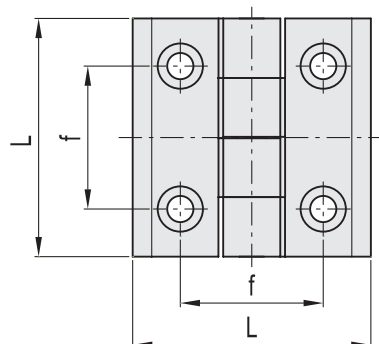
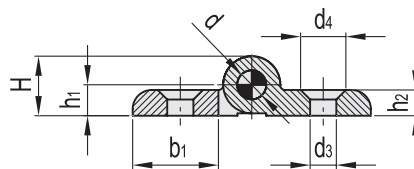
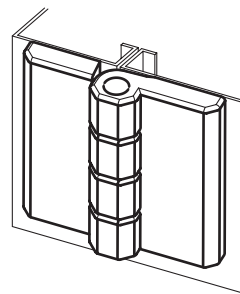
Max 270°, between 0° and -90° and between 0° and 180°

(0°= condition where the two interconnected surfaces are on the same plane).

Do not exceed the rotation angle limit (see drawing) so as not to prejudice the hinge mechanical performance.



Application example



Standard Elements		Main dimensions							Fitting	
Code	Description	L	f	H	h1	h2	b1	d	d3	d4
428649	CMM-AL-40-SH-5	40	25	10.5	5.5	5	17	4	5.5	10.5
428651	CMM-AL-50-SH-5	50	30	12.5	6.5	6	22	6	5.5	10.5
428652	CMM-AL-50-SH-6	50	30	12.5	6.5	6	22	6	6.5	12.5
428655	CMM-AL-60-SH-8	60	36	16.5	8.5	8	25	8	8.5	16.5

GN 238 (Zinc alloy)



Adjustable hinges with screw-covers

Material

Zinc alloy die-cast.

Finish

- Version SW: RAL 9005 black, matte finish, epoxy resin coating.
- Version SR: RAL 9006 silver, matte textured finish, epoxy resin coating.

Adjustable bushes

Hardened steel.

- Type BJ: two-sided adjustable.
- Type EJ: one-sided adjustable.
- Type NJ: not adjustable.

Plastic cover

Black-grey.

Rotation pin

AISI 303 stainless steel.



Features and applications

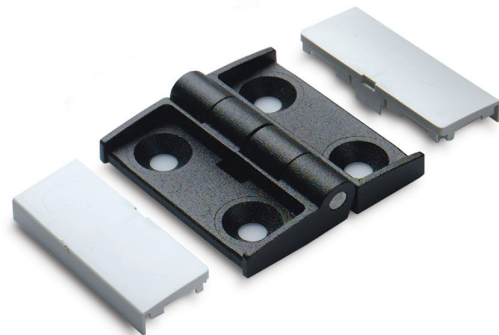
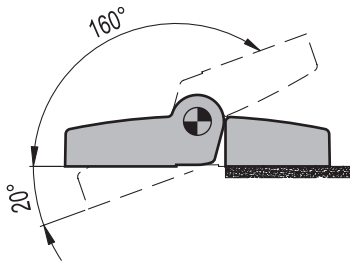
The adjustable type of hinges GN 238 offer a technically and optically perfect alignment of the door to its frame.

The adjustable bush made of steel has a cutting ring on its bottom side which cuts into the radially positioned serrations of the zinc die-casting when being tightening the countersunk screw. Thus, a form closure takes place (patented).

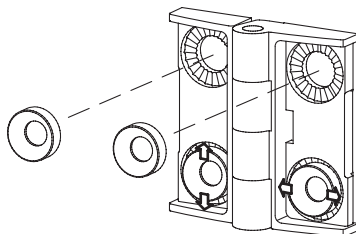
The plastic cover hides both, the adjustable bush and the countersunk screw so that no dirt can enter. Additionally, the cover offers an appealing look.

Rotation angle

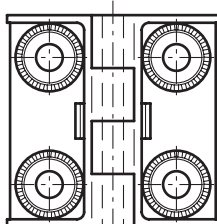
Max. 180°, between 0° and -20° and between 0° and 160°.



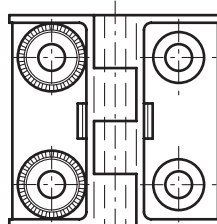
Assembly instructions



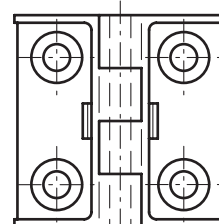
GN 238-BJ

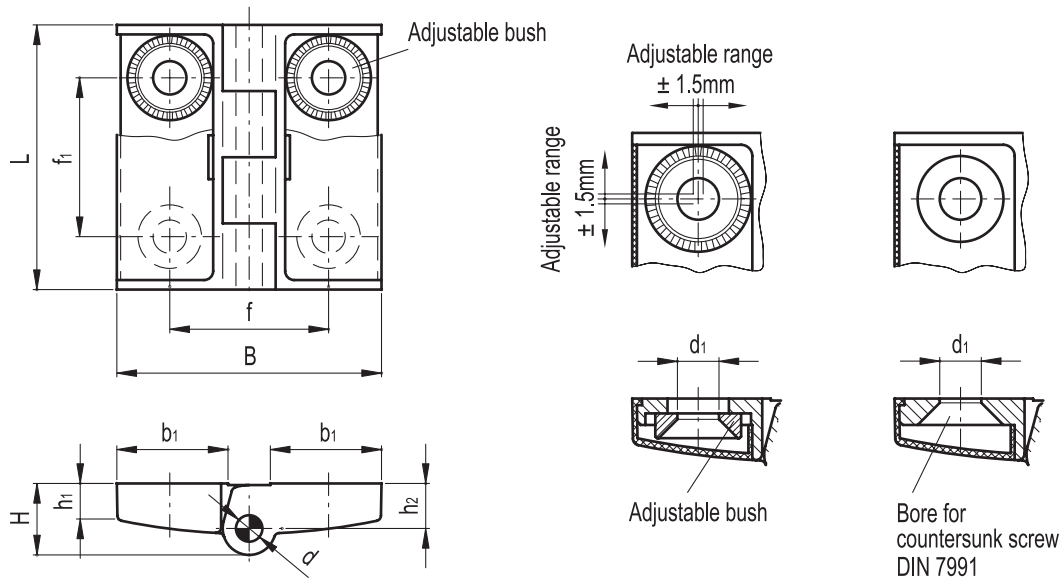


GN 238-EJ



GN 238-NJ





Standard Elements	Main dimensions									
Description	L	B	f	f1	H	h1~	h2~	b1	d	d1
GN 238-42-42-BJ-*	42	42	25	25	11	6.5	7.5	17	4	5.3
GN 238-50-50-BJ-*	50	50	30	30	13.5	7	8.5	21	5	6.3
GN 238-60-60-BJ-*	60	60	36	36	17	9	11.5	26	6	6.3
GN 238-42-42-EJ-*	42	42	25	25	11	6.5	7.5	17	4	5.3
GN 238-50-50-EJ-*	50	50	30	30	13.5	7	8.5	21	5	6.3
GN 238-60-60-EJ-*	60	60	36	36	17	9	11.5	26	6	6.3
GN 238-42-42-NJ-*	42	42	25	25	11	6.5	7.5	17	4	5.3
GN 238-50-50-NJ-*	50	50	30	30	13.5	7	8.5	21	5	6.3
GN 238-60-60-NJ-*	60	60	36	36	17	9	11.5	26	6	6.3

* Complete the description of the standard item needed by adding the index of the colour of the hinge: SW (black) or SR (silver).

Standard Elements	Radial load in N		Axial load in N
	LR0	LR90	LA
GN 238-42-42-BJ	1500	2100	1050
GN 238-42-42-EJ	1000	1500	1200
GN 238-42-42-NJ	1250	1350	1500
GN 238-50-50-BJ	1500	2200	1500
GN 238-50-50-EJ	1500	1700	1500
GN 238-50-50-NJ	1800	1900	2000
GN 238-60-60-BJ	2500	3200	1500
GN 238-60-60-EJ	2000	2000	1500
GN 238-60-60-NJ	3700	2600	2550

Adjustable hinge

Material

Glass-fibre reinforced polyamide based (PA) technopolymer. Resistant to solvents, oils, greases and other chemical agents.

Colour

Black, matte finish.

Adjusting inserts

Technopolymer, black colour.

Rotation pin

AISI 303 stainless steel.

Assembly

Through holes for M6 countersunk-head screws.

Features and applications

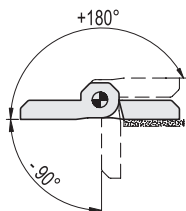
The adjusting inserts (ELESA patent) are designed to compensate limited misalignments of doors. Vertical and horizontal adjustments are both possible by simply setting the orientation of the inserts. The knurling on the hinge body holes and on the rear of the inserts avoid any accidental offset of the coupling during the assembly of the hinge so as to offer a secure mounting. A single product code to compensate vertical, horizontal or both misalignments.

Rotation angle

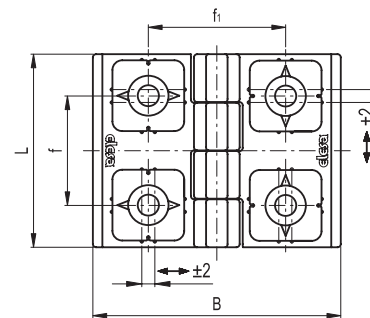
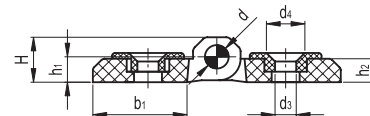
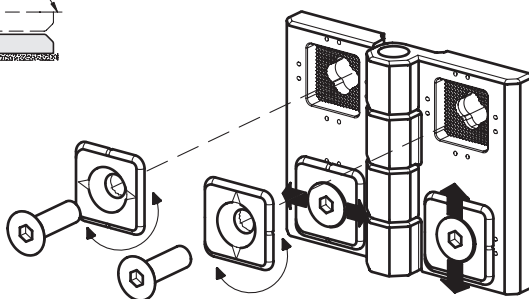
Max 270°, between 0° and -90° and between 0° and 180° (0° = condition where the two interconnected surfaces are on the same plane).

Do not exceed the rotation angle limit (see drawing) so as not to prejudice the hinge mechanical performance.

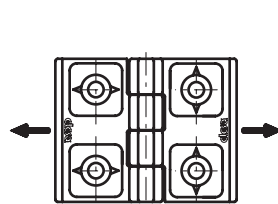
To choose the convenient type and the right number of hinges for your application, see the Guidelines.



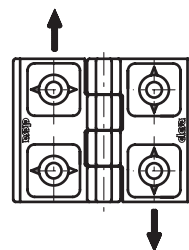
Assembly instructions



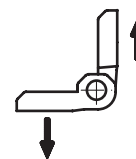
Standard Elements		Main dimensions									Mounting holes	
Code	Description	L	B	f	f1	H	h1	h2	b1	d	d3	d4
426431	CFR.60 SH-6	60	75	34	42	16	9.5	8	29.5	8	6.5	12.5



Radial strength



Axial strength



90° angled strength

Resistance tests		AXIAL STRENGTH	RADIAL STRENGTH	90° ANGLED STRENGTH	Tightening torque [Nm]
Code	Description	Max limit static load Sa [N]	Max limit static load Sr [N]	Max limit static load S90 [N]	SH
426431	CFR.60 SH-6	1800	2700	2130	5

Detent position hinges

Material

Glass-fibre reinforced polyamide based (PA) technopolymer. Resistant to solvents, oils, greases and other chemical agents.

Colour

Black, matte finish.

Rotation pin

AISI 303 stainless steel.

Standard executions

- CFV-SH: pass-through holes for countersunk head screws.
- CFV-EH: pass-through holes for hexagonal head screws.



Rotation angle (approximate value)

Max 210° (-90° and +120° being 0° the condition where the interconnected surfaces are on the same plane).

Do not exceed the rotation angle limit so as not to prejudice the hinge mechanical performance.

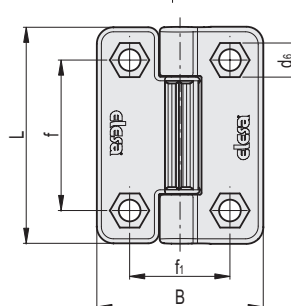
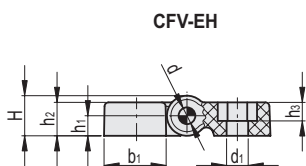
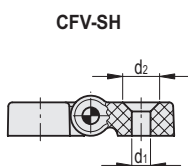
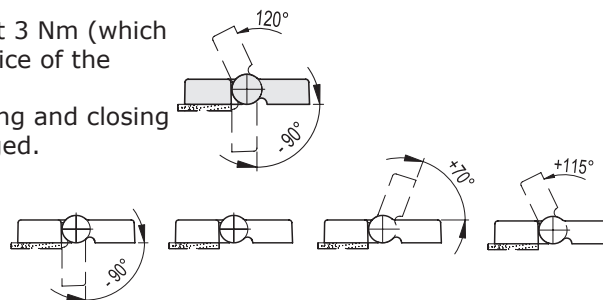
The detent device (ELESA patent) allows four different detent positions of the door (-90°, 0°, +70°, +115°).

To choose the convenient type and the right number of hinges for your application, see the Guidelines.

Resistant torque

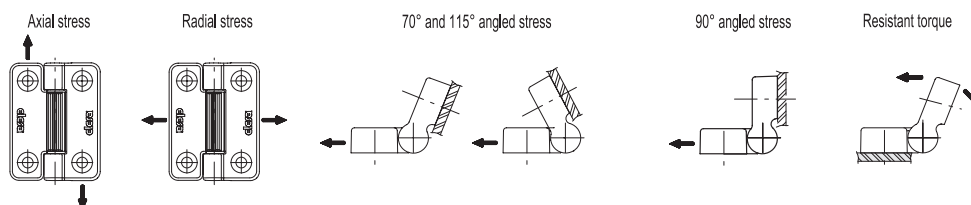
All detent positions guarantee a resistant torque of about 3 Nm (which is the torque that must be applied to free the detent device of the hinge).

The hinge had been tested with more than 20.000 opening and closing cycles and the value of the resistant torque was unchanged.



Standard Elements		Main dimensions									Fitting				
Code	Description	L	B	H	f	f1	h1	h2	b1	d	d1	d2	d6	h3	C [Nm] #
427626	CFV.65 SH-6	65	49.5	12	45	30	6	10	18.5	5	6.5	12.5	-	-	4
427621	CFV.65 EH-6	65	49.5	12	45	30	6	10	18.5	5	6.5	-	10	5	4

Suggested tightening torque for assembly screws.



Resistance tests	AXIAL STRESS		RADIAL STRESS		70° and 115° ANGLED STRESS		90° ANGLED STRESS		Resistant torque
Description	Maximum working load Ea [N]	Load at breakage Ra [N]	Maximum working load Er [N]	Load at breakage Rr [N]	Maximum working load E70 and E115 [N]	Load at breakage R70 and R115 [N]	Maximum working load E90 [N]	Load at breakage R90 [N]	[Nm]
CFV.65 SH-6	1320	4480	2070	5060	2150	3170	1630	3380	3
CFV.65 EH-6	1520	3840	1940	4900	1430	3660	970	3140	3

GN 127 (Zinc alloy)



Hinges

Material

Zinc alloy die-cast, black matte textured, epoxy resin coating.

Rotation pin

AISI 303 stainless steel.

Assembly

By means of two pairs of M6 countersunk-head screws.

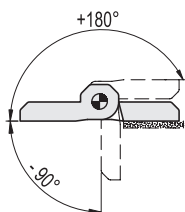
Features and applications

GN 127 hinges offer several advantages. Its mounting position is adjustable vertically (execution H), horizontally (execution B) or both horizontally and vertically (execution HB).

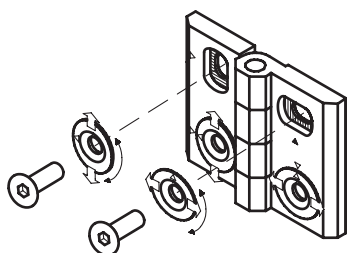
There are no oblong holes reducing the contact area of the screw head. In addition, serrations on the back of the holes prevent the hinge from moving. The arrow points indicate the zero reference mark for ease of installation. The easy-to-adjust holes allows a technically and optically perfect alignment of the door to its frame.

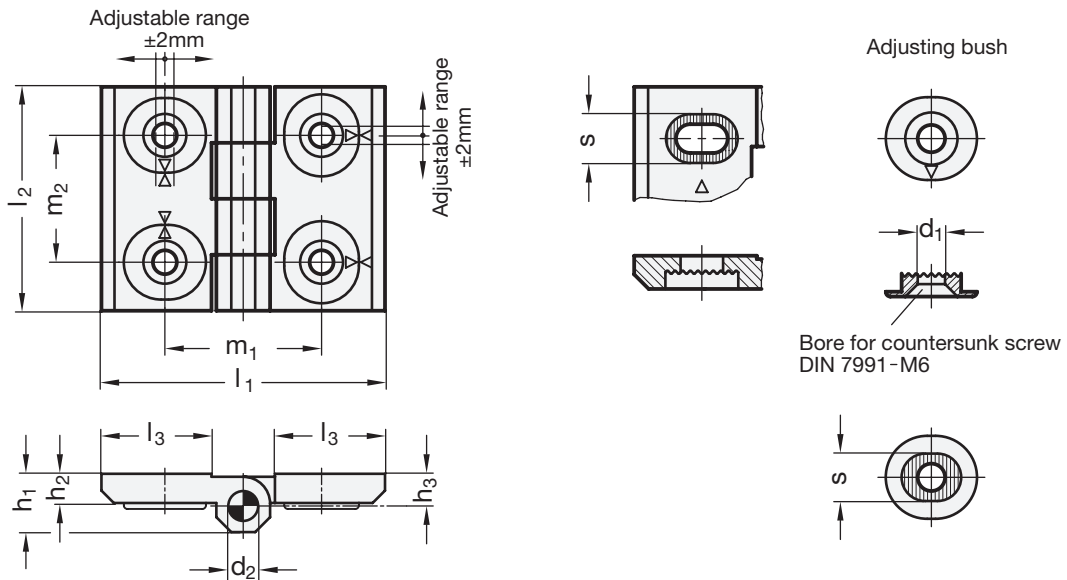
Rotation angle

Max 270°.

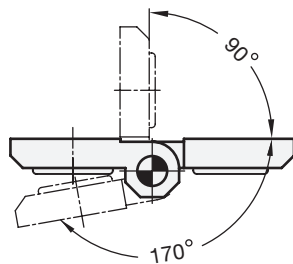


Assembly instructions

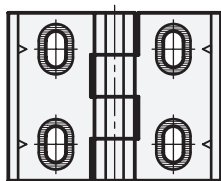
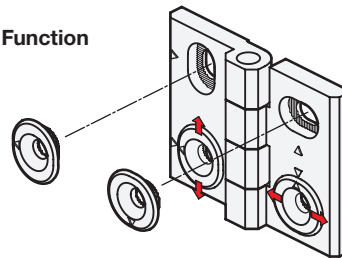




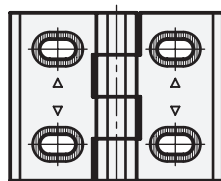
Swivelling range



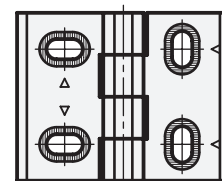
Function



Type H



Type B



Type HB

Standard Elements	Main dimensions										
Description	l_1	l_2	d_1	d_2	h_1	h_2	h_3	l_3	m_1	m_2	s
GN 127-76-60-B	76	60	6.5	8	15	8	8.5	30	42	34	12
GN 127-76-60-H	76	60	6.5	8	15	8	8.5	30	42	34	12
GN 127-76-60-HB	76	60	6.5	8	15	8	8.5	30	42	34	12

Standard Elements	RADIAL STRENGTH		AXIAL STRENGTH
Description	LR0	LR90	LA
GN 127-76-60	2000	2000	1150

Hinges

Material

High resilience polyamide based (PA) technopolymer. Resistant to solvents, oils, greases and other chemical agents.

Colour

Black, matte finish.

Rotation pin

AISI 303 stainless steel.

Assembly

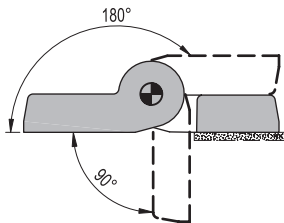
Through holes for cylindrical head screws.

Rotation angle

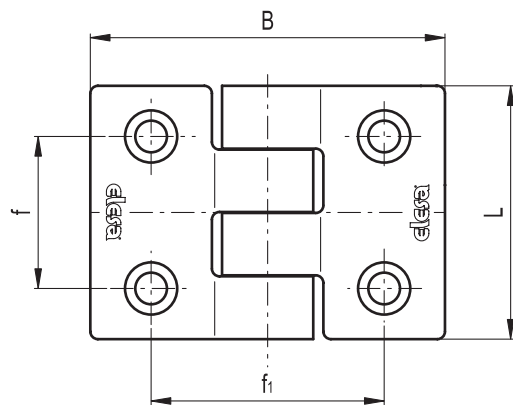
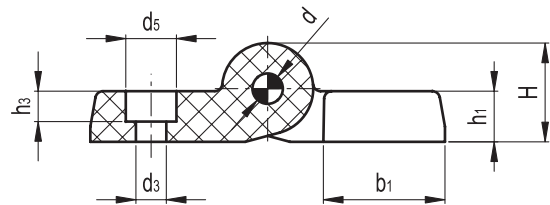
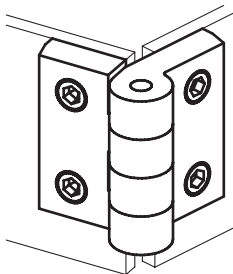
Max 270°, between 0° and -90° and between 0° and 180° (0° = condition where the two interconnected surfaces are on the same plane).

Do not exceed the rotation angle limit (see drawing) so as not to prejudice the hinge mechanical performance.

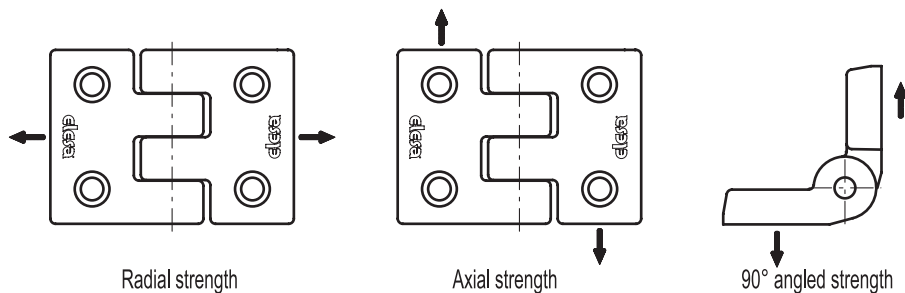
To choose the convenient type and the right number of hinges for your application, see the Guidelines.



Application example



Standard Elements		Main dimensions							Fitting			
Code	Description	L	B	f±0.25	f1 ±0.25	H	h1	b1	d	d3	d5	h3
424021	CFH.50 CH-6	50	69.5	30	45.5	19.5	10	24	6	6.5	10	6.5
424031	CFH.50 CH-8	50	69.5	30	45.5	19.5	10	24	6	8.5	13	4.5



Standard Elements		AXIAL STRENGTH		RADIAL STRENGTH		90° ANGLED STRENGTH		Maximum tightening torque [Nm]
Code	Description	Maximum working load Ea [N]	Load at breakage Ra [N]	Maximum working load Er [N]	Load at breakage Rr [N]	Maximum working load E90 [N]	Load at breakage R90 [N]	
424021	CFH.50 CH	200	2440	380	3830	190	1950	3

Hinges for thin doors

Material

High resilience polyamide based (PA) technopolymer. Resistant to solvents, oils, greases and other chemical agents.

Colour

Black, matte finish.

Rotation pin

AISI 303 stainless steel.

Assembly

- Execution B: nickel-plated brass bushings, tapped hole.
- Execution p: nickel-plated steel threaded studs.
- Combined executions: p/B - B/p - CH/B - CH/p (CH = through holes for cylindrical head screws).

Features and applications

The hinge is made up of two bodies with different dimensions (a narrow one and a larger one). They can be assembled for example on structures with thin jambs and doors.

Rotation angle

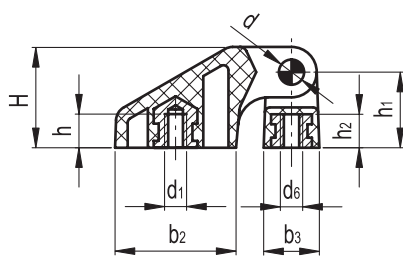
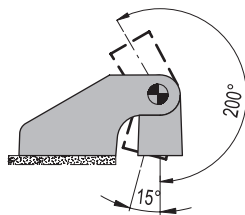
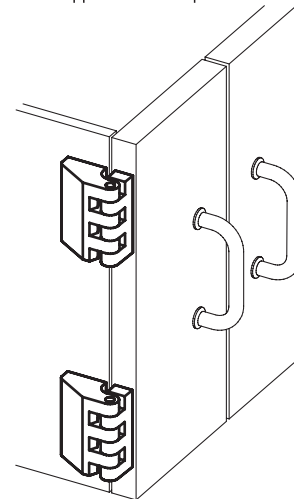
Max 215°, between 0° and -15° and between 0° and 200° (0° = condition where the two interconnected surfaces are on the same plane).

Do not exceed the rotation angle limit (see drawing) so as not to prejudice the hinge mechanical performance.

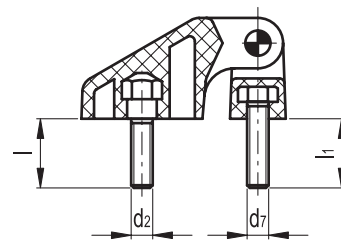
To choose the convenient type and the right number of hinges for your application, see the Guidelines.



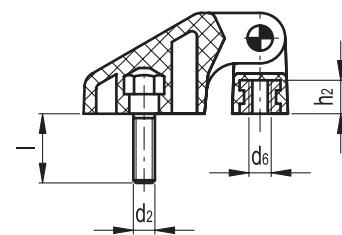
Application example



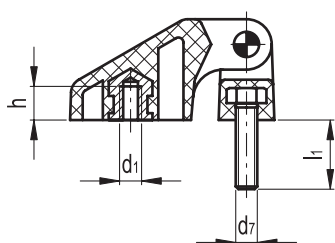
CFD-B



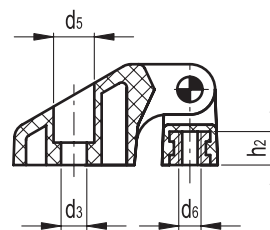
CFD p



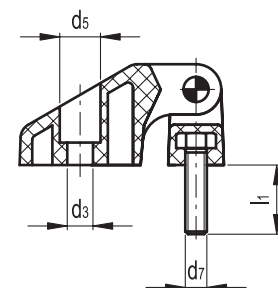
CFD p / B



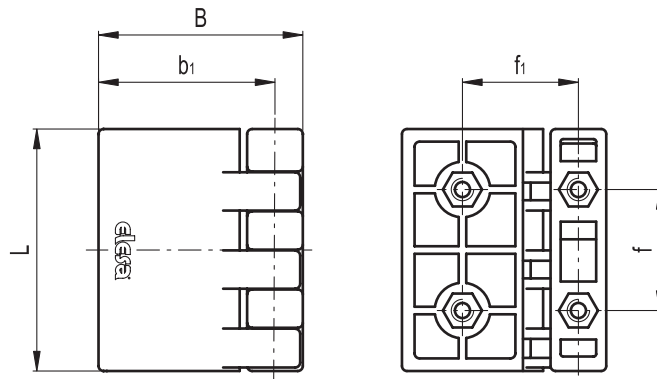
CFD-B / p



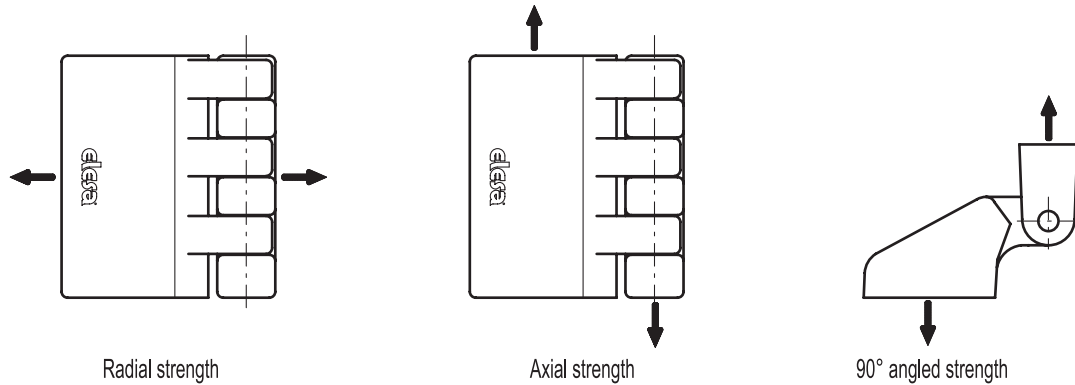
CFD-CH / B



CFD-CH / p



Standard Elements		Main dimensions										Fitting large part					Fitting narrow part				
												Bushings		Studs		Through holes		Bushings		Studs	
Code	Description	L	B	f ^{+0.25}	f1 ^{+0.25}	H	h1	b1	b2	b3	d	d1	h	d2	l	d3	d5	d6	h2	d7	l1
422711	CFD.30 B-M3	30.5	26.5	15	15	12.5	9.5	22.5	15	7	2.5	M3	4	-	-	-	-	M3	4	-	-
422721	CFD.30 p-M3x13	30.5	26.5	15	15	12.5	9.5	22.5	15	7	2.5	-	-	M3	13	-	-	-	-	M3	13
422731	CFD.30 p-M3x13-B-M3	30.5	26.5	15	15	12.5	9.5	22.5	15	7	2.5	-	-	M3	13	-	-	M3	4	-	-
422741	CFD.30 B-M3-p-M3x13	30.5	26.5	15	15	12.5	9.5	22.5	15	7	2.5	M3	4	-	-	-	-	-	-	M3	13
422751	CFD.30 CH-3-B-M3	30.5	26.5	15	15	12.5	9.5	22.5	15	7	2.5	-	-	-	-	3.5	6	M3	4	-	-
422761	CFD.30 CH-3-p-M3x13	30.5	26.5	15	15	12.5	9.5	22.5	15	7	2.5	-	-	-	-	3.5	6	-	-	M3	13
422811	CFD.40 B-M4	40.5	34	20	20.2	16.5	12.5	29.5	20	9.5	4	M4	5.5	-	-	-	-	M4	5.5	-	-
422821	CFD.40 p-M4x18	40.5	34	20	20.2	16.5	12.5	29.5	20	9.5	4	-	-	M4	18	-	-	-	-	M4	18
422831	CFD.40 p-M4x18-B-M4	40.5	34	20	20.2	16.5	12.5	29.5	20	9.5	4	-	-	M4	18	-	-	M4	5.5	-	-
422841	CFD.40 B-M4-p-M4x18	40.5	34	20	20.2	16.5	12.5	29.5	20	9.5	4	M4	5.5	-	-	-	-	-	-	M4	18
422851	CFD.40 CH-4-B-M4	40.5	34	20	20.2	16.5	12.5	29.5	20	9.5	4	-	-	-	-	4.5	7.5	M4	5.5	-	-
422861	CFD.40 CH-4-p-M4x18	40.5	34	20	20.2	16.5	12.5	29.5	20	9.5	4	-	-	-	-	4.5	7.5	-	-	M4	18
422911	CFD.48 B-M5	48.5	40.5	24	23	20	15	35	24	11.5	5	M5	6.5	-	-	-	-	M5	6.5	-	-
422921	CFD.48 p-M5x17	48.5	40.5	24	23	20	15	35	24	11.5	5	-	-	M5	17	-	-	-	-	M5	17
422931	CFD.48 p-M5x17-B-M5	48.5	40.5	24	23	20	15	35	24	11.5	5	-	-	M5	17	-	-	M5	6.5	-	-
422941	CFD.48 B-M5-p-M5x17	48.5	40.5	24	23	20	15	35	24	11.5	5	M5	6.5	-	-	-	-	-	-	M5	17
422951	CFD.48 CH-5-B-M5	48.5	40.5	24	23	20	15	35	24	11.5	5	-	-	-	-	5.5	9	M5	6.5	-	-
422961	CFD.48 CH-5-p-M5x17	48.5	40.5	24	23	20	15	35	24	11.5	5	-	-	-	-	5.5	9	-	-	M5	17
423011	CFD.66 B-M6	66	56	33	31.8	27.5	21	48.5	33	15	6	M6	10	-	-	-	-	M6	9	-	-
423021	CFD.66 p-M6x16	66	56	33	31.8	27.5	21	48.5	33	15	6	-	-	M6	16	-	-	-	-	M6	16
423031	CFD.66 p-M6x16-B-M6	66	56	33	31.8	27.5	21	48.5	33	15	6	-	-	M6	16	-	-	M6	9	-	-
423041	CFD.66 B-M6-p-M6x16	66	56	33	31.8	27.5	21	48.5	33	15	6	M6	10	-	-	-	-	-	-	M6	16
423051	CFD.66 CH-6-B-M6	66	56	33	31.8	27.5	21	48.5	33	15	6	-	-	-	-	6.5	10.5	M6	9	-	-
423061	CFD.66 CH-6-p-M6x16	66	56	33	31.8	27.5	21	48.5	33	15	6	-	-	-	-	6.5	10.5	-	-	M6	16



Standard Elements		AXIAL STRENGTH		RADIAL STRENGTH		90° ANGLED STRENGTH		Maximum tightening torque [Nm]		
Code	Description	Maximum working load Ea [N]	Load at breakage Ra [N]	Maximum working load Er [N]	Load at breakage Rr [N]	Maximum working load E90 [N]	Load at breakage R90 [N]	SH/CH	B	p
422711	CFD.30 B-M3	60	690	70	490	60	500	-	1	-
422721	CFD.30 p-M3x13	70	750	40	340	30	390	-	-	1
422731	CFD.30 p-M3x13-B-M3	60	690	40	340	30	390	-	1	1
422741	CFD.30 B-M3-p-M3x13	60	690	40	340	30	390	-	1	1
422751	CFD.30 CH-3-B-M3	100	830	110	720	70	670	0.5	1	-
422761	CFD.30 CH-3-p-M3x13	60	730	50	450	30	350	0.5	-	1
422811	CFD.40 B-M4	160	1710	150	1340	100	700	-	4	-
422821	CFD.40 p-M4x18	110	1230	140	880	50	730	-	-	1.5
422831	CFD.40 p-M4x18-B-M4	110	1230	140	880	50	700	-	4	1.5
422841	CFD.40 B-M4-p-M4x18	110	1230	140	880	50	700	-	4	1.5
422851	CFD.40 CH-4-B-M4	120	1620	150	1220	130	1110	1	4	-
422861	CFD.40 CH-4-p-M4x18	150	1480	140	820	100	860	1	-	1.5
422911	CFD.48 B-M5	260	2440	260	1700	120	1640	-	5	-
422921	CFD.48 p-M5x17	290	1770	240	1840	110	1740	-	-	3
422931	CFD.48 p-M5x17-B-M5	260	1770	240	1700	110	1640	-	5	3
422941	CFD.48 B-M5-p-M5x17	260	1770	240	1700	110	1640	-	5	3
422951	CFD.48 CH-5-B-M5	330	2530	240	1890	290	1870	2	-	-
422961	CFD.48 CH-5-p-M5x17	150	2170	120	1200	110	970	2	-	3
423011	CFD.66 B-M6	450	4130	320	2520	220	2250	-	5	-
423021	CFD.66 p-M6x16	470	3260	260	1700	240	1580	-	-	5
423031	CFD.66 p-M6x16-B-M6	450	3260	260	1700	220	1580	-	5	5
423041	CFD.66 B-M6-p-M6x16	450	3260	260	1700	220	1580	-	5	5
423051	CFD.66 CH-6-B-M6	430	3660	410	2610	310	2830	5	5	-
423061	CFD.66 CH-6-p-M6x16	350	3090	280	1770	180	1610	5	-	5

Hinge for thin doors

Material

Anodised aluminium.

