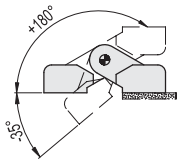
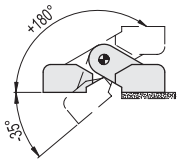
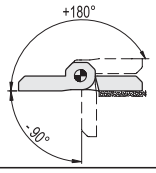
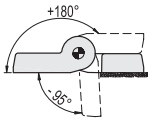
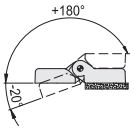
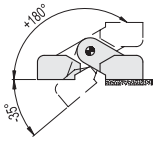
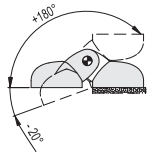
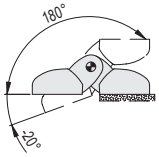
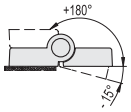
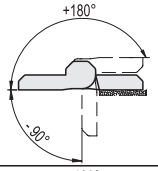
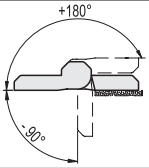
Hinges

Series	Features	Rotation angle	Material
CFA. page 1370	Assembly by means of bosses with threaded hole, pass-through holes for countersunk or cylindrical head screws, threaded studs.		Polyamide based (PA) technopolymer
CFAX. page 1374	Technopolymer rotating pin. Assembly by means of bosses with threaded hole, pass-through holes for countersunk or cylindrical head screws.		Polyamide based (PA) technopolymer
CFM. page 1382	Assembly by means of pass-through holes for countersunk or cylindrical head screws, slots for shortened cylindrical head screws, threaded studs.		Polyamide based (PA) SUPER-technopolymer
CFH. page 1385	Assembly by means of pass-through holes for cylindrical head screws.		Polyamide based (PA) technopolymer.
CFL. page 1381	Assembly by means of pass-through holes for cylindrical head screws.		Polyamide based (PA) technopolymer.
CFA-SL page 1373	Hinges with slotted holes. Assembly by means of pass-through slotted holes for cylindrical head screws.		Polyamide based (PA) technopolymer.
CFT. page 1378	Hinges with screw-covers. Assembly by means of pass-through holes for countersunk, cylindrical or hexagonal head screws.		Polyamide based (PA) technopolymer.
CFTX. page 1379	Assembly by means of pass-through holes for countersunk, cylindrical or hexagonal head screws.		Polyamide based (PA) technopolymer.
CFQ. page 1380	Hinges with screw-covers. Assembly by means of pass-through holes for countersunk, cylindrical or hexagonal head screws.		Acetal based (POM) technopolymer
GN 237 page 1386	Assembly by means of pass-through holes for countersunk head screws, with threaded studs.		Zinc die casting
GN 237 page 1386	Assembly by means of pass-through holes for countersunk head screws, with threaded studs.		Stainless Steel AISI CF-8 Stainless Steel A4

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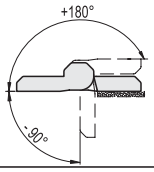
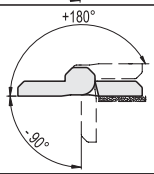
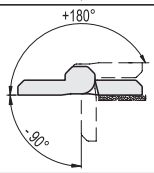
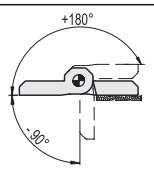
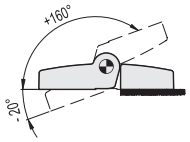
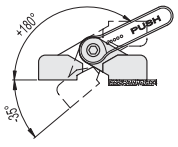
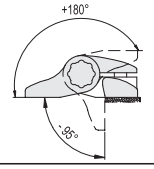
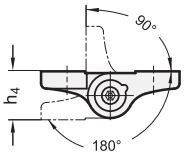
Hinges

Series	Features	Rotation angle	Material
GN 237 page 1386	Assembly by means of pass-through holes for countersunk head screws, with threaded studs.		Aluminium
GN 237 page 1388	Extended hinge wings. Assembly by means of pass-through holes for countersunk head screws, with threaded studs.		Zinc die casting
GN 237 page 1388	Extended hinge wings. Assembly by means of pass-through holes for countersunk head screws, with threaded studs.		INOX Stainless Steel
CMM-AL page 1389	Assembly by means of pass-through holes for countersunk head screws.		Anodised aluminium
GN 238 page 1390	Adjustable hinges with screw-covers. Assembly by means of pass-through holes for countersunk head screws.		Zinc die casting
GN 2370 page 1392	Spacer plates. Designed for hinges GN 237, GN 337, CFMY, CFM and GN 437 to ensure the appropriate height compensation during mounting.	-	INOX Stainless Steel
GN 2372 page 1393	Plates with tapped holes. Designed as accessories for hinges GN 237, GN 337, CFMY and CFM, eliminate the need of nuts and washers for mounting.	-	INOX Stainless Steel
GN 2374 page 1393	Rubber bumper stops. Designed as extras for hinges GN 237, GN 237.1, GN 337 and CFMY.	-	Perbunan® (NBR)
CFA-ERS page 1377	Hinges with friction brake. Assembly by means of pass-through holes for countersunk head screws.		Polyamide based (PA) technopolymer.
CFU. page 1426	Hinges with adjustable friction. Assembly by means of pass-through holes for cylindrical head screws.		CLEAN Acetal based (POM) technopolymer
GN 437 page 1427	Hinges with adjustable friction. Assembly by means of pass-through holes for countersunk head screws.		Zinc die casting

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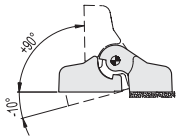
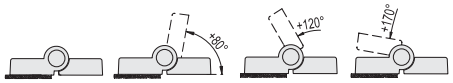
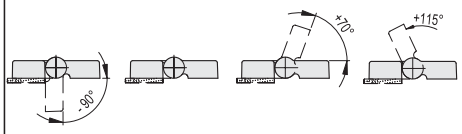
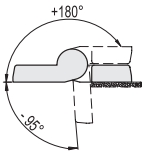
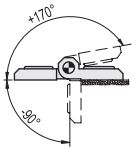
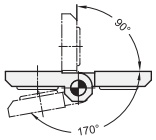
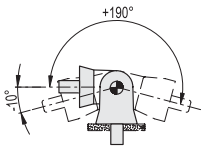
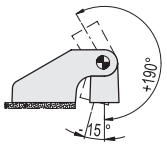
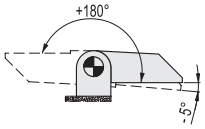
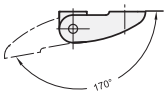
Hinges

Series	Features	Rotation angle	Material
CFA-F page 1376	Hinges with detent position at 90°. Assembly by means of bosses with threaded hole.		Polyamide based (PA) technopolymer.
CFP. page 1424	Detent position hinges with screw-covers. Assembly by means of pass-through holes for countersunk, cylindrical or hexagonal head screws.		Acetal based (POM) technopolymer
CFV. page 1425	Detent position hinges. Assembly by means of pass-through holes for countersunk or hexagonal head screws.		Polyamide based (PA) technopolymer.
CFJ. page 1394	Tamperproof hinges. Assembly by means of bosses with threaded hole, pass-through holes for countersunk, cylindrical head screws, threaded studs.		Polyamide based (PA) technopolymer.
CFMR. page 1384	Spring hinges for automatic return. Assembly by means of pass-through holes for cylindrical head screws.		Polyamide based (PA) SUPER-technopolymer
CFR. page 1396	Hinge with adjusting inserts. Assembly by means of pass-through holes for countersunk head screws.		Polyamide based (PA) SUPER-technopolymer
GN 127 page 1397	Hinges with adjusting inserts. Assembly by means of pass-through holes for countersunk head screws.		Zinc die casting
CFB. page 1412	Hinge for thin doors. Assembly by means of pass-through holes for countersunk head screws.		Polyamide based (PA) technopolymer.
CFD. page 1398	Hinges for thin doors. Assembly by means of bosses with threaded hole, pass-through holes for cylindrical head screws, threaded studs.		Polyamide based (PA) technopolymer.
CMDX-AL page 1400	Hinge for thin doors. Assembly by means of self-tapping screws.		Aluminium
GN 138 page 1401	Hinges for thin doors. Assembly by means of threaded blind bores.		Zinc die casting

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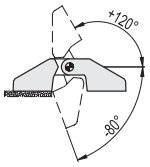
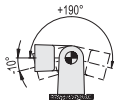
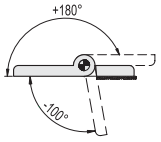
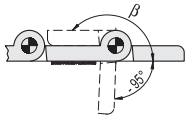
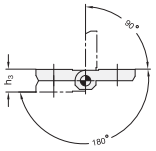
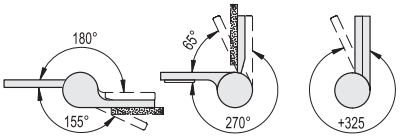
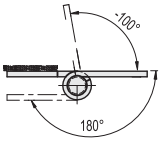
Hinges

Series	Features	Rotation angle	Material
CFE. page 1402	Assembly by means of bosses with threaded hole, pass-through holes for cylindrical head screws, threaded studs.		Polyamide based (PA) technopolymer.
CFF. page 1404	Hinges for thin doors. Assembly by means of bosses with threaded hole, threaded studs.		Polyamide based (PA) technopolymer.
CFG. page 1406	Hinges for profiles. Assembly by means of pass-through holes for countersunk head screws.		Polyamide based (PA) technopolymer.
CFI. page 1408	Double hinges for profiles. Assembly by means of pass-through holes for countersunk head screws.		Polyamide based (PA) technopolymer.
GN 161 page 1410	Hinges for profiles. Assembly by means of pass-through holes for countersunk head screws.		Zinc die casting
CFC. page 1413	Thin hinge. Assembly by means of pass-through holes for self-tapping countersunk head screws.		Polyamide based (PA) technopolymer.
GN 136 page 1395	Thin sheet metal hinges. Assembly by means of pass-through holes for cylindrical or countersunk head screws for welding.		Steel / Stainless Steel
CFN. page 1414	In line detachable hinge. Assembly by means of bosses with threaded hole, threaded studs.	360°	Polyamide based (PA) technopolymer.
CFO. page 1416	Offset detachable hinge, with screw-covers. Assembly by means of pass-through holes for hexagonal, cylindrical head screws or nuts.	360°	Polyamide based (PA) technopolymer.
GN 161.1 page 1418	In line detachable hinges. Assembly by means of threaded holes.	360°	Zinc die casting
GN 161.2 page 1419	Detachable hinges. Assembly by means of threaded holes.	180°	Zin die casting

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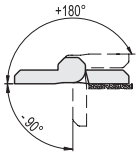
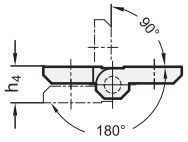
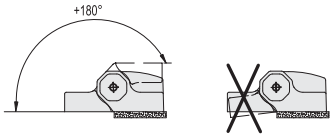
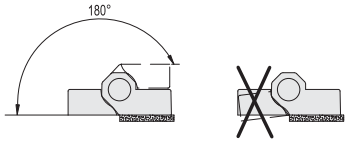
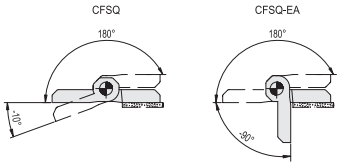
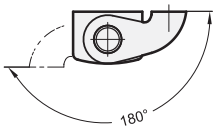
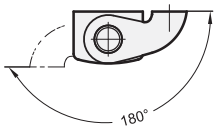
Hinges

Series	Features	Rotation angle	Material
GN 128 page 1420	In line detachable hinges for welding.	360°	Steel
GN 128.2 page 1421	In line detachable hinges for welding.	360°	Stainless Steel / Alluminium
CFMY page 1422	Detachable hinges. Assembly by means of pass-through holes for countersunk head screws.		Polyamide based (PA) SUPER-technopolymer.
GN 337 page 1423	Detachable hinge. Assembly by means of pass-through holes for countersunk head screws.		Zinc die casting / Stainless Steel
CFSW. page 1428	Hinges with built-in safety multiple switch. Assembly by means of pass-through holes for countersunk head screws.		Polyamide based (PA) SUPER-technopolymer
CFMW. page 1434	CFSW. complementary hinges. Assembly by means of pass-through holes for countersunk head screws.		Polyamide based (PA) SUPER-technopolymer
PMW. page 1433	CFSW. and CFMW. assembly kit on profiles.	-	Polyamide based (PA) SUPER-technopolymer
FC-M12x1 page 1428	Extensions with M12x1 connector for CFSQ, CFSW. and EBR-SW.	-	-
CFSQ page 1436	Hinges with built-in safety switch. Assembly by means of pass-through holes for countersunk head screws.		Polyamide based (PA) SUPER-technopolymer
GN 139.1 page 1440	Hinges with bulit-in safety switch. Assembly by means of threaded blind bores.		Zinc die casting
GN 139.2 page 1443	Hinges without safety switch. Assembly by means of threaded blind bores.		Zinc die casting

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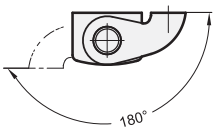
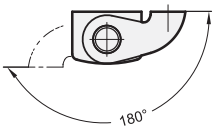
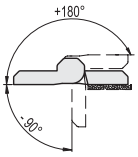
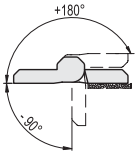
Hinges

Series	Features	Rotation angle	Material
GN 139.3 page 1444	Mounting plates for hinges GN 139.1 and GN 139.2.	-	Steel
GN 139.4 page 1444	Mounting plates for hinges GN 139.1 and GN 139.2.	-	Zinc die casting
GN 139.5 page 1445	Hinges with bulit-in safety switch. Assembly by means of threaded blind bores.		Stainless Steel
GN 139.6 page 1447	Hinges without safety switch. Assembly by means of threaded blind bores.		Stainless Steel
GN 330 page 1448	Cable with connector coupling M12x1 for the GN 139.1 and GN 139.5.	-	-
GN 129 page 1450	Two or three parts hinges. Corner mounted. Screw fastening from the rear.	360°	Steel
GN 129.2 page 1451	Three parts extended hinges. Corner mounted. Screw fastening from the rear.	360°	Steel / Stainless Steel
GN 129.3 page 1452	Three parts extended hinges. Corner mounted. Assembly by means of cylinder screws.		Steel
GN 129.5 page 1453	Three parts hinges. Corner mounted. Screw fastening from the rear.		Stainless Steel

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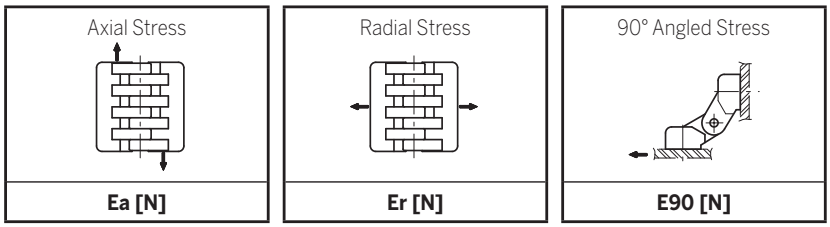
Guidelines for the correct application of plastic hinges

Materials of different type are used in accordance with the different structure and functionality of the hinges:

- High-resilience elastomer based technopolymer.
- Glass-fibre reinforced polyamide based or acetal based technopolymer.
- High-rigidity SUPER-technopolymer.

Resistance tests: two values are supplied for each product code:

- **Maximum working load (Ea, Er, E90)** is the value under which any elastic deformation that may occur is not permanent thus ensuring the hinge functionality.
- **Load at breakage (Ra, Rr, R90)** above which the plastic material can break.



For materials with high rigidity (SUPER-technopolymer) which are not significantly deformed even with loads very close to loads at breakage, only the max limit static load is given (Sa, Sr, S90). Therefore, the technical designer, when calculating the admissible load, will have to use a suitable factor according to the importance and the safety level of the specific situation.

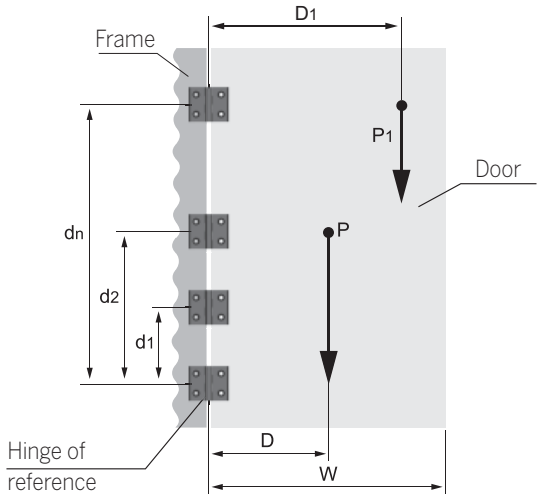
All the values shown in the tables **(Ea, Er, E90 e Sa, Sr, S90)** are the result of tests for the corresponding stresses carried out in our laboratories under controlled temperature and humidity (23° C - 50% R.H.) under given conditions of use and for a limited period of time.
When assessing the safety factor to apply, the technical designer shall take into consideration the actual conditions of use if they are different from the laboratory ones.
In order to help the technical designer to choose the right hinge and check its suitability to the specific application, we suggest asking for test samples and submitting the chosen product to tests in order to check its suitability.

The methods for calculating and interpreting the resistance values described in this catalogue have been updated in accordance with the latest improvements achieved.

Hinges CFN. and CFO. series: **E90** stress is not applicable, due to their geometry and structure.
CFSQ. and CFSW. hinges with built-in safety switch: being safety devices with specific properties, they require a specific argumentation which is illustrated in the product datasheet.

LOAD SUITABILITY CHECK
Hinged door on a vertical axis

P = weight of the door [Newton]
P1 = additional extra load [Newton]
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
dT = sum of the distances in metres of all the hinges from the hinge of reference (dT = d1+d2+...+dn).
In case of only two hinges assembled, dT is simply the distance between them.
The three conditions must be satisfied.



$$\frac{(P+P1)}{N} \leq Ea$$

$$\frac{[(P \cdot D) + (P1 \cdot D1)]}{dT} \leq Er \text{ (closed door)}$$

$$\frac{[(P \cdot D) + (P1 \cdot D1)]}{dT} \leq E90 \text{ (90° open door°)}$$

Suggestions for a correct assembly
The correct assembly of the hinges requires a drilling on the mounting wall with diameter not wider than 0.5 mm of the diameter of the assembling screw in order to leave the least clearance possible. The suggested tightening torque should not be exceeded.