Colour

Natural, matte finish.

Rotation pin

AISI 303 stainless steel.

Guide bushings for pin

Polyamide based (PA) technopolymer.

Assembly

Self-tapping screws 4.2x15.9 DIN 7982, stainless steel (narrow body of the hinge) and M5x10 semi-rounded head screws, stainless steel (large body of the hinge), supplied.

Features and applications

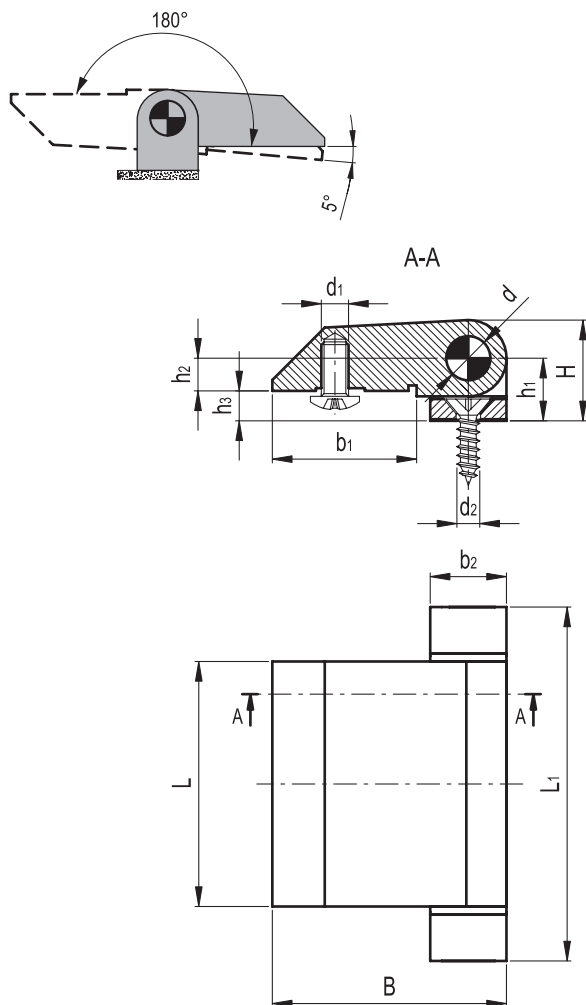
The hinge is made up of two bodies with different dimensions (a narrow one and a larger one). They can be assembled for example on structures with thin jambs and doors.

Rotation angle

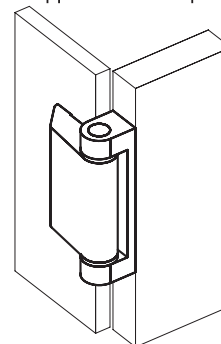
Max 180°, between 0° and 180°

(0°=condition where the two interconnected surfaces are on the same plane).

Do not exceed the rotation angle limit (see drawing) so as not to prejudice the hinge mechanical performance.



Application example



Standard Elements		Main dimensions											Fitting		
Code	Description	L	B	L1	f	f1	H	h1	h2	h3	b1	b2	d	d1	d2
428251	CMD-AL-45-SH-4-M5	45	43	65	33	24.5	18.5	11.5	6	5.5	26.5	14	8	M5	4.2

Hinges

Material

High resilience polyamide based (PA) technopolymer. Resistant to solvents, oils, greases and other chemical agents.

Colour

Black, matte finish.

Rotation pin

AISI 303 stainless steel.

Assembly

- Execution B: nickel-plated brass bushings, tapped hole.
- Execution p: nickel-plated brass threaded studs.
- Execution CH: through holes for cylindrical head screws.
- Combined executions: B/p - B/CH - p/CH

Applications

This hinge has been developed in particular for doors provided with gaskets.

Rotation angle

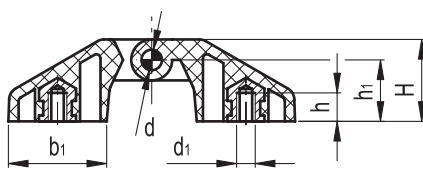
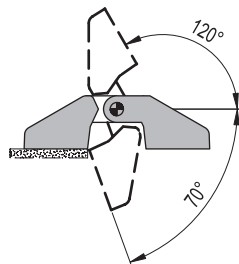
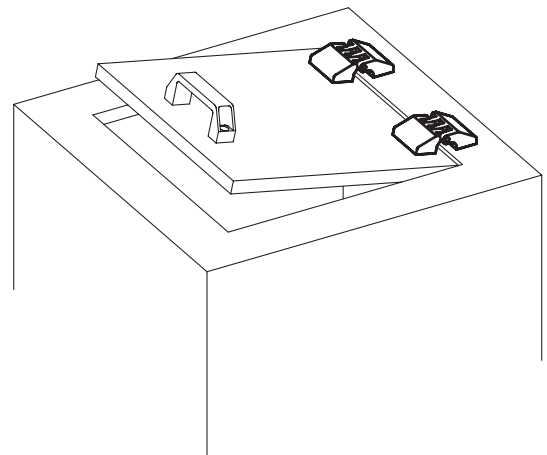
Max 190°, between 0° and -70° and between 0° and 120° (0° = condition where the two interconnected surfaces are on the same plane).

Do not exceed the rotation angle limit (see drawing) so as not to prejudice the hinge mechanical performance.

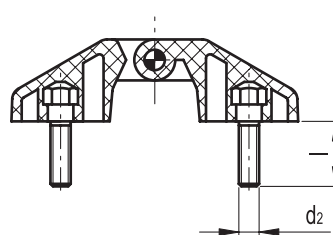
To choose the convenient type and the right number of hinges for your application, see the Guidelines.



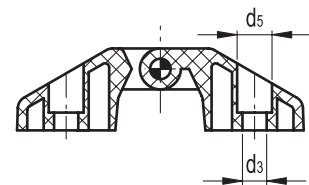
Application example



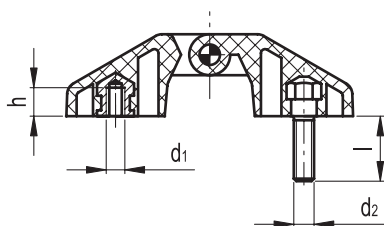
CFE-B



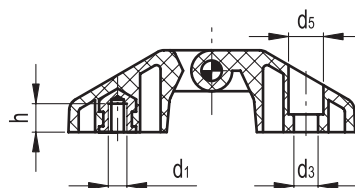
CFE p



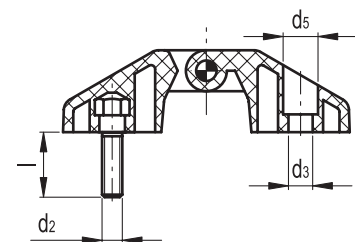
CFE-CH



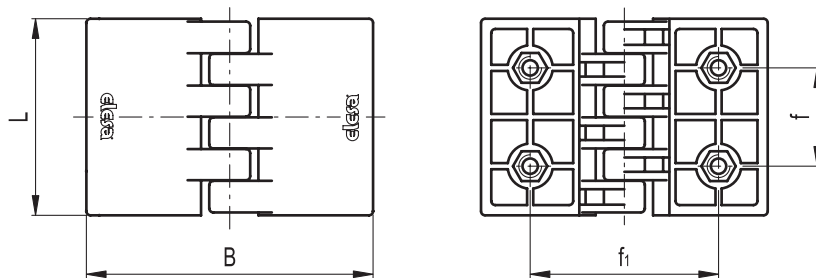
CFE-B/p



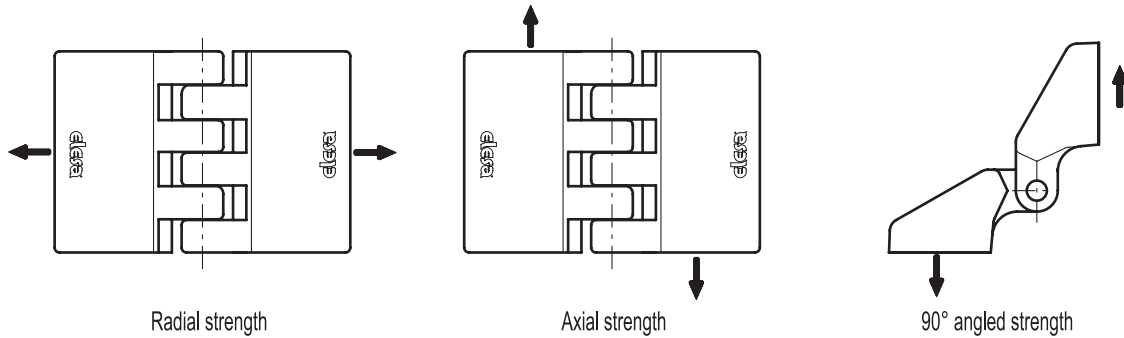
CFE-B/CH



CFE p/CH



Standard Elements		Main dimensions								Fitting					
										Bushings		Studs		Through holes	
Code	Description	L	B	f ^{±0.25}	f1 ^{±0.25}	H	h1	b1	d	d1	h	d2	l	d3	d5
423111	CFE.30 B-M3	30.5	45.5	15	30	12.5	9.5	15	2.5	M3	4	-	-	-	-
423121	CFE.30 p-M3x13	30.5	45.5	15	30	12.5	9.5	15	2.5	-	-	M3	13	-	-
423131	CFE.30 CH-3	30.5	45.5	15	30	12.5	9.5	15	2.5	-	-	-	-	3.5	6
423141	CFE.30 B-M3-p-M3x13	30.5	45.5	15	30	12.5	9.5	15	2.5	M3	4	M3	13	-	-
423151	CFE.30 B-M3-CH-3	30.5	45.5	15	30	12.5	9.5	15	2.5	M3	4	-	-	3.5	6
423161	CFE.30 p-M3x13-CH-3	30.5	45.5	15	30	12.5	9.5	15	2.5	-	-	M3	13	3.5	6
423211	CFE.40 B-M4	40.5	59	20	40.4	16.5	12.5	20	4	M4	5.5	-	-	-	-
423221	CFE.40 p-M4x18	40.5	59	20	40.4	16.5	12.5	20	4	-	-	M4	18	-	-
423231	CFE.40 CH-4	40.5	59	20	40.4	16.5	12.5	20	4	-	-	-	-	4.5	7.5
423241	CFE.40 B-M4-p-M4x18	40.5	59	20	40.4	16.5	12.5	20	4	M4	5.5	M4	18	-	-
423251	CFE.40 B-M4-CH-4	40.5	59	20	40.4	16.5	12.5	20	4	M4	5.5	-	-	4.5	7.5
423261	CFE.40 p-M4x18-CH-4	40.5	59	20	40.4	16.5	12.5	20	4	-	-	M4	18	4.5	7.5
423311	CFE.48 B-M5	48.5	70	24	46	20	15	24	5	M5	6.5	-	-	-	-
423321	CFE.48 p-M5x17	48.5	70	24	46	20	15	24	5	-	-	M5	17	-	-
423331	CFE.48 CH-5	48.5	70	24	46	20	15	24	5	-	-	-	-	5.5	9
423341	CFE.48 B-M5-p-M5x17	48.5	70	24	46	20	15	24	5	M5	6.5	M5	17	-	-
423351	CFE.48 B-M5-CH-5	48.5	70	24	46	20	15	24	5	M5	6.5	-	-	5.5	9
423361	CFE.48 p-M5x17-CH-5	48.5	70	24	46	20	15	24	5	-	-	M5	17	5.5	9
423411	CFE.66 B-M6	66	97	33	63.7	27.5	21	33	6	M6	10	-	-	-	-
423421	CFE.66 p-M6x16	66	97	33	63.7	27.5	21	33	6	-	-	M6	16	-	-
423431	CFE.66 CH-6	66	97	33	63.7	27.5	21	33	6	-	-	-	-	6.5	10.5
423441	CFE.66 B-M6-p-M6x16	66	97	33	63.7	27.5	21	33	6	M6	10	M6	16	-	-
423451	CFE.66 B-M6-CH-6	66	97	33	63.7	27.5	21	33	6	M6	10	-	-	6.5	10.5
423461	CFE.66 p-M6x16-CH-6	66	97	33	63.7	27.5	21	33	6	-	-	M6	16	6.5	10.5



Standard Elements		AXIAL STRENGTH		RADIAL STRENGTH		90° ANGLED STRENGTH		Maximum tightening torque [Nm]		
Code	Description	Maximum working load Ea [N]	Load at breakage Ra [N]	Maximum working load Er [N]	Load at breakage Rr [N]	Maximum working load E90 [N]	Load at breakage R90 [N]	CH	B	p
423111	CFE.30 B-M3	50	660	140	1040	50	310	-	1	-
423121	CFE.30 p-M3x13	40	460	110	1040	60	560	-	-	1
423131	CFE.30 CH-3	50	640	120	980	20	300	0.5	-	-
423141	CFE.30 B-M3-p-M3x13	40	460	110	1040	50	310	-	1	1
423151	CFE.30 B-M3-CH-3	50	640	120	980	20	300	0.5	1	-
423161	CFE.30 p-M3x13-CH-3	40	460	110	980	20	300	0.5	-	1
423211	CFE.40 B-M4	90	1110	230	1920	60	590	-	4	-
423221	CFE.40 p-M4x18	90	1110	300	2440	60	590	-	-	2
423231	CFE.40 CH-4	150	1580	370	2460	80	1210	1	-	-
423241	CFE.40 B-M4-p-M4x18	90	1110	230	1920	60	590	-	4	2
423251	CFE.40 B-M4-CH-4	90	1110	230	1920	60	590	1	4	-
423261	CFE.40 p-M4x18-CH-4	90	1110	300	2440	60	590	1	-	2
423311	CFE.48 B-M5	160	1260	440	2890	190	1290	-	5	-
423321	CFE.48 p-M5x17	190	1900	310	2870	160	1190	-	-	5
423331	CFE.48 CH-5	300	2160	410	2850	150	1440	2	-	-
423341	CFE.48 B-M5-p-M5x17	160	1260	310	2870	160	1190	-	5	5
423351	CFE.48 B-M5-CH-5	160	1260	410	2850	150	1290	2	5	-
423361	CFE.48 p-M5x17-CH-5	190	1900	310	2850	150	1190	2	-	5
423411	CFE.66 B-M6	530	4160	500	2480	310	2250	-	5	-
423421	CFE.66 p-M6x16	240	2670	700	3490	270	1830	-	-	5
423431	CFE.66 CH-6	440	3160	690	3450	260	2920	5	-	-
423441	CFE.66 B-M6-p-M6x16	240	2670	500	2480	270	1830	-	5	5
423451	CFE.66 B-M6-CH-6	440	3160	500	2480	260	2250	5	5	-
423461	CFE.66 p-M6x16-CH-6	240	2670	690	3450	260	1830	5	-	5

Tamperproof hinges

Material

Glass-fibre reinforced polyamide based (PA) technopolymer. Resistant to solvents, oils, greases and other chemical agents.

Colour

Black, matte finish.

Rotation pin

AISI 303 stainless steel, totally moulded in the hinge body.

Assembly

- Execution B: nickel-plated brass bushings, tapped hole.
- Execution p: nickel-plated steel threaded studs.
- Execution EH: through holes for hexagonal head screws.
- Combined executions: B/SH (SH = through holes for countersunk head screws).

Features and applications

The rotation pin totally moulded in the hinge body (ELESA patent) cannot be extracted, preventing any hinge tampering. This characteristic makes the hinge particularly suitable for mounting on structures or equipments requiring protection against intrusion.

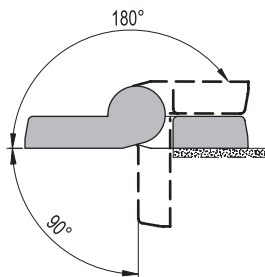
Rotation angle

Max 270°, between 0° and -90° and between 0° and 180°

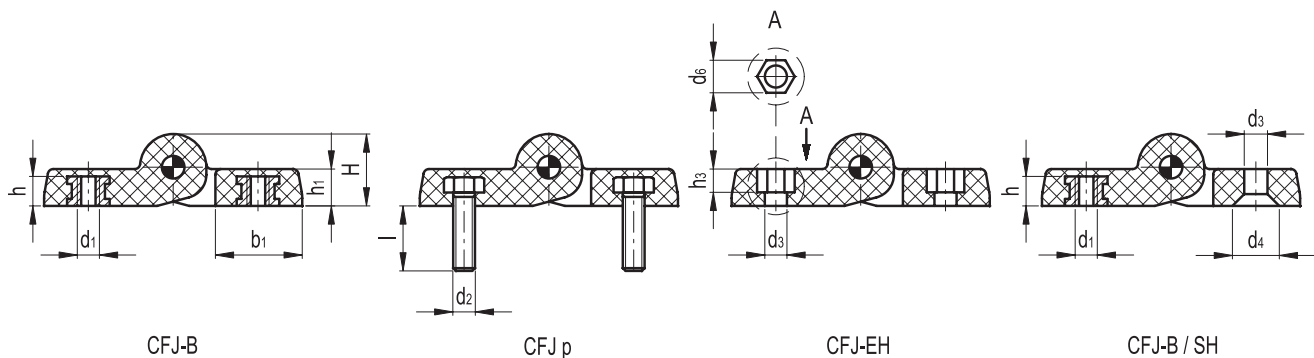
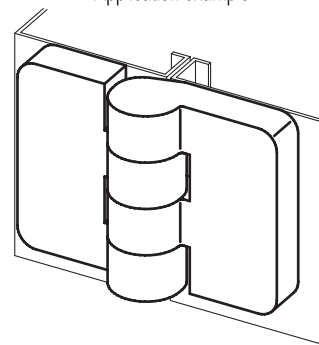
(0° = condition where the interconnected surfaces are on the same plane).

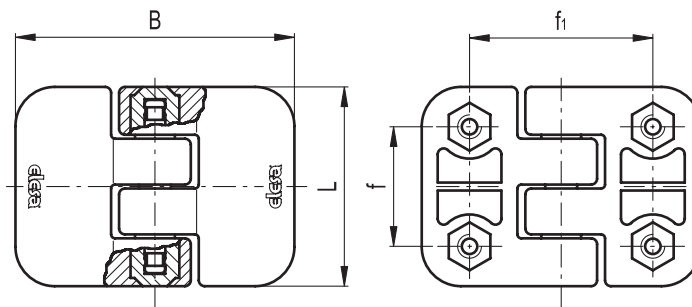
Do not exceed the rotation angle limit (see drawing) so as not to prejudice the hinge mechanical performance.

To choose the convenient type and the right number of hinges for your application see the Guidelines.

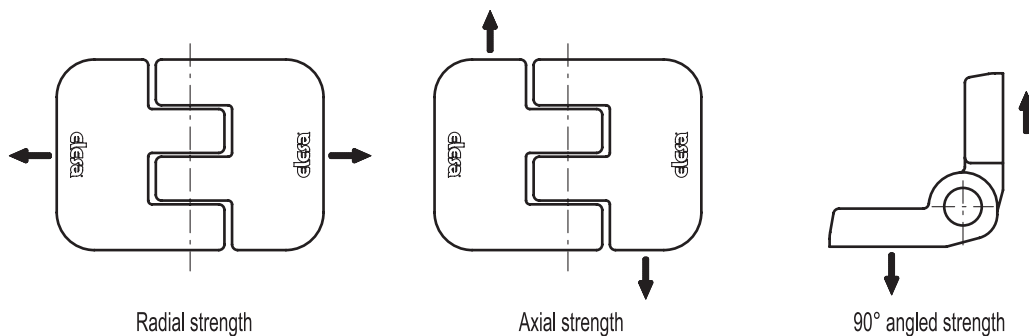


Application example





Standard Elements		Main dimensions							Fitting							
									Bushings		Studs		Through holes			
Code	Description	L	B	f ±0.25	f1 ±0.25	H	h1	b1	d1	h	d2	l	d3	d4	d6	h3
424611	CFJ.50 B-M6	50	70	30	46	19.5	10	23.5	M6	8	-	-	-	-	-	-
424621	CFJ.50 p-M6x17	50	70	30	46	19.5	10	23.5	-	-	M6	17	-	-	-	-
424631	CFJ.50 EH-6	50	70	30	46	19.5	10	23.5	-	-	-	-	6.5	-	10	5.5
424671	CFJ.50-R B-M6-SH-6	50	70	30	46	19.5	10	23.5	M6	8	-	-	6.5	12.5	-	-



Standard Elements		AXIAL STRENGTH		RADIAL STRENGTH		90° ANGLED STRENGTH		Maximum tightening torque [Nm]		
Code	Description	Maximum working load Ea [N]	Load at breakage Ra [N]	Maximum working load Er [N]	Load at breakage Rr [N]	Maximum working load E90 [N]	Load at breakage R90 [N]	EH/SH	B	p
424611	CFJ.50 B-M6	730	4170	2220	4450	710	2250	-	5	-
424621	CFJ.50 p-M6x17	1420	4410	2180	4350	510	2220	-	-	4
424631	CFJ.50 EH-6	1740	3470	1490	2970	460	2120	5	-	-
424671	CFJ.50-R B-M6-SH-6	1480	2780	1310	2490	390	1900	3	5	-

Hinges for profiles

Material

Glass-fibre reinforced polyamide based (PA) technopolymer. Resistant to solvents, oils, greases and other chemical agents.

Colour

Black or grey RAL 7040 (C33), matte finish.

Rotation pin

Nickel-plated steel.

Standard execution

Pass-through holes for M6 countersunk head screws.

Technopolymer centering inserts (supplied)

For profiles with slot dimensions from 6 to 12 mm.

Features and applications

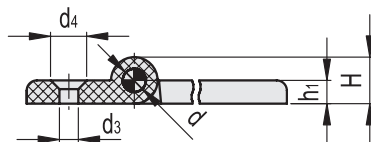
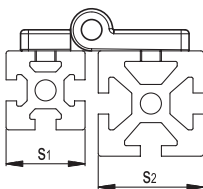
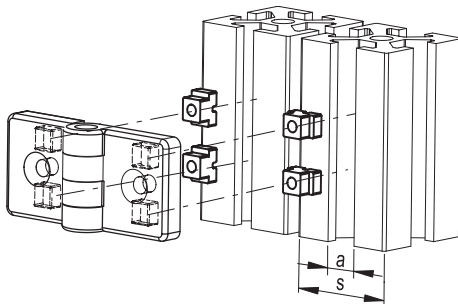
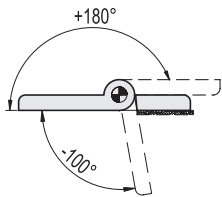
This type of hinge can be used with profiles from 30 up to 60 mm, also combining different dimensions.

Rotation angle (approximate value)

Max 280° (-100° and +180° being 0° the condition where the two interconnected surfaces are on the same plane).

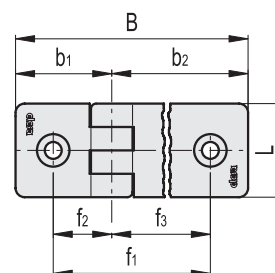
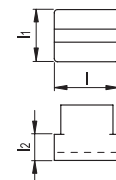
Do not exceed the rotation angle limit so as not to prejudice the hinge mechanical performance.

To choose the convenient type and the right number of hinges for your application, see the Guidelines.



Profile dimension		Insert orientation	Insert colour
s	a		
30	6		Light grey
	8		
40+45	8		Dark grey
	10		
50+60	10		Black
	12		

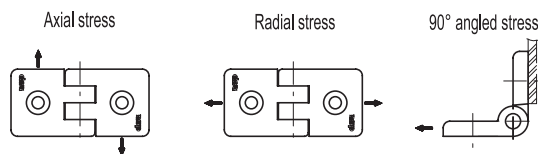
Centering inserts			
Dimensions	Dimensions		Colour
	l	l ₁	
8	6	2	Light grey
10	8	4	Dark grey
12	10	5	Black



Standard Elements		Main dimensions												Fitting	
Code	Description	s1	s2	L	B	f1 ±0.25	f2	f3	H	h1	b1	b2	d	d3	d4
423911	CFG.30/30 SH-6	30	30	36	54	35	17.5	17.5	16	8	27	27	8	6.5	12.5
423912	CFG.30/40 SH-6	30	40	36	64	40	17.5	22.5	16	8	27	37	8	6.5	12.5
423913	CFG.30/45 SH-6	30	45	36	69	42.5	17.5	25	16	8	27	42	8	6.5	12.5
423914	CFG.30/60 SH-6	30	60	36	84	50	17.5	32.5	16	8	27	57	8	6.5	12.5
423921	CFG.40/40 SH-6	40	40	36	74	45	22.5	22.5	16	8	37	37	8	6.5	12.5
423922	CFG.40/45 SH-6	40	45	36	79	47.5	22.5	25	16	8	37	42	8	6.5	12.5
423923	CFG.40/60 SH-6	40	60	36	94	55	22.5	32.5	16	8	37	57	8	6.5	12.5
423931	CFG.45/45 SH-6	45	45	36	84	50	25	25	16	8	42	42	8	6.5	12.5
423932	CFG.45/60 SH-6	45	60	36	99	57.5	25	32.5	16	8	42	57	8	6.5	12.5
423941	CFG.60/60 SH-6	60	60	36	114	65	32.5	32.5	16	8	57	57	8	6.5	12.5

Standard Elements		Main dimensions											Fitting		
Code	Description	L	B	f1±0.25	f2	f3	H	h1	b1	b2	d	d3	d4	C [N]	#
423911-C33	CFG.30/30 SH-6-C33	36	54	35	17.5	17.5	16	8	27	27	8	6.5	12.5	5	
423912-C33	CFG.30/40 SH-6-C33	36	64	40	17.5	22.5	16	8	27	37	8	6.5	12.5	5	
423913-C33	CFG.30/45 SH-6-C33	36	69	42.5	17.5	25	16	8	27	42	8	6.5	12.5	5	
423914-C33	CFG.30/60 SH-6-C33	36	64	50	17.5	32.5	16	8	27	57	8	6.5	12.5	5	
423921-C33	CFG.40/40 SH-6-C33	36	74	45	22.5	22.5	16	8	37	37	8	6.5	12.5	5	
423922-C33	CFG.40/45 SH-6-C33	36	79	47.5	22.5	22.5	16	8	37	42	8	6.5	12.5	5	
423923-C33	CFG.40/60 SH-6-C33	36	94	55	22.5	32.5	16	8	37	57	8	6.5	12.5	5	
423931-C33	CFG.45/45 SH-6-C33	36	94	50	25	25	16	8	42	42	8	6.5	12.5	5	
423932-C33	CFG.45/60 SH-6-C33	36	99	57.5	25	32.5	16	8	42	57	8	6.5	12.5	5	
423941-C33	CFG.60/60 SH-6-C33	36	114	65	32.5	32.5	16	8	57	57	8	6.5	12.5	5	

Suggested tightening torque for assembly screws.



Standard Elements		AXIAL STRESS		RADIAL STRESS		90° ANGLED STRESS		Maximum tightening torque [Nm]
Code	Description	Maximum working load Ea [N]	Load at breakage Ra [N]	Maximum working load Er [N]	Load at breakage Rr [N]	Maximum working load E90 [N]	Load at breakage R90 [N]	
423911	CFG.30/30 SH-6	440	2570	1850	3710	300	1700	5
423912	CFG.30/40 SH-6	320	2280	1750	3490	590	870	5
423913	CFG.30/45 SH-6	240	2150	1760	3520	190	780	5
423914	CFG.30/60 SH-6	280	1510	1600	3190	180	850	5
423921	CFG.40/40 SH-6	320	2280	1750	3490	220	870	5
423922	CFG.40/45 SH-6	240	2150	1750	3490	390	780	5
423923	CFG.40/60 SH-6	280	1510	1600	3190	180	850	5
423931	CFG.45/45 SH-6	240	2150	1760	3520	190	780	5
423932	CFG.45/60 SH-6	240	1510	1600	3190	180	780	5
423941	CFG.60/60 SH-6	280	1510	1600	3190	180	850	5

Double hinges for profiles

Material

Glass-fibre reinforced polyamide based (PA) technopolymer. Resistant to solvents, oils, greases and other chemical agents.

Colour

Black or grey RAL 7040 (C33), matte finish.

Rotation pins

Nickel-plated steel.

Standard execution

Pass-through holes for M6 countersunk head screws.

Technopolymer centering inserts (supplied)

For profiles with slot dimensions from 6 to 12 mm.

Features and applications

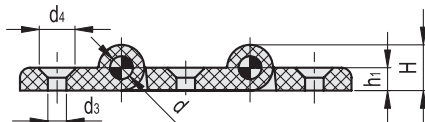
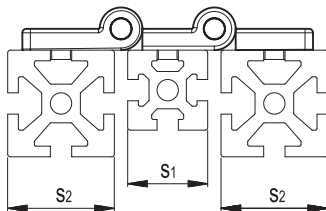
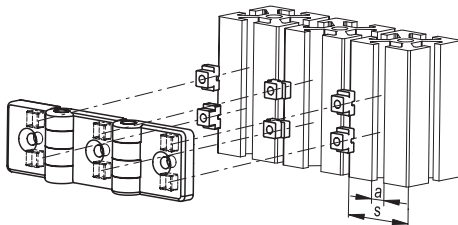
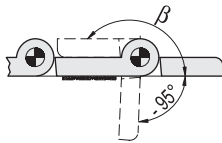
This type of hinge can be used with profiles from 30 up to 60 mm, also combining different dimensions.

Rotation angle (approximate value)

Max 260°/275° (-95° and +165°/180° being 0° the condition where the two interconnected surfaces are on the same plane).

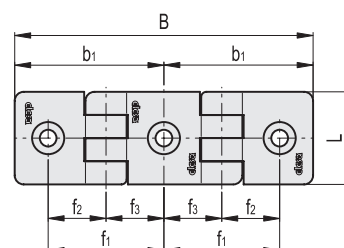
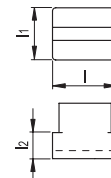
Do not exceed the rotation angle limit (see drawing) so as not to prejudice the hinge mechanical performance.

To choose the convenient type and the right number of hinges for your application, see the Guidelines.



Profile dimension s	a	Insert orientation	Insert colour
30	6		Light grey
	8		
40+45	8		Dark grey
	10		
50+60	10		Black
	12		

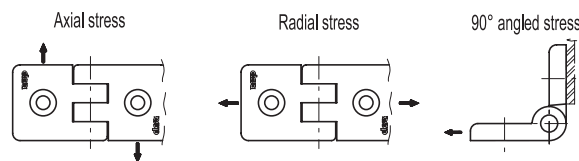
Centering inserts			
Dimensions			Colour
l	l ₁	l ₂	
8	6	2	Light grey
10	8	4	Dark grey
12	10	5	Black



Standard Elements		Main dimensions												Fitting		
Code	Description	s1	s2	L	B	f1 ^{±0.25}	f2	f3	H	h1	b1	d	β	d3	d4	C [Nm] #
424111	CFI.30-30/30 SH-6	30	30	36	89	35	17.5	17.5	16	8	44.5	8	180°	6.5	12.5	5
424121	CFI.30-40/40 SH-6	30	40	36	109	40	22.5	17.5	16	8	54.5	8	165°	6.5	12.5	5
424211	CFI.40-30/30 SH-6	40	30	36	99	40	17.5	22.5	16	8	49.5	8	180°	6.5	12.5	5
424221	CFI.40-40/40 SH-6	40	40	36	119	45	22.5	22.5	16	8	59.5	8	180°	6.5	12.5	5
424311	CFI.45-30/30 SH-6	45	30	36	104	42.5	17.5	25	16	8	52	8	180°	6.5	12.5	5
424321	CFI.45-40/40 SH-6	45	40	36	124	47.5	22.5	25	16	8	62	8	180°	6.5	12.5	5
424331	CFI.45-45/45 SH-6	45	45	36	134	50	25	25	16	8	67	8	180°	6.5	12.5	5
424411	CFI.60-30/30 SH-6	60	30	36	119	50	17.5	32.5	16	8	59.5	8	180°	6.5	12.5	5
424421	CFI.60-40/40 SH-6	60	40	36	139	55	22.5	32.5	16	8	69.5	8	180°	6.5	12.5	5
424431	CFI.60-45/45 SH-6	60	45	36	149	57.5	25	32.5	16	8	74.5	8	180°	6.5	12.5	5

Standard Elements		Main dimensions										Fitting		
Code	Description	L	B	f 1±0.25	f2	f3	H	h1	b1	d	β	d3	d4	C [N] #
424111-C33	CFI.30-30/30 SH-6-C33	36	89	35	17.5	17.5	16	8	44.5	8	180°	6.5	12.5	5
424121-C33	CFI.30-40/40 SH-6-C33	36	109	40	22.5	17.5	16	8	54.5	8	180°	6.5	12.5	5
424211-C33	CFI.40-30/30 SH-6-c33	36	99	40	17.5	22.5	16	8	49.5	8	180°	6.5	12.5	5
424221-C33	CFI.40-40/40 SH-6-C33	36	119	45	22.5	22.5	16	8	59.5	8	180°	6.5	12.5	5
424311-C33	CFI.45-30/30 SH-6-C33	36	104	42.5	17.5	25	16	8	52	8	180°	6.5	12.5	5
424321-C33	CFI.45-40/40 SH-6-C33	36	124	47.5	22.5	25	16	8	62	8	180°	6.5	12.5	5
424331-C33	CFI.45-45/45 SH-6-C33	36	134	50	25	25	16	8	67	8	180°	6.5	12.5	5
424411-C33	CFI.60-30/30 SH-6-C33	36	119	50	17.5	32.5	16	8	59.5	8	180°	6.5	12.5	5
424421-C33	CFI.60-40/40 SH-6-C33	36	139	55	22.5	32.5	16	8	69.5	8	180°	6.5	12.5	5
424431-C33	CFI.60-45/45 SH-6-C33	36	149	57.5	25	32.5	16	8	74.5	8	180°	6.5	12.5	5

Suggested tightening torque for assembly screws.



Standard Elements		AXIAL STRESS		RADIAL STRESS		90° ANGLED STRESS		Maximum tightening torque [Nm]
Code	Description	Maximum working load Ea [N]	Load at breakage Ra [N]	Maximum working load Er [N]	Load at breakage Rr [N]	Maximum working load E90 [N]	Load at breakage R90 [N]	
424111	CFI.30-30/30 SH-6	440	2570	1850	3710	300	1700	5
424121	CFI.30-40/40 SH-6	320	2280	1750	3490	220	870	5
424211	CFI.40-30/30 SH-6	320	2280	1750	3490	220	870	5
424221	CFI.40-40/40 SH-6	320	2280	1750	3490	220	870	5
424311	CFI.45-30/30 SH-6	240	2150	1760	3520	190	780	5
424321	CFI.45-40/40 SH-6	240	2150	1750	3490	190	780	5
424331	CFI.45-45/45 SH-6	240	2150	1760	3520	190	780	5
424411	CFI.60-30/30 SH-6	280	1510	1600	3190	180	850	5
424421	CFI.60-40/40 SH-6	280	1510	1600	3190	180	850	5
424431	CFI.60-45/45 SH-6	240	1510	1600	3190	180	780	5



Hinge



Material

High resilience polyamide based (PA) technopolymer. Resistant to solvents, oils, greases and other chemical agents.

Colour

Black, matte finish.

Rotation pin

AISI 303 stainless steel.

Assembly

Through holes for M6 countersunk head screws and referring pins for an accurate positioning of the hinge body.



Assembly instructions

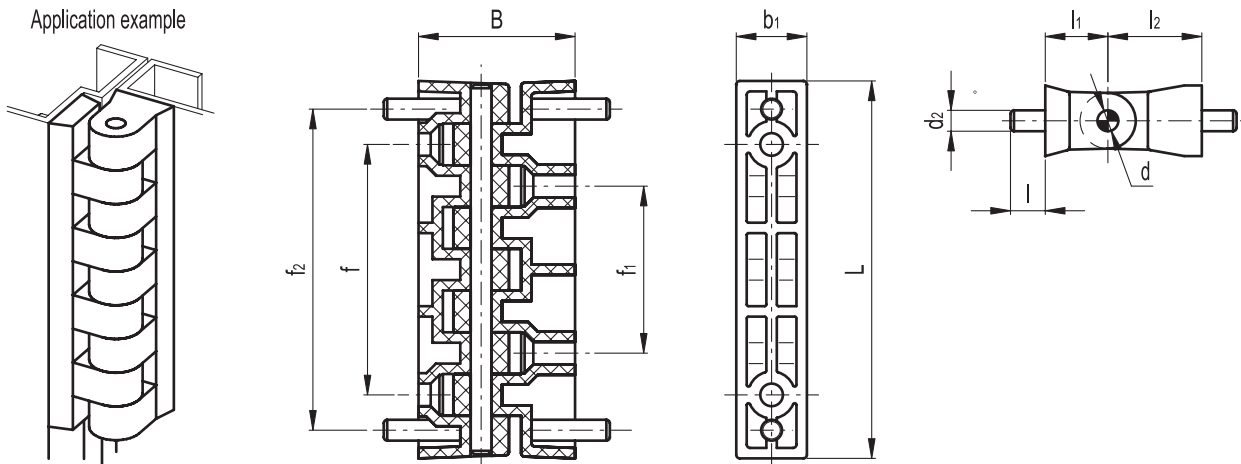
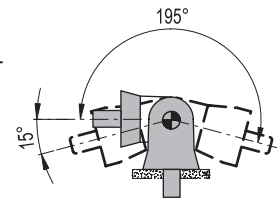
1. Remove the rotation pin and fit the two separated parts on the element to be hinged.
2. Assembly the two elements together matching the right alignment of the hinge and insert the rotation pin.

Rotation angle

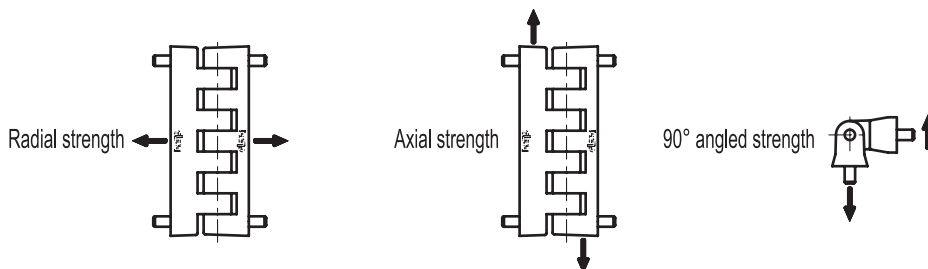
Max 210°, between 0° and -15° and between 0° and 195°
(0° = condition where the two interconnected surfaces are at a right angle).

Do not exceed the rotation angle limit (see drawing) so as not to prejudice the hinge mechanical performance.

To choose the convenient type and the right number of hinges for your application, see the Guidelines.



Standard Elements		Main dimensions									Fitting		
Code	Description	L	B	f ^{+0.25}	f1 ^{+0.25}	f2 ^{+0.25}	l1	l2	b1	d	d2	l	Through holes
422511	CFB.108 SH-6	109	45	72.5	48.2	92.7	18	27	20.5	6	6	10	6.5



Standard Elements		AXIAL STRENGTH		RADIAL STRENGTH		90° ANGLED STRENGTH		Maximum tightening torque [Nm]
Code	Description	Maximum working load Ea [N]	Load at breakage Ra [N]	Maximum working load Er [N]	Load at breakage Rr [N]	Maximum working load E90 [N]	Load at breakage R90 [N]	
422511	CFB.108 SH-6	610	6020	640	5020	520	2200	3

Thin hinge

Material

Glass-fibre reinforced polyamide based (PA) technopolymer. Resistant to solvents, oils, greases and other chemical agents.

Colour

Black, matte finish.

Rotation pin and end-caps

Acetal resin based (POM) technopolymer.

Assembly

Through holes for self-tapping countersunk head screws diameter 4.8 mm.



Features and applications

Completely made of technopolymer, without using metal parts, the hinge is suitable for application on machines and equipment in those sectors where laws or particular hygienic, climatic and environmental factors make it mandatory to use corrosion resistant materials.

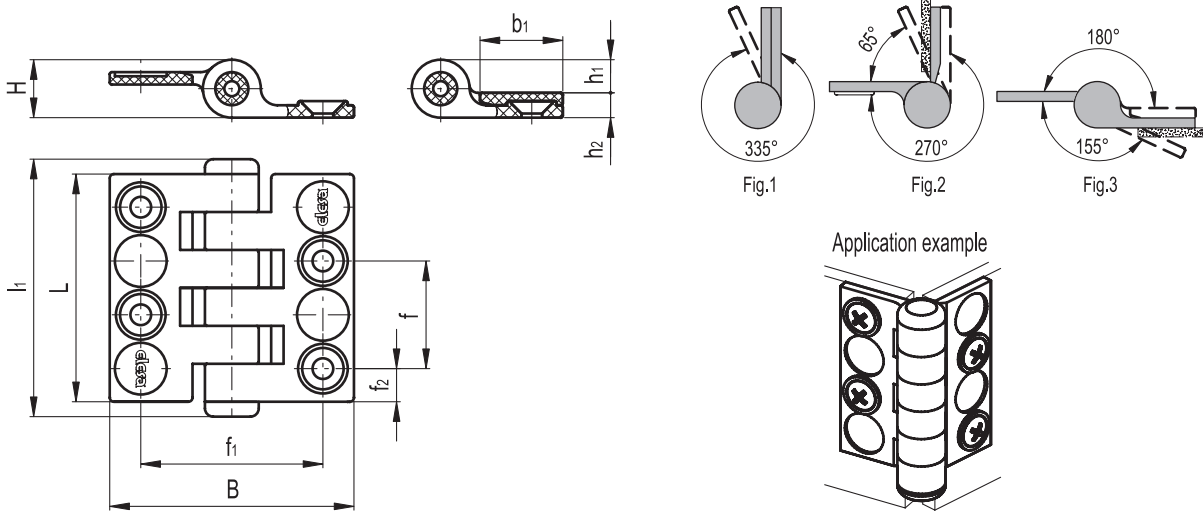
By replacing the technopolymer rotation pin with a metal one with an appropriate form, the hinge is suitable to control a safety micro switch mounted on the structure where the hinge is situated.

Rotation angle

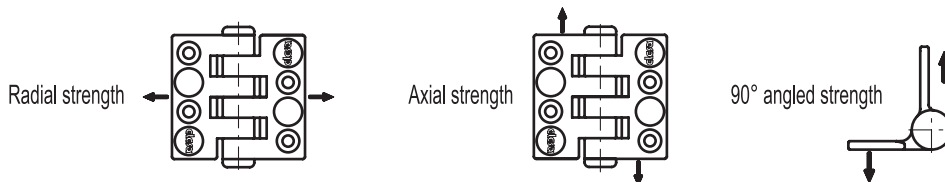
CFC. hinges have a max rotation angle of 335°. Depending on the type of assembly (see Fig. 1, Fig. 2 and Fig. 3) the rotation angle of the door can be lower.

Do not exceed the rotation angle limit so as not to prejudice the hinge mechanical performance.

To choose the convenient type and the right number of hinges for your applications, see the Guidelines.



Standard Elements		Main dimensions										Fitting
Code	Description	L	B	f ±0.25	f1 ±0.25	f2	H	h1	h2	l1	b1	Through holes
422611	CFC.55 SH-5	55	59	26.1	43.7	8	14	8	6	62	20	4.8



Standard Elements		AXIAL STRENGTH		RADIAL STRENGTH		90° ANGLED STRENGTH		Maximum tightening torque [Nm]
Code	Description	Maximum working load Ea [N]	Load at breakage Ra [N]	Maximum working load Er [N]	Load at breakage Rr [N]	Maximum working load E90 [N]	Load at breakage R90 [N]	
422611	CFC.55 SH-5	750	1500	890	1770	180	270	5

Hinges for removable doors



Material

Glass-fibre reinforced polyamide based (PA) SUPER-technopolymer. Resistant to solvents, oils, greases and other chemical agents.

Colour

Black, matte finish.

Rotation pin

Self-lubricating glass-fibre reinforced polyamide based (PA) technopolymer, black colour.

Standard executions

Pass-through holes for countersunk head screws.

- CFMY-D: rotation pin fitted on the right hinge body.
- CFMY-S: rotation pin fitted on the left hinge body.

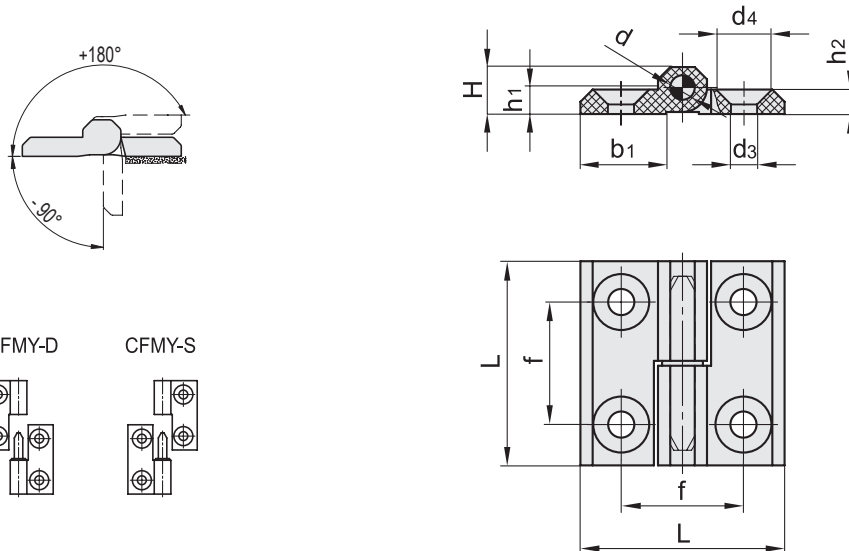


Rotation angle (approximate value)

Max 270° (-90° and +180° being 0° the condition where the two interconnected surfaces are on the same plane).

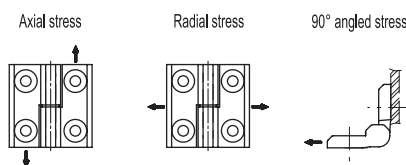
Do not exceed the rotation angle limit so as not to prejudice the hinge mechanical performance.

To choose the convenient type and the right number of hinges for your application, see the Guidelines.



Standard Elements		Main dimensions							Fitting		
Code	Description	L	f ±0.25	H	h1	h2	b1	d	d3	d4	C [Nm]#
425965	CFMY.60 SH-6-D	60	36	15	8.5	8	26	6	6.5	12.5	5
425966	CFMY.60 SH-6-S	60	36	15	8.5	8	26	6	6.5	12.5	5
425961	CFMY.60-SH-8-D	60	36	15	8.5	8	26	8	8.5	16.5	5
425962	CFMY.60-SH-8-S	60	36	15	8.5	8	26	8	8.5	16.5	5

Suggested tightening torque for assembly screws.



Resistance tests	AXIAL STRESS	RADIAL STRESS	90° ANGLED STRESS
Description	Max static load Sa [N]	Max static load Sr [N]	Max static load S90 [N]
CFMY.60-SH-6	2050	1600	1250
CFMY.60-SH-8	2050	1600	1250

The max static load is the value above which the material may break thus prejudicing the hinge functionality. Obviously, a suitable factor, according to the importance and the safety level of the specific application must be applied to this value.

In line lift-off hinge

Material

Glass-fibre reinforced polyamide based (PA) technopolymer. Resistant to solvents, oils, greases and other chemical agents.

Colour

Black, matte finish.

Rotation pin

Acetal resin based (POM) technopolymer, black colour.

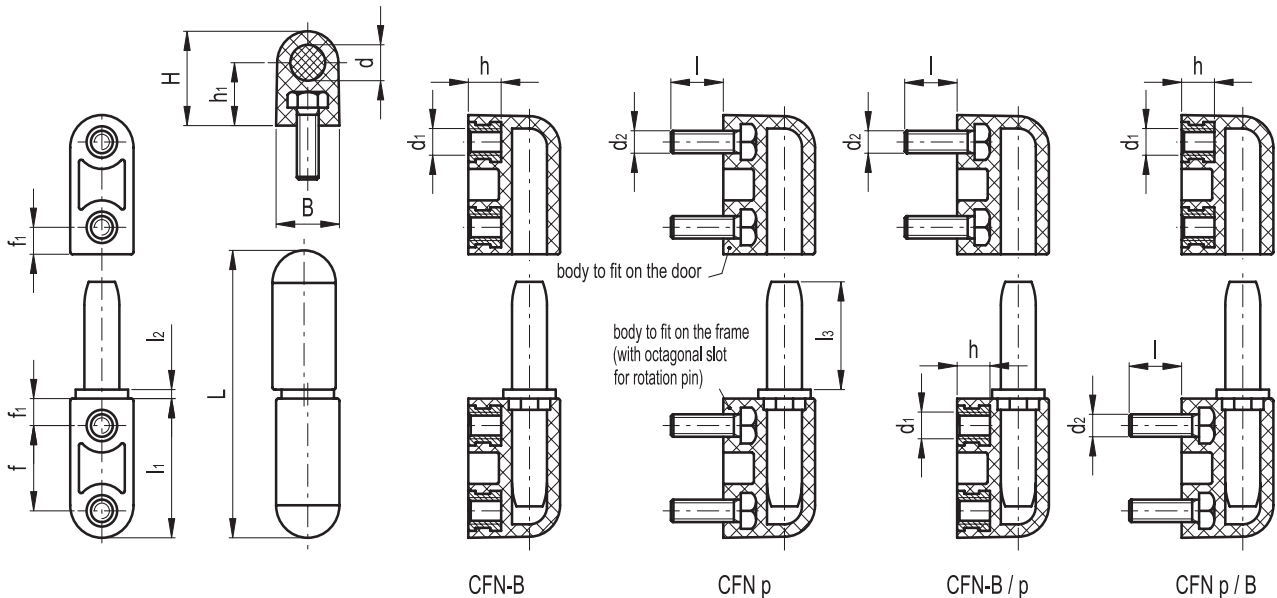
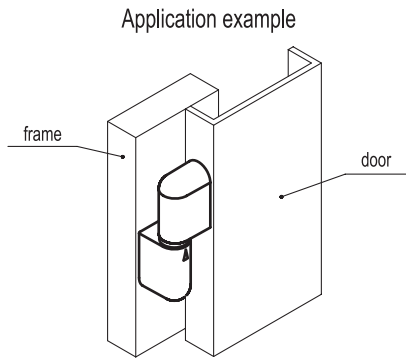
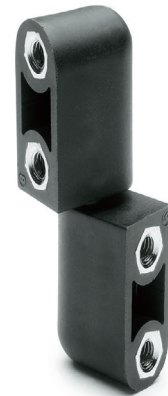
Assembly

- Execution B: nickel-plated brass bushings, tapped hole.
- Execution p: nickel-plated steel threaded studs.
- Combined executions: B/p - p/B

Features

CFN. in line lift-off hinges have been designed with a particular system patented by ELESA which allows the adjustment of the inclination of the door on the frame.

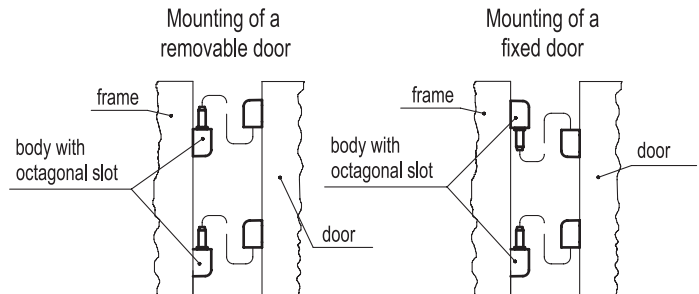
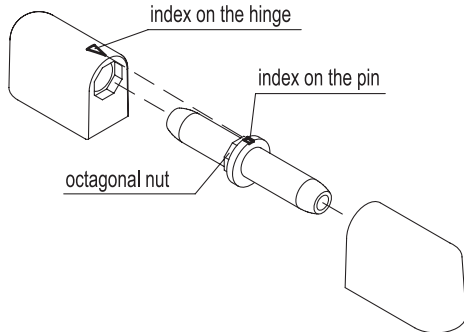
To choose the convenient type and the right number of hinges for your application, see the Guidelines .



Standard Elements		Main dimensions										Fitting			
												Bushings		Studs	
Code	Description	L	B	H	f	f1	l1	l2	l3	h1	d	d1	h	d2	l
426111	CFN.65 B-M5	64	14.5	21	19	6	31	2	24	14	8	M5	8	-	-
426121	CFN.65 p-M5x12	64	14.5	21	19	6	31	2	24	14	8	-	-	M5	12
426131	CFN.65 B-M5-p-M5x12	64	14.5	21	19	6	31	2	24	14	8	M5	8	M5	12
426141	CFN.65 p-M5x12-B-M5	64	14.5	21	19	6	31	2	24	14	8	M5	8	M5	12

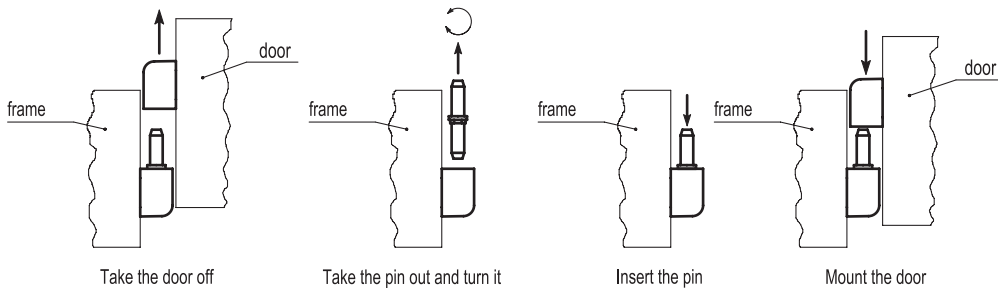
Assembly instructions

1. Fit the hinge bodies with octagonal slot for rotation pin on the frame and the other two bodies with cylindrical slot on the door.
2. Insert the pins with octagonal nut in the bodies fitted on the frame by matching the indexes engraved on the pin and on the hinge.
3. Mount the door by matching the hinge bodies on the pins.



Instructions for the adjustment of the door

In case the door is off line with the frame, the inclination of the door can be adjusted by turning the pins clockwise or anticlockwise.



Adjustment examples

If the door is off line on the bottom side

In order to have the door in line with the frame, turn the pin of hinge 1 anticlockwise and the pin of hinge 2 by 45° or 90° clockwise.

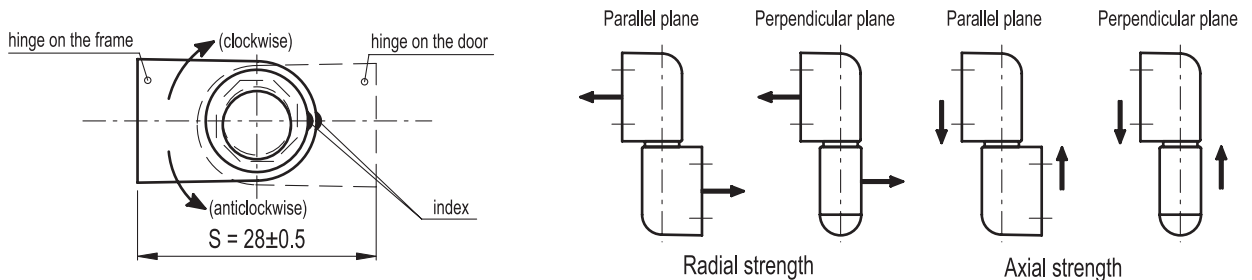
If the door is off line on the top side

In order to have the door in line with the frame, turn the pin of hinge 1 clockwise and the pin of hinge 2 45° or 90° anticlockwise.



Off line adjustments

Each pin has eight different positions which allow the adjustment of off line door. To have the door in line with the frame, it can be necessary to adjust the pins of both hinges. By turning the pin anticlockwise, the distance S increases (+0.5) while by turning the pin clockwise, it decreases (-0.5).



Standard Elements		AXIAL STRENGTH		RADIAL STRENGTH		Maximum tightening torque [Nm]
		Maximum working load Ea [N]		Maximum working load Er [N]		
Code	Description	Parallel and perpendicular planes		Parallel and perpendicular planes		
426111	CFN.65	590		200		5

The load at breakage data have not been calculated because CFN. hinges under working conditions exceeding the maximum working load values indicated in the tables, produce a plastic deformation which makes them no more usable.

Offset lift-off hinge

Material

Glass-fibre reinforced polyamide based (PA) technopolymer. Resistant to solvents, oils, greases and other chemical agents.

Colour

Black, matte finish.

Rotation pin

Acetal resin based (POM) technopolymer, black colour.

Assembly

Through holes for hexagonal head screws, cylindrical head screws with hexagon socket or M5 normal nuts (UNI 5588).

Screw-covers

Polyester based (PBT) technopolymer, black colour, glossy finish, snap-in assembly.

Covers for rotation pin housing

Technopolymer, black colour, matte finish; to be fitted after assembly.

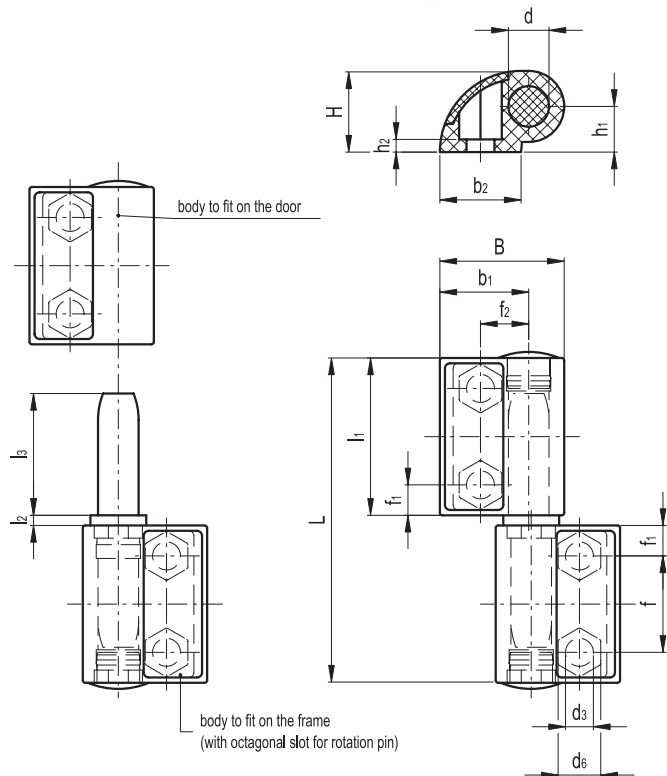
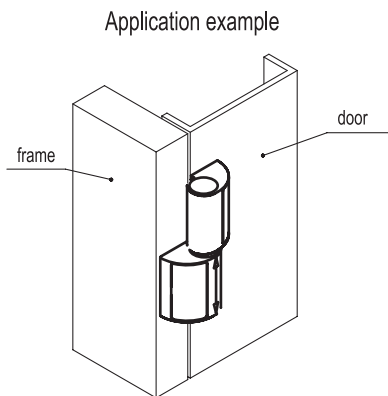
Special executions on request (For sufficient quantities)

Screw-covers in other RAL colours.

Features and applications

CFO. offset lift-off hinges have been designed with a particular system patented by ELESA which allows the adjustment of the inclination of the door on the frame.

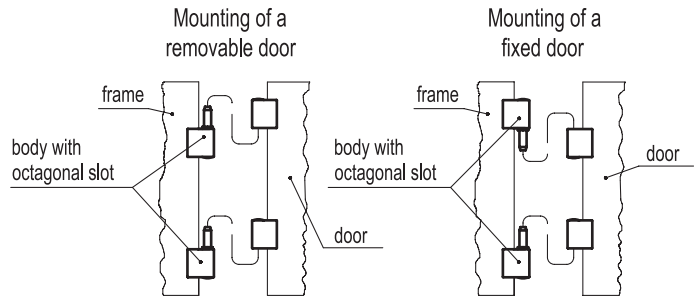
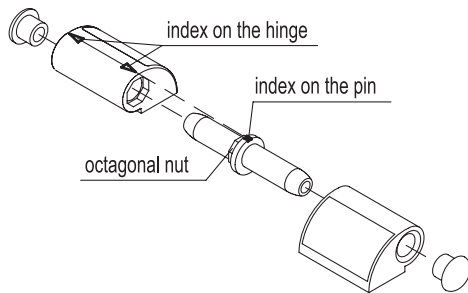
They can be mounted on doors which open on the right or on the left side. The two bodies of the hinge have two rotation pin housings each: the one which remains on the outer edge of the hinge can be closed with the supplied covers. To choose the convenient type and the right number of hinges for your application, see the Guidelines.



Standard Elements		Main dimensions														Fitting	
Code	Description	L	B	H	f	f1	f2	l1	l2	l3	h1	h2	b1	b2	d	d3	d6
426211-C9	CFO.65 EH-5-C9	64	24.5	16	19	6	9.5	31	2	24	9	2.5	17.5	16	8	5.5	8.5

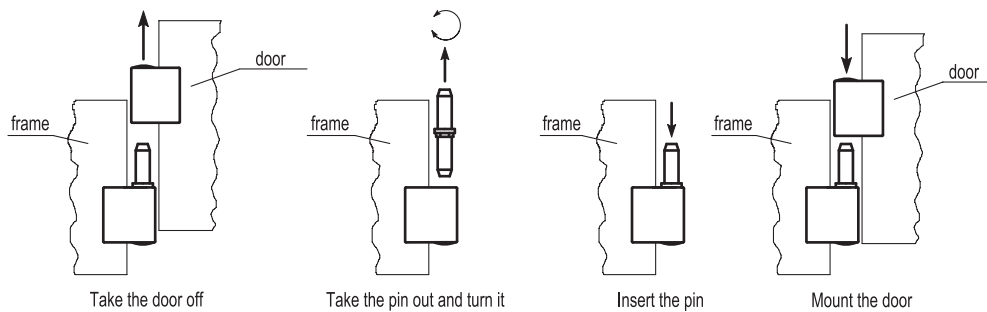
Assembly instructions

1. Fit the hinge bodies with octagonal slot for rotation pin on the frame and the other two bodies with cylindrical slot on the door.
2. Insert the pins with octagonal nut in the bodies fitted on the frame by matching the indexes engraved on the pin and on the hinge.
3. Mount the door by matching the hinge bodies on the pins.