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EXAMPLE

P = 10 Kg = **98 N** (10•9.81) weight of the door
P1 = 2 Kg = **20 N** (2•9.81) weight of the additional extra load applied (for example: handle, lock, machine control panel fitted onto the door)
W = 1 m width of the door
D = W/2 = 1/2 = **0.5 m** distance between the centre of gravity of the door and the hinge axis
D1 = **0.90 m** distance between the hinge axis and the additional extra load application point
N = **2** (evaluating use of two hinges)
dT = **1.3 m** (in this case it is simply the distance between the two hinges)

$$\frac{(P+P1)}{N} = \frac{(98+20)}{2} = 59N \leq Ea$$

$$\frac{[(P \cdot D) + (P1 \cdot D1)]}{d_T} = \frac{[(98 \cdot 0.5) + (20 \cdot 0.9)]}{1.3} = 51N \leq Er$$

$$\frac{[(P \cdot D) + (P1 \cdot D1)]}{dT} = \frac{[(98 \cdot 0.5) + (20 \cdot 0.9)]}{1.3} = 51N \leq E90$$

The suitable hinge can be chosen among those which present Ea, Er, E90 values higher than the calculated ones.
Take CFD., series for example, the suitable hinges are CFD.30 B-M3 and CFD.30 CH-B-M3, CFD.40 B-M4, CFD.40 CH-4-B-M4 and CFD.40 CH-4-p-M4x18, all CFD.48 and CFD.66.

Hinges CFD series satisfying the three conditions indicated in the example above.

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

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RoHS PA +80° -20°

Hinges

Technopolymer

FM design

MATERIAL

High-resilience polyamide based (PA) technopolymer, black colour, matte finish. Grey RAL 7040 (C33) only for CFA-SH execution.

ROTATING PIN

AISI 303 stainless steel.

STANDARD EXECUTIONS

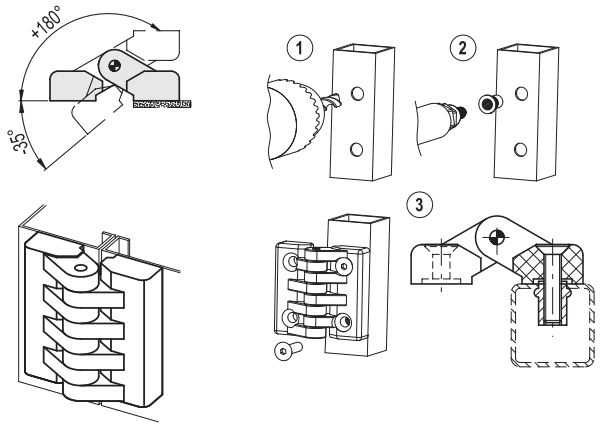
- **CFA-B**: nickel-plated brass bosses with threaded hole.
- **CFA-p**: nickel-plated steel threaded studs.
- **CFA-SH**: pass-through holes for countersunk head screws.
- **CFA-TI-SH**: pass-through holes for countersunk head screws and rear housing to accommodate the head of threaded inserts.
- **CFA-CH**: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

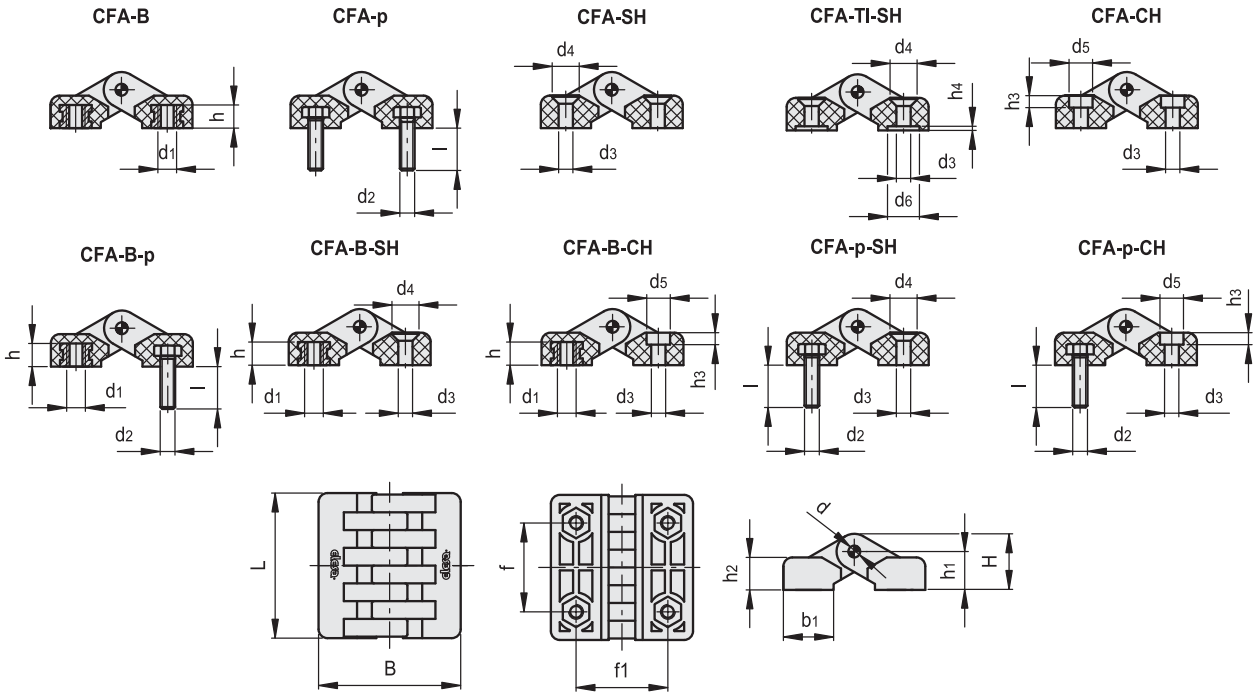
ROTATION ANGLE (APPROXIMATE VALUE)

Max 215° (-35° and +180° being 0° the condition where the two 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 (on page 1368).

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.





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CFA-B

Code	Description	L	B	d1	h	f±0.25	f1 ±0.25	H	h1	h2	b1	d	C# [Nm]	⚖
422391	CFA.40 B-M4	39.5	38.5	M4	6.5	25	25	14	9.5	9.5	14	3	5	23
422111	CFA.49 B-M5	49.5	48	M5	8.5	30	31	19	13	11	17	4	5	39
422113	CFA.49 B-M6	49.5	48	M6	8	30	31	19	13	11	17	4	5	38
422211	CFA.65 B-M6	65	64	M6	9	40	40	23	15	13.5	24	5	5	85
422311	CFA.97 B-M10	96.5	97.5	M10	15	59.5	62.5	35	23	20.5	35	8	5	306

CFA-p

Code	Description	L	B	d2	l	f±0.25	f1 ±0.25	H	h1	h2	b1	d	C# [Nm]	⚖
422121	CFA.49 p-M5x14	49.5	48	M5	14	30	31	19	13	11	17	4	5	45
422221	CFA.65 p-M6x18	65	64	M6	18	40	40	23	15	13.5	24	5	5	90
422321	CFA.97 p-M10x20	96.5	97.5	M10	20	59.5	62.5	35	23	20.5	35	8	5	330

CFA-SH

Code	Description	L	B	f±0.25	f1 ±0.25	H	h1	h2	b1	d	d3	d4	C# [Nm]	⚖
422411	CFA.40 SH-4	39.5	38.5	25	25	14	9.5	9.5	14	3	4.5	8.5	1	14
422131	CFA.49 SH-5	49.5	48	30	31	19	13	11	17	4	5.5	10	2	29
422231	CFA.65 SH-6	65	64	40	40	23	15	13.5	24	5	6.5	12.5	3	62
422331	CFA.97 SH-10	96.5	97.5	59.5	62.5	35	23	20.5	35	8	10.5	20	5	221

CFA-TI-SH

Code	Description	L	B	d6	f±0.25	f1 ±0.25	H	h1	h2	h4	b1	d	d3	d4	d6	C# [Nm]	⚖
422416	CFA.40 TI-SH-4	39.5	38.5	10	25	25	14	9.5	9.5	1.3	14	3	4.5	8.5	-	1	14
422136	CFA.49 TI-SH-5	49.5	48	11	30	31	19	13	11	1.5	17	4	5.5	10	11	2	29
422237	CFA.65 TI-SH-6	65	64	13	40	40	23	15	13.5	1.8	24	5	6.5	12.5	13	3	62

CFA-CH

Code	Description	L	B	f±0.25	f1 ±0.25	H	h1	h2	h3	b1	d	d3	d5	C# [Nm]	⚖
422412	CFA.40 CH-4	39.5	38.5	25	25	14	9.5	9.5	4.5	14	3	4.5	8.5	1	14
422132	CFA.49 CH-5	49.5	48	30	31	19	13	11	5.5	17	4	5.5	10	2	29
422232	CFA.65 CH-6	65	64	40	40	23	15	13.5	6.5	24	5	6.5	11	5	62
422332	CFA.97 CH-10	96.5	97.5	59.5	62.5	35	23	20.5	10.5	35	8	10.5	17	5	221

CFA-B-p

Code	Description	L	B	d1	h	d2	l	f±0.25	f1 ±0.25	H	h1	h2	b1	d	C# [Nm]	⚖
422141	CFA.49 B-M5-p-M5x14	49.5	48	M5	8.5	M5	14	30	31	19	13	11	17	4	5	42
422241	CFA.65 B-M6-p-M6x18	65	64	M6	10.5	M6	18	40	40	23	15	13.5	24	5	5	88
422341	CFA.97 B-M10-p-M10x20	96.5	97.5	M10	15	M10	20	59.5	62.5	35	23	20.5	35	8	5	318

CFA-B-SH

Code	Description	L	B	d1	h	f±0.25	f1 ±0.25	H	h1	h2	b1	d	d3	d4	C [Nm] B#	C [Nm] SH#	⚖
422151	CFA.49 B-M5-SH-5	49.5	48	M5	8.5	30	31	19	13	11	17	4	5.5	10	5	2	34
422251	CFA.65 B-M6-SH-6	65	64	M6	10.5	40	40	23	15	13.5	24	5	6.5	12.5	5	3	74
422351	CFA.97 B-M10-SH-10	96.5	97.5	M10	15	59.5	62.5	35	23	20.5	35	8	10.5	20	5	5	264

CFA-B-CH

Code	Description	L	B	d1	h	f±0.25	f1 ±0.25	H	h1	h2	h3	b1	d	d3	d5	C [Nm] B#	C [Nm] CH#	⚖
422152	CFA.49 B-M5-CH-5	49.5	48	M5	8.5	30	31	19	13	11	5.5	17	4	5.5	10	5	2	34
422252	CFA.65 B-M6-CH-6	65	64	M6	10.5	40	40	23	15	13.5	6.5	24	5	6.5	11	5	5	74
422352	CFA.97 B-M10-CH-10	96.5	97.5	M10	15	59.5	62.5	35	23	20.5	10.5	35	8	10.5	17	5	5	264

Suggested tightening torque for assembly screws.

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CFA-p-SH

Code	Description	L	B	d2	l	f±0.25	f1 ±0.25	H	h1	h2	b1	d	d3	d4	C [Nm] p#	C [Nm] SH#	⚖
422161	CFA.49 p-M5x14-SH-5	49.5	48	M5	14	30	31	19	13	11	17	4	5.5	10	5	2	37
422261	CFA.65 p-M6x18-SH-6	65	64	M6	18	40	40	23	15	13.5	24	5	6.5	12.5	5	3	76
422361	CFA.97 p-M10x20-SH-10	96.5	97.5	M10	20	59.5	62.5	35	23	20.5	35	8	10.5	20	5	5	276

CFA-p-CH

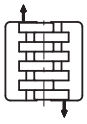
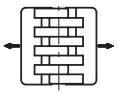
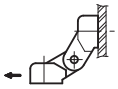
Code	Description	L	B	d2	l	f±0.25	f1 ±0.25	H	h1	h2	h3	b1	d	d3	d5	C [Nm] p#	C [Nm] CH#	⚖
422162	CFA.49 p-M5x14-CH-5	49.5	48	M5	14	30	31	19	13	11	5.5	17	4	5.5	10	5	2	37
422262	CFA.65 p-M6x18-CH-6	65	64	M6	18	40	40	23	15	13.5	6.5	24	5	6.5	11	5	5	76
422362	CFA.97 p-M10x20-CH-10	96.5	97.5	M10	20	59.5	62.5	35	23	20.5	10.5	35	8	10.5	17	5	5	276

CFA-SH-C33

Code	Description	L	B	f±0.25	f1 ±0.25	H	h1	h2	b1	d	d3	d4	C# [Nm]	⚖
422411-C33	CFA.40 SH-4-C33	39.5	38.5	25	25	14	9.5	9.5	14	3	4.5	8.5	1	14
422131-C33	CFA.49 SH-5-C33	49.5	48	30	31	19	13	11	17	4	5.5	10	2	29
422231-C33	CFA.65 SH-6-C33	65	64	40	40	23	15	13.5	24	5	6.5	12.5	3	62
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	221

Suggested tightening torque for assembly screws.

Index C33: hinge RAL 7040 grey colour.

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.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.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.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.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

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CFA-SL

Hinges with slotted holes of adjustment

Technopolymer

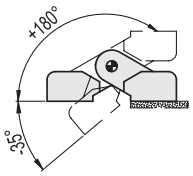
MATERIAL
High-resilience polyamide based (PA) technopolymer, black colour, matte finish.

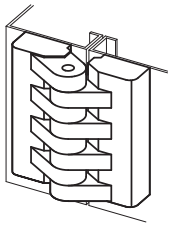
ROTATING PIN
AISI 303 stainless steel.

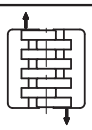
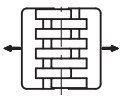
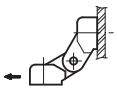
STANDARD EXECUTIONS
Pass-through slotted holes for cylindrical head screws which allow the adjustment during assembly.
- **CFA-SL-H**: for horizontal adjustments.
- **CFA-SL-V**: for vertical adjustments.
- **CFA-SL-HV**: for both horizontal and vertical adjustments.

ROTATION ANGLE (APPROXIMATE VALUE)
Max 215° (-35° 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 (on page 1368).

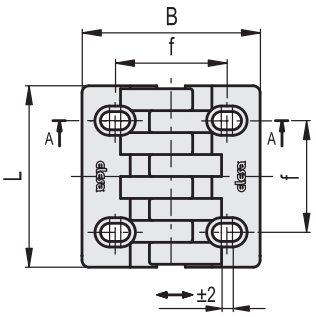
FM design



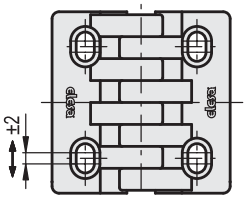


Resistance tests	AXIAL STRESS		RADIAL STRESS		90° ANGLED STRESS	
						
Description	Maximum working load Ea [N]	Load at breakage Ra [N]	Maximum working load Er [N]	Load at breakage Rr [N]	Maximum working load E90 [N]	Load at breakage R90 [N]
CFA.65-SL	510	5280	490	5790	260	3190

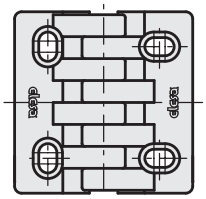
CFA-SL-H



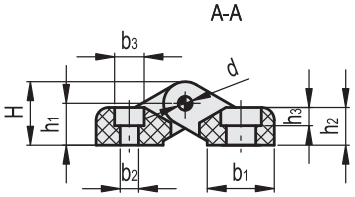
CFA-SL-V



CFA-SL-HV



A-A



Code	Description	L	B	f	H	h1	h2	h3	b1	b2	b3	d	C# [Nm]	⚖
422272	CFA.65-SL-H	65	64	40	23	15	13.5	6.5	24	6.5	10.5	5	3	60
422276	CFA.65-SL-V	65	64	40	23	15	13.5	6.5	24	6.5	10.5	5	3	60
422280	CFA.65-SL-HV	65	64	40	23	15	13.5	6.5	24	6.5	10.5	5	3	60

Suggested tightening torque for assembly screws.

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Hinges

Technopolymer rotating pin

MATERIAL
High-resilience polyamide based (PA) technopolymer, black colour, matte finish.

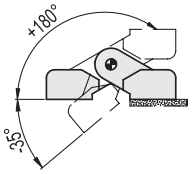
ROTATING PIN
Acetal based (POM) technopolymer, black colour.

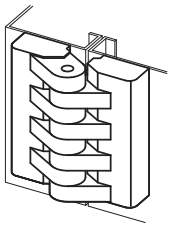
STANDARD EXECUTIONS
- **CFAX-B**: nickel-plated brass bosses with threaded hole.
- **CFAX-SH**: pass-through holes for countersunk head screws.
- **CFAX-CH**: pass-through holes for cylindrical head screws.

ROTATION ANGLE (APPROXIMATE VALUE)
Max 215° (-35° 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 peformance.
To choose the convenient type and the right number of hinges for your application, see the Guidelines (on page 1368).

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.

FM design





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]
CFAX.40 B-M4	200	1850	240	2000	100	560
CFAX.40 SH-4	130	1870	290	1800	280	1370
CFAX.40 CH-4	137	1340	230	1580	180	1200
CFAX.49 B-M5	400	2400	440	2760	170	1320
CFAX.49 SH-5	300	2660	310	2600	320	2240
CFAX.49 CH-5	360	2480	310	2270	250	1460
CFAX.65 B-M6	640	4000	690	4400	220	1400
CFAX.65 SH-6	520	4300	720	4800	240	3760
CFAX.65 CH-6	510	3700	490	5200	260	2870

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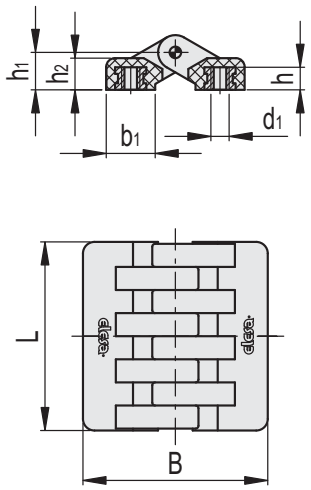
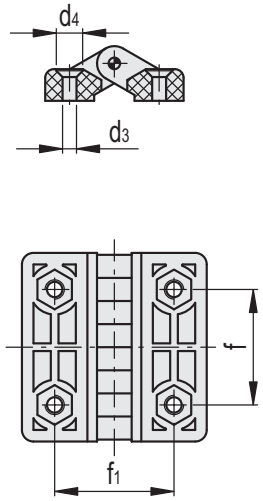
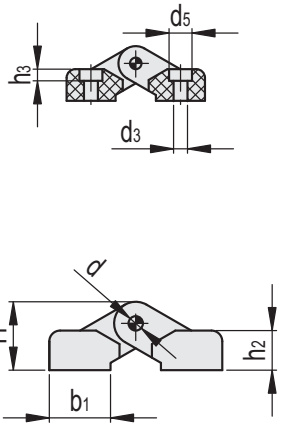
CFAX-B



CFAX-SH



CFAX-CH



CFAX-B

Code	Description	L	B	d1	h	f±0.25	f1 ±0.25	H	h1	h2	b1	d	C# [Nm]	⚖
422421	CFAX.40 B-M4	39.5	38.5	M4	6.5	25	25	14	9.5	9.5	14	3	5	23
422431	CFAX.49 B-M5	49.5	48	M5	8.5	30	31	19	13	11	17	4	5	39
422441	CFAX.65 B-M6	65	64	M6	9	40	40	23	15	13.5	24	5	5	85

CFAX-SH

Code	Description	L	B	f±0.25	f1 ±0.25	H	h1	h2	b1	d	d3	d4	C# [Nm]	⚖
422423	CFAX.40 SH-4	39.5	38.5	25	25	14	9.5	9.5	14	3	4.5	8.5	1	14
422433	CFAX.49 SH-5	49.5	48	30	31	19	13	11	17	4	5.5	10	2	29
422443	CFAX.65 SH-6	65	64	40	40	23	15	13.5	24	5	6.5	12.5	3	62

CFAX-CH

Code	Description	L	B	f±0.25	f1 ±0.25	H	h1	h2	h3	b1	d	d3	d5	C# [Nm]	⚖
422425	CFAX.40 CH-4	39.5	38.5	25	25	14	9.5	9.5	4.5	14	3	4.5	8.5	1	14
422435	CFAX.49 CH-5	49.5	48	30	31	19	13	11	5.5	17	4	5.5	10	2	29
422445	CFAX.65 CH-6	65	64	40	40	23	15	13.5	6.5	24	5	6.5	11	5	62

Suggested tightening torque for assembly screws.

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Hinges with detent position at 90°

Technopolymer

MATERIAL
High-resilience polyamide based (PA) technopolymer, black colour, matte finish.

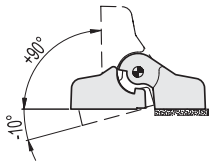
ROTATING PIN
AISI 303 stainless steel.

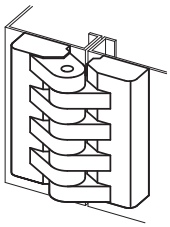
STANDARD EXECUTIONS
- **CFA-F-B**: nickel-plated brass bosses with threaded hole.
- **CFA-F-CH**: pass-through holes for cylindrical head screws.
- **CFA-F-SH**: pass-through holes for countersunk head screws.

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 (APPROXIMATE VALUE)
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 (on page 1368).

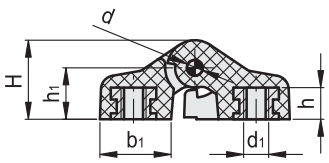
FM design



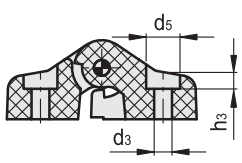


Resistance tests	AXIAL STRESS		RADIAL STRESS		90° ANGLED STRESS	
Description	Maximum working load Ea [N]	Load at breakage Ra [N]	Maximum working load Er [N]	Load at breakage Rr [N]	Maximum working load E90 [N]	Load at breakage R90 [N]
CFA.49-F-B-M6	330	3250	470	3250	110	1540
CFA.49-F-CH-5	380	3600	370	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

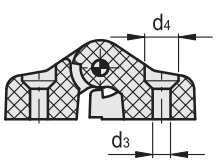
CFA-F-B

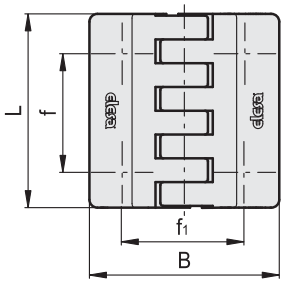


CFA-F-CH



CFA-F-SH





Code	Description	L	B	d1	h	f±0.25	f1 ±0.25	H	h1	h3	b1	d	d3	d4	d5	C# [Nm]	⚖
422114	CFA.49-F-B-M6	49.5	48	M6	8	30.2	31	20	13	-	18	4	-	-	-	5	42
422135	CFA.49-F-CH-5	49.5	48	-	-	30.2	31	20	13	5.5	18	4	5.5	-	10	2	29
422133	CFA.49-F-SH-5	49.5	48	-	-	30.2	31	20	13	-	18	4	5.5	10	-	2	29
422212	CFA.65-F-B-M6	65	63.5	M6	9	40	40	25	16	-	24	5	-	-	-	5	84
422235	CFA.65-F-CH-6	65	63.5	-	-	40	40	25	16	6.5	24	5	6.5	-	11	3	62
422236	CFA.65-F-SH-6	65	63.5	-	-	40	40	25	16	-	24	5	6.5	12.5	-	3	62

Suggested tightening torque for assembly screws.

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Hinges with friction brake

Technopolymer

MATERIAL
High-resilience polyamide based (PA) technopolymer, black colour, matte finish.

ROTATING PIN
Black-oxide steel.

STANDARD EXECUTION
Pass-through holes for countersunk head screws.

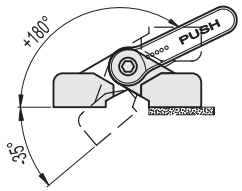
ADJUSTABLE HANDLE FOR CLAMPING
Glass-fibre reinforced polyamide based (PA) technopolymer, black colour, matte finish.
Red writing "PUSH" tampoprinted on the lever body (avoid contact with solvents, alcohol or detergents containing alcohol).
Black-oxide steel retaining screw, AISI 302 stainless steel return spring.
Boss with threaded blind hole in black-oxide steel (CFA.49 and CFA.65) or brass (CFA.97).

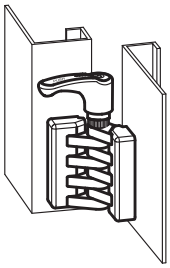
ROTATION ANGLE (APPROXIMATE VALUE)
Max 215° (-35° and +180° being 0° the condition where the two interconnected surfaces are on the same plane).
Do not exceed the rotation angle limit so as not to prejudice the hinge mechanical peformance.

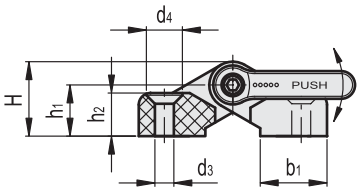
FEATURES AND APPLICATIONS
CFA-ERS hinge with friction brake allows to adjust the door open and close desired positions, and also the door clamping in any position within the rotation angle of 215°.

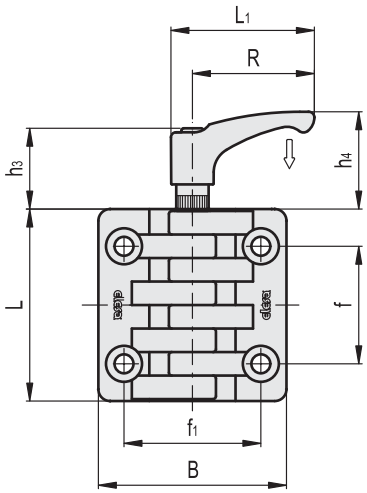
INSTRUCTIONS OF USE
The friction effect is obtained by clamping the two hinged bodies using the special adjustable handle.
To operate the adjusting mechanism, push down the lever (PUSH). By releasing the lever, the spring releases the toothing, thus the handle can return to its starting position and the lever can rotate freely together with the door without obstructing the movement, 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 (on page 1368).
For strength data, see the correspondent products of the series CFA. (see page 1370).

FM design









Code	Description	L	B	L1	f±0.25	f1 ±0.25	H	h1	h2	h3	h4	b1	R	d3	d4	⚖
422134	CFA.49-ERS-SH-5	49.5	48	52	30	31	19	13	11	29	36	17	44	5.5	10	40
422234	CFA.65-ERS-SH-6	65	64	52	40	40	23	15	13.5	29	36	24	44	6.5	11.5	75
422334	CFA.97-ERS-SH-10	96.5	97.5	73.5	59.5	62.5	35	23	20.5	37	48	35	63	10.5	20	240

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Hinges with screw-covers

Technopolymer

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

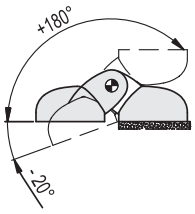
ROTATING PIN
Acetal based (POM) technopolymer, black colour.

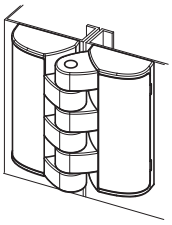
SCREW-COVERS
Polyester based (PBT) technopolymer, black colour, glossy finish, snap-in assembly.

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 (on page 1368).
Screw-covers in different RAL colours.

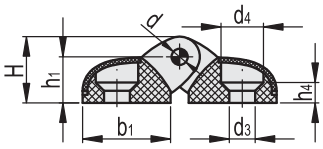
ELESA Original design 2009



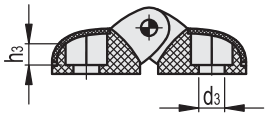


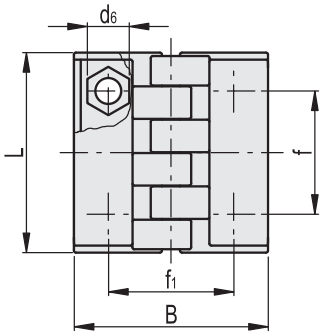
Resistance tests	AXIAL STRESS		RADIAL STRESS		90° ANGLED STRESS	
Description	Maximum working load Ea [N]	Load at breakage Ra [N]	Maximum working load Er [N]	Load at breakage Rr [N]	Maximum working load E90 [N]	Load at breakage R90 [N]
CFT.40	300	1500	300	1500	200	750
CFT.49	500	2900	400	3000	300	1600
CFT.65	800	4500	800	4400	500	2200

CFT-SH



CFT-EH





Code	Description	L	B	f±0.25	f1 ±0.25	H	h1	h3	h4	b1	d	d3	d4	d6	C# [Nm]	⚖
427112-C9	CFT.40 SH-4-C9	39.5	38	25	25	13	9	-	4.5	17.5	3	4.5	8.5	-	2	11
427132-C9	CFT.49 SH-5-C9	49.5	48	30.5	31	16.5	11.5	-	5	21.5	4	5.5	10.5	-	2	24
427152-C9	CFT.65 SH-6-C9	65	63	40	40	21.5	15	-	10	29	5	6.5	12.5	-	2	50
427111-C9	CFT.40 EH-4-C9	39.5	38	25	25	13	9	4	-	17.5	3	4.5	-	7	2	11
427131-C9	CFT.49 EH-5-C9	49.5	48	30.5	31	16.5	11.5	5	-	21.5	4	5.5	-	8.5	2	24
427133-C9	CFT.49 EH-6-C9 *	49.5	48	30.5	31	16.5	11.5	5	-	21.5	4	6.5	-	10	2	24
427151-C9	CFT.65 EH-6-C9	65	63	40	40	21.5	15	7	-	29	5	6.5	-	10	2	50

***** In case of assembly with cylindrical screw, use a shorted head screw.

Suggested tightening torque for assembly screws.

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Hinges

Technopolymer

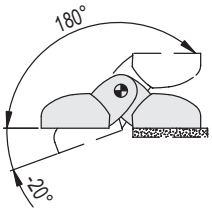
MATERIAL
Glass-fibre reinforced polyamide based (PA) technopolymer, black colour, matte finish.

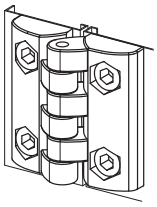
ROTATING PIN
Acetal resin based (POM) technopolymer, black colour.

STANDARD EXECUTIONS
- **CFTX-SH**: pass-through holes for countersunk head screws.
- **CFTX-EH**: hexagonal pass-through holes for cylindrical head screws. This 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 (on page 1368).

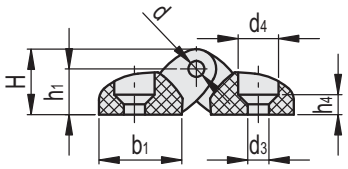
ELESA Original design



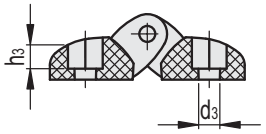


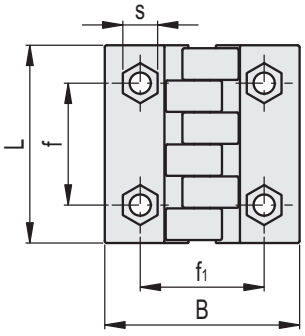
Resistance tests	AXIAL STRESS		RADIAL STRESS		90° ANGLED STRESS	
Description	Maximum working load Ea [N]	Load at breakage Ra [N]	Maximum working load Er [N]	Load at breakage Rr [N]	Maximum working load E90 [N]	Load at breakage R90 [N]
CFTX.40	300	1500	300	1500	200	750
CFTX.49	500	2900	400	3000	300	1600
CFTX.65	800	4500	800	4400	500	2200

CFTX-SH



CFTX-EH





Code	Description	L	B	f±0.25	f1 ±0.25	H	h1	h3	h4	b1	d	d3	d4	s	C# [Nm]	⚖
427211	CFTX.40 SH-4	39.5	38.5	25	25	13	9	-	4.5	16.5	3	4.5	8.5	-	2	9
427231	CFTX.49 SH-5	49.5	49	30.5	31	16.5	11.5	-	5	21	4	5.5	10.5	-	2	22
427251	CFTX.65 SH-6	65	64	40	40	21.5	15	-	9	27.5	5	6.5	12.5	-	2	48
427201	CFTX.40 EH-4	39.5	39.5	25	25	13	9	4.5	-	16.5	3	4.5	-	7	2	9
427221	CFTX.49 EH-5	49.5	49	30.5	31	16.5	11.5	6	-	21	4	5.5	-	8	2	22
427222	CFTX.49 EH-6	49.5	49	30.5	31	16.5	11.5	6	-	21	4	6.5	-	10	2	22
427241	CFTX.65 EH-6	65	64	40	40	21.5	15	7.5	-	27.5	5	6.5	-	10	2	48

Suggested torque for screw assembly.

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Hinges with screw-covers

Technopolymer

MATERIAL
Acetal resin based (POM) technopolymer, black colour, matte finish.

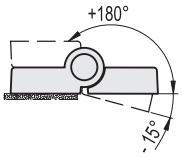
ROTATING PIN
Acetal based (POM) technopolymer, black colour.

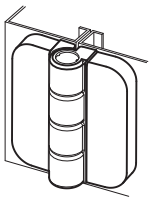
SCREW-COVERS
Polyester based (PBT) technopolymer, black colour, matte finish, snap-in assembly.

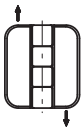
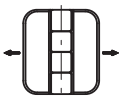
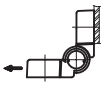
STANDARD EXECUTIONS
- **CFQ-SH**: pass-through holes for countersunk head screws.
- **CFQ-CH**: pass-through holes for cylindrical head screws.
- **CFQ-EH**: pass-through holes for hexagonal head screws.

ROTATION ANGLE (APPROXIMATE VALUE)
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.
To choose the convenient type and the right number of hinges for your application, see the Guidelines (on page 1368).

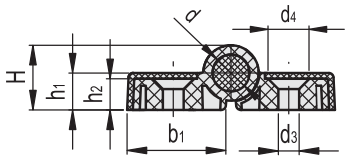
FM design



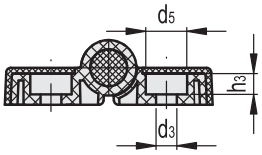


Resistance tests					
AXIAL STRESS		RADIAL STRESS		90° ANGLED STRESS	
					
Maximum working load Ea [N]	Load at breakage Ra [N]	Maximum working load Er [N]	Load at breakage Rr [N]	Maximum working load E90 [N]	Load at breakage R90 [N]
300	1220	350	1970	290	720

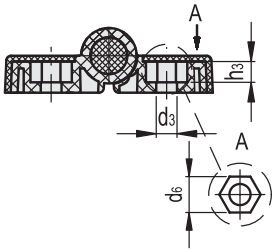
CFQ-SH

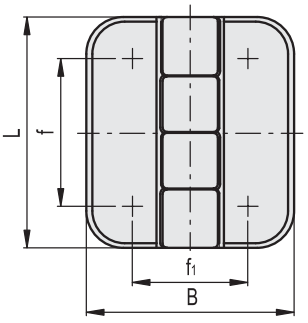


CFQ-CH



CFQ-EH





Code	Description	L	B	f	f1	H	h1	h2	h3	b1	d	d3	d4	d5	d6	C# [Nm]	⚖
426331-C9	CFQ.50 SH-4-C9	50	45	32	25	14	8	7	-	21.5	8	4.5	8.5	-	-	1.5	17
426332-C9	CFQ.50 CH-4-C9	50	45	32	25	14	8	7	4.5	21.5	8	4.5	-	8.5	-	1.5	17
426333-C9	CFQ.50 EH-4-C9	50	45	32	25	14	8	7	4.5	21.5	8	4.5	-	-	7	1.5	17

Suggested tightening torque for assembly screws.

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Hinges

Technopolymer

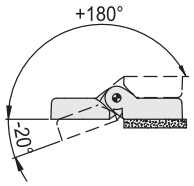
MATERIAL
High-resilience polyamide based (PA) technopolymer, black colour, matte finish.

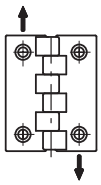
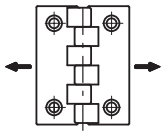
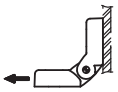
ROTATING PIN
AISI 303 stainless steel.

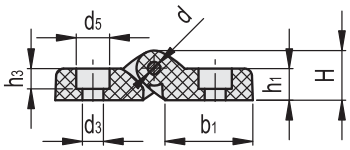
STANDARD EXECUTIONS
Pass-through holes for cylindrical head screws.

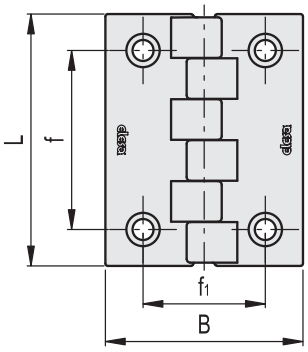
ROTATION ANGLE (APPROXIMATE VALUE)
Max 200° (-20° and +180° being 0° the condition where the interconnected surfaces are on the same plane).
Do not exceed the rotation angle limit so as not to prejudice the hinge mechanical performance.
To choose the convenient type and the right number of hinges for your application, see the Guidelines (on page 1368).

ELESA Original design



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]
CFL.102 CH-6	4000	10000	4500	10000	2000	4000
CFL.102 CH-8	3500	9000	4500	10000	2000	4000





Code	Description	L	B	f±0.25	f1 ±0.25	H	h1	h3	b1	d	d3	d5	C# [Nm]	⚖
425201	CFL.102 CH-6	102	80	72.5	49.5	20.5	13	6.5	35.5	5	6.5	10.5	5	110
425202	CFL.102 CH-8	102	80	72.5	49.5	20.5	13	8	35.5	5	8.5	13.5	5	106

Suggested tightening torque for assembly screws.

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Hinges

SUPER-technopolymer

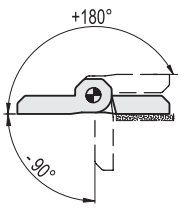
MATERIAL
Glass-fibre reinforced polyamide based (PA) SUPER-technopolymer.

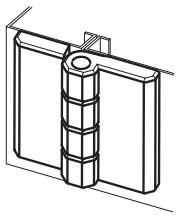
COLOUR
- CFM.: black, matte finish.
- CFM-CLEAN: white similar to RAL 9002, matte finish.