Instructions for the adjustment of the door

In case the door is off line with the frame, the inclination of the door can be adjusted by turning the pins clockwise or anticlockwise.



Adjustment examples

If the door is off line on the bottom side

In order to have the door in line with the frame, turn the pin of hinge 1 anticlockwise and the pin of hinge 2 by 45° or 90° clockwise.

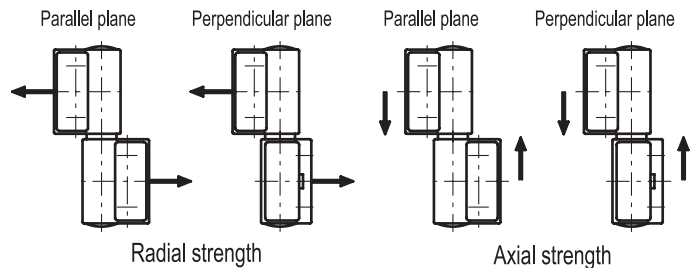
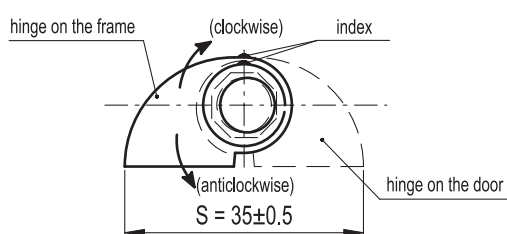
If the door is off line on the top side

In order to have the door in line with the frame, turn the pin of hinge 1 clockwise and the pin of hinge 2 by 45° or 90° anticlockwise.



Off line adjustments

Each pin has eight different positions which allow the adjustment of off line door. To have the door in line with the frame, it can be necessary to adjust the pins of both hinges. By turning the pin anticlockwise, the distance S increases (+0.5) while by turning the pin clockwise, it decreases (-0.5).



Standard Elements		AXIAL STRENGTH		RADIAL STRENGTH		Maximum tightening torque [Nm]
		Maximum working load Ea [N]		Maximum working load Er [N]		
Code	Description	Parallel and perpendicular planes		Parallel and perpendicular planes		
426211-C9	CFO.65 EH-5-C9	290		200		5

The load at breakage data have not been calculated because CFO. hinges under working conditions exceeding the maximum working load values indicated in the tables, produce a plastic deformation which makes them no more usable.

Detent position hinges with screw-covers

Material

Acetal resin based (POM) technopolymer. Resistant to solvents, oils, greases and other chemical agents.

Colour

Black, matte finish.

Assembly

- Execution SH: through holes for countersunk head screws.
- Execution CH: through holes for cylindrical head screws.
- Execution EH: through holes for hexagonal head screws.

Screw-covers

Polyester based (PBT) technopolymer, black colour, matte finish, snap-in assembly.

Characteristics

The detent device (ELESA patent) allows four detent positions:

- 0° closed
- 80°
- 120°
- 170°

All detent positions guarantee a positioning torque of 1.1 Nm for 10.000 cycles (thus the torque that has to be applied to free the detent device of the hinge).

Combined products

Hinge type CFQ. with the same design, without detent position.

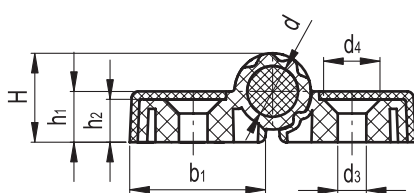
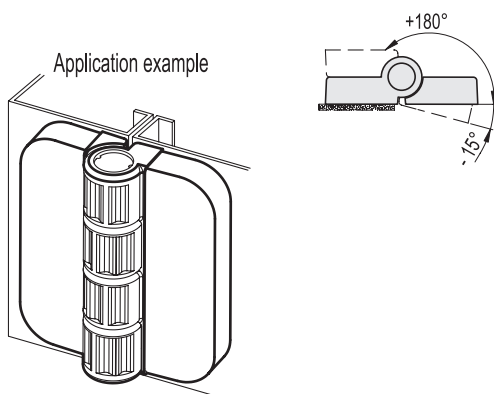
Rotation angle

Max 195° (-15° and +180° being 0° the condition where the interconnected surfaces are on the same plane).

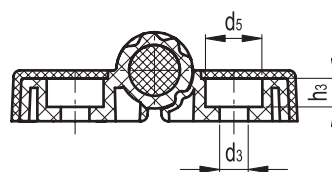
Do not exceed the rotation angle limit so as not to prejudice the hinge mechanical performance.

The detent device (ELESA patent) allows four different detent positions of the door (0°, +80°, +120°, +170°).

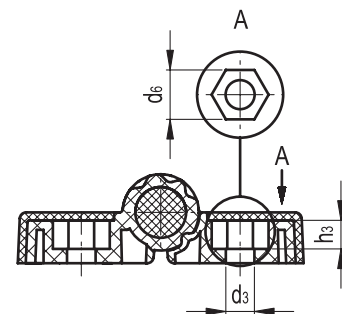
To choose the convenient type and the right number of hinges for your application, see the Guidelines.



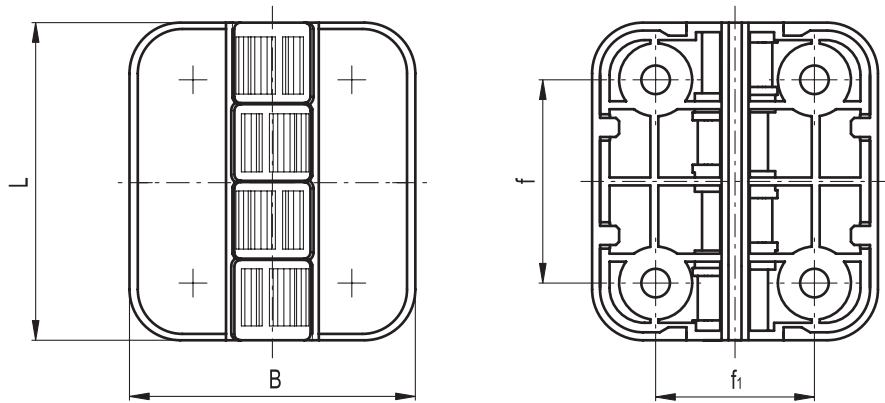
CFP-SH



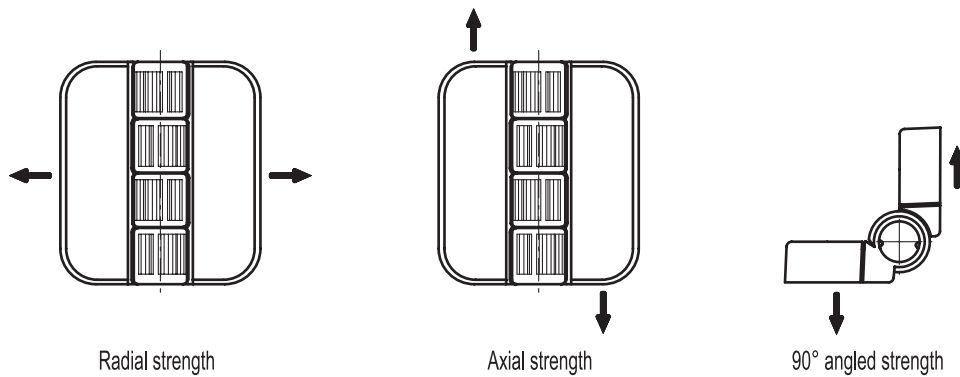
CFP-CH



CFP-EH



Standard Elements		Main dimensions									Fitting				
Code	Description	L	B	f	f1	H	h1	h2	b1	d	d3	d4	d5	d6	h3
426311-C9	CFP.50 SH-4-C9	50	45	32	25	14	8	7	21.5	8	4.5	8.5	-	-	-
426312-C9	CFP.50 CH-4-C9	50	45	32	25	14	8	7	21.5	8	4.5	-	8.5	-	4.5
426313-C9	CFP.50 EH-4-C9	50	45	32	25	14	8	7	21.5	8	4.5	-	-	7	4.5



Standard Elements		AXIAL STRENGTH		RADIAL STRENGTH		90° ANGLED STRENGTH		Maximum tightening torque [Nm]
Code	Description	Maximum working load Ea [N]	Load at breakage Ra [N]	Maximum working load Er [N]	Load at breakage Rr [N]	Maximum working load E80 and E90 [N]	Load at breakage R90 and R90 [N]	SH/CH/EH
426311-C9	CFP.50	300	1220	350	1970	345	620	1.1

Hinges with screw-covers

Material

Acetal resin based (POM) technopolymer. Resistant to solvents, oils, greases and other chemical agents.

Colour

Black, matte finish.

Assembly

- Execution SH: through holes for countersunk head screws.
- Execution CH: through holes for cylindrical head screws.
- Execution EH: through holes for hexagonal head screws.

Screw-covers

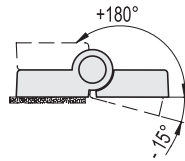
Polyester based (PBT) technopolymer, black colour, matte finish, snap-in assembly.

Rotation angle

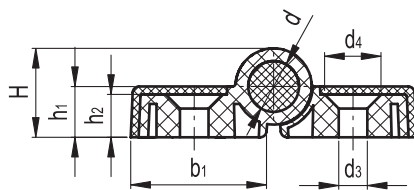
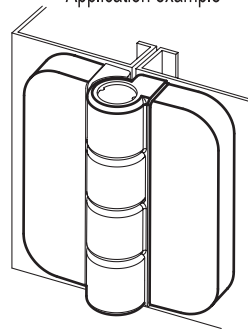
Max 195°, between 0° and -15° and between 0° and 180° (0° = condition where the two interconnected surfaces are on the same plane).

Do not exceed the rotation angle limit (see drawing) so as not to prejudice the hinge mechanical performance.

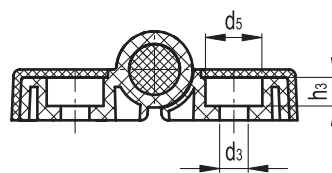
To choose the convenient type and the right number of hinges for your application, see the Guidelines.



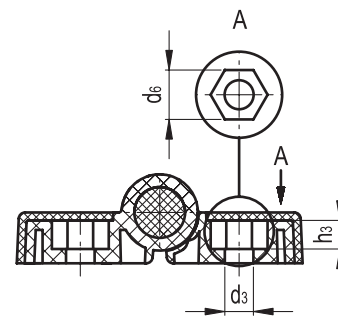
Application example



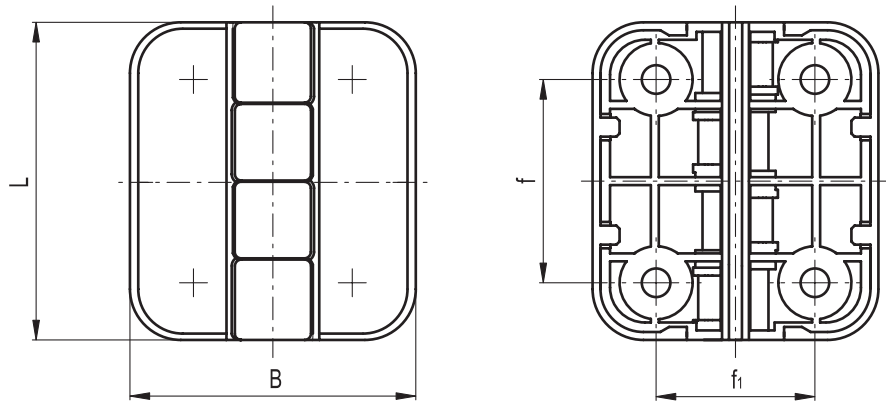
CFQ-SH



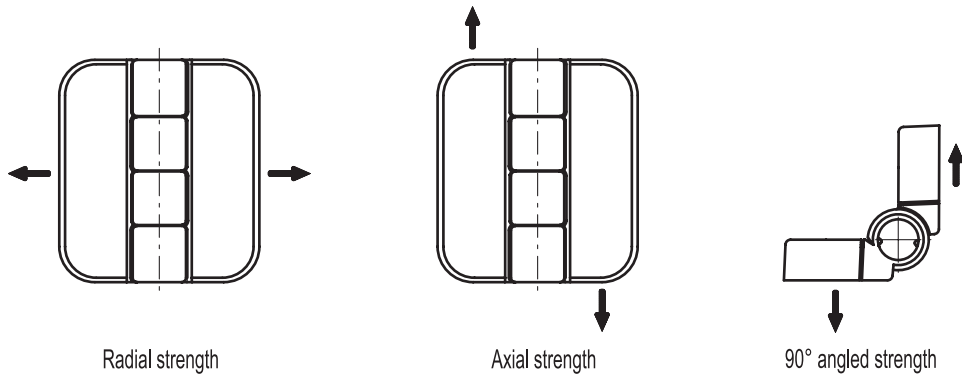
CFQ-CH



CFQ-EH



Standard Elements		Main dimensions									Fitting				
Code	Description	L	B	f	f1	H	h1	h2	b1	d	d3	d4	d5	d6	h3
426331-C9	CFQ.50 SH-4-C9	50	45	32	25	14	8	7	21.5	8	4.5	8.5	-	-	-
426332-C9	CFQ.50 CH-4-C9	50	45	32	25	14	8	7	21.5	8	4.5	-	8.5	-	4.5
426333-C9	CFQ.50 EH-4-C9	50	45	32	25	14	8	7	21.5	8	4.5	-	-	7	4.5



Standard Elements		AXIAL STRENGTH		RADIAL STRENGTH		90° ANGLED STRENGTH		Maximum tightening torque [Nm]
Code	Description	Maximum working load Ea [N]	Load at breakage Ra [N]	Maximum working load Er [N]	Load at breakage Rr [N]	Maximum working load E90 [N]	Load at breakage R90 [N]	SH/CH/EH
426331-C9	CFQ.50	300	1220	350	1970	345	620	1.5

Hinges with built-in safety switch

Material

Self-extinguish high-rigidity SUPER-technopolymer. Resistant to solvents, oils, greases and other chemical agents.

Colour

Black, matte finish.

Rotation pin

AISI 303 stainless steel.

Standard executions

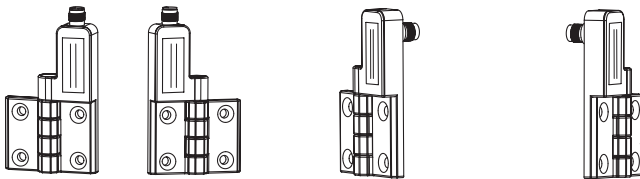
Assembly by means of pass-through holes for M6 countersunk-head screws UNI 5933, DIN 7991.

- C-A-D: axial connector, microswitch on the right.
- C-A-S: axial connector, microswitch on the left.
- C-B-D: rear connector, microswitch on the right.
- C-B-S: rear connector, microswitch on the left.
- F-A-D: axial cable, 2 or 5 m length, microswitch on the right.
- F-A-S: axial cable, 2 or 5 m length, microswitch on the left.
- F-B-D: rear cable, 2 or 5 m length, microswitch on the right.
- F-B-S: rear cable, 2 or 5 m length, microswitch on the left.

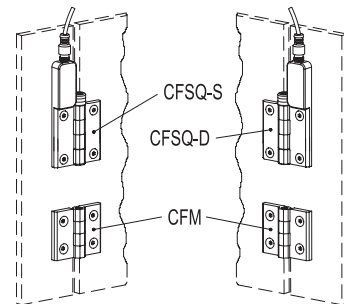
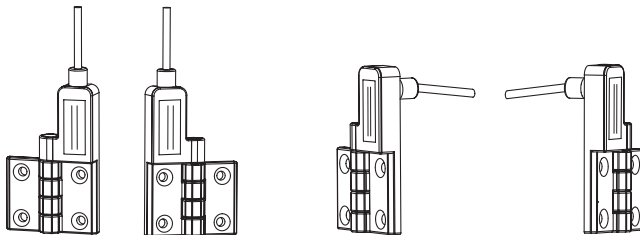
Cable type: UL/CSA STYLE 2587 3 X AWG 22.



CFSQ-C-A-D CFSQ-C-A-S CFSQ-C-B-D CFSQ-C-B-S



CFSQ-F-A-D CFSQ-F-A-S CFSQ-F-B-D CFSQ-F-B-S



Features and applications

- The hinge with built-in switch (ELESA patent) is a safety device because in case of accidental opening of doors, machine protections, or safety doors on machines and production equipment, it automatically breaks off the power supply hence protecting the operators.
- This hinge can be subject to frequent washing cycles and can be used in any situation or environment where a special attention to cleaning and hygiene is requested, thanks to the IP67 protection class and the use of stainless steel elements for closing the hinge body.
- Switch equipped with two contacts: one NC contact and one change-over NO contact, form C, see IEC EN 60947-5-1 standard.
- Switch set with positive opening (in compliance with IEC EN 60947-5-1 standard, K attachment): the contacts break off for the direct movement of an actuator, onto which the working force is applied through non elastic elements.
- Quick release switch: the stroke speed of the contact-holder slider does not depend on the working speed.
- Easy to assemble: the built-in safety switch is integrated into a single body with the hinge, thus offering a very easy and fast assembly. This is a great advantage in comparison with some traditional systems which still require to set up separately a hinge and a safety switch connected by a special pin to replace the standard pin of the hinge.
- Universal usage: CFSQ hinges can be assembled on the most common aluminium profiles.

Rotation angle (approximate value)

Max 190° (-10° and +180° being 0° the condition where the two interconnected surfaces are on the same plane fig.1). The switching angle (see Built-in safety switch functioning and maintenance) is guaranteed from this position.

The hinge must not be stressed by any negative angle of less than -10° (fig. 2).

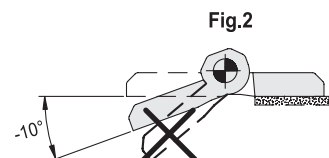
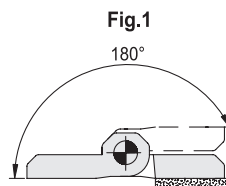
The normal use of the hinge is for positive angles only.

Accessories on request

FC-M12x1 (see page) : extensions with 4 pole M12 female axial connector.

Special executions on request

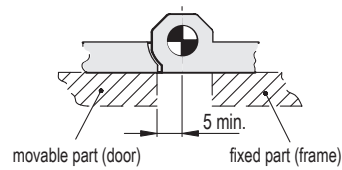
Operating angle of the hinge other than from 0° to 180°, every 15°, where the system frame/door requires a special execution.



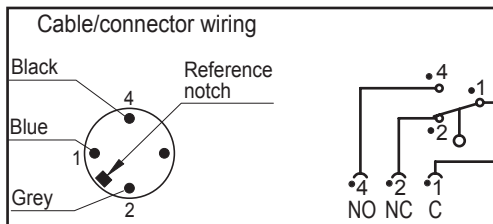
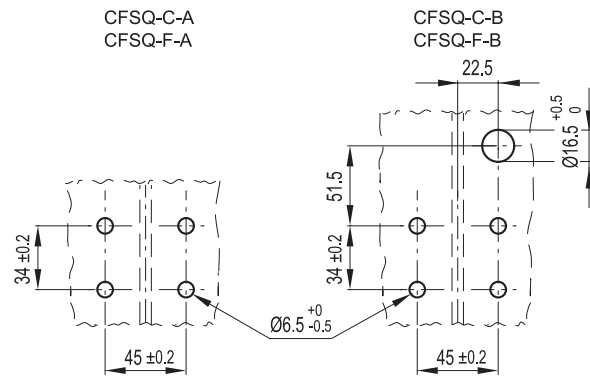
Assembly instructions

- Fit the hinge body with the built-in switch on the fixed part (frame) and the other body on the door. The distance between the axis of the hinge pin and the door must be at least 5 mm (fig.3).
 - Leave the least clearance between the holes in the mounting walls and the diameter of the setscrews (Max 0.5 mm). The suggested tightening torque should not be exceeded: 5 Nm.
 - The hinge must not be used as a mechanical end-stroke either for door maximum opening or for closed door. For this purpose we recommend using special mechanical stops to prevent the door from opening completely against the hinge body assembled on the frame (fig.1) or exceeding the angle where the two interconnected surfaces are on the same plane (fig.2).
 - The CFSQ hinge must always be assembled with at least a second complementary CFM.
 - hinge (CFM.60-45- SH-6 code 425812). In case of horizontal door opening or in general of a limited weight it is possible to use one hinge only.
 - The connection cables must always be protected against mechanical damages.
- Cables
- Cable with M12x1 connector using the following circuit scheme.
 - Normally Closed contact NC: for safety applications, according to IEC EN 60947-5-1 standard, only the NC contact (for break off) must be used leaving the NO contact unused
 - Normally Open contact NO: the normally open contact can be used only if the hinge is used as status indicator (signalling) in this case also the NC contact can be used simultaneously always as status indicator (signalling).

Fig.3



Drilling template



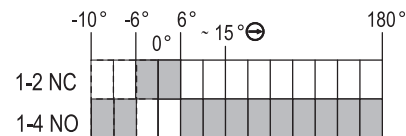
Built-in safety switch functioning and maintenance

- The operating angle (see Operating life switching angle diagram) is set at 6° (we suggest to check it according to EN294 Standard). Under normal conditions of use, when the mechanical life of the device is over, the operating angle can get up to 9°.
 - For applications with safety protection function, the hinge must be able to turn at least by 15°, equivalent to the forced opening (positive opening) of the contacts by the actuator.
 - We suggest to check the proper functioning of the CFSQ hinge prior to the start up and afterwards periodically.
- When the protection is opened the machine must stop immediately. When the protection is opened at any degrees, the machine must not be able to start.

Warnings

- The hinge with built-in safety switch must not be used in environments with frequent temperature changes which can cause condensation, in the presence of explosive or flammable gasses.
- The hinge with built-in safety switch must always be protected with a proper fuse (see table).
- The choice and use of the hinge with built-in safety switch is the responsibility of the customer who will check that the relevant application is compliant to the safety standards in force under the actual operating conditions.
- Using CFSQ hinges always implies a full knowledge of and compliance with the safety standards in force, including EN ISO 13849-1, IEC EN 60204-1, EN 1088, EN ISO 12100.
- The hinge must always be assembled and connected by qualified operators who have to check regularly its perfect functioning.

Travel diagram

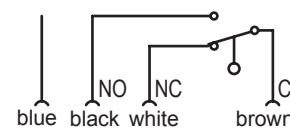


Positive opening

in compliance with EN 60947-5-1

CE In compliance with:
IEC EN 60947-5-1:2003+A1:2009
Low voltage control auxiliaries

Extension cable wiring (see accessory on request)

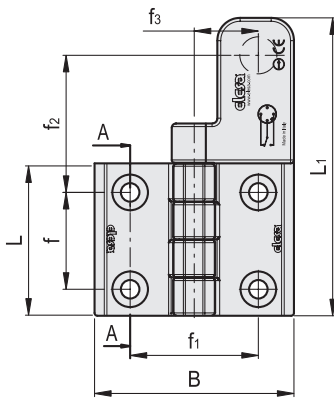
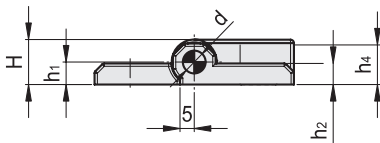


CFSQ. (Plastic)

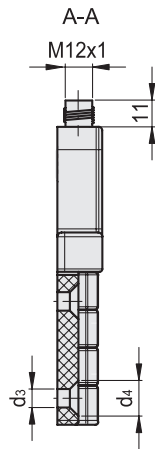


Category of usage		CFSQ-C.. (connector)	CFSQ-F.. (cable)
AC15 standard IEC 60947-5-1 Typical applications: electromagnetic load controls in alternating current	48 V	4 A	4 A
	220 V	4 A	4 A
	440 V	-	3 A
DC13 standard IEC 60947-5-2 Typical applications: electromagnet controls in direct current	24 V	4 A	4 A
	127 V	0.3 A	0,3 A

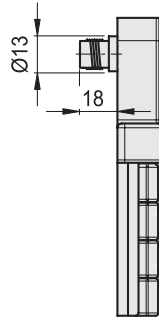
Mechanical features	Electrical features	
Type of contacts: Ag 90 Ni 10	Thermic power I the	Cable 10 A Connector 4A
Maximum working frequency: 1200 operation/hour	Short-circuit protection: 6A gl	
Mechanical life-span (test carried in compliance with IEC EN 60947-5-1 regulation): 10 ⁶	Seal voltage at nominal pulse: 4KV	
	Insulation nominal voltage UI = 250 V	
Protection class of the housing EN60529: IP67	Minimum force (torque for positive opening of contact): 0.5 Nm	
Speed of operation: minimum 2° / sec., maximum 90° / sec.	Short circuit conditioned current: 1000 A	
	Pollution degree: 3	
	B10d = 2000000	
	Tm = 20 years	



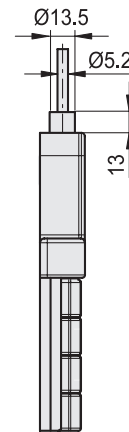
CFSQ-C-A



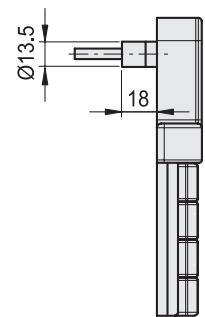
CFSQ-C-B



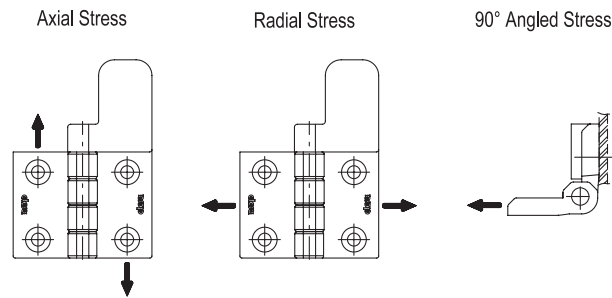
CFSQ-F-A



CFSQ-F-B



Standard Elements		Main dimensions											Fitting				
Code	Description	L	B	L1	f±0.2	f1 ±0.2	f2	f3	H	h1	h2	h4	d	d3	d4	C [Nm]	#
427011	CFSQ.60-SH-6-C-A-D	53	70	110	34	45	-	-	16	8	7.5	15	7	6.5	12.5	5	
427013	CFSQ.60-SH-6-C-A-S	53	70	110	34	45	-	-	16	8	7.5	15	7	6.5	12.5	5	
427015	CFSQ.60-SH-6-C-B-D	53	70	110	34	45	51.5	22.5	16	8	7.5	15	7	6.5	12.5	5	
427017	CFSQ.60-SH-6-C-B-S	53	70	110	34	45	51.5	22.5	16	8	7.5	15	7	6.5	12.5	5	
427021	CFSQ.60-SH-6-F-A-D-2	53	70	110	34	45	-	-	16	8	7.5	15	7	6.5	12.5	5	
427023	CFSQ.60-SH-6-F-A-S-2	53	70	110	34	45	-	-	16	8	7.5	15	7	6.5	12.5	5	
427025	CFSQ.60-SH-6-F-B-D-2	53	70	110	34	45	51.5	22.5	16	8	7.5	15	7	6.5	12.5	5	
427027	CFSQ.60-SH-6-F-B-S-2	53	70	110	34	45	51.5	22.5	16	8	7.5	15	7	6.5	12.5	5	
427031	CFSQ.60-SH-6-F-A-D-5	53	70	110	34	45	-	-	16	8	7.5	15	7	6.5	12.5	5	
427033	CFSQ.60-SH-6-F-A-S-5	53	70	110	34	45	-	-	16	8	7.5	15	7	6.5	12.5	5	
427035	CFSQ.60-SH-6-F-B-D-5	53	70	110	34	45	51.5	22.5	16	8	7.5	15	7	6.5	12.5	5	
427037	CFSQ.60-SH-6-F-B-S-5	53	70	110	34	45	51.5	22.5	16	8	7.5	15	7	6.5	12.5	5	



Resistance tests	AXIAL STRESS	RADIAL STRESS	90° ANGLED STRESS
Description	Static load max limit Sa [N]	Static load max limit Sr [N]	Static load max limit S90 [N]
CFSQ.60-SH-6	2100	2800	1300

For CFSQ. hinges with built-in safety switch, the reference value supplied is the max limit static load (Sa, Sr, S90), since these hinges can be used as safety devices. Above this value, the material may break, thus prejudicing the hinge functionality. Obviously a suitable factor, according to the importance and safety level of the specific application, must be applied to this value. The load values shown in the tables of the different hinges are the result of tests carried out in our laboratories under controlled temperature and humidity (23°C-50% R.H.), under given conditions of use and for a limited period of time.

Example of suitability check

- P** = weight of the door [N]
- P₁** = additional extra load [N]
- W** = width of the door
- D** = distance [metres] between the centre of gravity of the door and the hinge axis. In normal conditions $D = W/2$
- D₁** = distance [metres] between the hinge axis and the additional extra load application point
- N** = number of hinges
- k** = safety factor
- d₁... d_n** = distances (metres) of all the hinges from the hinge of reference
- d_T = d₁ + d₂ + ... + d_n** in case of only two hinges assembled, d_T is simply the distance between them

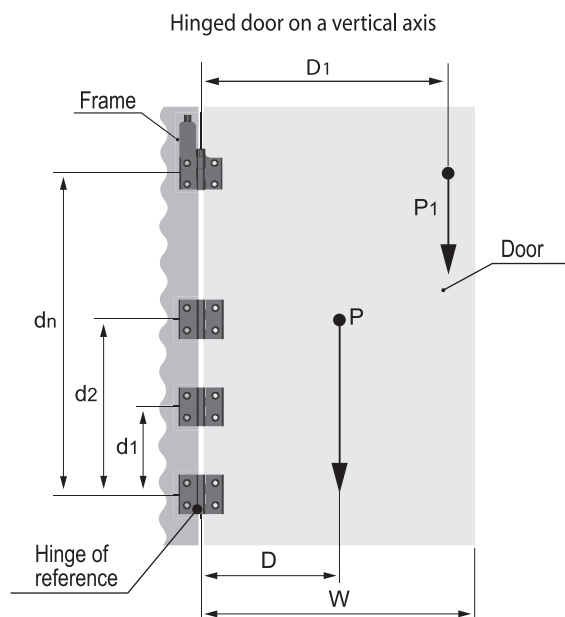
Conditions to be checked in order to ensure a correct functioning with two or more hinges.

$$\frac{(P+P_1)}{N} \cdot k < Sa$$

$$\frac{[(P \cdot D) + (P_1 \cdot D_1)]}{d_T} \cdot k < Sr$$

$$\frac{[(P \cdot D) + (P_1 \cdot D_1)]}{d_T} \cdot k < S90$$

The technical designer must use suitable safety factors (k) according to the type of application and function of the CFSQ. hinge.



Example hinge CFSQ.60-SH-6

- $P = 294 \text{ N (30 Kg)}$ $D = 0,4 \text{ m}$ $N = 3$
- $d_T = 1,5 \text{ m}$ $d_2 = 1 \text{ m}$ $d_1 = 0,5 \text{ m}$
- $P_1 = 196 \text{ N (20 Kg)}$ $D_1 = 1,2 \text{ m}$

$$\frac{490}{3} = 163,3 \cdot k < 2100$$

$$\frac{[(294 \cdot 0,4) + (196 \cdot 1,2)]}{1,5} = 235,2 \cdot k < 2800$$

$$\frac{[(294 \cdot 0,4) + (196 \cdot 1,2)]}{1,5} = 235,2 \cdot k < 1300$$

The examples shown here must be considered only as explanatory, since they are not applicable to all the different applications, conditions of use, ways of assembly which can actually take place. In practice, the technical designer, after applying a suitable safety factor (k) must also test the chosen product to check its suitability. For further general technical information, refer to the guidelines.

Hinges with built-in safety multiple switch

Material

- Hinge body: self-extinguish high-rigidity SUPER-technopolymer, black colour. Resistant to solvents, oils, greases and other chemical agents.

Rotation pin: glass-fibre reinforced polyamide-based technopolymer (PA), black colour.

Assembly kit (see assembly instructions):

- n°4 technopolymer covers (fig.3).
- n°4 technopolymer bushings (fig.4 e fig.5).
- n°2 thermoplastic elastomer safety plugs (fig.7) to guarantee IP67 protection class.