ROTATING 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 (on page 1368).





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]
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.50-63 SH-6	800	1600	1000
CFM.50-76 SH-6	600	1500	1000
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

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

Valid values also for CFM-CLEAN.

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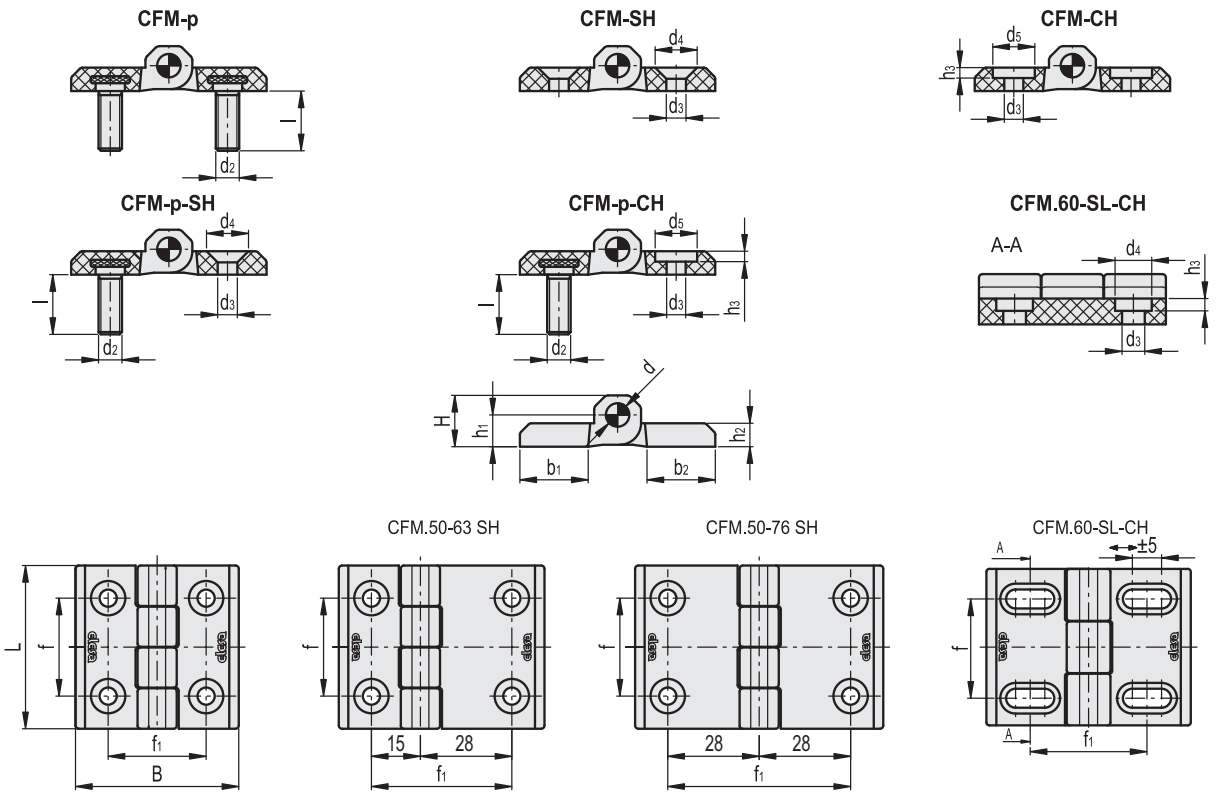

CFM.

Code	Description	L	B	d2	l	f±0.25	f1 ±0.25	H	h1	h2	h3	b1	b2	d	d3	d4	d5	C [Nm] p#	C [Nm] SH/ CH#	⚖
425411	CFM.30-SH-4	30	30	-	-	18	18	7	4	3.5	-	10.5	10.5	2.5	4.5	8.5	-	-	3	11
425412	CFM.30-CH-4	30	30	-	-	18	18	7	4	3.5	1.3	10.5	10.5	2.5	4.5	-	8.5	-	3	11
425521	CFM.40-p-M5x12	40	40	M5	12	25	25	9	5.5	5	-	14	14	4	-	-	-	5	-	26
425511	CFM.40-SH-5	40	40	-	-	25	25	9	5.5	5	-	14	14	4	5.5	10.5	-	-	3	14
425512	CFM.40-CH-5	40	40	-	-	25	25	9	5.5	5	1.7	14	14	4	5.5	-	10.5	-	5	14
425531	CFM.40-p-M5x12-SH-5	40	40	M5	12	25	25	9	5.5	5	-	14	14	4	5.5	10.5	-	5	3	20
425532	CFM.40-p-M5x12-CH-5	40	40	M5	12	25	25	9	5.5	5	1.7	14	14	4	5.5	-	10.5	5	5	20
425621	CFM.50-p-M6x12	50	50	M6	12	30	30	11.5	6.5	6	-	18	18	6	-	-	-	5	-	50
425611	CFM.50-SH-6	50	50	-	-	30	30	11.5	6.5	6	-	18	18	6	6.5	12.5	-	-	5	30
425851	CFM.50-63-SH-6	50	63	-	-	30	43	11.5	6.5	6	-	18	31	6	6.5	12.5	-	-	5	37
425856	CFM.50-76-SH-6	50	76	-	-	30	56	11.5	6.5	6	-	31	31	6	6.5	12.5	-	-	5	42
425612	CFM.50-CH-6	50	50	-	-	30	30	11.5	6.5	6	3	18	18	6	6.5	-	12.5	-	5	30
425631	CFM.50-p-M6x12-SH-6	50	50	M6	12	30	30	11.5	6.5	6	-	18	18	6	6.5	12.5	-	5	5	40
425632	CFM.50-p-M6x12-CH-6	50	50	M6	12	30	30	11.5	6.5	6	3	18	18	6	6.5	-	12.5	5	5	40
425721	CFM.60-p-M8x14.5	60	60	M8	14.5	36	36	15	8.5	8	-	21	21	8	-	-	-	5	-	101
425711	CFM.60-SH-8	60	60	-	-	36	36	15	8.5	8	-	21	21	8	8.5	16.5	-	-	5	57
425712	CFM.60-CH-8	60	60	-	-	36	36	15	8.5	8	4	21	21	8	8.5	-	16.5	-	5	57
425731	CFM.60-p-M8x14.5-SH-8	60	60	M8	14.5	36	36	15	8.5	8	-	21	21	8	8.5	16.5	-	5	5	79
425732	CFM.60-p-M8x14.5-CH-8	60	60	M8	14.5	36	36	15	8.5	8	4	21	21	8	8.5	-	16.5	5	5	79
425812	CFM.60-45-SH-6	60	70	-	-	34	45	14.5	8	7.5	-	26	26	8	6.5	12.5	-	-	5	62
425822	CFM.60-SL-CH-6	60	70	-	-	34	40	14.5	8	7.5	4	26	26	8	6.5	10.5	-	-	4	61

CFM-CLEAN

Code	Description	L	B	f±0.25	f1 ±0.25	H	h1	h2	b1	b2	d	d3	d4	C# [Nm]	⚖
425441	CFM.30-SH-4-CLEAN	30	30	18	18	7	4	3.5	10.5	10.5	2.5	4.5	8.5	3	11
425541	CFM.40-SH-5-CLEAN	40	40	25	25	9	5.5	5	14	14	4	5.5	10.5	3	14
425641	CFM.50-SH-6-CLEAN	50	50	30	30	11.5	6.5	6	18	18	6	6.5	12.5	5	30
425741	CFM.60-SH-8-CLEAN	60	60	36	36	15	8.5	8	21	21	8	8.5	16.5	5	57

Suggested tightening torque for assembly screws.

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Spring hinges

for automatic return, SUPER-technopolymer

MATERIAL
Glass-fibre reinforced polyamide (PA) SUPER-technopolymer body, black colour, matte finish.

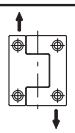
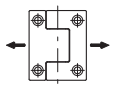
ROTATING PIN
Aluminium.
Pin housing end caps made out of acetal based (POM) technopolymer, black colour.

RETURN SPRING
Stainless steel.

STANDARD EXECUTIONS
Pass-through holes for M6 cylindrical head screws.
- **CFMR-NC-035**: max return torque 0.35Nm (at 180°), holding torque 0.12Nm (at 0°).
- **CFMR-NC-070**: max return torque 0.70Nm (at 180°), holding torque 0.25Nm (at 0°).
- **CFMR-NO-035**: max return torque 0.35Nm (at 0°), holding torque 0.12Nm (at 180°).
- **CFMR-NO-070**: max return torque 0.70Nm (at 0°), holding torque 0.25Nm (at 180°).
- **CFMR-NS**: complementary hinge, no return spring.

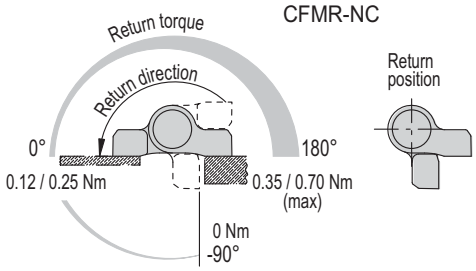
ROTATION ANGLE (APPROXIMATE VALUE)
Max 270° (-90° and +180° being 0° the condition where the two interconnected surfaces are on the same plane).
The hinge can reach -90 ° but this condition must not be used for CFMR-NO execution.
Do not exceed the rotation limit angle so as not to prejudice the correct operation of the return spring.
To choose the convenient type and the right number of hinges for your application, see the Guidelines (on page 1368).

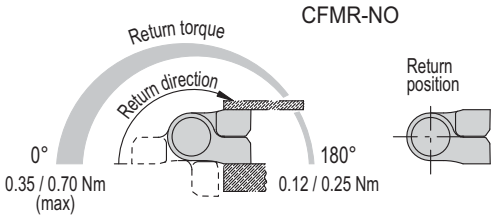
FEATURES AND PERFORMANCES
CFMR hinge is used for the automatic re-closing or re-opening of the door by the return spring.
The torque varies progressively with the opening/closing angle of the hinge.
In special stress resistance tests, the return spring has exceeded 100,000 cycles while keeping the torque values unchanged.

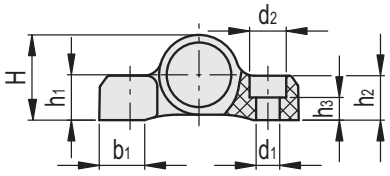
	AXIAL STRESS	RADIAL STRESS	90° ANGLED STRESS
Resistance tests			
	Max limit static load Sa [N]	Max limit static load Sr [N]	Max limit static load S90 [N]
CFMR.	2100	3500	1900

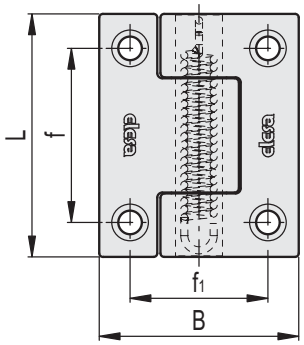
The max static load is the value above which the material may break thus prejudicing the hinge functionality. Obviously, a suitable factor, according to the importance and the safety level of the specific application must be applied to this value.

ELESA Original design









Code	Description	L	B	d1	d2	f	f1	H	h1	h2	h3	b1	C# [Nm]	⚖
425841	CFMR.67-NC-035	67	55	6.5	10	48	38	24	12.5	12.5	6.3	12.5	6	67
425845	CFMR.67-NC-070	67	55	6.5	10	48	38	24	12.5	12.5	6.3	12.5	6	67
425852	CFMR.67-NO-035	67	55	6.5	10	48	38	24	12.5	12.5	6.3	12.5	6	67
425855	CFMR.67-NO-070	67	55	6.5	10	48	38	24	12.5	12.5	6.3	12.5	6	67
425840	CFMR.67-NS	67	55	6.5	10	48	38	24	12.5	12.5	6.3	12.5	6	61

Suggested torque for screw assembly.

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Hinges

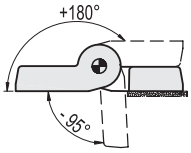
Technopolymer

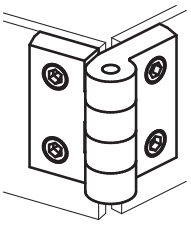
MATERIAL
High-resilience polyamide based (PA) technopolymer, black colour, matte finish.

ROTATING PIN
AISI 303 stainless steel.

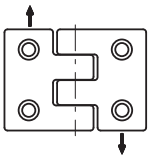
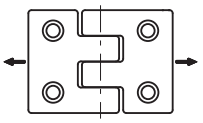
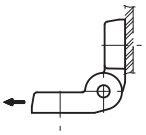
STANDARD EXECUTION
Pass-through holes for cylindrical head screws.

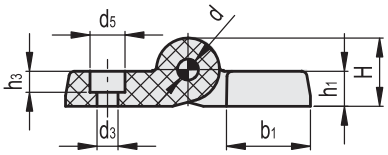
ROTATION ANGLE (APPROXIMATE VALUE)
Max 275° (-95° and +180° being 0° the condition where the two interconnected surfaces are on the same plane).
Do not exceed the rotation angle limit so as not to prejudice the hinge mechanical performance.
To choose the convenient type and the right number of hinges for your application, see the Guidelines (on page 1368).

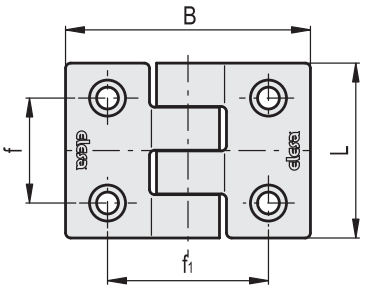




FM design

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]
CFH.50	200	2440	380	3830	190	1950





Code	Description	L	B	f±0.25	f1 ±0.25	H	h1	h3	b1	d	d3	d5	C# [Nm]	⚖
424021	CFH.50 CH-6	50	69.5	30	45.5	19.5	10	6.5	24	6	6.5	10	3	46
424031	CFH.50 CH-8	50	69.5	30	45.5	19.5	10	4.5	24	6	8.5	13	3	42

Suggested tightening torque for assembly screws.

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Hinges

Zinc die casting / Stainless Steel / Aluminium

SPECIFICATION

Types

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

Version in Zinc die casting

Zinc die casting **ZD**

plastic coated

- black, RAL 9005, textured finish **SW**
- silver, RAL 9006, textured finish **SR**
- chrome-plated **CR**

Pin, Stainless Steel AISI 303

Threaded stud (Type C), Stainless Steel AISI 316

Version in Stainless Steel

- AISI CF-8 **NI**
- German Material No. 1.4408 **A4**
- matt shot-blasted **GS**

Pin, Stainless Steel AISI 316Ti

Threaded stud (Type C), Stainless Steel AISI 316 for ZD and AL Stainless Steel AISI CF-8, casted "in one piece"

Version in Aluminium

Aluminium **AL**
anodized, natural colour **EL**

Pin, Stainless Steel AISI 316Ti

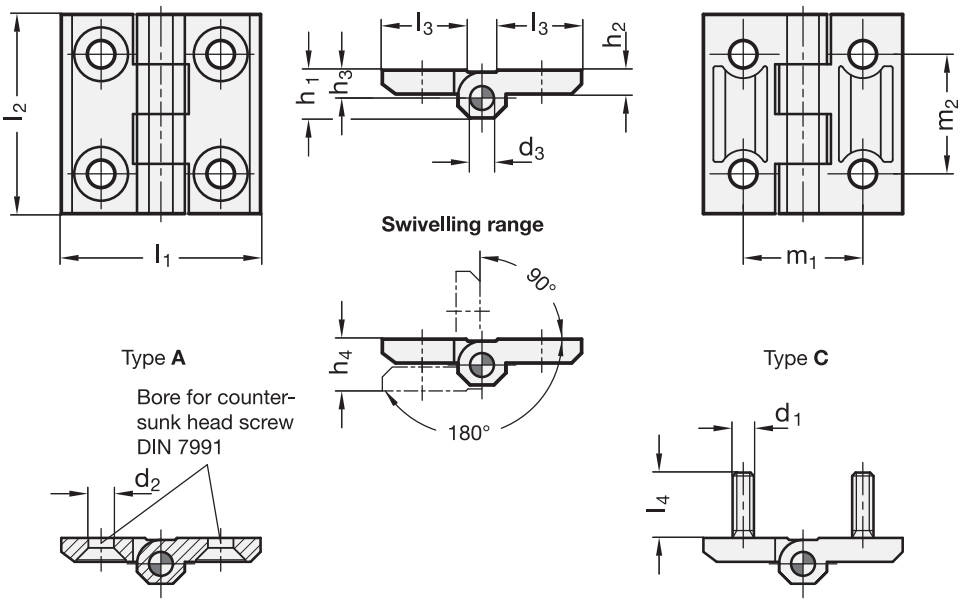
Threaded stud (Type C), Stainless Steel AISI 316

INFORMATION

GN 237 hinges are characterized by their compact and stable design. The various material and surface choices in combination with two mounting types enable very specific applications.

TECHNICAL INFORMATION

- Stainless Steel characteristics (see page A26)
- Load rating information of hinges (see page A40)
- List of hinges types (see page 1362)



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GN 237-ZD

Description	l1	l2	d1	d2	d3	h1	h2	h3	h4 +0.5	l3	l4	m1	m2	⚖
GN 237-ZD-30-30-A-SW	30	30	-	4.3	3	7.5	4	4.5	8.5	10.7	-	18	18	19
GN 237-ZD-30-30-A-SR	30	30	-	4.3	3	7.5	4	4.5	8.5	10.7	-	18	18	19
GN 237-ZD-30-30-A-CR	30	30	-	4.3	3	7.5	4	4.5	8.5	10.7	-	18	18	19
GN 237-ZD-40-40-A-SW	40	40	-	5.3	4	9	5	5.5	11	14	-	25	25	42
GN 237-ZD-40-40-A-SR	40	40	-	5.3	4	9	5	5.5	11	14	-	25	25	45
GN 237-ZD-40-40-A-CR	40	40	-	5.3	4	9	5	5.5	11	14	-	25	25	50
GN 237-ZD-40-40-C-SW	40	40	M 5	-	4	9	5	5.5	11	14	12	25	25	59
GN 237-ZD-40-40-C-SR	40	40	M 5	-	4	9	5	5.5	11	14	12	25	25	59
GN 237-ZD-40-40-C-CR	40	40	M 5	-	4	9	5	5.5	11	14	12	25	25	69
GN 237-ZD-50-50-A-SW	50	50	-	6.4	6	11.5	6	6.5	13	18.5	-	30	30	87
GN 237-ZD-50-50-A-SR	50	50	-	6.4	6	11.5	6	6.5	13	18.5	-	30	30	89
GN 237-ZD-50-50-A-CR	50	50	-	6.4	6	11.5	6	6.5	13	18.5	-	30	30	87
GN 237-ZD-50-50-C-SW	50	50	M 6	-	6	11.5	6	6.5	13	18.5	12	30	30	102
GN 237-ZD-50-50-C-SR	50	50	M 6	-	6	11.5	6	6.5	13	18.5	12	30	30	103
GN 237-ZD-50-50-C-CR	50	50	M 6	-	6	11.5	6	6.5	13	18.5	12	30	30	102
GN 237-ZD-60-60-A-SW	60	60	-	8.3	8	15	8	8.5	17	21.5	-	36	36	160
GN 237-ZD-60-60-A-SR	60	60	-	8.3	8	15	8	8.5	17	21.5	-	36	36	160
GN 237-ZD-60-60-A-CR	60	60	-	8.3	8	15	8	8.5	17	21.5	-	36	36	164
GN 237-ZD-60-60-C-SW	60	60	M 8	-	8	15	8	8.5	17	21.5	14	36	36	200
GN 237-ZD-60-60-C-SR	60	60	M 8	-	8	15	8	8.5	17	21.5	14	36	36	190
GN 237-ZD-60-60-C-CR	60	60	M 8	-	8	15	8	8.5	17	21.5	14	36	36	194

GN 237-AL

Description	l1	l2	d2	d3	h1	h2	h3	h4 +0.5	l3	m1	m2	⚖
GN 237-AL-30-30-A-EL	30	30	4.3	3	7.5	4	4.5	8.5	10.7	18	18	11
GN 237-AL-40-40-A-EL	40	40	5.3	4	9	5	5.5	11	14	25	25	24
GN 237-AL-50-50-A-EL	50	50	6.4	6	11.5	6	6.5	13	18.5	30	30	48
GN 237-AL-60-60-A-EL	60	60	8.3	8	15	8	8.5	17	21.5	36	36	90

GN 237-A4

STAINLESS STEEL

Description	l1	l2	d2	d3	h1	h2	h3	h4 +0.5	l3	m1	m2	⚖
GN 237-A4-30-30-A-GS	30	30	4.3	3	7.5	4	4.5	8.5	10.7	18	18	23
GN 237-A4-40-40-A-GS	40	40	5.3	4	9	5	5.5	11	16	25	25	57
GN 237-A4-50-50-A-GS	50	50	6.4	6	11.5	6	6.5	13	21	30	30	110
GN 237-A4-60-60-A-GS	60	60	8.3	8	15	8	8.5	17	26	36	36	200

GN 237-NI

STAINLESS STEEL

Description	l1	l2	d1	d2	d3	h1	h2	h3	h4 +0.5	l3	l4	m1	m2	⚖
GN 237-NI-30-30-A-GS	30	30	-	4.3	3	7.5	4	4.5	8.5	10.7	-	18	18	25
GN 237-NI-40-40-A-GS	40	40	-	5.3	4	9	5	5.5	11	16	-	25	25	57
GN 237-NI-40-40-C-GS	40	40	M 5	-	4	9	5	5.5	11	16	11	25	25	69
GN 237-NI-50-50-A-GS	50	50	-	6.4	6	11.5	6	6.5	13	21	-	30	30	100
GN 237-NI-50-50-C-GS	50	50	M 6	-	6	11.5	6	6.5	13	21	13	30	30	128
GN 237-NI-60-60-A-GS	60	60	-	8.3	8	15	8	8.5	17	26	-	36	36	180
GN 237-NI-60-60-C-GS	60	60	M 8	-	8	15	8	8.5	17	26	17	36	36	200

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Hinges

Zinc die casting / Stainless Steel, extended, horizontally elongated

SPECIFICATION

Types

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

Version in Zinc die casting ZD

Zinc die casting
plastic coated
black, RAL 9005, textured finish **SW**
silver, RAL 9006, textured finish **SR**

Pin, Stainless Steel AISI 303 (A2)

Threaded stud (type C)
Stainless Steel AISI 316

Version in Stainless Steel (only type A) NI

- AISI CF-8
- matt shot-blasted **GS**

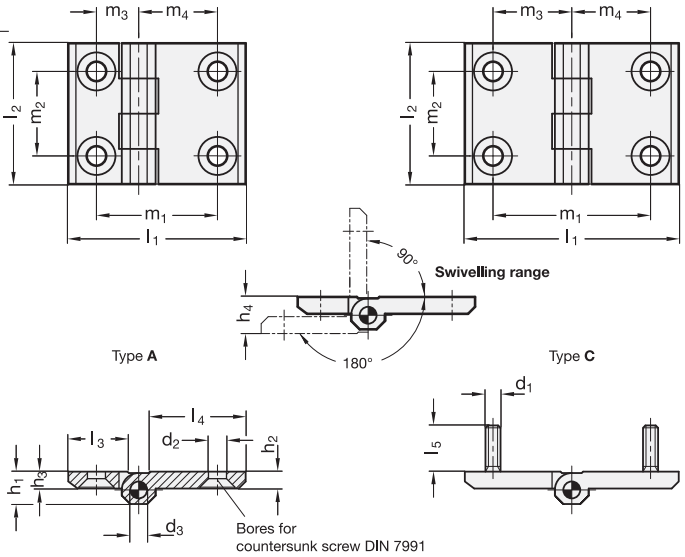
Pin, Stainless Steel AISI 316Ti (A4)

INFORMATION

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.

TECHNICAL INFORMATION

- Stainless Steel characteristics (see page A26)
- Load rating information of hinges (see page A40)
- List of hinges types (see page 1362)



*Complete with colour index of the Hinges (SW or SR)

SW RAL9005 SR RAL9006

GN 237-ZD

Description	l1	l2	d1	d2	d3	h1	h2	h3	h4 +0.5	l3	l4	l5	m1	m2	m3	m4	⚖
GN 237-ZD-63-50-A-*	63	50	-	6.3	6	11.5	6	6.5	13	18.5	31.5	-	43	30	15	28	100
GN 237-ZD-63-50-C-*	63	50	M 6	-	6	11.5	6	6.5	13	18.5	-	12	43	30	15	28	119
GN 237-ZD-76-50-A-*	76	50	-	6.3	6	11.5	6	6.5	13	31.5	31.5	-	56	30	28	28	130
GN 237-ZD-76-50-C-*	76	50	M 6	-	6	11.5	6	6.5	13	31.5	-	12	56	30	28	28	145
GN 237-ZD-90-60-A-*	90	60	-	8.4	8	15	8	8.5	17	21.5	51.5	-	63	36	18	45	240
GN 237-ZD-90-60-C-*	90	60	M 8	-	8	15	8	8.5	17	21.5	-	14	63	36	18	45	277
GN 237-ZD-120-60-A-*	120	60	-	8.4	8	15	8	8.5	17	51.5	51.5	-	90	36	45	45	313
GN 237-ZD-120-60-C-*	120	60	M 8	-	8	15	8	8.5	17	51.5	-	14	90	36	45	45	364

GN 237-NI

STAINLESS STEEL

Description	l1	l2	d2	d3	h1	h2	h3	h4 +0.5	l3	l4	m1	m2	m3	m4	⚖
GN 237-NI-63-50-A-GS	63	50	6.3	6	11.5	6	6.5	13	18.5	31.5	43	30	15	28	132
GN 237-NI-76-50-A-GS	76	50	6.3	6	11.5	6	6.5	13	31.5	31.5	56	30	28	28	154
GN 237-NI-90-60-A-GS	90	60	8.4	8	15	8	8.5	17	21.5	51.5	63	36	18	45	287
GN 237-NI-120-60-A-GS	120	60	8.4	8	15	8	8.5	17	51.5	51.5	90	36	45	45	369

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CMM-AL

Hinges

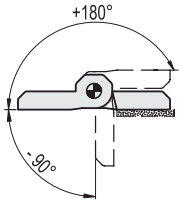
Aluminium

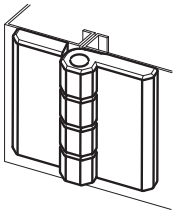
MATERIAL
Anodised aluminium, natural colour, matte finish.

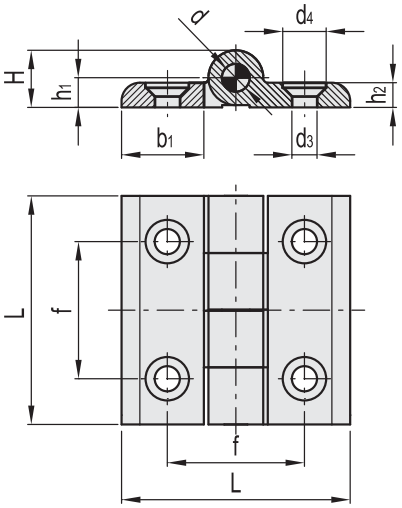
ROTATING PIN
AISI 304 stainless steel.

STANDARD EXECUTION
Pass-through holes for countersunk head screws.

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.







Code	Description	L	d3	d4	f	H	h1	h2	b1	d	⚖
428649	CMM-AL-40-SH-5	40	5.5	10.5	25	10.5	5.5	5	17	4	25
428651	CMM-AL-50-SH-5	50	5.5	10.5	30	12.5	6.5	6	22	6	50
428652	CMM-AL-50-SH-6	50	6.5	12.5	30	12.5	6.5	6	22	6	47
428655	CMM-AL-60-SH-8	60	8.5	16.5	36	16.5	8.5	8	25	8	94

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GN 238

Hinges

adjustable / with cover / zinc die casting

SPECIFICATION

Types

- Type **BJ**: adjustable on both sides
- Type **EJ**: one-sided adjustable
- Type **NJ**: not adjustable

Zinc die casting
plastic coated
black, RAL 9005, textured finish **SW**
silver, RAL 9006, textured finish **SR**

Adjusting disc
Steel, hardened

Cover
Plastic

- black grey for type SW
- light grey for type SR

Pin
Stainless Steel AISI 303

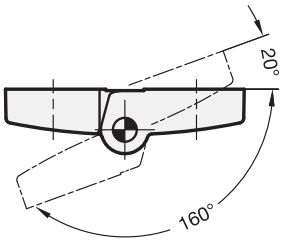
INFORMATION

The adjustable hinges GN 238 allow the technically and visually perfect positioning and alignment of a door in its frame.
The steel adjusting disc has a cutting ring in its underside which cuts into the radial fins of the zinc die-cast wings when the countersunk screw is tightened, virtually creating a form-lock that prevents adjusting the hinge after mounting.
The covers conceal the fixing elements and lend the hinge an attractive optical appearance.

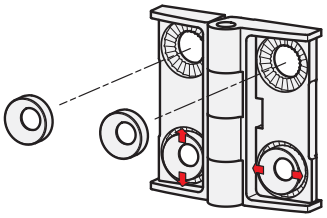
TECHNICAL INFORMATION

- Stainless Steel characteristics (see page A26)
- Load rating information of hinges (see page A40)
- List of hinges types (see page 1362)

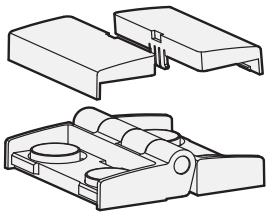
Swivelling range



Function (Type BJ)



Assembly instruction



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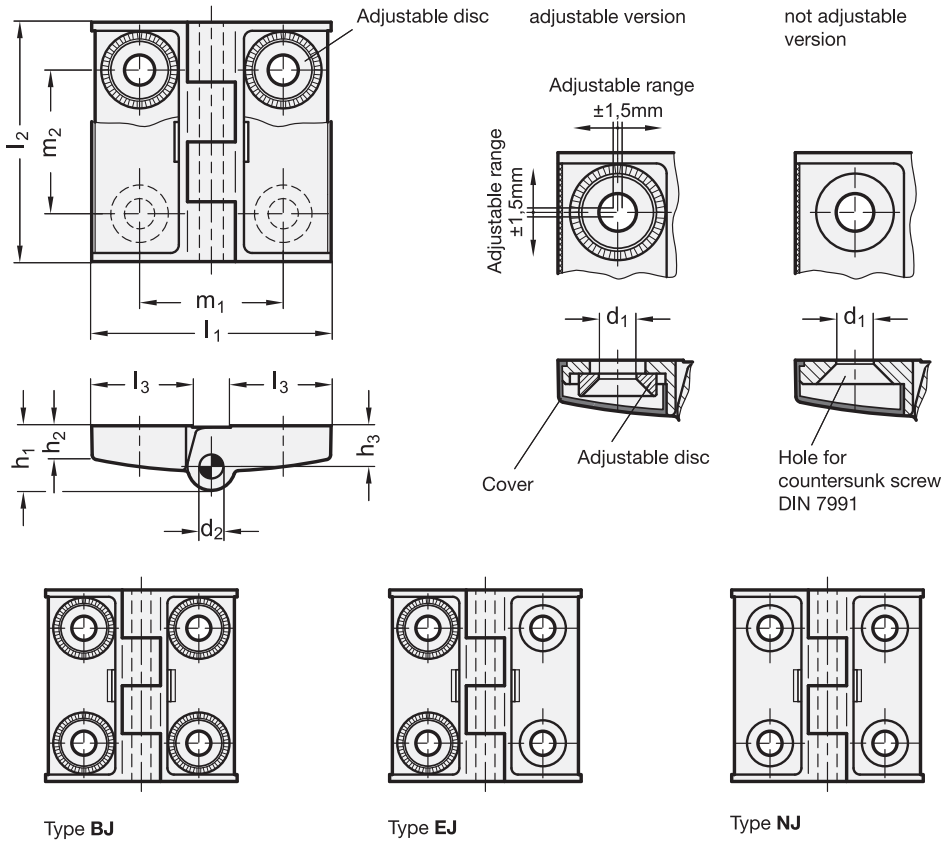

Type **BJ** Type **EJ** Type **NJ**

GN 238

Description	l1	l2	d1	d2	h1 ≈	h2 ≈	h3	l3	m1	m2	⚖
GN 238-42-42-BJ-SR	42	42	5.3	4	11	6.5	7.5	17	25	25	52
GN 238-42-42-BJ-SW	42	42	5.3	4	11	6.5	7.5	17	25	25	60
GN 238-50-50-BJ-SR	50	50	6.3	5	13.5	7	8.5	21	30	30	91
GN 238-50-50-BJ-SW	50	50	6.3	5	13.5	7	8.5	21	30	30	91
GN 238-60-60-BJ-SR	60	60	6.3	6	16.5	8.5	11	26	36	36	160
GN 238-60-60-BJ-SW	60	60	6.3	6	16.5	8.5	11	26	36	36	160
GN 238-42-42-EJ-SR	42	42	5.3	4	11	6.5	7.5	17	25	25	54
GN 238-42-42-EJ-SW	42	42	5.3	4	11	6.5	7.5	17	25	25	54
GN 238-50-50-EJ-SR	50	50	6.3	5	13.5	7	8.5	21	30	30	92
GN 238-50-50-EJ-SW	50	50	6.3	5	13.5	7	8.5	21	30	30	90
GN 238-60-60-EJ-SR	60	60	6.3	6	16.5	8.5	11	26	36	36	160
GN 238-60-60-EJ-SW	60	60	6.3	6	16.5	8.5	11	26	36	36	172
GN 238-42-42-NJ-SR	42	42	5.3	4	11	6.5	7.5	17	25	25	54
GN 238-42-42-NJ-SW	42	42	5.3	4	11	6.5	7.5	17	25	25	54
GN 238-50-50-NJ-SR	50	50	6.3	5	13.5	7	8.5	21	30	30	88
GN 238-50-50-NJ-SW	50	50	6.3	5	13.5	7	8.5	21	30	30	91
GN 238-60-60-NJ-SR	60	60	6.3	6	16.5	8.5	11	26	36	36	170
GN 238-60-60-NJ-SW	60	60	6.3	6	16.5	8.5	11	26	36	36	172

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Stainless Steel-Spacer plates

for hinges GN 237, GN 337, CFMY CFM and GN 437

SPECIFICATION

Stainless Steel **NI**

- AISI 304
- plain, matt tumbled finish **MT**

INFORMATION

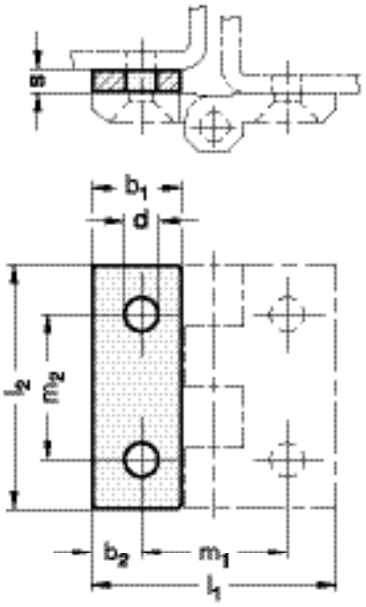
Chamfers, different sheet metal thicknesses, or seals could mean that the mounting surfaces of hinges to frame and door are not on the same level.
Stainless Steel-Spacer plates GN 2370, as accessories of the GN 237 (see page 1386) and 337 (see page 1423) family of hinges, are designed dimensionally so that they ensure the appropriate height compensation during mounting by shimming, either individually or in combination.

TECHNICAL INFORMATION

- Stainless Steel characteristics (see page A26)

The table includes a number of potential compensation heights which can be accomplished by shimming with one or two spacer plates.

Height compensation	Plate thickness s
1	1
1.5	1.5
2	1 + 1
2.5	1 + 1.5
3	3
4	3 + 1
4.5	3 + 1.5
5	5
6	3 + 3
6.5	5 + 1.5
8	5 + 3
10	5 + 5



GN 2370 **STAINLESS STEEL**

Description	l2	s	b1	b2	d	l1	m1	m2	⚖
GN 2370-NI-30-1-MT	30	1	10.8	6	4	30	18	18	2
GN 2370-NI-30-1.5-MT	30	1.5	10.8	6	4	30	18	18	3
GN 2370-NI-30-3-MT	30	3	10.8	6	4	30	18	18	6
GN 2370-NI-30-5-MT	30	5	10.8	6	4	30	18	18	10
GN 2370-NI-40-1-MT	40	1	14.5	7.5	5	40	25	25	4
GN 2370-NI-40-1.5-MT	40	1.5	14.5	7.5	5	40	25	25	6
GN 2370-NI-40-3-MT	40	3	14.5	7.5	5	40	25	25	12
GN 2370-NI-40-5-MT	40	5	14.5	7.5	5	40	25	25	20
GN 2370-NI-50-1-MT	50	1	18	10	6	50	30	30	6
GN 2370-NI-50-1.5-MT	50	1.5	18	10	6	50	30	30	10
GN 2370-NI-50-3-MT	50	3	18	10	6	50	30	30	19
GN 2370-NI-50-5-MT	50	5	18	10	6	50	30	30	31
GN 2370-NI-60-1-MT	60	1	21.5	12.5	8	60	36	36	9
GN 2370-NI-60-1.5-MT	60	1.5	21.5	12.5	8	60	36	36	14
GN 2370-NI-60-3-MT	60	3	21.5	12.5	8	60	36	36	27
GN 2370-NI-60-5-MT	60	5	21.5	12.5	8	60	36	36	44

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GN 2372

Stainless Steel-Plates with tapped holes

for hinges GN 237, GN 337, CFMY and CFM

SPECIFICATION

Stainless Steel **NI**

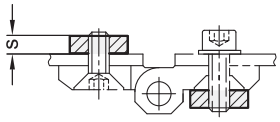
- AISI 304
- plain, matt tumbled finish **MT**

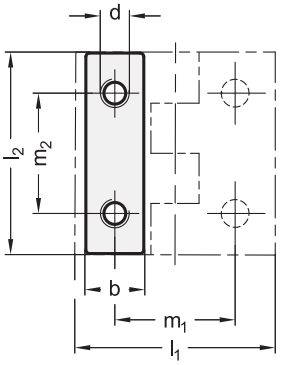
INFORMATION

Dimensionally, Stainless Steel plates GN 2372 are designed as accessories for the GN 237 (see page 1386) family of hinges, eliminating the need for nuts and washers for mounting.
Meanwhile, there is no need for the time-consuming pre-assembly of washer and nuts or for counterholding during tightening. Mounted to the top side of the hinge, the plate offers entirely new assembly options.