Switch: four slow action electrical contacts with double interruption Zb shaped (see IEC EN 60947-5-1) which can be set in normally open (NO) or normally closed (NC) mode in production.

Positive opening in compliance with IEC EN 60947-5-1 annex K: the separation of the electrical contacts is the direct result of an actuator action on which an action force is applied by means of non elastic elements, that is to say not dependant on, for example, spring-like elements.

The contact elements guarantee a self-cleaning action of the silver-alloy pastes.

Thanks to its housing made out of SUPER-technopolymer, the CFSW hinge guarantees the double insulation of the internal circuits, therefore there is no need of grounding connection. Furthermore, the housing protects the electric contacts from shocks, atmospheric agents and accidental penetration of tools.

Standard executions

- C-A: 8 pole male connector, top axial output.
- C-C: 8 pole male connector, bottom axial output.
- C-B: 8 pole male connector, back output.
- F-A: 2 or 5 m cable, 8 conductors, top axial output.
- F-C: 2 or 5 m cable, 8 conductors, bottom axial output.
- F-B: 2 or 5 m cable, 8 conductors, back output.
- FC-B: 0,2 m cable, with 8 pole male connector, back output.

Cable type: UL/CSA STYLE 2587 8X AWG 22.

Contact blocks in the standard execution:

- NO-NC-NO-NC: 2 NO contacts + 2 NC contacts.
- NO-NC-NC-NC: 1 NO contact + 3 NC contacts.

Features and applications

- Hinge with built-in multiple switch (ELESA patent) is a safety device because in case of accidental opening of doors, machine protections, or safety doors on machines and production equipment, it automatically breaks off the power supply hence protecting the operators.
- This hinge can be subject to frequent cleaning cycles and can be used in any situation or environment where a special attention to cleaning and hygiene is requested, thanks to the IP67 protection class and the use of stainless steel elements for closing the hinge body.
- Limited size, different assembly and output options (cable/connector) make this product easy to install on the most common aluminium profiles (30 mm minimum wide).
- Easy to assemble: the built-in safety multiple switch and the hinge come in one piece offering a very easy and fast assembly. This is a big advantage in comparison with some traditional systems which require to set up separately a hinge and a safety switch connected by a special pin to replace the standard pin of the hinge.
- Universal usage: CFSW. hinges can be assembled on the most common aluminium profiles.
- By using a redundant system, the CFSW. hinges allow to have a system design up to SIL3 in compliance with IEC 62061, PL e in compliance with EN ISO 13849-1 or security category 4 in compliance with EN 954-1 with redundant structure.

Rotation angle (approximate value)

Max 180° (0° and +180° being 0° the condition where the two interconnected surfaces are on the same plane fig.1). The switching angle (see Built-in safety multiple switch functioning and maintenance) is guaranteed from this position.

The condition where the two interconnected surfaces are on the same plane is to be strictly verified because the hinge must not be stressed by any negative angle (fig. 2).

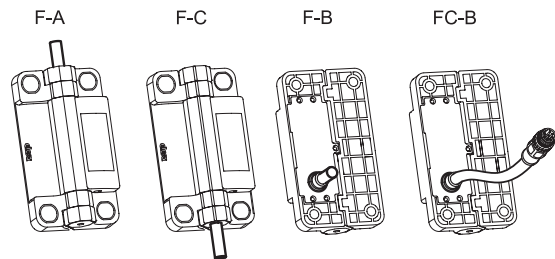
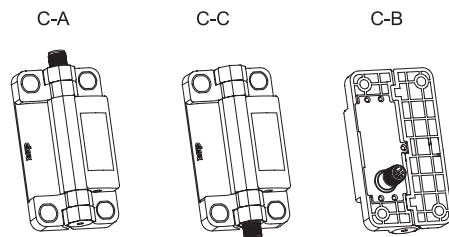
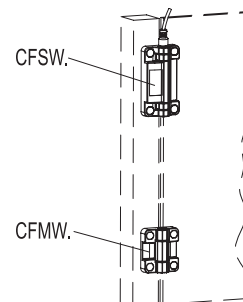
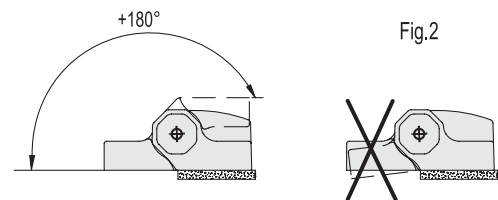


Fig.1



Accessories on request

- FC-M12x1: extensions with 8 pole M12 female axial connector.
- PMW: assembly plate on T-slot profiles.

Special executions on request

- Operating angle of the hinge other than from 0° to 180°, every 15°, where the system frame/door requires a special execution.
- NC and NO contact blocks setting (up to 4 NC).
- NO and NC overlapping contacts.

Assembly instructions

CFSW. hinge can be assembled in three different modes:

- With M6 UNI 5933 ISO 10642 countersunk-head screw (not supplied) and screw cover supplied in the kit (fig. 3) to avoid free access to screws.
- With cylindrical-head screw with hexagon socket M6 UNI 5931 ISO 4762 (not supplied) to set with the bushing supplied in the kit (fig.4).
- With M6 UNI 5588 ISO 4032 nut (not supplied) and the bushing supplied in the kit (fig.5). This kind of assembly makes the hinge totally tamper-proof preventing any tampering.
- Fit the hinge side with the built-in microswitch on the fixed part (the frame) and the other side on the door.
- Leave the least clearance between the holes on the mounting walls and the diameter of the assembling screws (Max 0.5 mm). The suggested tightening torque should not be exceeded: 5 Nm.
- The hinge must not be used as a mechanical end-stroke either for door maximum opening or for closed door. For this purpose we recommend using external mechanical stops to prevent the door from opening completely against the hinge body assembled on the frame (fig.1) or exceeding the angle where the two interconnected surfaces are on the same plane (fig.2).
- CFSW. hinge is generally assembled with one or more complementary hinges CFMW. In case of horizontal door opening or of a limited weight it is possible to use one hinge only.
- The connection cables must always be protected against mechanical damages.

Contacts and cables

The built-in safety switch is available with 4 contacts which can be set in production in the normally closed NC or normally open NO mode.

- NC contact with positive opening is mainly used for safety applications. The use of more than one NC switches reduces the risk of error of the single commutation.
- NO contact can be used simultaneously with the NC contact thanks to their electrical separation. The use of NO together with NC contacts guarantees a safety diversification.
- Cable with M12x1 connector following the shown circuit scheme.

Built-in safety multiple switch functioning and maintenance

- The operating angle (see travel diagram) is set at 5° (we suggest to check it according to EN294).
- To guarantee the safety protection function, the hinge must be able to turn at least by 11° (see travel diagram), equivalent to the forced opening of the NC contacts by the actuator (positive opening).
- The adjustment of the operating angle can be modified, in case of doors with large dimensions, till 1° of width before the start up of the hinge by adjusting the assembly screw by a screwdriver (fig.6).
- After the adjustment is done, the safety plug must be fit (not removable) to guarantee protection class IP67 (fig.7). The functioning points shown in the travel diagram undergo the same variation as the operating angle (ex: operating angle 1°, positive operating angle 7°).
- Under normal conditions of use, when the mechanical life of the device is over, the operating angle can get to 3° from the starting angle.
- We suggest to check prior to the start up and then periodically the proper functioning of the CFSW. hinge. When the protection is opened the machine must immediately stop. When the protection is opened at any degrees, the machine must not be able to start.

Warnings

- The choice and use of CFSW. hinge is the responsibility of the customer who will check that the relevant application is compliant to the safety regulations in force in the actual operating conditions.
- Using CFSW. hinges always implies a full knowledge of and compliance with the safety regulations in force, including UNI EN ISO 13849-1, IEC EN 60204-1, EN1088 and EN ISO 12100.
- The hinge must always be assembled and connected by qualified operators who have to check regularly the hinge perfect functioning.
- The hinge with built-in safety switch CFSW. must not be used in environments with frequent temperature changes which can cause condensation, in the presence of explosive or flammable gasses and must always be protected by a proper fuse (see Electrical features table).
- The structure of CFSW hinge must not be modified and the back cover has never to be removed: an improper installation or tampering of the hinge with built-in safety switch can make the protection ineffective and cause serious damages.
- During handling and storage the shown environmental conditions have to be observed.

Drilling template

CFSW-C-A
CFSW-C-C
CFSW-F-A
CFSW-F-C

CFSW-F-B
CFSW-C-B
CFSW-FC-B

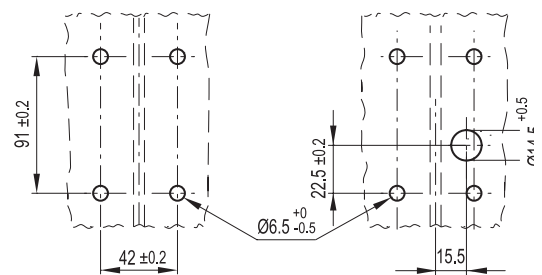
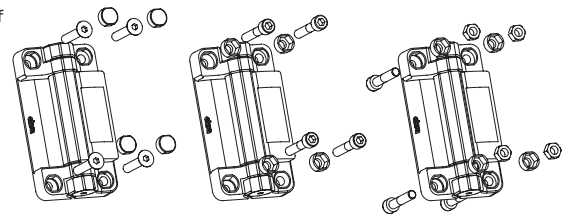


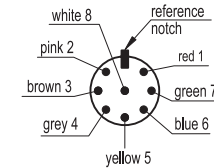
Fig.3

Fig.4

Fig.5



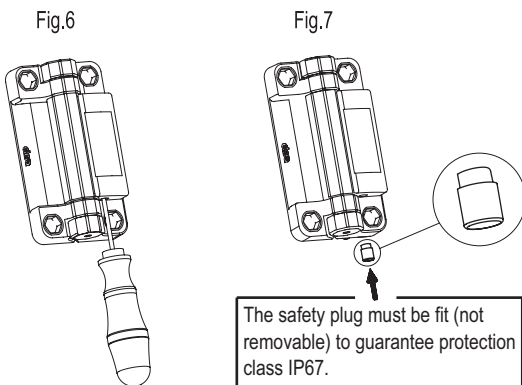
Cable/connector/extension* wiring
(see accessory on request)



Approved by IMQ CA02.04800
In compliance with: EN 60947-1/2007+
EN 60947-5-1 : 2004 + A1/2009
Low voltage control auxiliaries
Approved by UL: E360222

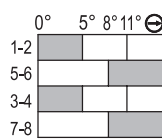
Positive opening
in compliance with
EN 60947-5-1

Execution	Approvals
CFSW-C-A	CE, cULus,IMQ
CFSW-C-C	CE, cULus,IMQ
CFSW-C-B	CE, cULus
CFSW-F-A	CE, cULus,IMQ
CFSW-F-C	CE, cULus,IMQ
CFSW-F-B	CE, cULus,IMQ
CFSW-FC-B	CE, cULus

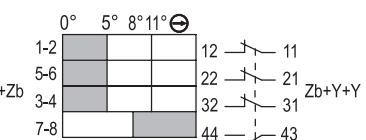


The safety plug must be fit (not removable) to guarantee protection class IP67.

Travel diagram 2NO+2NC
(production setting)

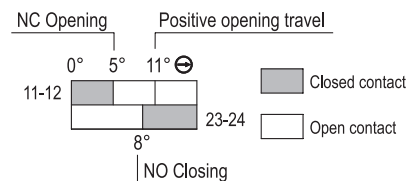


Travel diagram 1NO+3NC
(production setting)



The diagrams refer to the hinge with the operating angle set in production.
The operating angle can be reduced (max. adjustment: 4°).

How to read the diagram



Category of usage (values approved by IMQ)	CFSW-C.. (connector)	CFSW-F.. (cable)
AC15 standard IEC 60947-5-1 Typical applications: electromagnetic load controls in alternating current	24 V	-
	120 V	-
	250 V	-
	400 V	-
DC13 standard IEC 60947-5-2 Typical applications: electromagnet controls in direct current	24 V	2 A
	125 V	-
	250 V	0,3 A

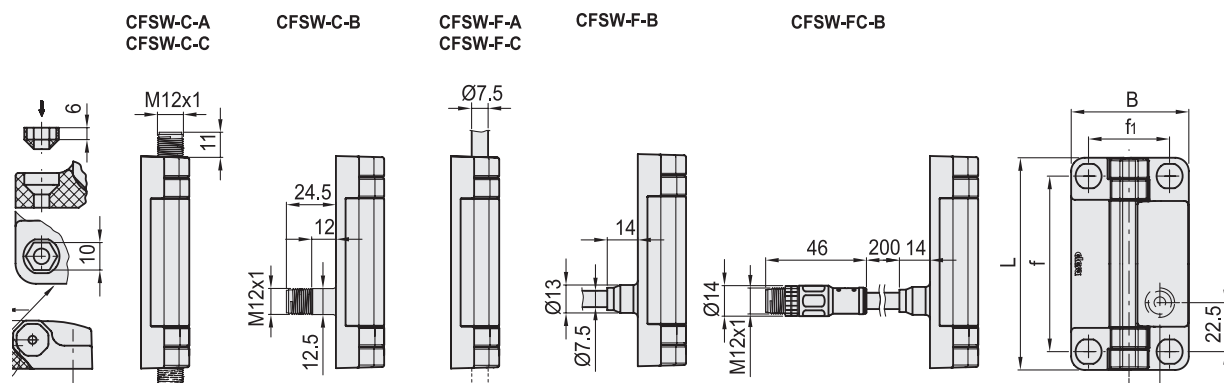
Remark: the category of usage AC15 2A 24V may be applied to CFSW-C., even though this category is not certified by IMQ, since it is not provided for the standards in use.

Category of usage (values approved by UL)	CFSW-F-A CFSW-F-C CFSW-F-B (cable)		CFSW-C-A CFSW-C-C CFSW-C-B (connector)
C300 AC control	120 V	1,5 A	Therm. current 2,5 A
	240 V	0,75 A	
Q 300 DC control	125 V	0,55 A	Therm. current 2,5 A
	250 V	0,27 A	

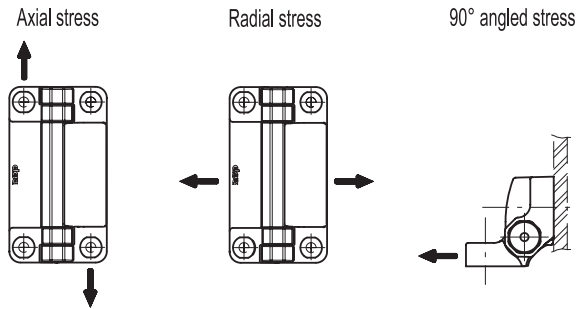
Mechanical features (values approved by IMQ)	Electrical features (values approved by IMQ)	
Type of contacts: Ag 999	Thermic power I the	Cable 4A Connector 2A
Maximum working frequency: 600 cycles/hour *	Short-circuit protection: 4A 500V gG	
Mechanical life-span (test carried in compliance with IEC EN 60947-5-1 regulation): 10 ⁶	Seal voltage at nominal pulse:	Cable 4 Kv Connector 2.5 Kv
	Insulation nominal U _i voltage	Cable: 400 Vac Connector: 30 Vac/Vdc
Protection class of the housing EN60529: IP67 **	Minimum force (torque for positive opening of contact): 0.5 Nm	
Speed of operation:	Short circuit conditioned current: 1000 A	
minimum 2° / sec.,	Pollution degree: 3	
maximum 90° / sec.	B10d = 2000000 Tm = 20 years	

* A cycle of operations is equivalent to one closure and one opening as required by the standard EN60947-5-1.

** Fit the safety plug to guarantee IP67 protection (fig.7)
For CFSW-C..(connector) it is the customer's responsibility to check the protection class guaranteed by the connector of the cable used.



Standards Elements		Main dimensions							Fitting		
Code	Description	L	B	f ±0.2	f1 ±0.2	H	h1	h2	d3	d4	C [Nm]#
426601	CFSW.110-6-2NO+2NC-C-A	110	60	91	42	25	15	12	6.5	12	5
426602	CFSW.110-6-2NO+2NC-C-C	110	60	91	42	25	15	12	6.5	12	5
426603	CFSW.110-6-2NO+2NC-C-B	110	60	91	42	25	15	12	6.5	12	5
426611	CFSW.110-6-2NO+2NC-F-A-2	110	60	91	42	25	15	12	6.5	12	5
426612	CFSW.110-6-2NO+2NC-F-C-2	110	60	91	42	25	15	12	6.5	12	5
426613	CFSW.110-6-2NO+2NC-F-B-2	110	60	91	42	25	15	12	6.5	12	5
426615	CFSW.110-6-2NO+2NC-F-A-5	110	60	91	42	25	15	12	6.5	12	5
426616	CFSW.110-6-2NO+2NC-F-C-5	110	60	91	42	25	15	12	6.5	12	5
426617	CFSW.110-6-2NO+2NC-F-B-5	110	60	91	42	25	15	12	6.5	12	5
426619	CFSW.110-6-2NO+2NC-FC-B	110	60	91	42	25	15	12	6.5	12	5
426661	CFSW.110-6-1NO+3NC-C-A	110	60	91	42	25	15	12	6.5	12	5
426662	CFSW.110-6-1NO+3NC-C-C	110	60	91	42	25	15	12	6.5	12	5
426663	CFSW.110-6-1NO+3NC-C-B	110	60	91	42	25	15	12	6.5	12	5
426671	CFSW.110-6-1NO+3NC-F-A-2	110	60	91	42	25	15	12	6.5	12	5
426672	CFSW.110-6-1NO+3NC-F-C-2	110	60	91	42	25	15	12	6.5	12	5
426673	CFSW.110-6-1NO+3NC-F-B-2	110	60	91	42	25	15	12	6.5	12	5
426675	CFSW.110-6-1NO+3NC-F-A-5	110	60	91	42	25	15	12	6.5	12	5
426676	CFSW.110-6-1NO+3NC-F-C-5	110	60	91	42	25	15	12	6.5	12	5
426677	CFSW.110-6-1NO+3NC-F-B-5	110	60	91	42	25	15	12	6.5	12	5
426679	CFSW.110-6-1NO+3NC-FC-B	110	60	91	42	25	15	12	6.5	12	5



Resistance tests	AXIAL STRESS	RADIAL STRESS	90° ANGLED STRESS
Description	Max static load Sa [N]	Static load max limit Sr [N]	Static load max limit S90 [N]
CFSW.110	2100	2800	1300

FOR CFSW. HINGES WITH BUILT-IN SAFETY MULTIPLE SWITCH, THE REFERENCE VALUE SUPPLIED IS THE MAX LIMIT STATIC LOAD (SA, SR, S90), SINCE THESE HINGES CAN BE USED AS SAFETY DEVICES. ABOVE THIS VALUE, THE MATERIAL MAY BREAK, THUS PREJUDICING THE HINGE FUNCTIONALITY. OBVIOUSLY A SUITABLE FACTOR, ACCORDING TO THE IMPORTANCE AND SAFETY LEVEL OF THE SPECIFIC APPLICATION, MUST BE APPLIED TO THIS VALUE. THE LOAD VALUES SHOWN IN THE TABLES OF THE DIFFERENT HINGES ARE THE RESULT OF TESTS CARRIED OUT IN OUR LABORATORIES UNDER CONTROLLED TEMPERATURE AND HUMIDITY (23°C-50% R.H.), UNDER GIVEN CONDITIONS OF USE AND FOR A LIMITED PERIOD OF TIME.

Example of suitability check

- P = weight of the door [N]
- P₁ = additional extra load [N]
- W = width of the door
- D = distance [metres] between the centre of gravity of the door and the hinge axis. In normal conditions D = W/2
- D₁ = distance [metres] between the hinge axis and the additional extra load application point
- N = number of hinges
- k = safety factor
- d_T = sum of the distances (metres) of all the hinges from the hinge of reference (d_T = d₁ + d₂ + ... + d_n). In case of only two hinge assembled, d_T is simply the distance between them.

Conditions to be checked in order to ensure a correct functioning with two or more hinges.

$$\frac{(P+P_1)}{N} \cdot k < Sa$$

$$\frac{[(P \cdot D) + (P_1 \cdot D_1)]}{d_T} \cdot k < Sr$$

$$\frac{[(P \cdot D) + (P_1 \cdot D_1)]}{d_T} \cdot k < S90$$

The technical designer must use suitable safety factors (k) according to the type of application and function of the CFSW. hinge.

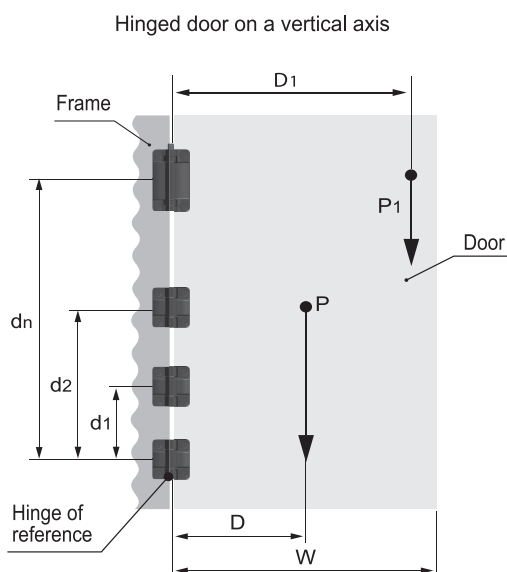
Example hinge CFSW.110-6-2NO+2NC-C-A

- P = 294 N (30 Kg) D = 0,4 m N = 3
- d₁ = 1,5 m d₂ = 1 m d₁ = 0,5 m
- P₁ = 196 N (20 Kg) D₁ = 1,2 m

$$\frac{490}{3} = 163 \cdot k < 2100$$

$$\frac{[(294 \cdot 0,4) + (196 \cdot 1,2)]}{1,5} = 235,2 \cdot k < 2800$$

$$\frac{[(294 \cdot 0,4) + (196 \cdot 1,2)]}{1,5} = 235,2 \cdot k < 1300$$



The examples shown here must be considered only as explanatory, since they are not applicable to all the different applications, conditions of use, ways of assembly which can actually take place. In practice, the technical designer, after applying a suitable safety factor (k) must also test the chosen product to check its suitability. For further general technical information, refer to the guidelines.

Assembly plates on profiles with T-slot for CFSW. and CFMW. hinges

Plate

Polyamide based (PA) high-rigidity SUPER-technopolymer, black colour, matte finish.

Resistant to solvents, oils, greases and other chemical agents.

Screws and nuts

AISI 304 stainless steel.

Features and applications

PMW assembly plates allow the mounting of CFSW.110 and CFMW.110 hinges on standard aluminium profiles of 30, 35, 40, 45 and 50 mm with T-slot.

The mounting on aluminium profiles of 40 mm can also be performed without the use of assembly plates.

The fixing screws of the plates to the profile are not accessible after the assembly of the hinges (Fig. 1). Therefore, even with the use of PMW assembly plates, CFSW. and CFMW. hinges remain tamperproof.

The supply of the plate includes:

- PMW: 2 countersunk screws M6x12 (for CFSW.110).
- PMW-M: 2 countersunk screws M6x14 (for CFMW.110).
- 2 M6 hexagonal nuts, assembled into the plate, necessary for the fixing of the hinge to the plate.

Plates of different dimensions can be combined in case of door and doorframe made with profiles of different dimensions (Fig.2).

Assembly instructions

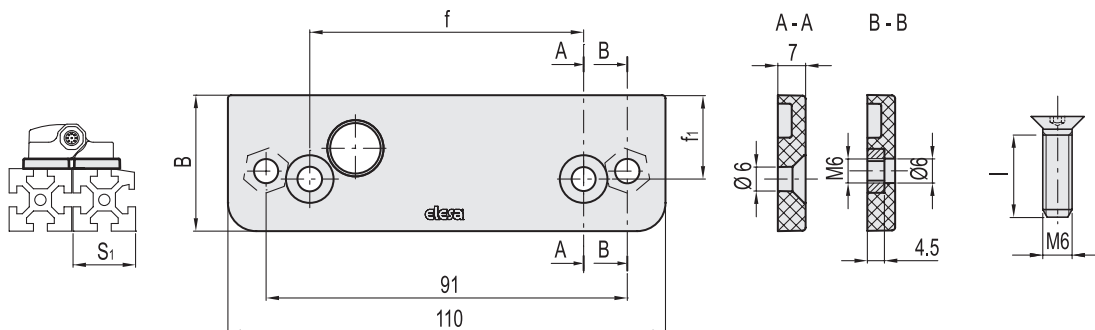
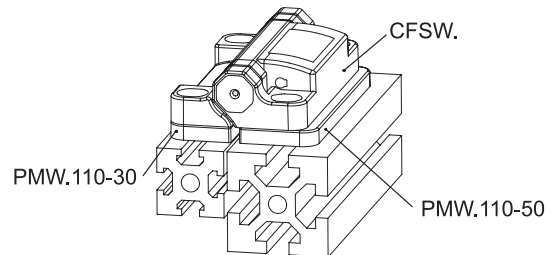
- Fix the plates on the profile in the desired position by using M6 countersunk head screws (not included in the supply) and the relative dowels for T-slot type GN 505 (see page) (not included in supply).
- Fit CFSW.110 or CFMW.110 hinge (fig. 1) on the relative plates by using M6 countersunk head screws (included in the supply).
- Place the closing caps properly (included in the supply of the hinge).

Technical data

The use of PMW plates, properly assembled as indicated in the assembly instructions, guarantees the max limit static load of CFSW. and CFMW. hinges.



Fig.2



Standard Elements		Profile	Main dimensions				For hinges
Code	Description	s1	B	f	f1	l	
51901	PMW.110-30	30	28	73	14.5	12	CFSW.110
51903	PMW.110-35	35	28	72	16.5	12	CFSW.110
51904	PMW.110-40	40	28	70.5	19	12	CFSW.110
51905	PMW.110-45	45	34	69	21	12	CFSW.110
51907	PMW.110-50	50	34	69	24	12	CFSW.110

Standard Elements		Profile	Main dimensions				For hinges
Code	Description	s1	B	f	f1	l	
51901-M	PMW.110-30-M	30	28	73	14.5	14	CFMW.110
51903-M	PMW.110-35-M	35	28	72	16.5	14	CFMW.110
51904-M	PMW.110-40-M	40	28	70.5	19	14	CFMW.110
51905-M	PMW.110-45-M	45	34	69	21	14	CFMW.110
51907-M	PMW.110-50-M	50	34	69	24	14	CFMW.110

Hinge

Material

Glass-fibre reinforced polyamide based (PA) SUPER-technopolymer. Resistant to solvents, oils, greases and other chemical agents.

Colour

Black, matte finish.

Rotation pin

Glass-fibre reinforced polyamide based (PA) technopolymer, black colour.

Assembly kit (see assembly)

- n°4 technopolymer covers (fig.1).
- n°4 technopolymer bushings (fig.2 and fig.3).

Assembly

CFMW. hinge can be assembled in three different modes:

- With M6 UNI 5933 ISO 10642 countersunk-head screw (not supplied) and screw cover supplied in the kit (fig. 1) to avoid free access to **screws**.
- With cylindrical-head screw with hexagon socket M6 UNI 5931 ISO 4762 (not supplied) to set with the bushing supplied in the kit (fig.2).
- With M6 UNI 5588 ISO 4032 nut (not supplied) and the bushing supplied in the kit (fig.3). This kind of assembly makes the hinge totally tamper-proof preventing any tampering.

Features and applications

The different assembly options make this product easy to install on the most common aluminium profiles (30 mm minimum side).

CFMW. hinge can be assembled with CFSW. hinge with built-in safety switch.

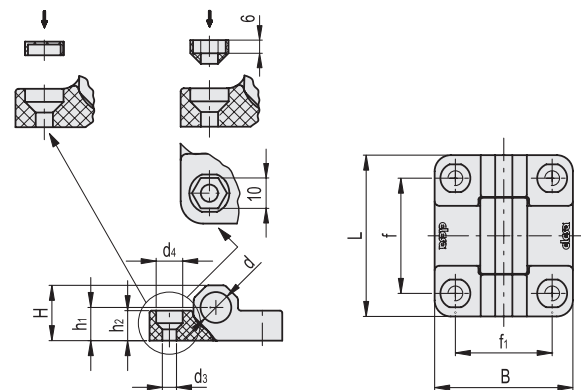
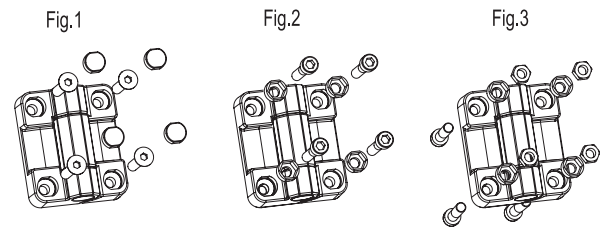
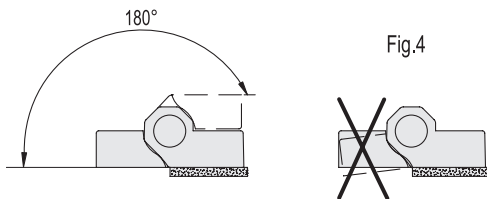
Rotation angle (approximate value)

Max 180° (0° and +180° being 0° the condition where the interconnected surfaces are on the same plane).

Do not exceed the rotation angle limit so as not to prejudice the hinge mechanical performance.

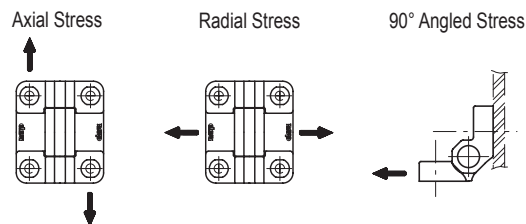
The condition where the two interconnected surfaces are on the same plane is to be strictly verified because the hinge must not be stressed by any negative angle (fig.4).

To choose the convenient type and the right number of hinges for your application, see the Guidelines.



Standards Elements		Main dimensions								Fitting		
Code	Description	L	B	f ±0.2	f1 ±0.2	H	h1	h2	d	d3	d4	C [Nm] #
425951	CFMW.70-SH-6	70	60	50	42	25	15	15	13.5	6.5	12	5
425956	CFMW.110-SH-6	110	60	91	42	25	15	15	12	6.5	12	5

Suggested tightening torque for assembly screws.



Resistance tests	AXIAL STRESS	RADIAL STRESS	90° ANGLED STRESS
Description	Max limit static load Sa [N]	Max limit static load Sr [N]	Max limit static load S90 [N]
CFMW.70	4500	7600	5800
CFMW.110	2100	2800	1300

The max limit static load is the value above which the material may break thus prejudicing the hinge functionality. Obviously, a suitable factor, according to the importance and the safety level of the specific application, must be applied to this value.

Hinges with safety switch

Material

Zinc alloy die-cast, silver metallic epoxy resin coating.

Pin

AISI 303 stainless steel.

Assembly

- Type A: Connector plug at the top.
- Type B: Connector plug from the bottom.
- Type C: Connector plug on the backside, with 0,2 m cable.
- Type AK: Connector cable at the top.
- Type BK: Connector cable from the bottom.
- Type CK: Connector cable at the back.

Accessories on request

- Hinges without safety switch GN 139.2 in the same design for uniform appearance.
- Cables with connector coupling 8-pin, 5 and/or 10 meter long: GN 330-M12x1-8-G-5 and GN 330-M12x1-8-G-10.
- Mounting plates GN 139.3 / GN 139.4.

Features and applications

Hinges GN 139.1 with integrated safety switches have been designed for monitoring doors and covers of machines and plants. Opening the door will activate the switch contacts which, in turn, will then e.g. interrupt a protective circuit via break contact (NC) and at the same time signal the door opening by closing a normally open contact element (NO). The contact blocks are fitted with positive opening slow-action contacts, i.e. they will definitely be separated when activated and have no hysteresis. The angle at which the switching points are reached are adjustable (see contact travel diagram).

Together with the integrated contact blocks, the hinges are a compact, easy to mount unit with an attractive design. The mounting from the back make the hinge more tamper-proof.