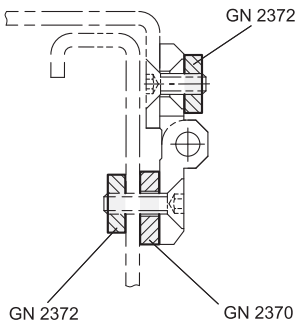
TECHNICAL INFORMATION

- Stainless Steel characteristics (see page A26)





Application example



GN 2372 **STAINLESS STEEL**

Description	l2	b	d	l1	m1	m2	s	⚖
GN 2372-NI-30-MT	30	9	M 4	30	18	18	3	5
GN 2372-NI-40-MT	40	12	M 5	40	25	25	3	10
GN 2372-NI-50-MT	50	15	M 6	50	30	30	4	21
GN 2372-NI-60-MT	60	18	M 8	60	36	36	4	29

GN 2374

Rubber bumper stops

for hinges GN 237, GN 237.1, GN 337 and CFMY.

SPECIFICATION

Steel precision casting **ST**
zinc plated, plastic coated
black, RAL 9005, textured finish **SW**

Elastomer element

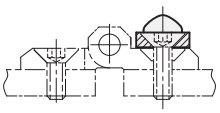
- Perbunan® (NBR)
- temperature resistant up to 120 °C
- Hardness 85±5 Shore A

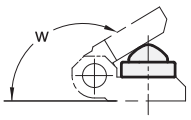
INFORMATION

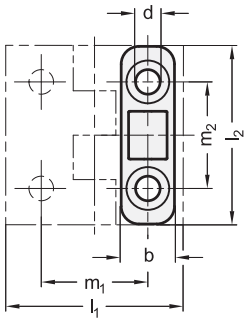
In terms of their dimensions, limit stops GN 2374 have been designed as extras for the GN 237 (see page 1386) and GN 337 (see page 1423) family of hinges. They can also be bolt-attached when mounting the hinge, with an elastomer element limiting the angle of rotation to the value w.
They are mainly used for lighter traps and gates, or when the limit stop is not expected to be exposed to dynamic loads.

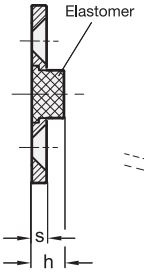
TECHNICAL INFORMATION

- Elastomer characteristics (see page A32)

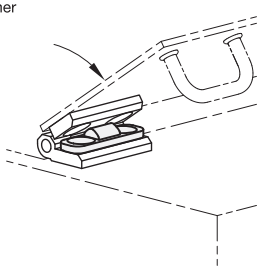








Application example



GN 2374

Description	l2	w	b	d	h	l1	m1	m2	s	⚖
GN 2374-ST-40-150-SW	40	150	12	5.3	7.8	40	25	25	3.5	10
GN 2374-ST-50-150-SW	50	150	15	6.3	9.2	50	30	30	4	12
GN 2374-ST-60-150-SW	60	150	18	8.3	10.9	60	36	36	5	21

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Tamperproof hinges

Technopolymer

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

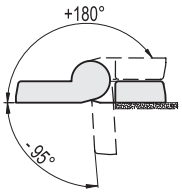
ROTATING PIN
AISI 303 stainless steel, totally moulded in the hinge body.

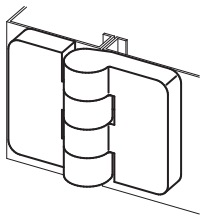
STANDARD EXECUTIONS
- **CFJ-B**: nickel-plated brass bosses with threaded hole.
- **CFJ-p**: nickel-plated steel threaded studs.
- **CFJ-EH**: pass-through holes for hexagonal head screws.
- **CFJ-B-SH**: nickel-plated brass bosses with threaded hole and pass-through holes for countersunk head screws.

FEATURES AND APPLICATIONS
The pin is totally moulded in the hinge body (ELESA patent) thus it cannot be extracted, preventing any hinge tampering.
This charatcteristic makes the hinge particularly suitable for mounting on structures or equipments requiring protection against intrusion.

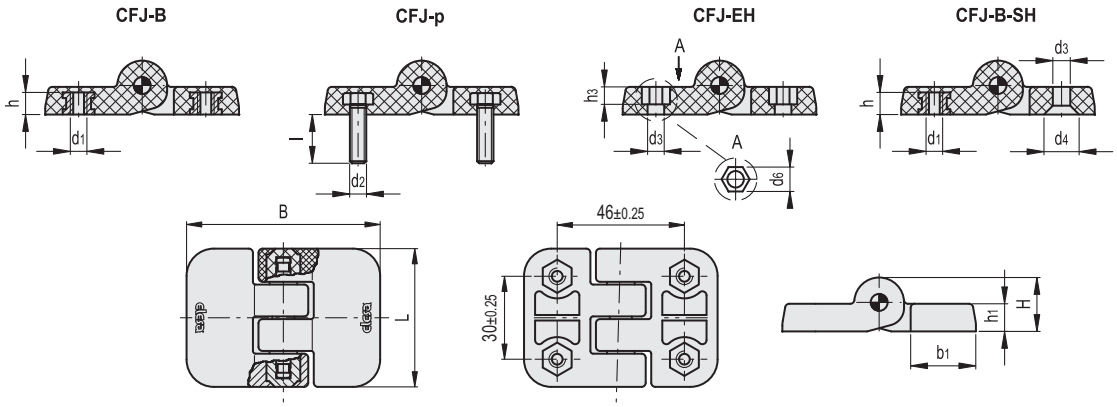
ROTATION ANGLE (APPROXIMATE VALUE)
Max 275° (-95° and +180° being 0° the condition where the two interconnected surfaces are on the same plane).
Do not exceed the rotation angle limit so as not to prejudice the hinge mechanical performance.
To choose the convenient type and the right number of hinges for your application, see the Guidelines (on page 1368).

FM design





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]
CFJ.50 B-M6	730	4170	2220	4450	710	2250
CFJ.50 p-M6x17	1420	4410	2180	4350	510	2220
CFJ.50 EH-6	1740	3470	1490	2970	460	2120
CFJ.50-R B-M6-SH-6	1480	2780	1310	2490	390	1900



Code	Description	L	B	d1	h	d2	l	H	h1	h3	b1	d3	d4	d6	C [Nm] B#	C [Nm] p#	C [Nm] EH/ SH#	⚖
424611	CFJ.50 B-M6	50	70	M6	8	-	-	19.5	10	-	23.5	-	-	-	5	-	-	66
424621	CFJ.50 p-M6x17	50	70	-	-	M6	17	19.5	10	-	23.5	-	-	-	-	4	-	71
424631	CFJ.50 EH-6	50	70	-	-	-	-	19.5	10	5.5	23.5	6.5	-	10	-	-	5	46
424671	CFJ.50-R B-M6-SH-6	50	70	M6	8	-	-	19.5	10	-	23.5	6.5	12.5	-	5	-	3	54

Suggested tightening torque for assembly screws.

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GN 136

Sheet metal hinges

Stainless Steel / Steel, square or vertically elongated

SPECIFICATION

Types

- Type **A**: without bores, for welding (only in Stainless Steel NI)
- Type **B**: with bores for cylinder head screws / lens head screws
- Type **C**: with bore, for countersunk screws

Version in Steel

Steel **ST**

- only types B and C
- zinc plated, blue passivated

Pin
Stainless Steel AISI 304
riveted

Version in Stainless Steel

Stainless Steel AISI 304 **NI**
all types

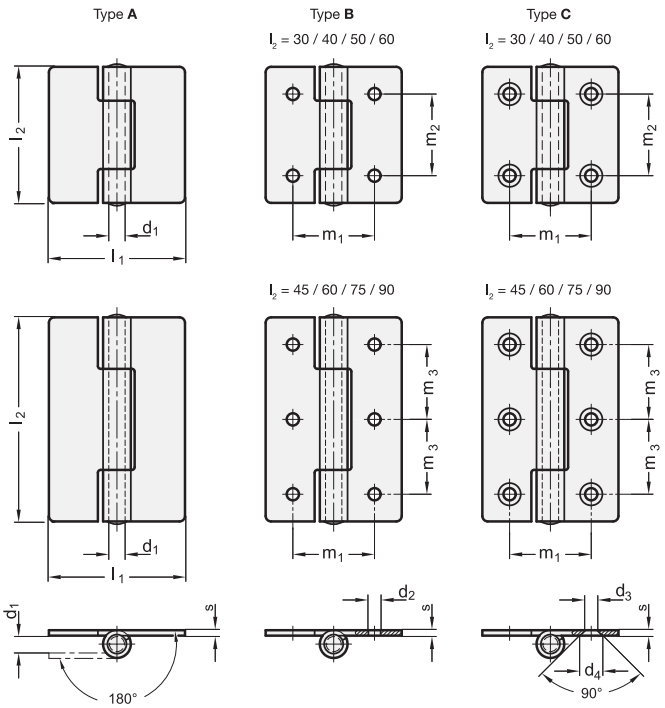
Pin
Stainless Steel AISI 304
riveted

INFORMATION

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

TECHNICAL INFORMATION

- Stainless Steel characteristics (see page A26)
- Load rating information of hinges (see page A40)
- List of hinge types (see page 1362)



*Complete with type index of the Sheet metal hinges
B C

*Complete with type index of the Sheet metal hinges
A B C

GN 136

Description	l1	l2	d1	d2	d3	d4	m1	m2	m3	s	⚖
GN 136-ST-30-30-*	30	30	3	3.2	4	6.4	18	18	-	1.5	22
GN 136-ST-30-45-*	30	45	3	3.2	4	6.4	18	-	16.5	1.5	22
GN 136-ST-40-40-*	40	40	4	4.2	5	8.3	25	25	-	2	33
GN 136-ST-40-60-*	40	60	4	4.2	5	8.3	25	-	22.5	2	33
GN 136-ST-50-50-*	50	50	6	5.2	5	8.3	30	30	-	2	60
GN 136-ST-50-75-*	50	75	6	5.2	5	8.3	30	-	27.5	2	60
GN 136-ST-60-60-*	60	60	6	5.2	5	8.3	36	36	-	2	82
GN 136-ST-60-90-*	60	90	6	5.2	5	8.3	36	-	33	2	82

GN 136-NI **STAINLESS STEEL**

Description	l1	l2	d1	d2	d3	d4	m1	m2	m3	s	⚖
GN 136-NI-30-30-*	30	30	3	3.2	4	6.4	18	18	-	1.5	34
GN 136-NI-30-45-*	30	45	3	3.2	4	6.4	18	-	16.5	1.5	34
GN 136-NI-40-40-*	40	40	4	4.2	5	8.3	25	25	-	2	34
GN 136-NI-40-60-*	40	60	4	4.2	5	8.3	25	-	22.5	2	34
GN 136-NI-50-50-*	50	50	6	5.2	5	8.3	30	30	-	2	62
GN 136-NI-50-75-*	50	75	6	5.2	5	8.3	30	-	27.5	2	62
GN 136-NI-60-60-*	60	60	6	5.2	5	8.3	36	36	-	2	83
GN 136-NI-60-90-*	60	90	6	5.2	5	8.3	36	-	33	2	83

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Hinge with adjusting inserts

SUPER-technopolymer

MATERIAL
Glass-fibre reinforced polyamide based (PA) SUPER-technopolymer, black colour, matte finish.

ADJUSTING INSERTS
Technopolymer, black colour.

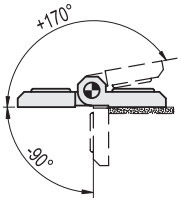
ROTATING PIN
AISI 303 stainless steel.

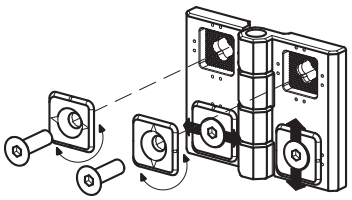
STANDARD EXECUTION
Pass-through holes for M6 countersunk-head screws.

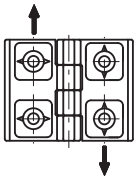
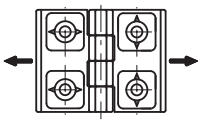
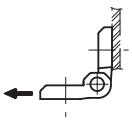
FEATURES AND APPLICATIONS
The adjusting inserts (ELESA patent) are designed to compensate limited misalignments of doors. Vertical and horizontal adjustments are both possible by simply setting the orientation of the inserts, thus obtaining the perfect alignment between the door and the frame.
The knurling on the hinge body and on the rear of the inserts keep the precise position during the assembly of the hinge.
This hinge can be used to compensate vertical, horizontal or both misalignments.

ROTATION ANGLE (APPROXIMATE VALUE)
Max 260° (-90° and +170° 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 (on page 1368).

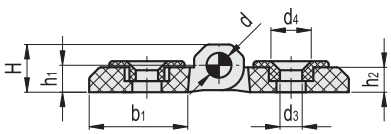
FM design

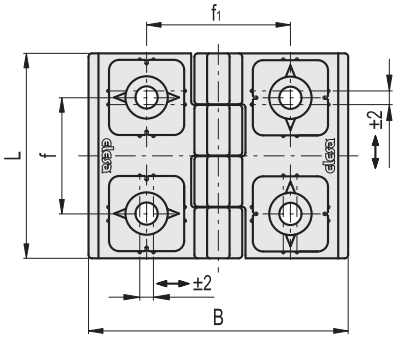




Resistance tests	AXIAL STRESS	RADIAL STRESS	90° ANGLED STRESS
			
	Max. limit stati load	Max. limit stati load	Max. limit stati load
Description	Sa [N]	Sr [N]	S90 [N]
CFR.60 SH-6	1800	2700	2130

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





Code	Description	L	B	f	f1	H	h1	h2	b1	d	d3	d4	C# [Nm]	⚖
426431	CFR.60 SH-6	60	75	34	42	16	9.5	8	29.5	8	6.5	12.5	5	72

Suggested tightening torque for assembly screws.

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GN 127

Hinges

adjustable / zinc die casting

SPECIFICATION

Types

- Type **H**: horizontal adjustable
- Type **B**: vertical adjustable
- Type **HB**: vertical and/or horizontal adjustable

Zinc die casting
plastic coated
black, textured finish

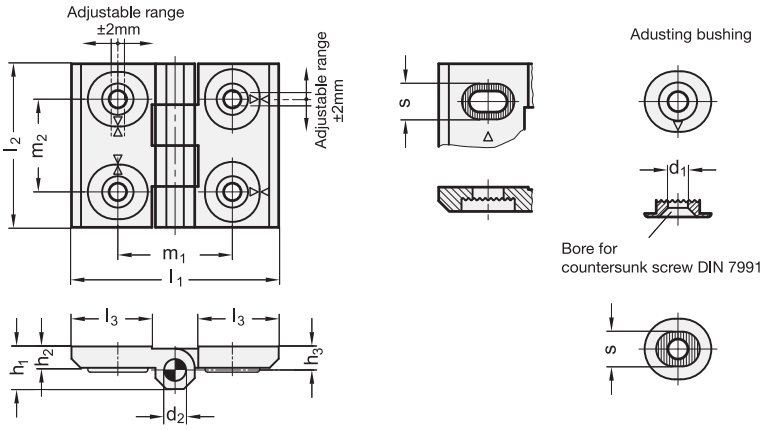
Pin
Stainless Steel AISI 303

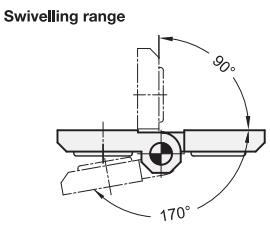
INFORMATION

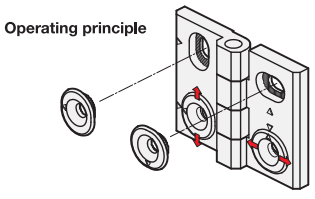
Hinges GN 127 allow technically and visually perfect positioning and alignment of a door in its frame.
The serrations at the wings of the hinge and at the adjusting bushings create a form lock which prevents the hinge from moving after installation. The tips of the arrows mark the 0 reference point for easier installation.

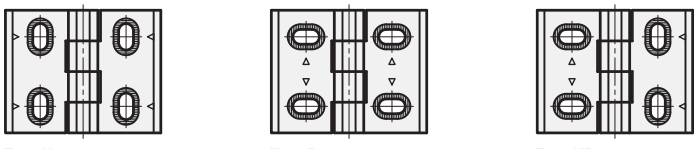
TECHNICAL INFORMATION

- Stainless Steel characteristics (see page A26)
- Load rating information of hinges (see page A40)
- List of hinges types (see page 1362)









GN 127

Description	l1	l2	d1	d2	h1 ≈	h2	h3	l3	m1	m2	s	⚖
GN 127-76-60-B	76	60	6.5	8	15	8	8.5	30	42	34	12	200
GN 127-76-60-H	76	60	6.5	8	15	8	8.5	30	42	34	12	201
GN 127-76-60-HB	76	60	6.5	8	15	8	8.5	30	42	34	12	201

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Hinges for thin doors

Technopolymer

MATERIAL
High-resilience polyamide based (PA) technopolymer, black colour, matte finish.

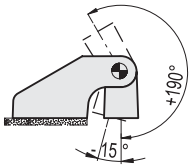
ROTATING PIN
AISI 303 stainless steel.

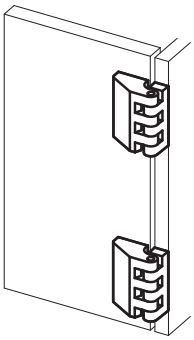
STANDARD EXECUTIONS
- **CFD-B**: nickel-plated brass bosses with threaded hole.
- **CFD-p**: nickel-plated brass threaded studs in the wide body, nickel-plated steel threaded studs in the narrow body.
- **CFD-p-B**: nickel-plated brass threaded studs and nickel-plated brass bosses with threaded hole.
- **CFD-B-p**: nickel-plated brass bosses with threaded hole and nickel-plated steel threaded studs.
- **CFD-CH-B**: pass-through holes for cylindrical head screws and nickel-plated brass bosses with threaded hole.
- **CFD-CH-p**: pass-through holes for cylindrical head screws and nickel-plated steel threaded studs.

FEATURES AND APPLICATIONS
The hinge is made up of two bodies with different dimensions (a narrow one and a larger one) and can be assembled for example on structures with thin frame or door.

ROTATION ANGLE (APPROXIMATE VALUE)
Max 205° (-15° and +190° 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 (on page 1368).

FM design





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]
CFD.30 B-M3	60	690	70	490	60	500
CFD.30 p-M3x13	70	750	40	340	30	390
CFD.30 p-M3x13-B-M3	60	690	40	340	30	390
CFD.30 B-M3-p-M3x13	60	690	40	340	30	390
CFD.30 CH-3-B-M3	100	830	110	720	70	670
CFD.30 CH-3-p-M3x13	60	730	50	450	30	350
CFD.40 B-M4	160	1710	150	1340	100	700
CFD.40 p-M4x18	110	1230	140	880	50	730
CFD.40 p-M4x18-B-M4	110	1230	140	880	50	700
CFD.40 B-M4-p-M4x18	110	1230	140	880	50	700
CFD.40 CH-4-B-M4	120	1620	150	1220	130	1110
CFD.40 CH-4-p-M4x18	150	1480	140	820	100	860
CFD.48 B-M5	260	2440	260	1700	120	1640
CFD.48 p-M5x17	290	1770	240	1840	110	1740
CFD.48 p-M5x17-B-M5	260	1770	240	1700	110	1640
CFD.48 B-M5-p-M5x17	260	1770	240	1700	110	1640
CFD.48 CH-5-B-M5	330	2530	240	1890	290	1870
CFD.48 CH-5-p-M5x17	150	2170	120	1200	110	970
CFD.66 B-M6	450	4130	320	2520	220	2250
CFD.66 p-M6x16	470	3260	260	1700	240	1580
CFD.66 p-M6x16-B-M6	450	3260	260	1700	220	1580
CFD.66 B-M6-p-M6x16	450	3260	260	1700	220	1580
CFD.66 CH-6-B-M6	430	3660	410	2610	310	2830
CFD.66 CH-6-p-M6x16	350	3090	280	1770	180	1610

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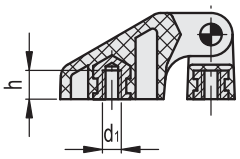
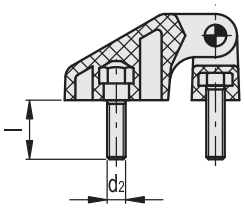
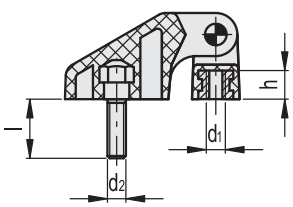
CFD-B



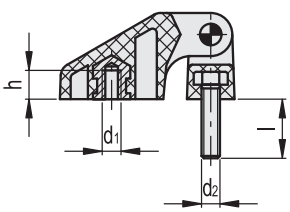
CFD-p



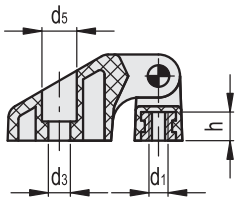
CFD-p-B



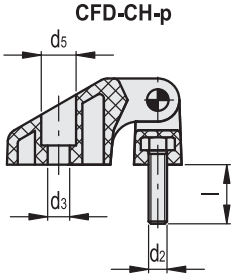
CFD-B-p

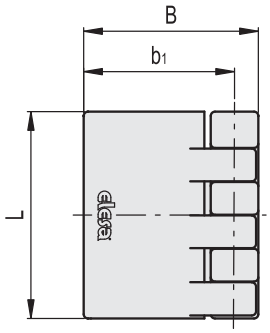


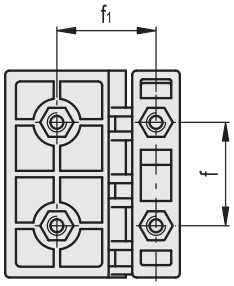
CFD-CH-B

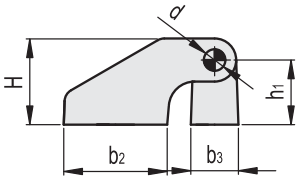


CFD-CH-p









Code	Description	L	B	d1	h	d2	l	f±0.25	f1 ±0.25	H	h1	b1	b2	b3	d	d3	d5	C [Nm] B#	C [Nm] p#	C [Nm] CH#	⚖
422711	CFD.30 B-M3	30.5	26.5	M3	4	-	-	15	15	12.5	9.5	22.5	15	7	2.5	-	-	1	-	-	8
422721	CFD.30 p-M3x13	30.5	26.5	-	-	M3	13	15	15	12.5	9.5	22.5	15	7	2.5	-	-	-	1	-	11
422731	CFD.30 p-M3x13-B-M3	30.5	26.5	M3	4	-	13	15	15	12.5	9.5	22.5	15	7	2.5	-	-	1	1	-	10
422741	CFD.30 B-M3-p-M3x13	30.5	26.5	-	4	M3	13	15	15	12.5	9.5	22.5	15	7	2.5	-	-	1	1	-	9
422751	CFD.30 CH-3-B-M3	30.5	26.5	M3	4	-	-	15	15	12.5	9.5	22.5	15	7	2.5	3.5	6	1	-	0.5	7
422761	CFD.30 CH-3-p-M3x13	30.5	26.5	-	-	M3	13	15	15	12.5	9.5	22.5	15	7	2.5	3.5	6	-	1	0.5	8
422811	CFD.40 B-M4	40.5	34	M4	5.5	-	-	20	20.2	16.5	12.5	29.5	20	9.5	4	-	-	4	-	-	19
422821	CFD.40 p-M4x18	40.5	34	-	-	M4	18	20	20.2	16.5	12.5	29.5	20	9.5	4	-	-	-	1.5	-	26
422831	CFD.40 p-M4x18-B-M4	40.5	34	M4	5.5	M4	18	20	20.2	16.5	12.5	29.5	20	9.5	4	-	-	4	1.5	-	23
422841	CFD.40 B-M4-p-M4x18	40.5	34	-	5.5	M4	18	20	20.2	16.5	12.5	29.5	20	9.5	4	-	-	4	1.5	-	21
422851	CFD.40 CH-4-B-M4	40.5	34	M4	5.5	-	-	20	20.2	16.5	12.5	29.5	20	9.5	4	4.5	7.5	4	-	1	16
422861	CFD.40 CH-4-p-M4x18	40.5	34	-	-	M4	18	20	20.2	16.5	12.5	29.5	20	9.5	4	4.5	7.5	-	1.5	1	19
422911	CFD.48 B-M5	48.5	40.5	M5	6.5	-	-	24	23	20	15	35	24	11.5	5	-	-	5	-	-	33
422921	CFD.48 p-M5x17	48.5	40.5	-	-	M5	17	24	23	20	15	35	24	11.5	5	-	-	-	3	-	46
422931	CFD.48 p-M5x17-B-M5	48.5	40.5	M5	6.5	M5	17	24	23	20	15	35	24	11.5	5	-	-	5	3	-	41
422941	CFD.48 B-M5-p-M5x17	48.5	40.5	-	6.5	M5	17	24	23	20	15	35	24	11.5	5	-	-	5	3	-	38
422951	CFD.48 CH-5-B-M5	48.5	40.5	M5	6.5	-	-	24	23	20	15	35	24	11.5	5	5.5	9	-	-	2	27
422961	CFD.48 CH-5-p-M5x17	48.5	40.5	-	-	M5	17	24	23	20	15	35	24	11.5	5	5.5	9	-	3	2	31
423011	CFD.66 B-M6	66	56	M6	9	-	-	33	31.8	27.5	21	48.5	33	15	6	-	-	5	-	-	76
423021	CFD.66 p-M6x16	66	56	-	-	M6	16	33	31.8	27.5	21	48.5	33	15	6	-	-	-	5	-	95
423031	CFD.66 p-M6x16-B-M6	66	56	M6	9	M6	16	33	31.8	27.5	21	48.5	33	15	6	-	-	5	5	-	90
423041	CFD.66 B-M6-p-M6x16	66	56	-	9	M6	16	33	31.8	27.5	21	48.5	33	15	6	-	-	5	5	-	82
423051	CFD.66 CH-6-B-M6	66	56	M6	9	-	-	33	31.8	27.5	21	48.5	33	15	6	6.5	10.5	5	-	5	66
423061	CFD.66 CH-6-p-M6x16	66	56	-	-	M6	16	33	31.8	27.5	21	48.5	33	15	6	6.5	10.5	-	5	5	71

Suggested tightening torque for assembly screws.

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CMDX-AL

Hinges for thin doors

Aluminium

MATERIAL
Anodized aluminium, black or natural colour, matte finish.

ROTATING PIN
AISI 304 stainless steel.

GUIDE BUSHINGS FOR PIN
Polyamide based (PA) technopolymer.

ASSEMBLY SCREWS
Stainless steel self-tapping screws 4.8x15.9 DIN 7982 (frame side) and stainless steel M5x10 semi-rounded head screws (door side). Included in the supply.

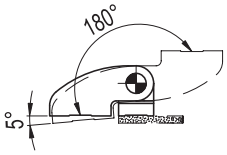
STANDARD EXECUTIONS
- **CMDX-AL-P**: with bodies on the same plane.
- **CMDX-AL-R**: with raised body.
- **CMDX-AL-PS**: with bodies on the same plane, opening to the left side.
- **CMDX-AL-RS**: with raised body, opening to the left side.
- **CMDX-AL-PD**: with bodies on the same plane, opening to the right side.
- **CMDX-AL-RD**: with raised body, opening on the right side.

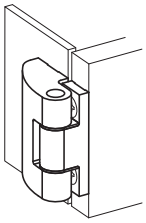
Index for finish:
- **AN**: anodised in natural colour.
- **AB**: anodised in black colour.

FEATURES AND APPLICATIONS
The hinge is made up of two bodies with different dimensions (a narrow one and a larger one) and can be assembled for example on structures with thin frame or door. Supplied not assembled for an easy fixing.

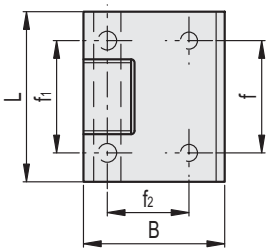
ELESA Original design

ROTATION ANGLE (APPROXIMATE VALUE)
Max 185° (-5° and +180° being 0° the condition where the two hinged surfaces are on the same plane).
Do not exceed the rotation angle limit so as not to damage the hinge.

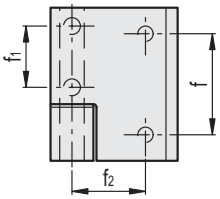




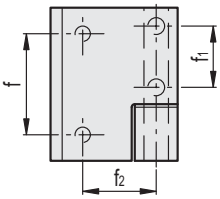
CMDX-AL-P
CMDX-AL-R



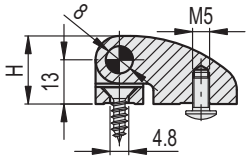
CMDX-AL-PS
CMDX-AL-RS



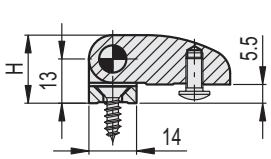
CMDX-AL-PD
CMDX-AL-RD



CMDX-AL-P



CMDX-AL-R



CMDX-AL-PS **CMDX-AL-RS** **CMDX-AL-PD** **CMDX-AL-RD**

Code	Description	Code	Description	L	B	f	f1	f2	H	⚖
428321	CMDX-AL-P-50-AN	428322	CMDX-AL-P-50-AB	50	41.5	33	33	24	20	94
428325	CMDX-AL-P-70-AN	428326	CMDX-AL-P-70-AB	70	41.5	50	50	24	20	132
428329	CMDX-AL-P-90-AN	428330	CMDX-AL-P-90-AB	90	41.5	70	70	24	20	170
428341	CMDX-AL-R-50-AN	428342	CMDX-AL-R-50-AB	50	41.5	33	33	24	20	85
428345	CMDX-AL-R-70-AN	428346	CMDX-AL-R-70-AB	70	41.5	50	50	24	20	120
428349	CMDX-AL-R-90-AN	428350	CMDX-AL-R-90-AB	90	41.5	70	70	24	20	154
428366	CMDX-AL-PS-50-AN	428367	CMDX-AL-PS-50-AB	50	41.5	33	20	24	20	92
428376	CMDX-AL-RS-50-AN	428377	CMDX-AL-RS-50-AB	50	41.5	33	20	24	20	83
428361	CMDX-AL-PD-50-AN	428362	CMDX-AL-PD-50-AB	50	41.5	33	20	24	20	92
428371	CMDX-AL-RD-50-AN	428372	CMDX-AL-RD-50-AB	50	41.5	33	20	24	20	83

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GN 138

Hinges

Zinc die casting

SPECIFICATION

Type

Type **A**: 2x2 threaded blind bores

Zinc die casting **ZD**
plastic coated
black, RAL 9005, textured finish **SW**
silver, RAL 9006, textured finish **SR**

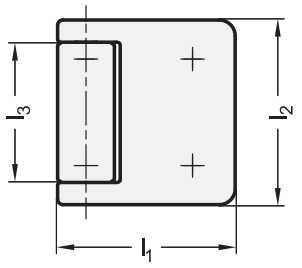
Pin
Stainless Steel AISI 303

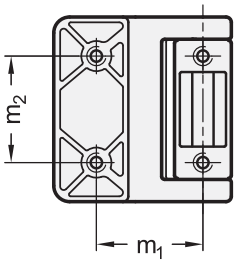
INFORMATION

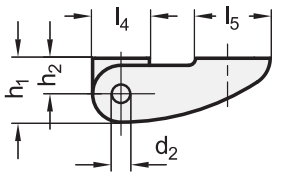
With their attractive design, hinges GN 138 are suitable for use in plant and machinery where a well-designed and stylish appearance is important.
The concealed and tamper-proof mounting from the rear highlights and enhances the special appearance of the hinge.
The dimensions l_1 / l_2 and the drill hole spacings m_1 / m_2 match the usual hinges GN 237 (see page 1386) / CFM. (see page 1382) and can replace these.

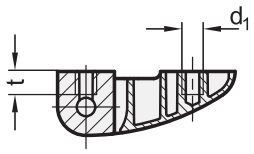
TECHNICAL INFORMATION

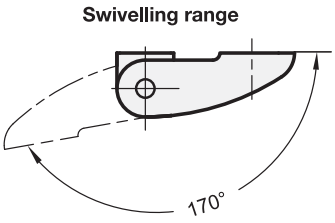
- Stainless Steel characteristics (see page A26)
- Load rating information of hinges (see page A40)
- List of hinges types (see page 1362)











GN 138

Description	l1	l2	d1	d2	h1	h2	l3	l4	l5	m1	m2	t	⚖
GN 138-ZD-40-42-A-SR	40	42	M 5	6	14	8	34	12	18	25	25	5	50
GN 138-ZD-40-42-A-SW	40	42	M 5	6	14	8	34	12	18	25	25	5	72
GN 138-ZD-50-52-A-SR	50	52	M 6	6	18	10	39	16	21	30	30	6.5	130
GN 138-ZD-50-52-A-SW	50	52	M 6	6	18	10	39	16	21	30	30	6.5	131
GN 138-ZD-60-62-A-SR	60	62	M 6	8	22	12	47	20	24	36	36	7.5	210
GN 138-ZD-60-62-A-SW	60	62	M 6	8	22	12	47	20	24	36	36	7.5	210

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Hinges

Technopolymer

MATERIAL
High-resilience polyamide based (PA) technopolymer, black colour, matte finish.

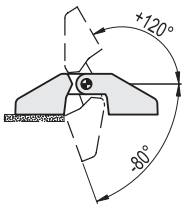
ROTATING PIN
AISI 303 stainless steel.

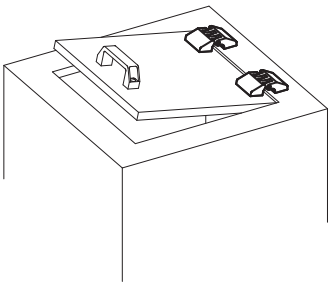
STANDARD EXECUTIONS
- **CFE-B**: nickel-plated brass bosses with threaded hole.
- **CFE-p**: nickel-plated brass threaded studs.
- **CFE-CH**: pass-through holes for cylindrical head screws.
- **CFE-B-p**: nickel-plated brass bosses with threaded hole and nickel-plated brass threaded studs.
- **CFE-B-CH**: nickel-plated brass bosses with threaded hole and pass-through holes for cylindrical head screws.
- **CFE-p-CH**: nickel-plated brass threaded studs and pass-through holes for cylindrical head screws.

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

ROTATION ANGLE (APPROXIMATE VALUE)
Max 200° (-80° and +120° 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 (on page 1368).