Special execution on request (For sufficient quantities)

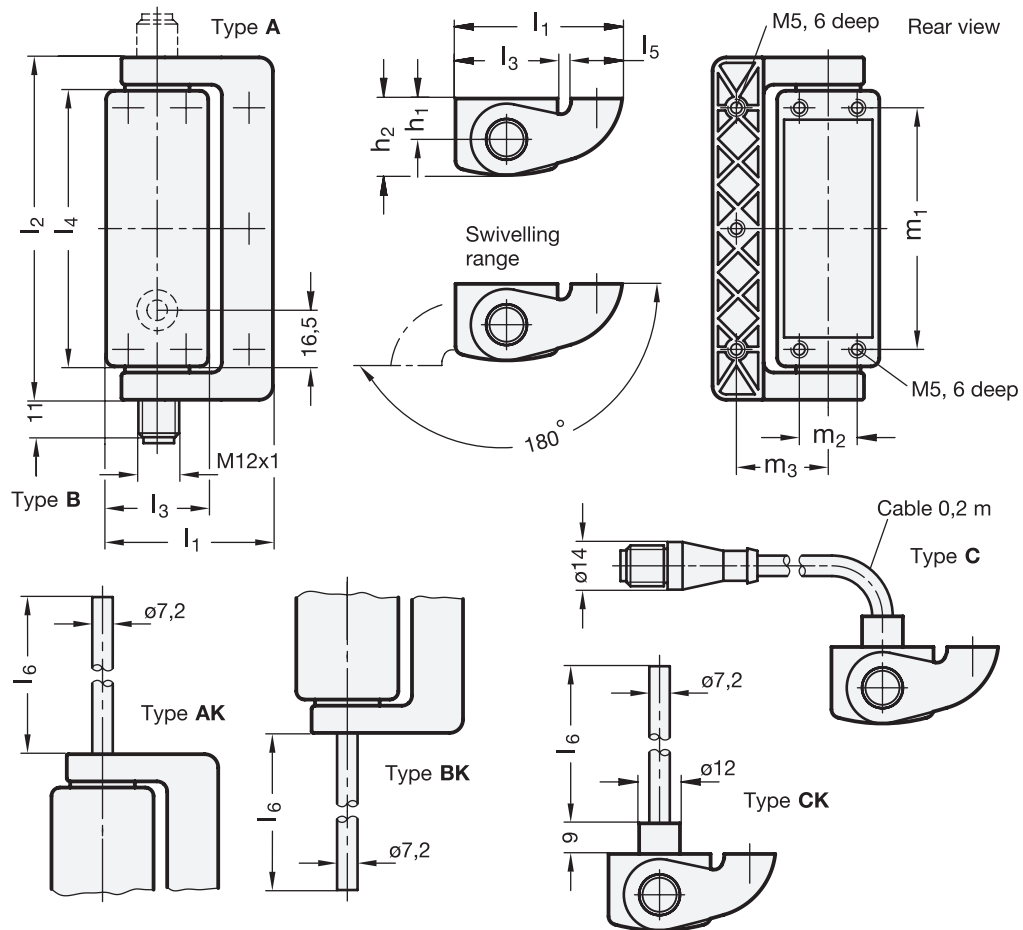
- Hinges with operating angle $>0^\circ$.
- Hinges with other contact loadings.

Other important details and hints

Other important details and hints are given in the operating instructions for GN 139.1 hinges which are included with every hinge and which are also available as PDF at „www.elesa-ganter-griff.com“ in „Instruction manuals“.

The hinges with safety switch must be mounted and commissioned by qualified technical personnel in compliance with the details given in the operating instructions and with the national and international rules and regulations and the applicable standards. ELESA+Ganter will assume no statutory liability for missing or incorrect information and for any consequences arising therefrom.

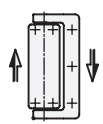
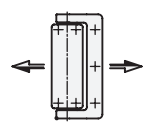

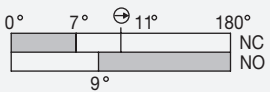
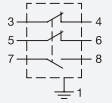






Standard Elements	Main dimensions											
	Description	l1	l2	l3	l4	l5	l6	h1	h2	m1	m2	m3
GN 139.1-49-101-A	49	101	30	81	15	-	-	12	22.5	71	17	27
GN 139.1-49-101-AK-2	49	101	30	81	15	2	2	12	22.5	71	17	27
GN 139.1-49-101-AK-5	49	101	30	81	15	5	5	12	22.5	71	17	27
GN 139.1-49-101-B	49	101	30	81	15	-	-	12	22.5	71	17	27
GN 139.1-49-101-BK-2	49	101	30	81	15	2	2	12	22.5	71	17	27
GN 139.1-49-101-BK-5	49	101	30	81	15	5	5	12	22.5	71	17	27
GN 139.1-49-101-C	49	101	30	81	15	-	-	12	22.5	71	17	27
GN 139.1-49-101-CK-2	49	101	30	81	15	2	2	12	22.5	71	17	27
GN 139.1-49-101-CK-5	49	101	30	81	15	5	5	12	22.5	71	17	27
GN 139.1-79-101-A	79	101	30	81	30	-	-	12	22.5	71	17	50
GN 139.1-79-101-AK-2	79	101	30	81	30	2	2	12	22.5	71	17	50
GN 139.1-79-101-AK-5	79	101	30	81	30	5	5	12	22.5	71	17	50
GN 139.1-79-101-B	79	101	30	81	30	-	-	12	22.5	71	17	50
GN 139.1-79-101-BK-2	79	101	30	81	30	2	2	12	22.5	71	17	50
GN 139.1-79-101-BK-5	79	101	30	81	30	5	5	12	22.5	71	17	50
GN 139.1-79-101-C	79	101	30	81	30	-	-	12	22.5	71	17	50
GN 139.1-79-101-CK-2	79	101	30	81	30	2	2	12	22.5	71	17	50
GN 139.1-79-101-CK-5	79	101	30	81	30	5	5	12	22.5	71	17	50

GN 139.1 (Zinc alloy)



Mechanical features				
Maximum load				
Information with safety factor				
Examples of calculation => see operating instruction				
	l1 = 49	1500 N	1000 N	1000 N
	l1 = 79	750 N	500 N	500 N
Fixing	from the back, 7 x threads M5, 6 deep			
Recommended torque	5 Nm (Screws M5)			
Protection class	IP67 (Type A / B, connector on the housing) IP69K (Type C with connector cable)	acc. to EN 60529		
Switching principle, contact opening	Slow-action contacts force-fitted, with positive opening	acc. to IEC 60947-5-1, K		
Contact material	Silver alloy Ag 999			
Operating travel diagram (scheme)	The switching points are adjustable up to 4° in direction of 0°. see operating instruction			
Maximum operating frequency	1200 / hour	acc. to IEC 60947-5-1		
Mechanical life span	10 ⁶ operating cycles	acc. to EN 60947-5-1		
Actuating speed	min. 2° / second, max. 90° / second			
Electrical features / Safety features				
Utilization category	DC 13: 24 Vdc / 2 A (with connector plug) AC 15: 24 Vac / 2 A	acc. to EN 60947-5-1		
Contact termination 8-pole connector M12 or cable with 2 m or 5 m length			1 - green-yellow 3 - black 5 - red 7 - brown 4 - black-white 6 - red-white 8 - blue	
Pin and cable assignment				
Type of cable	Type N 7 x0,5 mm ² , jacket PVC H05VV-F	acc. to IEC 60332-1-2 et seqq.		
Short-circuit current	1000 A	acc. to EN 60947-5-1		
Rated insulation voltage	30 V AC / 36 V DC			
Short-circuit protection	2 A, 500 V, Type gG			
Ambient temperature	- 25 °C up to + 80 °C			
Degree of pollution, external	3	acc. to EN 60947-5-1		
Mission time (TM)	20 years	acc. to EN ISO 13849-1		
Number of cycles (B10 d)	5 000 000	acc. to EN 61820-2		
Approvals, Conformities, Applicability				
Low-voltage switchgear and controlgear CE declaration IMQ: CA02.03746 UL: E 131787		EN 60947-1/2007 EN 60947-1-5 : 2004 + A1/2009		
Safety applications	up to SIL 3 / PL e	acc. to EN ISO 13849-1		

Other important details and hints are given in the operating instructions for GN 139.1 hinges which are included with every hinge and which are also available as PDF at "www.elesa-ganter-griff.com" in "Instruction manuals".

The hinges with safety switch must be mounted and commissioned by qualified technical personnel in compliance with the details given in the operating instructions and with the national and international rules and regulations and the applicable standards.

ELESA+GANter will assume no statutory liability for missing or incorrect information and for any consequences arising therefrom.

Hinges

Material

Zinc alloy die-cast, silver metallic, epoxy resin coating.

Pin

AISI 303 stainless steel.

Load ratings

- for $d_1 = 49$: 1500 Nm (axial) / 1000 Nm (radial) / 25 Nm (torsion).
- for $d_1 = 79$: 750 Nm (axial) / 500 Nm (radial) / 12 Nm (torsion).

Accessories

Mounting plates GN 139.3 / GN 139.4.

Special execution on request (For sufficient quantities)

Hinges with operating angle $>0^\circ$.

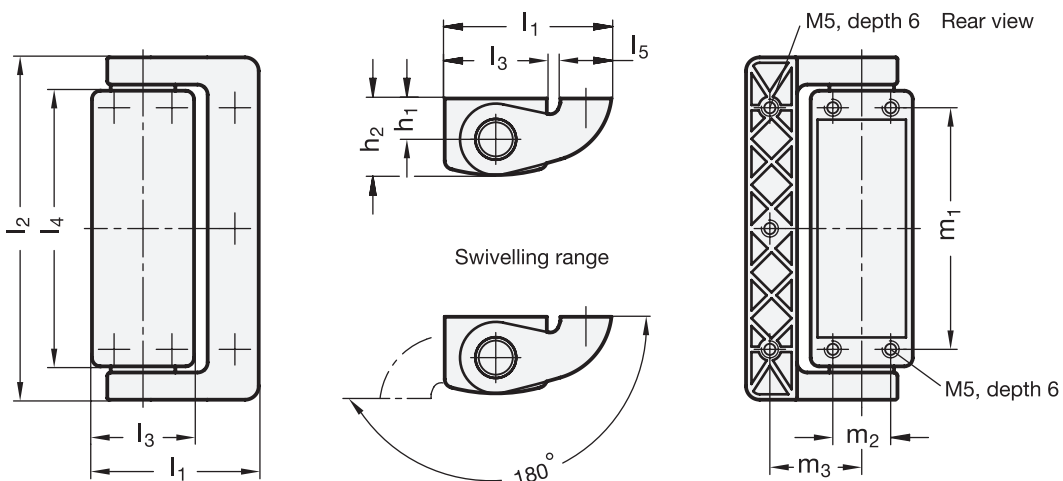
Features and applications

Hinges without safety switch GN 139.2 are identical with the version with safety switch except the connector plug. In addition, the covered bolts at the rear make the hinge tamper-proof.

The compact construction combines safety and attractive design.

The version with broad hinge wing has been designed for mounting against glass or polycarbonate doors.

More important details and notices are found in the operating instructions for the hinges GN 139.2.



Standard Elements	Main dimensions									
Description	l1	l2	l3	l4	l5	h1	h2	m1	m2	m3
GN 139.2-49-101	49	101	30	81	15	12	22.5	71	17	27
GN 139.2-79-101	79	101	30	81	30	12	22.5	71	17	50

Mounting plate

Material

Steel plastic-coated, silver metallic epoxy resin coating.

Features and applications

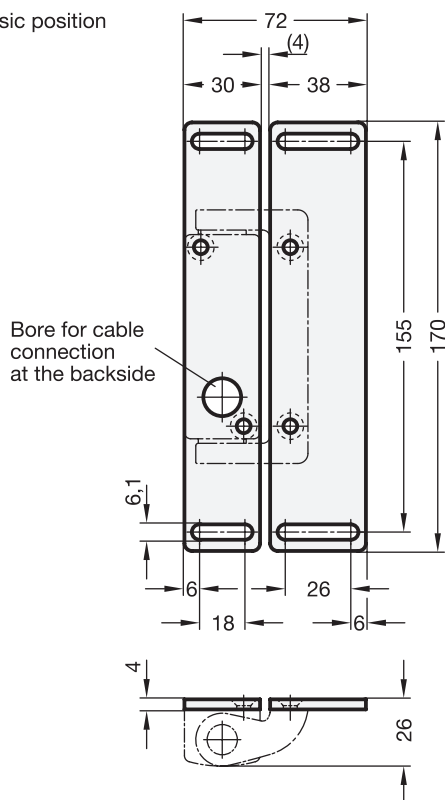
The flat mounting plate GN 139.3 allows the hinges GN 139.1 / GN 139.2 to be attached from the front.

The long slotted holes allow also allow the attachment to profile systems.

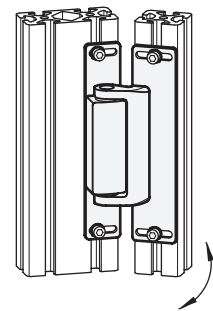
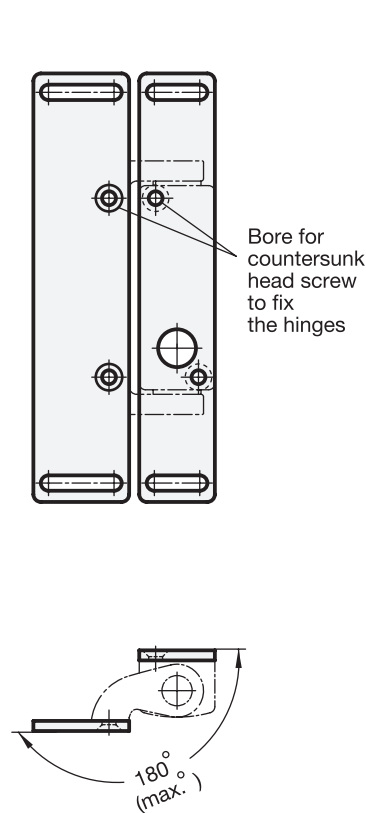
Countersunk screws for fixing the hinges to the mounting plate are included part of the order.



Basic position



180° swivelled



Standard Elements	Main dimensions
Description	Length
GN 139.3-170	170

Mounting plates

Material

Zinc-alloy die-cast, silver metallic epoxy resin coating.

Features and applications

The angled mounting plate GN 139.4 allows the hinges GN 139.1 / GN 139.2 to be attached between frame and door, i.e. the door gap.

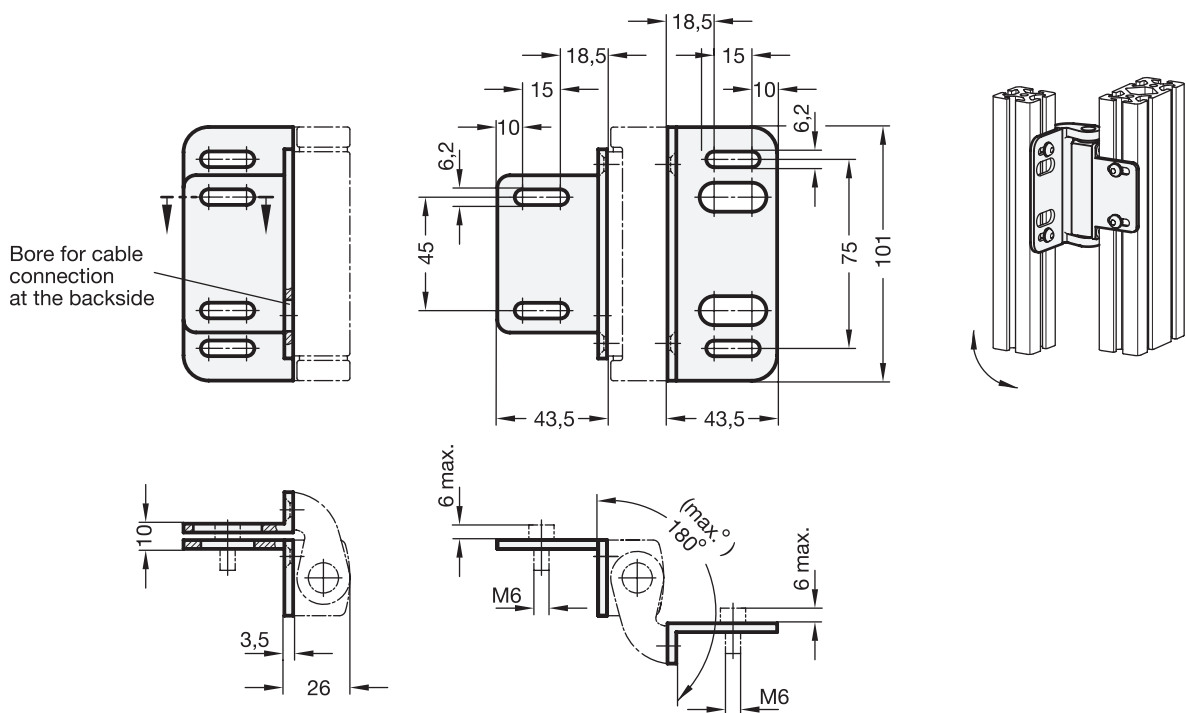
The long slotted holes allow also allow the attachment to profile systems.

Countersunk screws for fixing the hinges to the mounting plate are included part of the order.



Basic position

180° swivelled



Standard Elements	Main dimensions
Description	Length
GN 139.4-101	101

Hinges with safety switch

Specification

Type

- Type A: Connector plug at the top
- Type B: Connector plug from the bottom
- Type C: Connector plug at the back (with 0.2 m cable)
- Type CK: Cable from the back

Stainless Steel precision casting

- AISI 316L
- polished, Ra

Information

Hinges GN 139.5 with integrated safety switches have been designed for monitoring doors and covers of machines and plants. Opening the door will activate the switch contacts which, in turn, will then e.g. interrupt a protective circuit via break contact (NC) and at the same time signal the door opening by closing a normally open contact element (NO). The contact blocks are fitted with positive opening slow-action contacts, i.e. they will definitely be separated when activated and have no hysteresis. The angle at which the switching points are reached are adjustable.

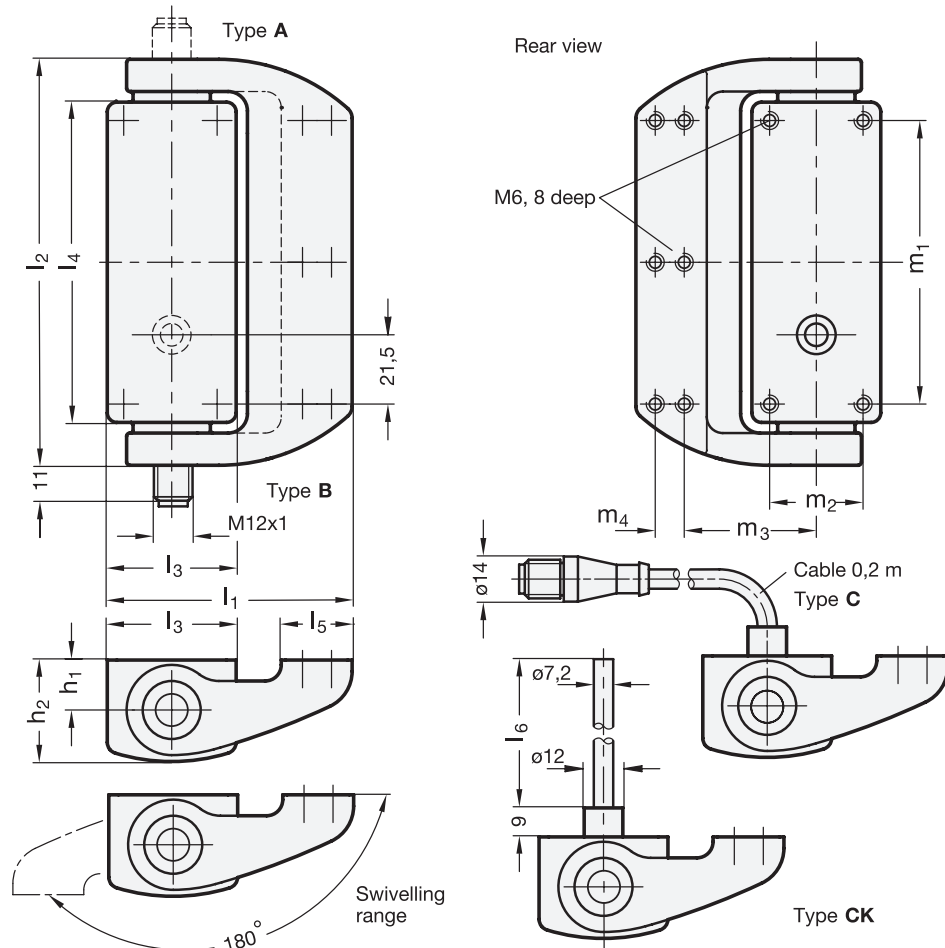
Together with the integrated contact blocks, the hinges are a compact, easy to mount unit with an attractive design. The mounting from the back make the hinge more tamper-proof.

Accessory
Cable with connector coupling
8-pole, 5 or 10 meter long:

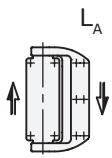
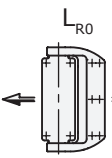
- GN 330-M12x1-8-G-5
- GN 330-M12x1-8-G-10

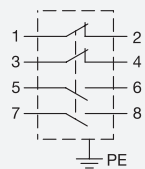

On request

- Hinges with operating angle $> 0^\circ$
- Hinges with other contact loadings



Standard Elements	Main dimensions											
	Description	l1	l2	l3	l4	l5	l6	h1	h2	m1	m2	m3
GN 139.5-76-A	76	126	40	99.4	22	-	15.5	31.5	88	29	41	9
GN 139.5-76-B	76	126	40	99.4	22	-	15.5	31.5	88	29	41	9
GN 139.5-76-C	76	126	40	99.4	22	-	15.5	31.5	88	29	41	9
GN 139.5-76-CK-2	76	126	40	99.4	22	2	15.5	31.5	88	29	41	9
GN 139.5-76-CK-5	76	126	40	99.4	22	5	15.5	31.5	88	29	41	9

Mechanical features			
Maximum load Information with safety factor	Load direction		
Examples of calculation <input type="checkbox"/> see operating instruction	F max.	2000 N	2000 N
Fixing	from the back, 10 x threads M6, 8 mm deep		
Recommended torque	10 Nm (Screws M6)		
Protection class	IP67 / IP69K (Mind the cable conduit!)	acc. to EN 60529	
Switching principle, contact opening	Slow-action contacts force-fitted, with positive opening	acc. to IEC 60947-5-1	
Contact material	Silver alloy		
Operating travel diagram (scheme)	The switching points are adjustable up to 2° in direction of 0°. <input type="checkbox"/> see operating instruction		
Maximum operating frequency	600 operating cycles / hour	acc. to IEC 60947-5-1, one operating cycle includes one opening and one closing action	
Mechanical life span	10 ⁶ operating cycles		
Actuating speed	min. 2° / second, max. 90° / second		

Electrical features / Safety features		
Utilization category	AC 15: 24 Vac / 2A / DC 13: 24 Vdc / 2A (connector plug) AC 15: 250 Vac / 3A / DC 13: 250 Vdc / 0,3 A (cable)	acc. to EN 60947-5-1
Contacts, termination 8-pole connector M12 or 9 wire cable with 2 m or 5 m length Pin and cable assignment	  <ul style="list-style-type: none"> 1 - black 2 - black-white 3 - red 4 - red-white 5 - brown 6 - blue 7 - purple 8 - purple-white <p>PE - yellow-green (only Type CK)</p>	
Type of cable	9x0,34 mm ² , PVC H05VV-F, black	acc. to IEC 60332-1
Short-circuit current	1000 A	acc. to EN 60947-5-1
Rated insulation voltage	30 V AC / 36 V DC (connector plug) / 250 Vac (cable)	
Short-circuit protection	2 A, 500 V, Typ gG (connector plug) / 3 A, 500 V, Typ gG (cable)	
Ambient temperature	- 25 °C up to + 80 °C	
Degree of pollution, external	3	acc. to EN 60947-5-1
Safety parameters	B10: 1 000 000, B10 d: 5 000 000, B10 / B10 d: 20%	acc. to EN ISO 13849-1

Approvals, Conformities, Applicability		
Low-voltage switchgear and controlgear CE declaration EAC- and UL-certified	  	EN 60947-1/2007 EN 60947-1-5 : 2004 + A1/2009
Safety applications	until SIL 3 / PL e	acc. to EN ISO 13849-1

Other important details and hints are given in the operating instruction for GN 139.5 hinges which are included with every hinge and which are also available as PDF downloads from „www.ganter-griff.com“ under ‚Service‘.

The hinges with safety switch must be mounted and commissioned by qualified technical personnel in compliance with the details given in the operating instructions and with the national and international rules and regulations and the applicable standards. Otto Gantner GmbH & Co. KG will assume no statutory liability for missing or incorrect information and for any consequences arising therefrom.

Hinges with safety switch

Specification

Stainless Steel precision casting
 - AISI 316L
 - polished, Ra

Information

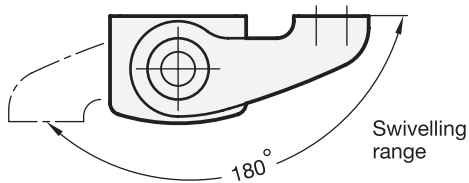
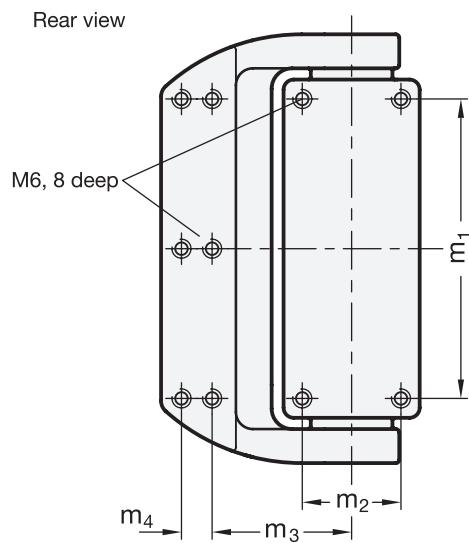
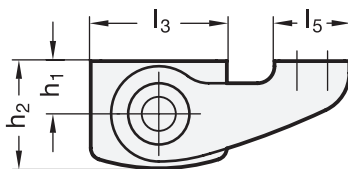
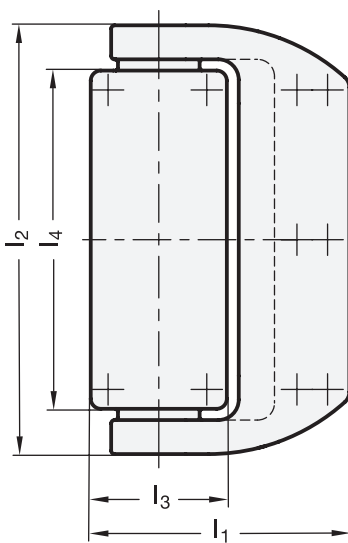
With the exception of the connector plug, the hinge without safety switch

GN 139.6 do not differ in their external appearance from hinges with safety switch GN 139.1. With the concealed screw connection at the back, the hinge is also tamper-proof.

The compact design combines safety and attractive appearance. The design with broad hinge halves is intended for mounting to glass or polycarbonate doors

On request

- Hinges with operating angle > 0°
- Hinges with other contact loadings



Standard Elements	Main dimensions										
Description	l1	l2	l3	l4	l5	h1	h2	m1	m2	m3	m4
GN 139.6-76-126	76	126	40	99.4	22	15.5	31.5	88	29	41	9

Cables with connector coupling

Handle

Plastic, Polyurethan-Elastomer-TPU, black colour.

Cable (Outer sheath)

Polyurethan PUR, black colour.

Working temperature

From -40 °C to +90 °C.

Assembly

- Type G: Connector coupling straight.
- Type W: Connector coupling 90° angled.

Technical data

- Insulating resistance: >109 Ω.
- Degree of pollution: 3 / 2 according to ICE 60 664-1.
- Protection class: IP67 (in screwed condition) according to ICE 60 529.

Connecting nut M12x1

Nickel plated brass.

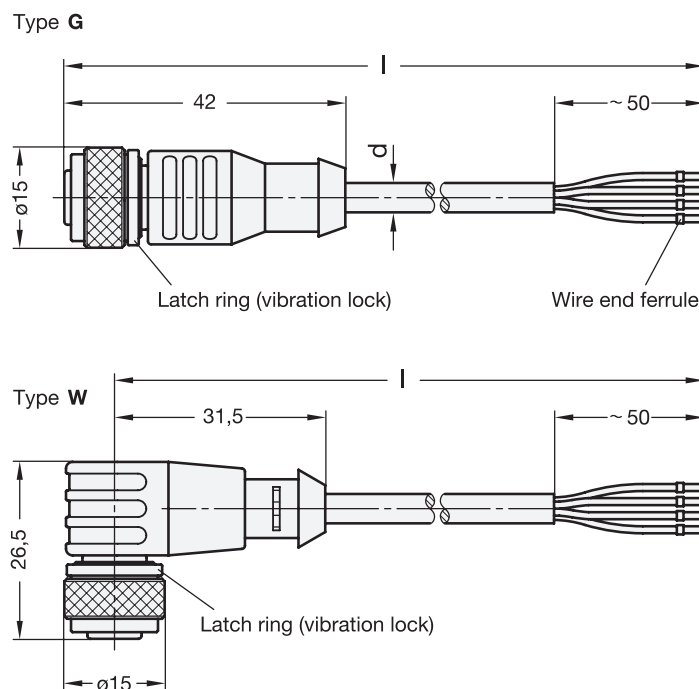


Special executions on request (For sufficient quantities)

Cable in different lengths.

Features and applications

Cables with connector coupling M12x1 GN 330 are used in conjunction with standard elements which have an electric switching function.



Standard Elements	Main dimensions		
	Connector	No. of contacts	l
GN 330-M12x1-4-G-5	M12x1	4	5
GN 330-M12x1-4-G-10	M12x1	4	10
GN 330-M12x1-8-G-5	M12x1	8	5
GN 330-M12x1-8-W-5	M12x1	8	5
GN 330-M12x1-8-G-10	M12x1	8	10
GN 330-M12x1-8-W-10	M12x1	8	10
GN 330-M12x1-12-G-5	M12x1	12	5
GN 330-M12x1-12-W-5	M12x1	12	5
GN 330-M12x1-12-G-10	M12x1	12	10
GN 330-M12x1-12-W-10	M12x1	12	10

GN 161 (Zinc alloy)



Hinges

Material

Zinc alloy die-cast, black matte textured, epoxy resin coating.

Rotation pin

AISI 303 stainless steel.

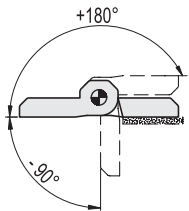
Features and applications

Hinges GN 161 have been designed for commercially available aluminium profiles. With three different types of hinges only, 66 different slot widths 'n' can be accommodated. To achieve this the positioning components are set in specially marked recesses in the hinge wings.

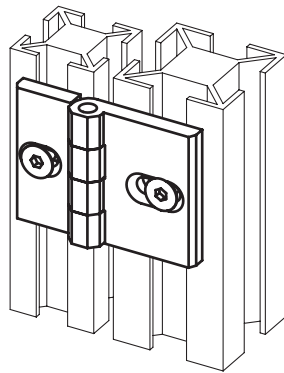
The rectangular (8x10 mm) positioning components, two pieces hinge wing, will prevent a misalignment. They will also carry the weight of the door.

Rotation angle

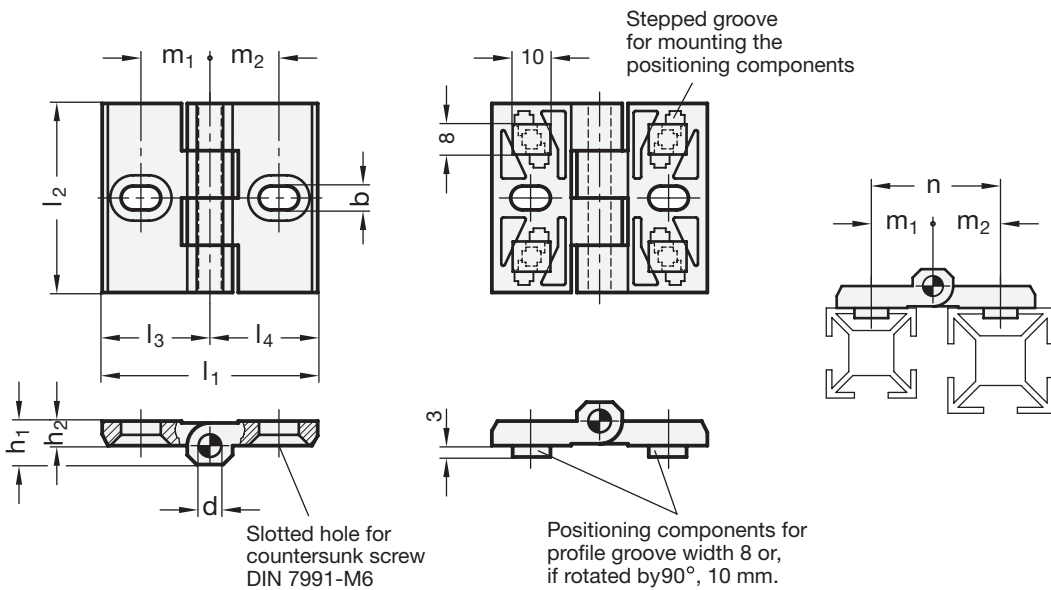
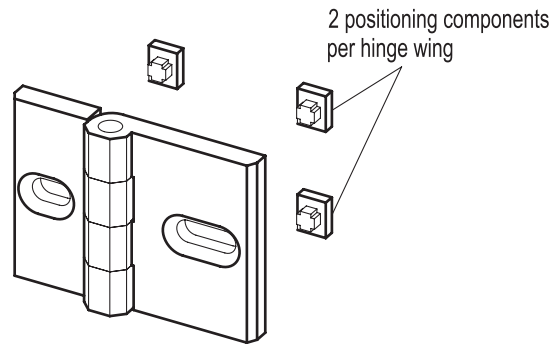
Max 270°.



Application example



Assembly instructions



Standard Elements	Main dimensions							
Description	l1	b	d	h1	h2	l2	l3	l4
GN 161-57	57	6.3	6	12	6.5	50	28.5	28.5
GN 161-68	68	6.3	6	12	6.5	50	28.5	40
GN 161-80	80	6.3	6	12	6.5	50	40	40

Hinges

Material

Zinc alloy die-cast, plastic coated.

- Version SW: RAL 9005 black, matte epoxy resin coating.
- Version SR: RAL 9006 silver, matte epoxy resin coating.

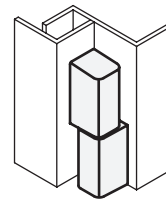
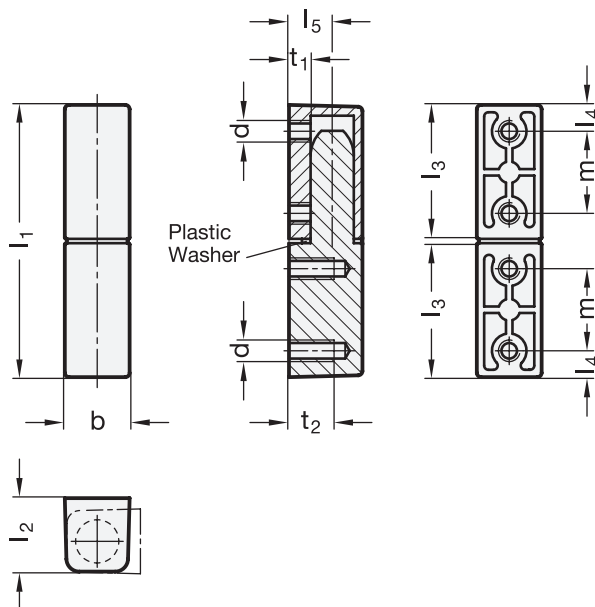
Features and applications

Hinges GN 161.1 are a variant with highly attractive design. The fixing screws are invisible.

During the load tests, the hinges were gradually loaded and relieved at room temperature with incrementally increasing force. For the specified values, an insignificant permanent deformation remained after relieving the load which had no effect on the function and appearance. In most cases, the failure loads are multiples of the specified value.

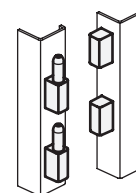
The details relating to the load bearing capacity are non-binding recommended values and rule out any liability. They constitute no general warranty of quality and condition.

The user must determine from case to case whether a product is suitable for the intended use. Environmental influences and aging may influence these values.

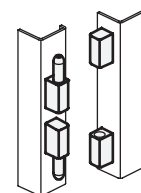


Mounting alternatives:

Door to be unhinged



Door not to be unhinged



Standard Elements	Main dimensions										Load rating in N	
	b	l1	d	l2	l3	l4	l5	m	t1	t2	Radial	Axial
GN 161.1-15-63-SW	15	63	M5	17	31	6.1	10	19	5	10	2300	1500
GN 161.1-15-63-SR	15	63	M5	17	31	6.1	10	19	5	10	2300	1500

GN 161.2 (Zinc alloy)



Hinges

Material

Zinc alloy die-cast, plastic coated.

- Version SW: RAL 9005 black, matte epoxy resin coating.
- Version SR: RAL 9006 silver, matte epoxy resin coating.

Assembly

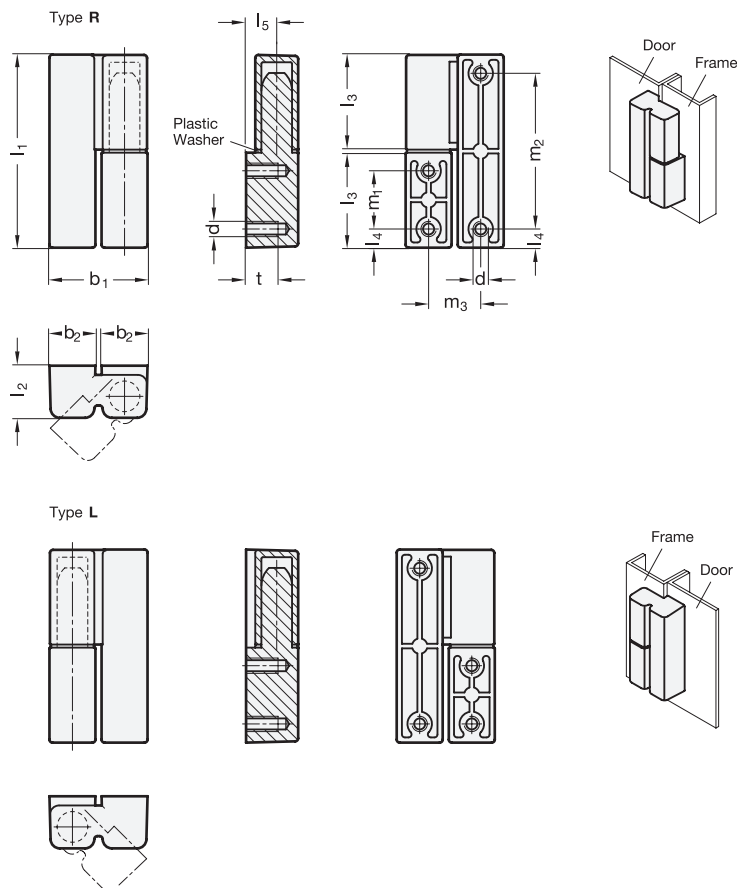
- Type R: Fixed bearing (pin) right.
- Type L: Fixed bearing (pin) left.

Features and applications

Hinges GN 161.2 are a variant with highly attractive design. The fixing screws are invisible.

During the load tests, the hinges were gradually loaded and relieved at room temperature with incrementally increasing force. For the specified values, an insignificant permanent deformation remained after relieving the load which had no effect on the function and appearance. In most cases, the failure loads are multiples of the specified value.

The details relating to the load bearing capacity are non-binding recommended values and rule out any liability. They constitute no general warranty of quality and condition. The user must determine from case to case whether a product is suitable for the intended use. Environmental influences and aging may influence these values.



Standard Elements	Main dimensions												Load rating in N	
	b1	l1	b2	d	l2	l3	l4	l5	m1	m2	m3	t	Radial	Axial
GN 161.2-32-63-R-SW	32	63	15	M5	17	31	6.1	10	19	50.8	17	10	700	2000
GN 161.2-32-63-L-SW	32	63	15	M5	17	31	6.1	10	19	50.8	17	10	700	2000
GN 161.2-32-63-R-SR	32	63	15	M5	17	31	6.1	10	19	50.8	17	10	700	2000
GN 161.2-32-63-L-SR	32	63	15	M5	17	31	6.1	10	19	50.8	17	10	700	2000

Hinges

Material

Zinc-alloy die-cast ZD, black matte epoxy resin coating.

- Version SW: RAL 9005, black, matte finish.

- Version SR: RAL 9006, silver, matte finish.

Rotation pin

AISI 303 stainless steel.

- Identification no. 1: fixed bearing (pin) right.

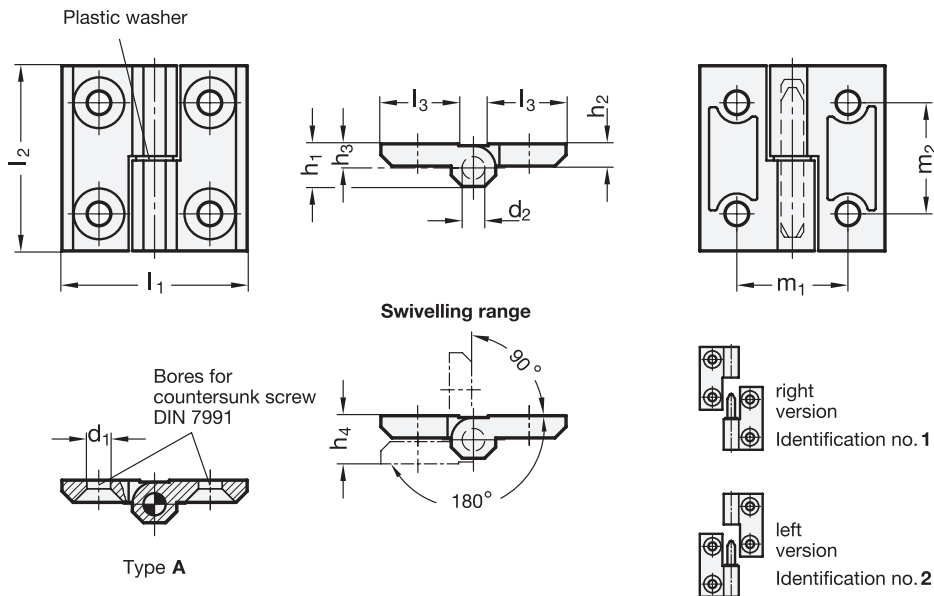
- Identification no. 2: fixed bearing (pin) left.

Assembly

Version A: two couples of through holes for countersunk-head screws.

Rotation angle

Max. 270°, between 0° and -90° and between 0° and 180°.



Standard Elements	Main dimensions										Through holes
	l1	l2	d2	h1	h2	h3	h4 +0.5	l3	m1	m2	
GN 337-ZD-40-40-A-1-SW	40	40	4	9	5	5.5	11	16	25	25	5.3
GN 337-ZD-40-40-A-1-SR	40	40	4	9	5	5.5	11	16	25	25	5.3
GN 337-ZD-40-40-A-2-SW	40	40	4	9	5	5.5	11	16	25	25	5.3
GN 337-ZD-40-40-A-2-SR	40	40	4	9	5	5.5	11	16	25	25	5.3
GN 337-ZD-50-50-A-1-SW	50	50	6	11.5	6	6.5	13	21	30	30	6.4
GN 337-ZD-50-50-A-1-SR	50	50	6	11.5	6	6.5	13	21	30	30	6.4
GN 337-ZD-50-50-A-2-SW	50	50	6	11.5	6	6.5	13	21	30	30	6.4
GN 337-ZD-50-50-A-2-SR	50	50	6	11.5	6	6.5	13	21	30	30	6.4
GN 337-ZD-60-60-A-1-SW	60	60	8	15	8	8.5	17	26	36	36	8.3
GN 337-ZD-60-60-A-1-SR	60	60	8	15	8	8.5	17	26	36	36	8.3
GN 337-ZD-60-60-A-2-SW	60	60	8	15	8	8.5	17	26	36	36	8.3
GN 337-ZD-60-60-A-2-SR	60	60	8	15	8	8.5	17	26	36	36	8.3

Standard Elements	Radial load in N		Axial load in N
	LR0	LR90	LA
GN 337-ZD-40-40-A	2200	1600	1500
GN 337-ZD-50-50-A	3000	2500	2500
GN 337-ZD-60-60-A	4300	3500	3100

GN 337-NI (Stainless)



Hinges

Material

AISI CF-8 stainless steel NI.

Finish

Sand-blasted, matte finish GS.

Rotation pin

AISI 303 stainless steel.

- Identification no. 1: fixed bearing (pin) right.

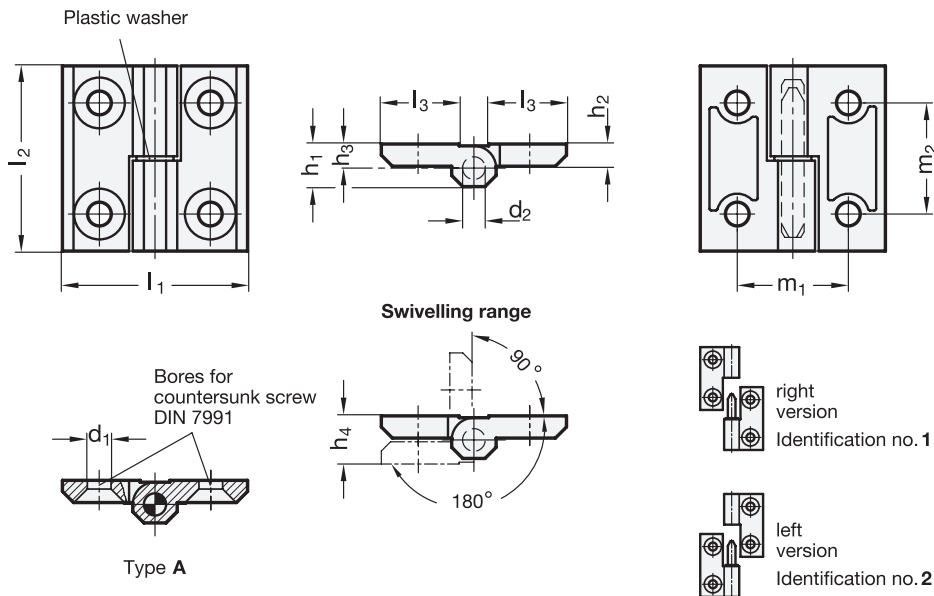
- Identification no. 2: fixed bearing (pin) left.

Assembly

Version A: two couples of through holes for countersunk-head screws.

Rotation angle

Max. 270°, between 0° and -90° and between 0° and 180°.



Standard Elements	Main dimensions											Through holes
	Description	l1	l2	d2	h1	h2	h3	l3	h4 +0.5	m1	m2	
GN 337-NI-40-40-A-1-GS	40	40	4	9	5	5.5	16	11	25	25	5.3	
GN 337-NI-40-40-A-2-GS	40	40	4	9	5	5.5	16	11	25	25	5.3	
GN 337-NI-50-50-A-1-GS	50	50	6	11.5	6	6.5	21	13	30	30	6.4	
GN 337-NI-50-50-A-2-GS	50	50	6	11.5	6	6.5	21	13	30	30	6.4	
GN 337-NI-60-60-A-1-GS	60	60	8	15	8	8.5	26	17	36	36	8.3	
GN 337-NI-60-60-A-2-GS	60	60	8	15	8	8.5	26	17	36	36	8.3	

Standard Elements	Radial load in N		Axial load in N
	Description	LR0	LR90
GN 337-NI-40-40-A-GS	3000	3500	2000
GN 337-NI-50-50-A-GS	5000	3500	2500
GN 337-NI-60-60-A-GS	6000	6000	5000

Hinges

Material

Steel.

Washer

Brass.

Rotation pin

- Version ST: with fixed steel pin.
- Version MS: with fixed brass pin.
- Version STL: with loose steel pin.
- Version STS: with fixed steel pin and lubricating nipple.

Lubricating nipple

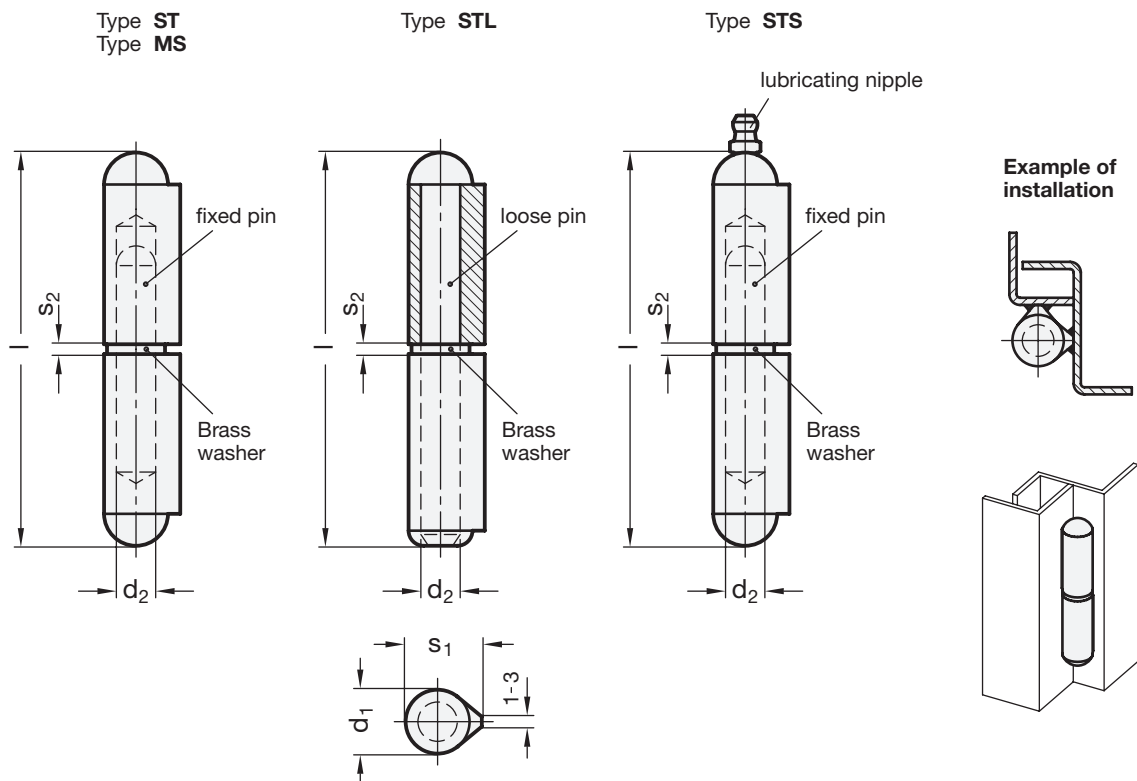
DIN 71412-D zinc-plated steel.

Features and applications

Hinges GN 128 are produced from drawn weldable profiled steel extrusions.

Versions ST, STS and MS feature a hinge pin fixed in the lower half of hinge. Version STL with loose steel pin allows the easy installation when attaching several hinges in parallel or if the door is very heavy.

The upper half of Version STS hinge has an additional lubricating nipple DIN 71412-D which allows the hinges to be lubricated without dismantling the hinges.



GN 128 (Steel)



Standard Elements	Main dimensions				
Description	l	d1	d2	s1	s2
GN 128-40-MS	40	8	5	10	2
GN 128-50-MS	50	8	5	10	2
GN 128-60-MS	60	10	6	12	2
GN 128-80-MS	80	13	8	15.5	2
GN 128-100-MS	100	16	10	20	3
GN 128-120-MS	120	16	11	20	3
GN 128-135-MS	135	18	12	23	3
GN 128-150-MS	150	20	13	25.5	3
GN 128-180-MS	180	20	14	25.5	3
GN 128-200-MS	200	23	16	28.5	3
GN 128-40-ST	40	8	5	10	2
GN 128-50-ST	50	8	5	10	2
GN 128-60-ST	60	10	6	12	2
GN 128-80-ST	80	13	8	15.5	2
GN 128-100-ST	100	16	10	20	3
GN 128-120-ST	120	16	11	20	3
GN 128-135-ST	135	18	12	23	3
GN 128-150-ST	150	20	13	25.5	3
GN 128-180-ST	180	20	14	25.5	3
GN 128-200-ST	200	23	16	28.5	3
GN 128-80-STL	80	13	8	15.5	2
GN 128-100-STL	100	16	10	20	3
GN 128-120-STL	120	16	11	20	3
GN 128-135-STL	135	18	12	23	3
GN 128-150-STL	150	20	13	25.5	3
GN 128-180-STL	180	20	14	25.5	3
GN 128-200-STL	200	23	16	28.5	3
GN 128-80-STS	80	13	8	15.5	2
GN 128-100-STS	100	16	10	20	3
GN 128-120-STS	120	16	11	20	3
GN 128-135-STS	135	18	12	23	3
GN 128-150-STS	150	20	13	25.5	3
GN 128-180-STS	180	20	14	25.5	3
GN 128-200-STS	200	23	16	28.5	3

Hinges

Material

Aluminium, weldable, 3.3206.

Washer

AISI 304 stainless steel.

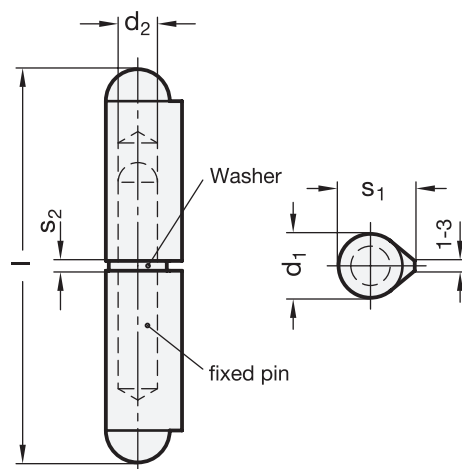
Rotation pin

AISI 304 stainless steel.

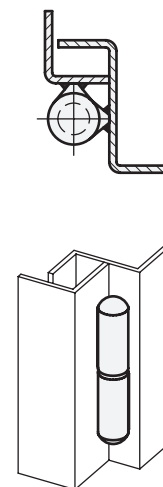
Features and applications

Hinges GN 128.2 are produced from drawn weldable profiled Aluminium extrusions.

The pin is fixed in the lower half.



Example of installation



Standard Elements	Main dimensions					
Description	l	d1	d2	s1	s2	
GN 128.2-60-AL	60	10	6	12	2	
GN 128.2-80-AL	80	13	8	15.5	2	
GN 128.2-100-AL	100	16	10	20	3	
GN 128.2-120-AL	120	16	11	20	3	
GN 128.2-150-AL	150	20	13	25.5	3	
GN 128.2-180-AL	180	20	14	25.5	3	

GN 128.2-NI/A4 (Stainless)



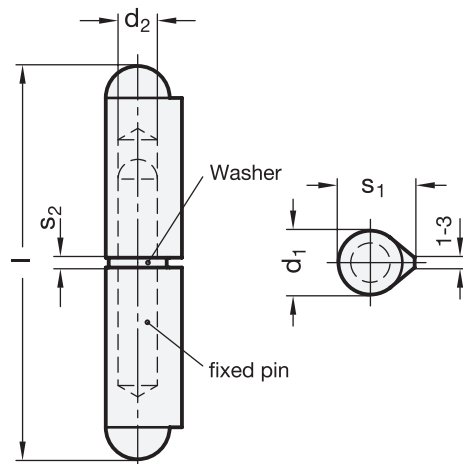
Hinges

Material

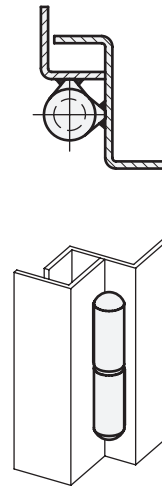
- Version NI: AISI 304 stainless steel.
- Version A4: AISI 316 stainless steel.

Features and applications

Hinges GN 128.2 are produced from drawn weldable profiled stainless steel extrusions.
The pin is fixed in the lower half.



Example of installation



Standard Elements	Main dimensions				
Description	l	d1	d2	s1	s2
GN 128.2-60-NI	60	10	6	12	2
GN 128.2-80-NI	80	13	8	15.5	2
GN 128.2-100-NI	100	16	10	20	3
GN 128.2-120-NI	120	16	11	20	3
GN 128.2-150-NI	150	20	13	25.5	3
GN 128.2-180-NI	180	20	14	25.5	3
GN 128.2-80-A4	80	13	8	15.5	2
GN 128.2-100-A4	100	16	10	20	3
GN 128.2-120-A4	120	16	11	20	3

Hinges

Material

Zinc alloy die-cast ZD.

Finish

- Version SW: RAL 9005 black, matte textured finish, epoxy resin coating.

- Version SR: RAL 9006 silver, matte textured finish, epoxy resin coating.

Rotation pin

AISI 303 stainless steel (A2).

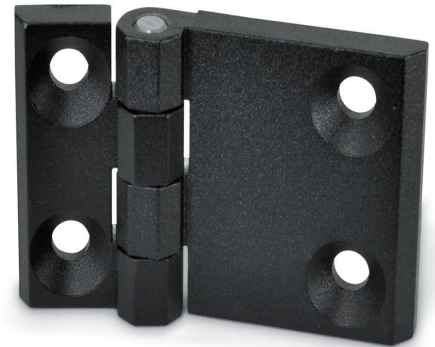
Threaded stud (Type C)

AISI 316 Stainless Steel.

Assembly

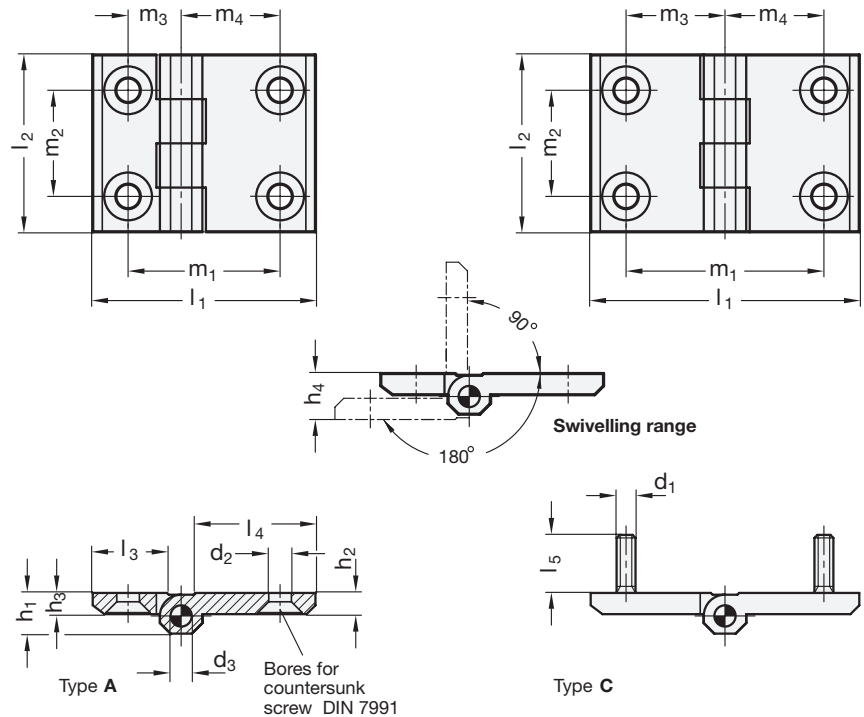
- Type A: 2x2 bores for countersunk screws.

- Type C: 2x2 threaded studs.



Features and applications

Hinges GN 237 with extended hinge wings are made in a compact and sturdy design. They are used when larger spacings are required for the attachment bore holes.



Standard Elements	Main dimensions													Studs		Through holes
	l1	l2	d3	h1	h2	h3	h4 +0.5	l3	l4	m1	m2	m3	m4	d1	l5	d2
GN 237-ZD-63-50-A-SW	63	50	6	11.5	6	6.5	13	21	34	43	30	15	28	-	-	6.3
GN 237-ZD-63-50-A-SR	63	50	6	11.5	6	6.5	13	21	34	43	30	15	28	-	-	6.3
GN 237-ZD-76-50-A-SW	76	50	6	11.5	6	6.5	13	34	34	56	30	28	28	-	-	6.3
GN 237-ZD-76-50-A-SR	76	50	6	11.5	6	6.5	13	34	34	56	30	28	28	-	-	6.3
GN 237-ZD-90-60-A-SW	90	60	8	15	8	8.5	17	26	56	63	36	18	45	-	-	8.4
GN 237-ZD-90-60-A-SR	90	60	8	15	8	8.5	17	26	56	63	36	18	45	-	-	8.4
GN 237-ZD-120-60-A-SW	120	60	8	15	8	8.5	17	56	56	90	36	45	45	-	-	8.4
GN 237-ZD-120-60-A-SR	120	60	8	15	8	8.5	17	56	56	90	36	45	45	-	-	8.4
GN 237-ZD-63-50-C-SW	63	50	6	11.5	6	6.5	13	21	34	43	30	15	28	M6	12	-
GN 237-ZD-63-50-C-SR	63	50	6	11.5	6	6.5	13	21	34	43	30	15	28	M6	12	-
GN 237-ZD-76-50-C-SW	76	50	6	11.5	6	6.5	13	34	34	56	30	28	28	M6	12	-
GN 237-ZD-76-50-C-SR	76	50	6	11.5	6	6.5	13	34	34	56	30	28	28	M6	12	-
GN 237-ZD-90-60-C-SW	90	60	8	15	8	8.5	17	26	56	63	36	18	45	M8	14	-
GN 237-ZD-90-60-C-SR	90	60	8	15	8	8.5	17	26	56	63	36	18	45	M8	14	-
GN 237-ZD-120-60-C-SW	120	60	8	15	8	8.5	17	56	56	90	36	45	45	M8	14	-
GN 237-ZD-120-60-C-SR	120	60	8	15	8	8.5	17	56	56	90	36	45	45	M8	14	-

* Load values on request.

GN 237 (Stainless)



Hinges

Material

AISI CF-8 stainless steel NI.

Finish

Sand-blasted, matte finish GS.

Rotation pin

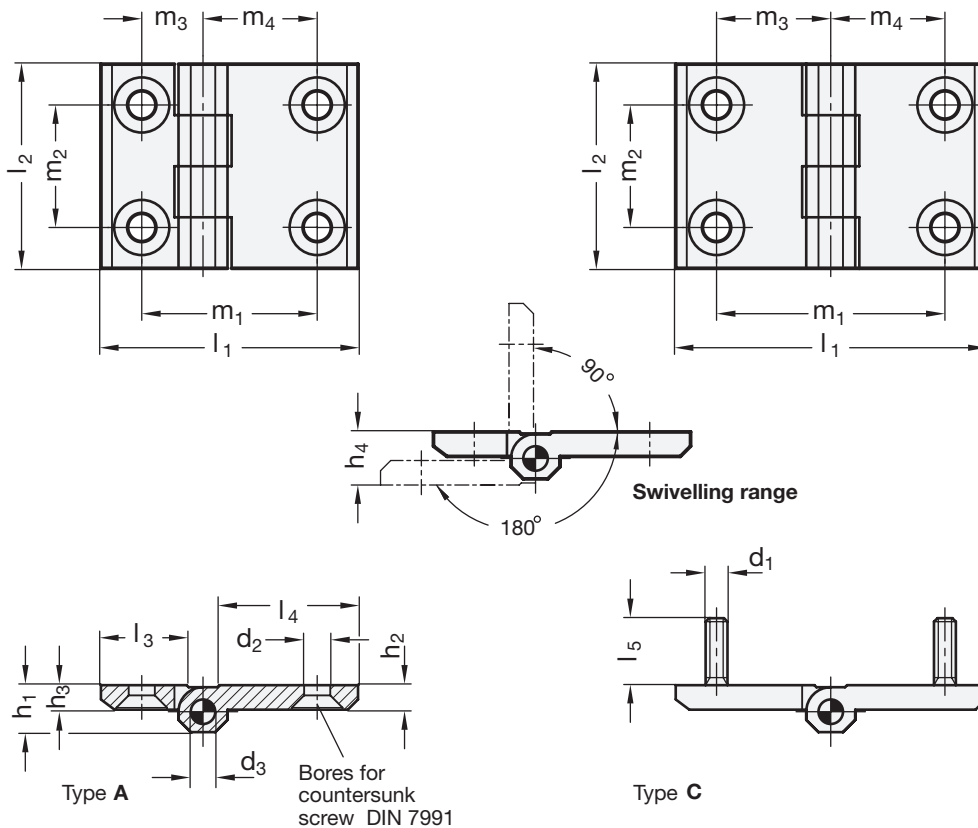
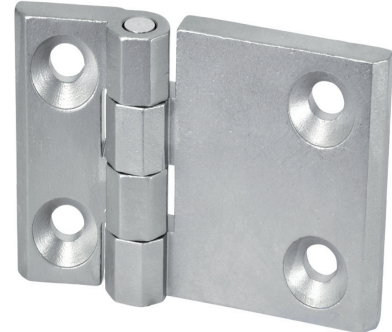
AISI 316Ti stainless steel (A4).

Assembly

- Type A: 2x2 bores for countersunk screws.
- Type C: 2x2 threaded studs.

Features and applications

Stainless-Steel Hinges GN 237 with extended hinge wings are made in a compact and sturdy design. They are used when larger spacings are required for the attachment bore holes.



Standard Elements	Main dimensions														Through holes	
	l1	l2	d3	h1	h2	h3	h4 +0.5	l3	l4	l5	m1	m2	m3	m4	d1	d2
GN 237-NI-63-50-A-GS	63	50	6	11.5	6	6.5	13	21	34	-	43	30	15	28	-	6.3
GN 237-NI-76-50-A-GS	76	50	6	11.5	6	6.5	13	34	34	-	56	30	28	28	-	6.3
GN 237-NI-90-60-A-GS	90	60	8	15	8	8.5	17	26	56	-	63	36	18	45	-	8.4
GN 237-NI-120-60-A-GS	120	60	8	15	8	8.5	17	56	56	-	90	36	45	45	-	8.4

* Load values on request.

Sheet metal hinges

Material

Zinc-plated steel, blue passivated.

Pin

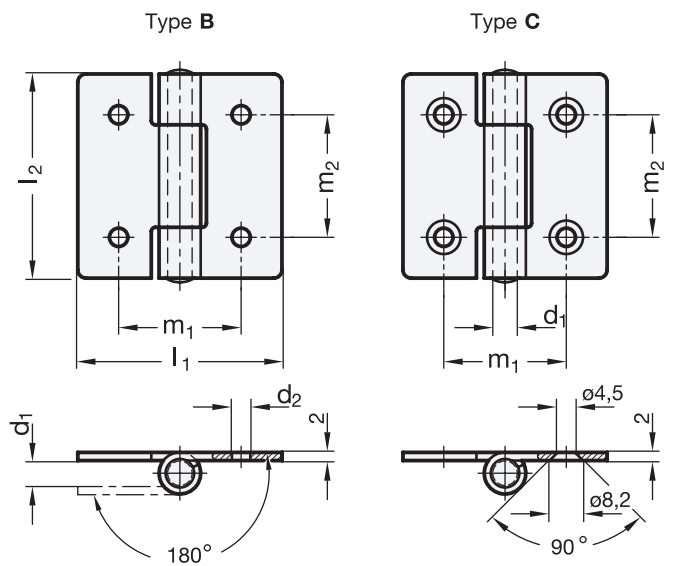
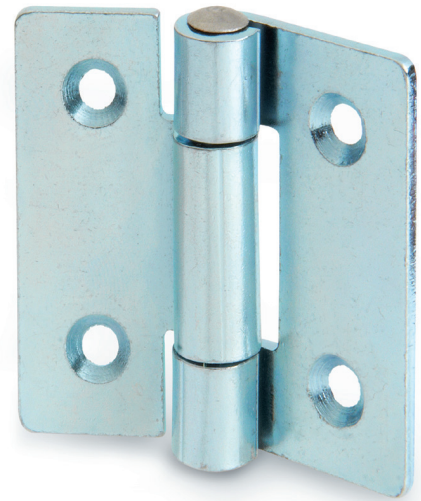
AISI 304 stainless steel.

Assembly

- Type B: with bores for cylinder head screws / pan head screws.
- Type C: with bore for countersunk screws.

Features and applications

Sheet metal hinges GN 136 are low-cost designs for low-load applications.



Boreholes for countersunk screw thread $\varnothing 4$ to $\varnothing 4,5$
Adapt the thread countersunk, if required.

Standard Elements	Main dimensions					Through holes	
	Description	l1	l2	d1	m1		m2
GN 136-ST-40-40-B		40	40	4	25	25	4.2
GN 136-ST-50-50-B		50	50	6	30	30	5.2
GN 136-ST-60-60-B		60	60	6	36	36	5.2
GN 136-ST-40-40-C		40	40	4	25	25	4.2
GN 136-ST-50-50-C		50	50	6	30	30	5.2
GN 136-ST-60-60-C		60	60	6	36	36	5.2

Sheet metal hinges

Material

AISI 304 stainless steel.

Pin

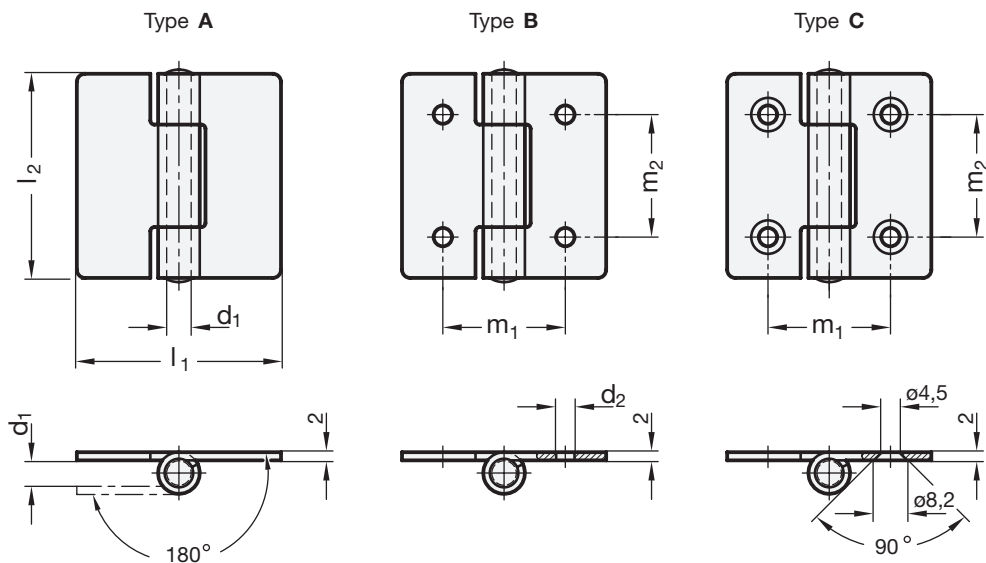
AISI 304 stainless steel.

Assembly

- Type B: with bores for cylinder head screws / pan head screws.
- Type C: with bore for countersunk screws.

Features and applications

Sheet metal hinges GN 136 are low-cost designs for low-load applications.



Boreholes for countersunk screw thread - $\varnothing 4$ to $\varnothing 4,5$
Adapt the thread countersunk, if required.

Standard Elements	Main dimensions					Through holes
	Description	l1	l2	d1	m1	
GN 136-NI-40-40-A	40	40	4	25	25	4.2
GN 136-NI-50-50-A	50	50	6	30	30	5.2
GN 136-NI-60-60-A	60	60	6	36	36	5.2
GN 136-NI-40-40-B	40	40	4	25	25	4.2
GN 136-NI-50-50-B	50	50	6	30	30	5.2
GN 136-NI-60-60-B	60	60	6	36	36	5.2
GN 136-NI-40-40-C	40	40	4	25	25	4.2
GN 136-NI-50-50-C	50	50	6	30	30	5.2
GN 136-NI-60-60-C	60	60	6	36	36	5.2

Hinges

Material

Zinc-plated steel, blue passivated.

Rotation pin and washers

Nickel-plated brass.

Hexagon nuts ISO 4032

Zinc-plated steel, blue passivated.

Serrated washer DIN 6797

For securing screws, Zinc-plated steel, blue passivated.

Standard versions available

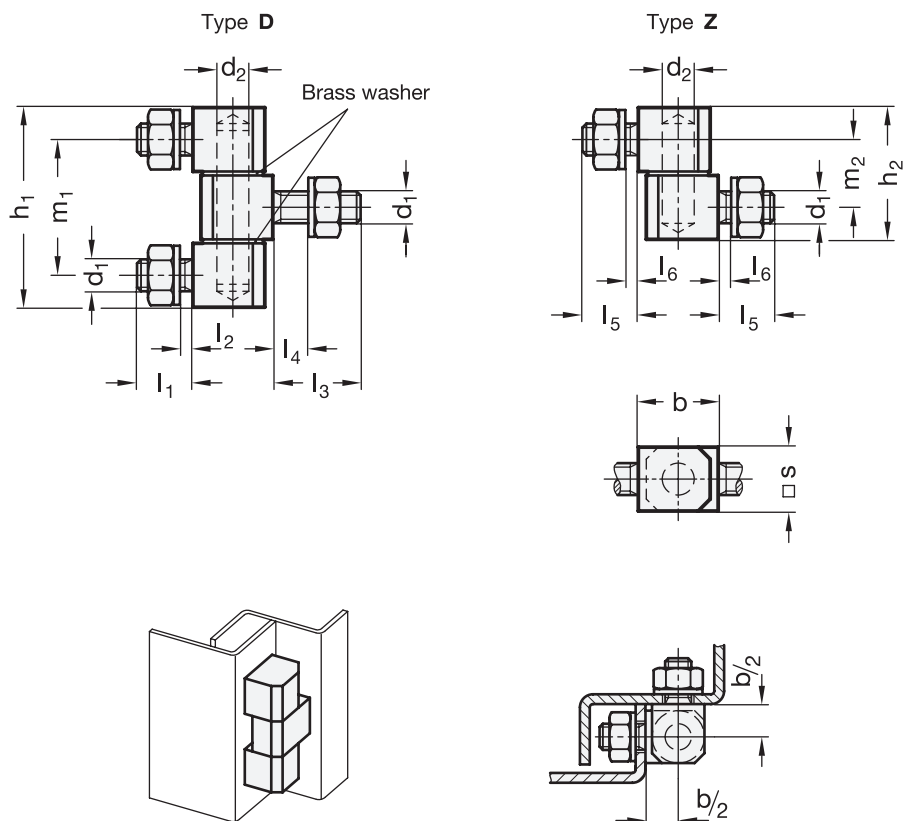
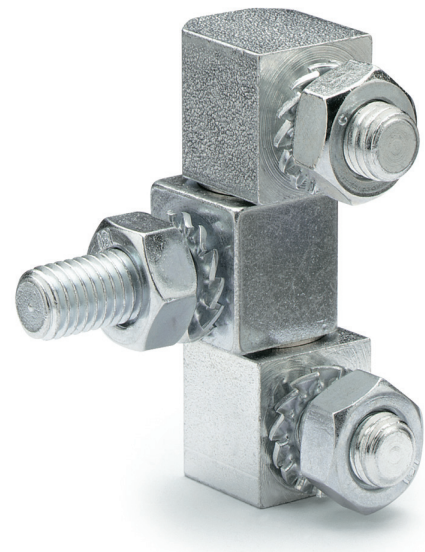
- Type D: consisting of three parts.
- Type Z: consisting of two parts.

Features and applications

Hinges GN 129 are used for top-hung doors. The hinges are normally arranged to the side of the door.

In the two-part design, the door can be unhinged with two identically arranged hinges.

The three-part hinges, which generally cannot be unhinged and are mounted inside, are suitable for doors and flaps which, as anti-tamper precaution, must not be dismountable from the outside.



Standard Elements	Main dimensions													
	s	b	d1	d2	h1	h2	l1	l2	l3	l4 max.	l5	l6	m1	m2
GN 129-12-D	12	15	M6	6	39.2	-	10	5	14	9	-	-	27.2	-
GN 129-16-D	16	20	M8	8	49	-	14	8	22	16	-	-	33	-
GN 129-12-Z	12	15	M6	6	-	25.6	-	-	-	-	10	5	-	13.6
GN 129-16-Z	16	20	M8	8	-	32.5	-	-	-	-	14	8	-	16.5

GN 129.2-ST (Zinc-plated)



Hinges

Material

Zinc-plated steel, blue passivated.

Rotation pin and washers

Nickel-plated brass.

Hexagon nuts ISO 4032

Zinc-plated steel, blue passivated.

Serrated washer DIN 6797

For securing screws, Zinc-plated steel, blue passivated.

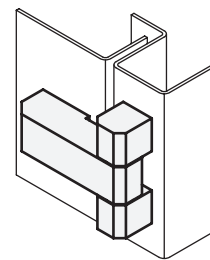
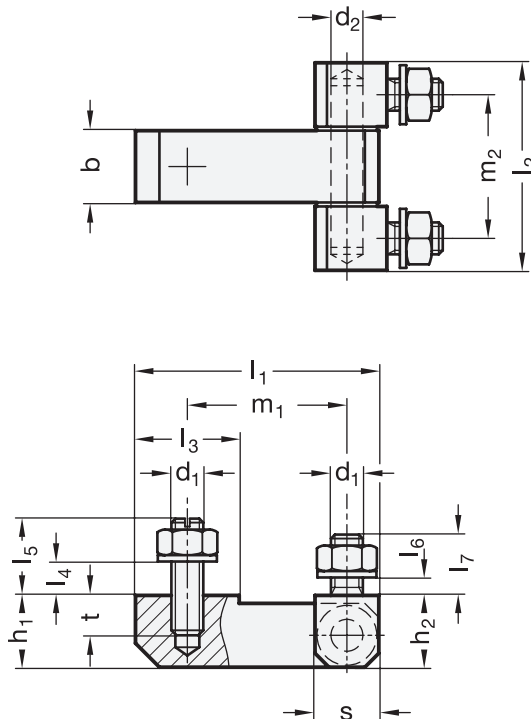
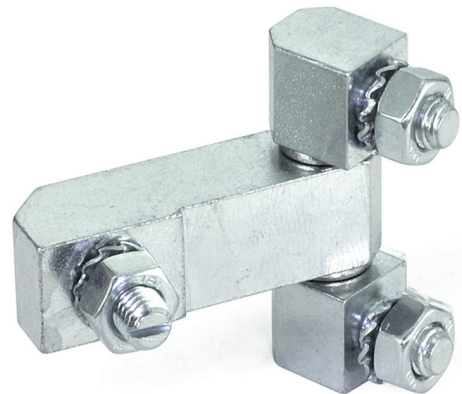
Standard version available

- Type C: Fixing from the back side.

Features and applications

Hinges GN 129.2 are use for doors which are flush with the frame on the outside. Once assembled, they cannot be unhinged.

With the fixing from the inside, they are especially suitable for doors and trap doors which must not be detachable from the outside as an anti-tamper device.



Standard Elements	Main dimensions															
Description	l1	l2	b	d1	d2	h1	h2	l3	l4 max.	l5	l6 max.	l7	m1	m2	s	t
GN 129.2-45-40-C-ST	45	40	13	M6	6	13	13.5	18	6	11	5	10	30	28.2	12	9
GN 129.2-50-51-C-ST	50	51	18	M8	8	18	18	26	8	14	8	14	29	35	16	11
GN 129.2-53-40-C-ST	53	40	13	M6	6	13	13.5	26	6	11	5	10	38	28.2	12	9
GN 129.2-61-51-C-ST	61	51	18	M8	8	18	18	26	6	14	8	14	40	35	16	11

Hinges

Body, Pin, Washer

AISI 316 Stainless Steel A4.

Hexagon nuts ISO 4032

AISI 304 Stainless Steel.

Serrated washer DIN 6797

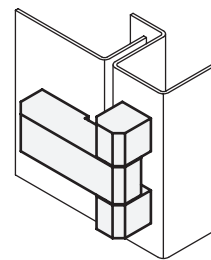
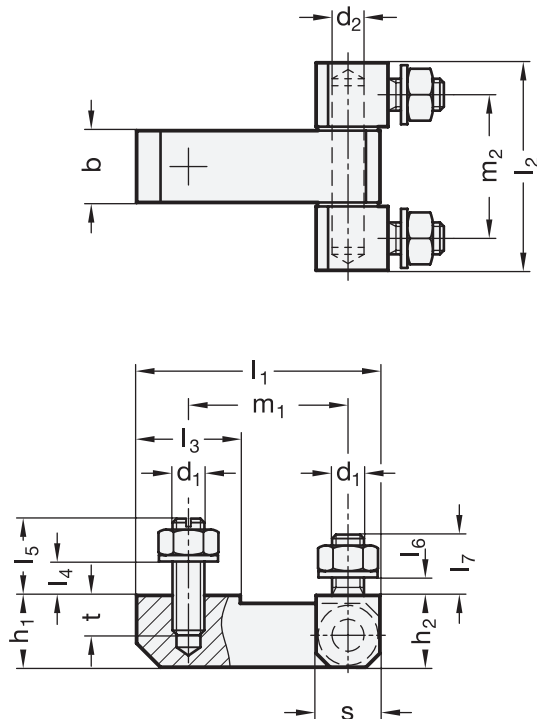
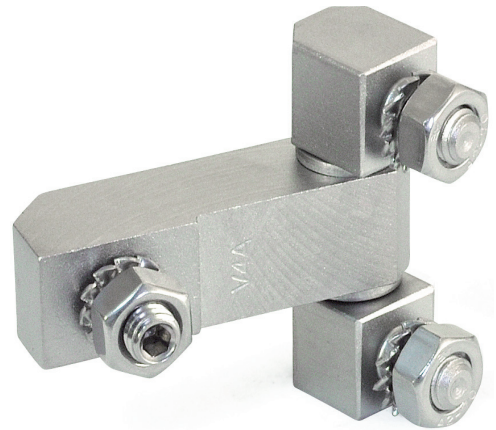
For securing screws, AISI 304 Stainless Steel.

Standard version available

- Type C: Fixing from the back side.

Features and applications

Hinges GN 129.2 are used for doors which are flush with the frame on the outside. Once assembled, they cannot be unhinged. With the fixing from the inside, they are especially suitable for doors and trap doors which must not be detachable from the outside as an anti-tamper device.



Standard Elements	Main dimensions															
Description	l1	l2	b	d1	d2	h1	h2	l3	l4 max.	l5	l6 max.	l7	m1	m2	s	t
GN 129.2-45-40-C-A4	45	40	13	M6	6	13	13.5	18	6	11	5	10	30	28.2	12	9
GN 129.2-50-51-C-A4	50	51	18	M8	8	18	18	26	8	14	8	14	29	35	16	11

Hinges

Body, Pin, Washer

AISI 303 Stainless Steel NI.

Hexagon nuts ISO 4032

AISI 304 Stainless Steel.

Serrated washer DIN 6797

For securing screws, AISI 304 Stainless Steel.

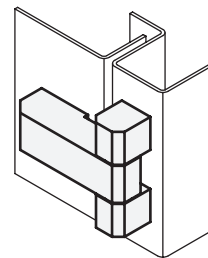
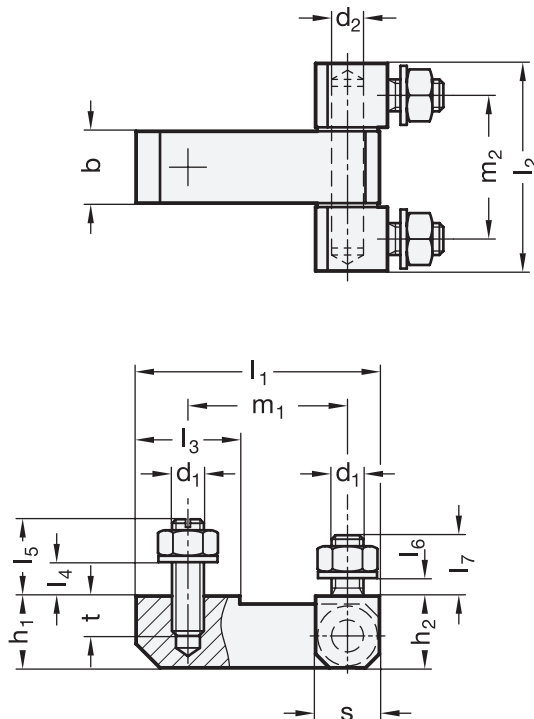
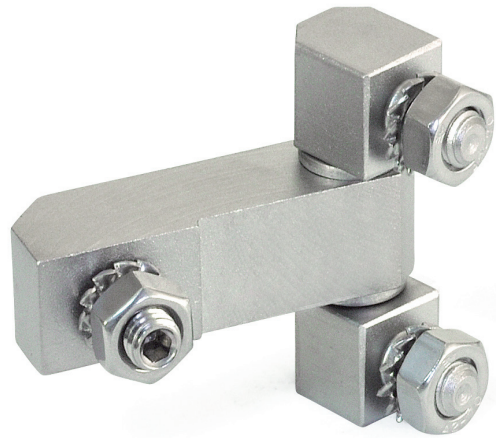
Standard version available

- Type C: Fixing from the back side.

Features and applications

Hinges GN 129.2 are use for doors which are flush with the frame on the outside. Once assembled, they cannot be unhinged.

With the fixing from the inside, they are especially suitable for doors and trap doors which must not be detachable from the outside as an anti-tamper device.



Standard Elements	Main dimensions															
Description	l1	l2	b	d1	d2	h1	h2	l3	l4 max.	l5	l6 max.	l7	m1	m2	s	t
GN 129.2-45-40-C-NI	45	40	13	M6	6	13	13.5	18	6	11	5	10	30	28.2	12	9
GN 129.2-50-51-C-NI	50	51	18	M8	8	18	18	26	8	14	8	14	29	35	16	11

Hinges

Material

Zinc-plated steel, blue passivated.

Pin and Washer

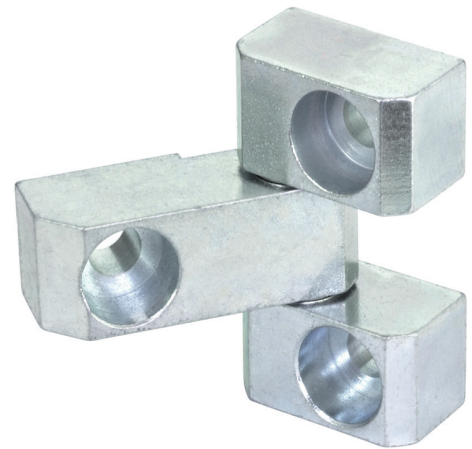
Nickel-plated brass.

Standard version available

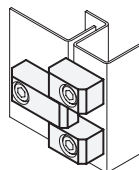
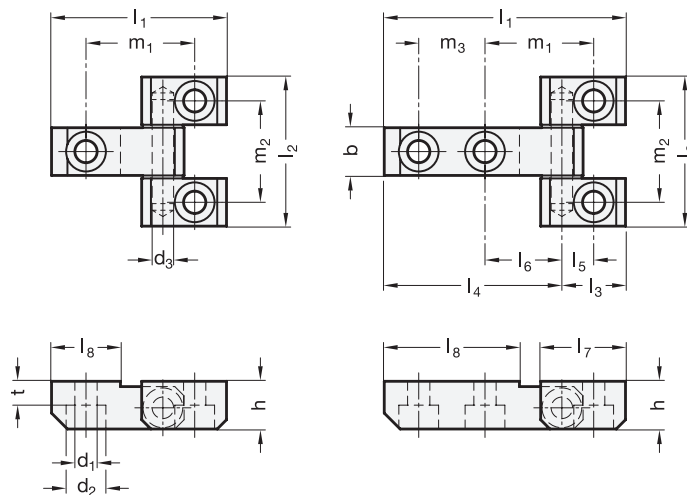
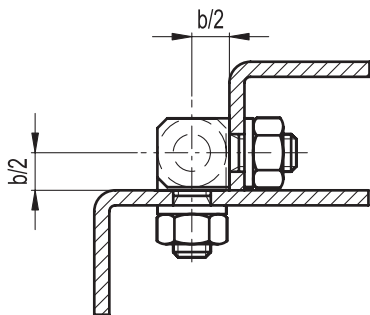
- Type A: Fixing from the front side.

Features and applications

Hinges GN 129.3 are used for doors which are flush with the frame on the outside. Once assembled, they cannot be unhinged. By using cylinder screws DIN 912, they are conveniently fixed using threads on the user side or by using through screws for different clamping thicknesses.



Application example



Standard Elements	Main dimensions																
	l1	l2	b	d1	d2	d3	h	l3	l4	l5	l6	l7	l8	m1	m2	m3	t
GN 129.3-66-55-A-ST	66	55	18	8.4	15	8	18	24	42	12	29	32	26	41	37	-	9
GN 129.3-91-55-A-ST	91	55	18	8.4	15	8	18	24	67	12	29	32	51	41	37	25	9

GN 129.5-A4 (Stainless)



Hinges

Hinge body, pin, washer

AISI 316 Stainless Steel A4.

Hexagon nuts ISO 4032

AISI 304 Stainless Steel

Serrated washer DIN 6797

For securing screws, AISI 304 Stainless Steel.

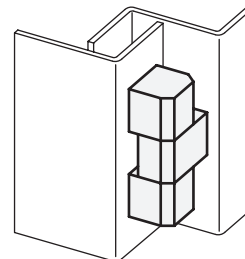
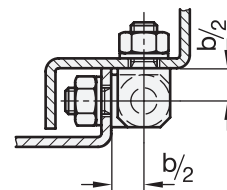
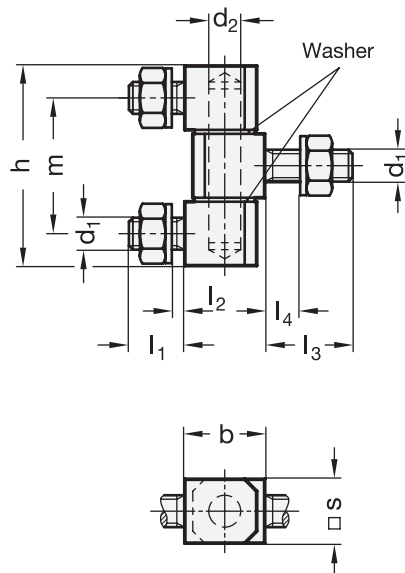
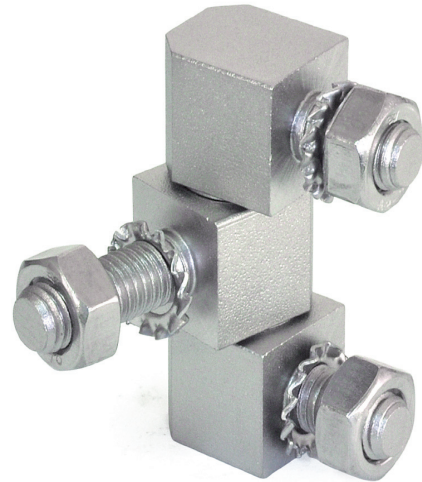
Standard version available

- Type D: consisting of three parts.

Features and applications

Stainless Steel-Hinges GN 129.5 are used for doors which are flush with the frame on the outside. Once assembled, they cannot be unhinged.

With the fixing from the inside, they are especially suitable for doors and trap doors which must not be detachable from the outside as an anti-tamper device



Standard Elements	Main dimensions									
Description	s	b	d1	d2	h	l1	l2	l3	l4 max.	m
GN 129.5-12-D-A4	12	15	M6	6	39.2	10	5	14	9	27.2
GN 129.5-16-D-A4	16	20	M8	8	49	14	8	22	16	33

Hinges

Hinge body, pin, washer

AISI 303 Stainless Steel NI.

Hexagon nuts ISO 4032

AISI 304 Stainless Steel.

Serrated washer DIN 6797

For securing screws, AISI 304 Stainless Steel.

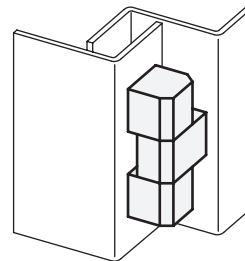
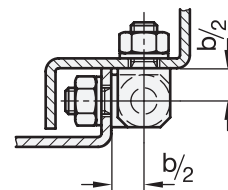
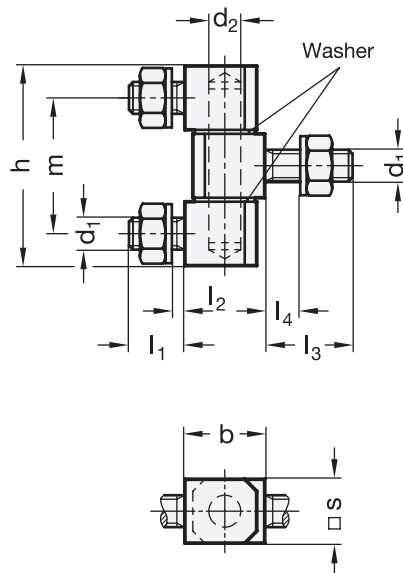
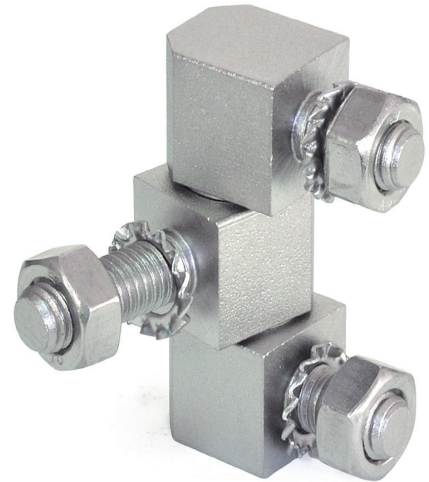
Standard version available

- Type D: consisting of three parts.

Features and applications

Stainless Steel-Hinges GN 129.5 are used for doors which are flush with the frame on the outside. Once assembled, they cannot be unhinged.

With the fixing from the inside, they are especially suitable for doors and trap doors which must not be detachable from the outside as an anti-tamper device



Standard Elements	Main dimensions									
Description	s	b	d1	d2	h	l1	l2	l3	l4 max.	m
GN 129.5-12-D-NI	12	15	M6	6	39.2	10	5	14	9	27.2
GN 129.5-16-D-NI	16	20	M8	8	49	14	8	22	16	33

GN 437-ZD (Zinc-plated)



Hinges

Specification

Type

- Type A: 2x2 bores for countersunk head screw
Zinc die casting ZD
plastic coatedblack, RAL 9005, textured finish SW
silver, RAL 9006, textured finish SR

Friction cone

Plastic (Polyacetal POM)
temperature resistant up to 80 °C
Set screw / Hexagon nut

Steel

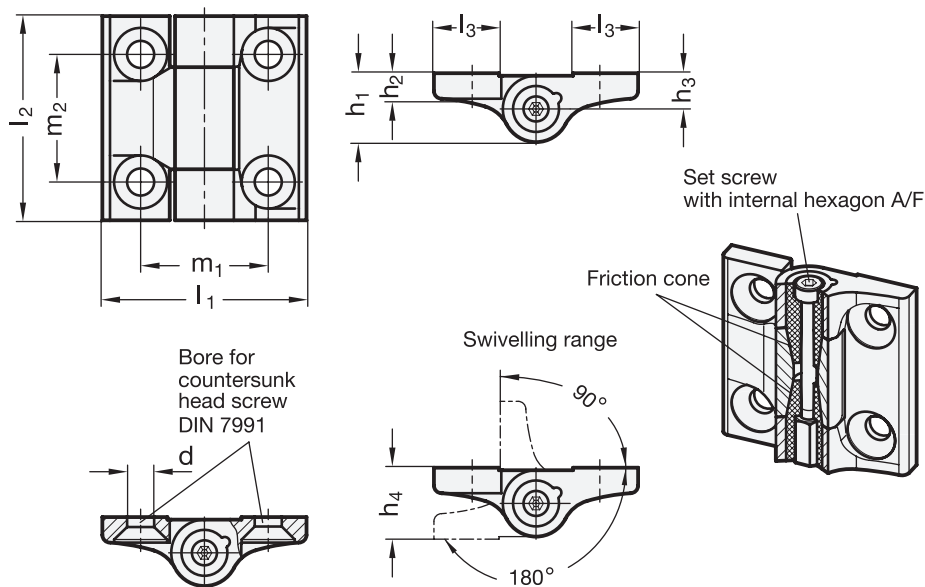
zinc plated, blue passivated

Information

The set screw fitted to the hinges GN 437 allows the mobility of the hinge to be changed, permitting a constant and adjustable braking torque across the whole of the hinged range. The swivel motion of doors and traps is inhibited and the inadvertent motion is prevented.

The friction torque is accomplished by two slim friction cones being braced against each other. The large friction surface and the low-wear synthetic material of the friction cone guarantee a long service life with virtually constant sluggishness.

Another effect of this type of hinge is that there is no play in axial or radial direction of the hinge.



Standard Elements	Main dimensions											max. recommended tightening torque of the set screw in Nm	Friction torque in Nm \approx
	Description	l1	l2	d	h1	h2	h3	h4	l3	m1	m2		
GN 437-ZD-40-40-A-SW	40	40	5.3	13.5	5	7	14	13	25	25	2.5	1	4
GN 437-ZD-50-50-A-SW	50	50	6.5	15.5	6	8	16	16.5	30	30	3	1.4	6
GN 437-ZD-60-60-A-SW	60	60	8.3	18.5	7.5	9.5	19	20	36	36	4	1.7	8
GN 437-ZD-40-40-A-SR	40	40	5.3	13.5	5	7	14	13	25	25	2.5	1	4
GN 437-ZD-50-50-A-SR	50	50	6.5	15.5	6	8	16	16.5	30	30	3	1.4	6
GN 437-ZD-60-60-A-SR	60	60	8.3	18.5	7.5	9.5	19	20	36	36	4	1.7	8



NOTES

ELESA+GANTER er også håndhjul, stjernegreb og fingerskruer, låse og hængsler, fødder, rørklemmer, justérenheder, mekaniske tællere, skueglas, magneter, hjul, propper og filtre.
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