FM design





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]
CFE.30 B-M3	50	660	140	1040	50	310
CFE.30 p-M3x13	40	460	110	1040	60	560
CFE.30 CH-3	50	640	120	980	20	300
CFE.30 B-M3-p-M3x13	40	460	110	1040	50	310
CFE.30 B-M3-CH-3	50	640	120	980	20	300
CFE.30 p-M3x13-CH-3	40	460	110	980	20	300
CFE.40 B-M4	90	1110	230	1920	60	590
CFE.40 p-M4x18	90	1110	300	2440	60	590
CFE.40 CH-4	150	1580	370	2460	80	1210
CFE.40 B-M4-p-M4x18	90	1110	230	1920	60	590
CFE.40 B-M4-CH-4	90	1110	230	1920	60	590
CFE.40 p-M4x18-CH-4	90	1110	300	2440	60	590
CFE.48 B-M5	160	1260	440	2890	190	1290
CFE.48 p-M5x17	190	1900	310	2870	160	1190
CFE.48 CH-5	300	2160	410	2850	150	1440
CFE.48 B-M5-p-M5x17	160	1260	310	2870	160	1190
CFE.48 B-M5-CH-5	160	1260	410	2850	150	1290
CFE.48 p-M5x17-CH-5	190	1900	310	2850	150	1190
CFE.66 B-M6	530	4160	500	2480	310	2250
CFE.66 p-M6x16	240	2670	700	3490	270	1830
CFE.66 CH-6	440	3160	690	3450	260	2920
CFE.66 B-M6-p-M6x16	240	2670	500	2480	270	1830
CFE.66 B-M6-CH-6	440	3160	500	2480	260	2250
CFE.66 p-M6x16-CH-6	240	2670	690	3450	260	1830

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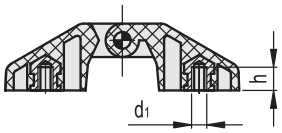
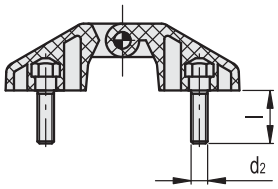
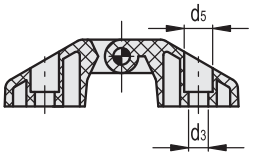
CFE-B



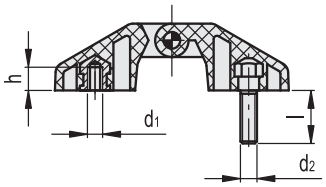
CFE-p



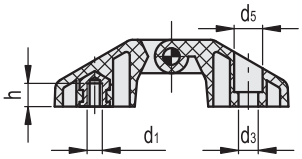
CFE-CH



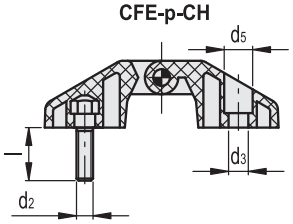
CFE-B-p

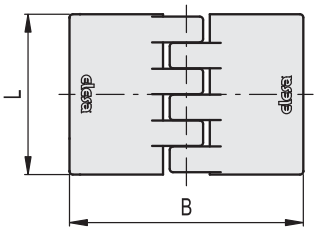


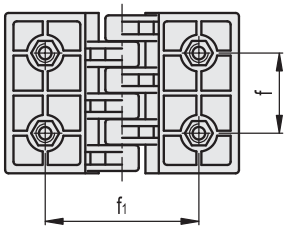
CFE-B-CH

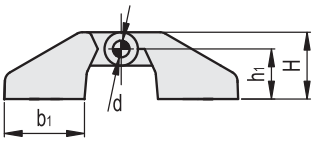


CFE-p-CH









Code	Description	L	B	d1	h	d2	l	f±0.25	f1 ±0.25	H	h1	b1	d	d3	d5	C [Nm] B#	C [Nm] p#	C [Nm] CH#	⚖
423111	CFE.30 B-M3	30.5	45.5	M3	4	-	-	15	30	12.5	9.5	15	2.5	-	-	1	-	-	11
423121	CFE.30 p-M3x13	30.5	45.5	-	-	M3	13	15	30	12.5	9.5	15	2.5	-	-	-	1	-	14
423131	CFE.30 CH-3	30.5	45.5	-	-	-	-	15	30	12.5	9.5	15	2.5	3.5	6	-	-	0.5	8
423141	CFE.30 B-M3-p-M3x13	30.5	45.5	M3	4	M3	13	15	30	12.5	9.5	15	2.5	-	-	1	1	-	13
423151	CFE.30 B-M3-CH-3	30.5	45.5	M3	4	-	-	15	30	12.5	9.5	15	2.5	3.5	6	1	-	0.5	10
423161	CFE.30 p-M3x13-CH-3	30.5	45.5	-	-	M3	13	15	30	12.5	9.5	15	2.5	3.5	6	-	1	0.5	11
423211	CFE.40 B-M4	40.5	59	M4	5.5	-	-	20	40.4	16.5	12.5	20	4	-	-	4	-	-	26
423221	CFE.40 p-M4x18	40.5	59	-	-	M4	18	20	40.4	16.5	12.5	20	4	-	-	-	2	-	34
423231	CFE.40 CH-4	40.5	59	-	-	-	-	20	40.4	16.5	12.5	20	4	4.5	7.5	-	-	1	19
423241	CFE.40 B-M4-p-M4x18	40.5	59	M4	5.5	M4	18	20	40.4	16.5	12.5	20	4	-	-	4	2	-	30
423251	CFE.40 B-M4-CH-4	40.5	59	M4	5.5	-	-	20	40.4	16.5	12.5	20	4	4.5	7.5	4	-	1	21
423261	CFE.40 p-M4x18-CH-4	40.5	59	-	-	M4	18	20	40.4	16.5	12.5	20	4	4.5	7.5	-	2	1	26
423311	CFE.48 B-M5	48.5	70	M5	6.5	-	-	24	46	20	15	24	5	-	-	5	-	-	44
423321	CFE.48 p-M5x17	48.5	70	-	-	M5	17	24	46	20	15	24	5	-	-	-	5	-	58
423331	CFE.48 CH-5	48.5	70	-	-	-	-	24	46	20	15	24	5	5.5	9	-	-	2	31
423341	CFE.48 B-M5-p-M5x17	48.5	70	M5	6.5	M5	17	24	46	20	15	24	5	-	-	5	5	-	51
423351	CFE.48 B-M5-CH-5	48.5	70	M5	6.5	-	-	24	46	20	15	24	5	5.5	9	5	-	2	38
423361	CFE.48 p-M5x17-CH-5	48.5	70	-	-	M5	17	24	46	20	15	24	5	5.5	9	-	5	2	45
423411	CFE.66 B-M6	66	97	M6	10	-	-	33	63.7	27.5	21	33	6	-	-	5	-	-	103
423421	CFE.66 p-M6x16	66	97	-	-	M6	16	33	63.7	27.5	21	33	6	-	-	-	5	-	124
423431	CFE.66 CH-6	66	97	-	-	-	-	33	63.7	27.5	21	33	6	6.5	10.5	-	-	5	77
423441	CFE.66 B-M6-p-M6x16	66	97	M6	10	M6	16	33	63.7	27.5	21	33	6	-	-	5	5	-	115
423451	CFE.66 B-M6-CH-6	66	97	M6	10	-	-	33	63.7	27.5	21	33	6	6.5	10.5	5	-	5	90
423461	CFE.66 p-M6x16-CH-6	66	97	-	-	M6	16	33	63.7	27.5	21	33	6	6.5	10.5	-	5	5	100

Suggested tightening torque for assembly screws.

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Hinges for thin doors

Technopolymer

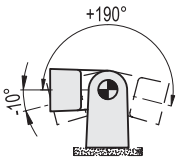
MATERIAL
High-resilience polyamide based (PA) technopolymer, black colour, matte finish.

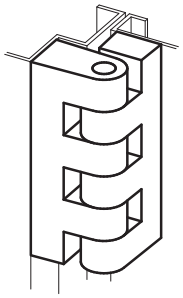
ROTATING PIN
AISI 303 stainless steel.

STANDARD EXECUTIONS
- **CFF-B**: nickel-plated brass bosses with threaded hole.
- **CFF-p**: nickel-plated steel threaded studs.
- **CFF-B-p**: nickel-plated brass bosses with threaded hole and nickel-plated steel threaded studs.

ROTATION ANGLE (APPROXIMATE VALUE)
Max 200° (-10° and +190° 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 (on page 1368).

FM design





Resistance tests	AXIAL STRESS		RADIAL STRESS		RADIAL 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]
CFF.30 B-M3	100	1030	150	1190	90	600
CFF.30 p-M3x13	120	900	160	1020	80	560
CFF.30 B-M3-p-M3x13	100	900	150	1020	80	560
CFF.40 B-M4	180	1780	290	1950	150	1160
CFF.40 p-M4x18	170	1490	140	1220	120	710
CFF.40 B-M4-p-M4x18	170	1490	140	1220	120	710
CFF.48 B-M5	370	3250	480	2890	150	1870
CFF.48 p-M5x17	220	2200	370	2480	140	1200
CFF.48 B-M5-p-M5x17	220	2200	370	2480	140	1200
CFF.66 B-M6	310	4660	860	4880	340	2770
CFF.66 p-M6x16	310	2410	590	3520	220	1420
CFF.66 B-M6-p-M6x16	310	2410	590	3520	220	1420

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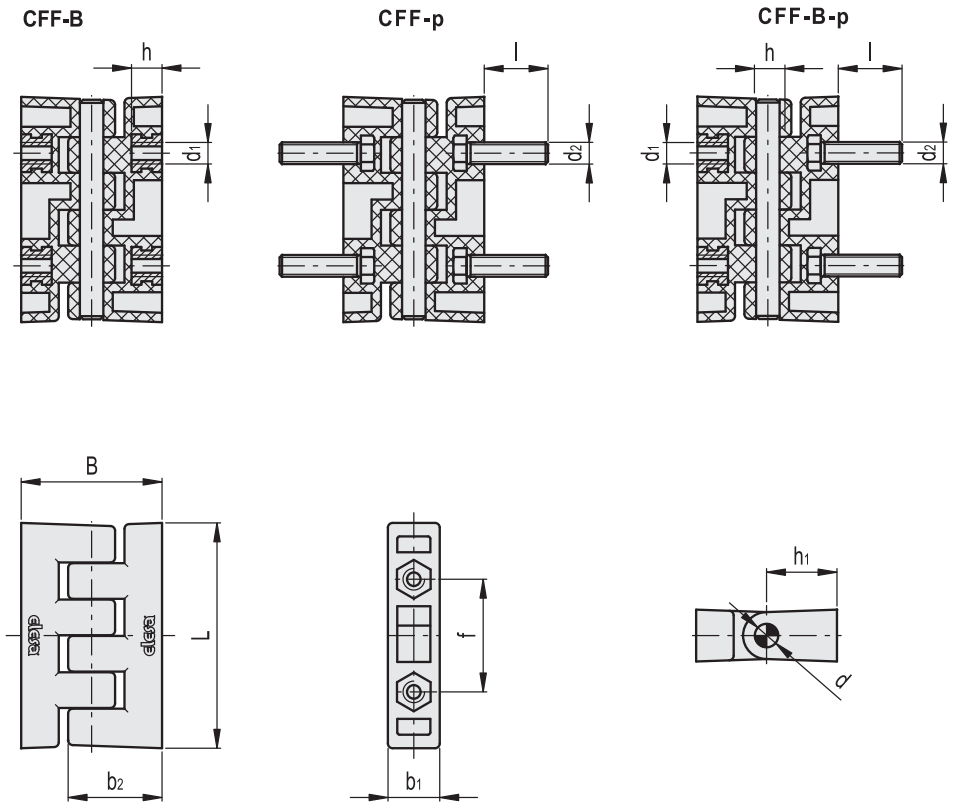

Code	Description	L	B	d1	h	d2	l	f±0.25	h1	b1	b2	d	C [Nm] B#	C [Nm] p#	⚖
423511	CFF.30 B-M3	30.5	19	M3	4	-	-	15	9	7	12.5	2.5	1	-	6
423521	CFF.30 p-M3x13	30.5	19	-	-	M3	13	15	9	7	12.5	2.5	-	0.5	8
423531	CFF.30 B-M3-p-M3x13	30.5	19	M3	4	M3	13	15	9	7	12.5	2.5	1	0.5	7
423611	CFF.40 B-M4	40.5	24	M4	5.5	-	-	20	12	9.5	16.5	4	4	-	14
423621	CFF.40 p-M4x18	40.5	24	-	-	M4	18	20	12	9.5	16.5	4	-	1.5	20
423631	CFF.40 B-M4-p-M4x18	40.5	24	M4	5.5	M4	18	20	12	9.5	16.5	4	4	1.5	17
423711	CFF.48 B-M5	48.5	30	M5	6.5	-	-	24	15	11.5	20	5	5	-	23
423721	CFF.48 p-M5x17	48.5	30	-	-	M5	17	24	15	11.5	20	5	-	4	33
423731	CFF.48 B-M5-p-M5x17	48.5	30	M5	6.5	M5	17	24	15	11.5	20	5	5	4	28
423811	CFF.66 B-M6	66	42	M6	9	-	-	33	21	15	27.5	6	5	-	54
423821	CFF.66 p-M6x16	66	42	-	-	M6	16	33	21	15	27.5	6	-	4	64
423831	CFF.66 B-M6-p-M6x16	66	42	M6	9	M6	18	33	21	15	27.5	6	5	4	59

Suggested tightening torque for assembly screws.

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Hinges for profiles

Technopolymer

MATERIAL
Glass-fibre reinforced polyamide based (PA) technopolymer, black or grey colour RAL 7040 (C33), matte finish.

ROTATING PIN
Nickel-plated steel.

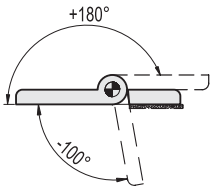
STANDARD EXECUTION
Pass-through holes for M6 countersunk head screws.

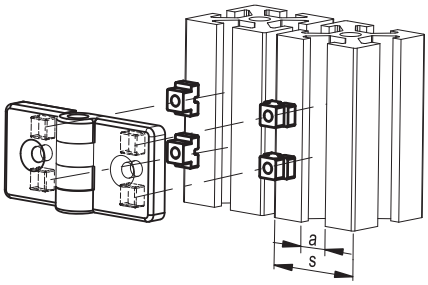
TECHNOPOLYMER CENTERING INSERTS (SUPPLIED)
For profiles with slot dimensions from 6 to 12 mm.

FEATURES AND APPLICATIONS
This type of hinge can be used with aluminium 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 (on page 1368).

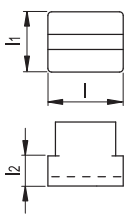
FM design





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			Colour
l	l_1	l_2	
8	6	2	Light grey
10	8	4	Dark grey
12	10	5	Black



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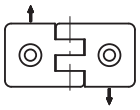
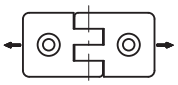
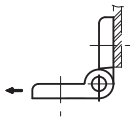
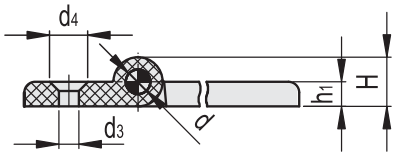
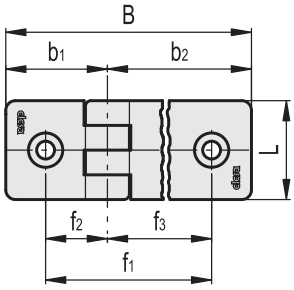
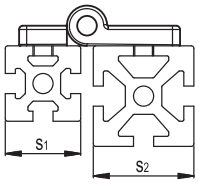
Resistance tests	AXIAL STRESS		RADIAL STRESS		90° ANGLED STRESS	
						
Description	Maximum working load Ea [N]	Load at breakage Ra [N]	Maximum working load Er [N]	Load at breakage Rr [N]	Maximum working load E90 [N]	Load at breakage R90 [N]
CFG.30/30 SH-6	440	2570	1850	3710	300	1700
CFG.30/40 SH-6	320	2280	1750	3490	590	870
CFG.30/45 SH-6	240	2150	1760	3520	190	780
CFG.30/60 SH-6	280	1510	1600	3190	180	850
CFG.40/40 SH-6	320	2280	1750	3490	220	870
CFG.40/45 SH-6	240	2150	1750	3490	390	780
CFG.40/60 SH-6	280	1510	1600	3190	180	850
CFG.45/45 SH-6	240	2150	1760	3520	190	780
CFG.45/60 SH-6	240	1510	1600	3190	180	780
CFG.60/60 SH-6	280	1510	1600	3190	180	850







CFG.

Code	Description	s1	s2	L	B	f1 ±0.25	f2	f3	H	h1	b1	b2	d	d3	d4	C# [Nm]	⚖
423911	CFG.30/30 SH-6	30	30	36	54	35	17.5	17.5	16	8	27	27	8	6.5	12.5	5	32
423912	CFG.30/40 SH-6	30	40	36	64	40	17.5	22.5	16	8	27	37	8	6.5	12.5	5	34
423913	CFG.30/45 SH-6	30	45	36	69	42.5	17.5	25	16	8	27	42	8	6.5	12.5	5	35
423914	CFG.30/60 SH-6	30	60	36	84	50	17.5	32.5	16	8	27	57	8	6.5	12.5	5	38
423921	CFG.40/40 SH-6	40	40	36	74	45	22.5	22.5	16	8	37	37	8	6.5	12.5	5	36
423922	CFG.40/45 SH-6	40	45	36	79	47.5	22.5	25	16	8	37	42	8	6.5	12.5	5	37
423923	CFG.40/60 SH-6	40	60	36	94	55	22.5	32.5	16	8	37	57	8	6.5	12.5	5	40
423931	CFG.45/45 SH-6	45	45	36	84	50	25	25	16	8	42	42	8	6.5	12.5	5	38
423932	CFG.45/60 SH-6	45	60	36	99	57.5	25	32.5	16	8	42	57	8	6.5	12.5	5	41
423941	CFG.60/60 SH-6	60	60	36	114	65	32.5	32.5	16	8	57	57	8	6.5	12.5	5	45

CFG-C33

Code	Description	s1	s2	L	B	f1 ±0.25	f2	f3	H	h1	b1	b2	d	d3	d4	C# [Nm]	⚖
423911-C33	CFG.30/30 SH-6-C33	30	30	36	54	35	17.5	17.5	16	8	27	27	8	6.5	12.5	5	32
423912-C33	CFG.30/40 SH-6-C33	30	40	36	64	40	17.5	22.5	16	8	27	37	8	6.5	12.5	5	34
423913-C33	CFG.30/45 SH-6-C33	30	45	36	69	42.5	17.5	25	16	8	27	42	8	6.5	12.5	5	35
423914-C33	CFG.30/60 SH-6-C33	30	60	36	64	50	17.5	32.5	16	8	27	57	8	6.5	12.5	5	38
423921-C33	CFG.40/40 SH-6-C33	40	40	36	74	45	22.5	22.5	16	8	37	37	8	6.5	12.5	5	36
423922-C33	CFG.40/45 SH-6-C33	40	45	36	79	47.5	22.5	22.5	16	8	37	42	8	6.5	12.5	5	37
423923-C33	CFG.40/60 SH-6-C33	40	60	36	94	55	22.5	32.5	16	8	37	57	8	6.5	12.5	5	40
423931-C33	CFG.45/45 SH-6-C33	45	45	36	94	50	25	25	16	8	42	42	8	6.5	12.5	5	38
423932-C33	CFG.45/60 SH-6-C33	45	60	36	99	57.5	25	32.5	16	8	42	57	8	6.5	12.5	5	41
423941-C33	CFG.60/60 SH-6-C33	60	60	36	114	65	32.5	32.5	16	8	57	57	8	6.5	12.5	5	45

Suggested tightening torque for assembly screws.

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Double hinges for profiles

Technopolymer

MATERIAL
Glass-fibre reinforced polyamide based (PA) technopolymer, black or grey colour RAL 7040 (C33), matte finish.

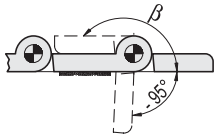
ROTATING PINS
Nickel-plated steel.

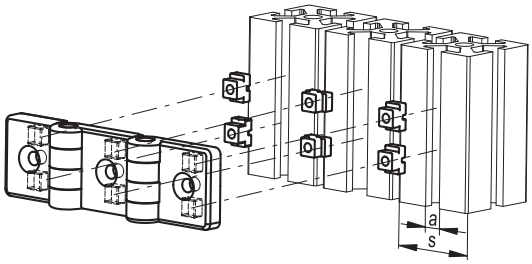
STANDARD EXECUTION
Pass-through holes for M6 countersunk head screws.

TECHNOPOLYMER CENTERING INSERTS (SUPPLIED)
For profiles with slot dimensions from 6 to 12 mm.

FEATURES AND APPLICATIONS
This type of hinge is recommended when, for example, one central frame is connected with two lateral doors. It can be used with aluminium 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 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 (on page 1368).

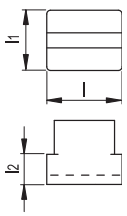




FM design

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			Colour
l	l1	l2	
8	6	2	Light grey
10	8	4	Dark grey
12	10	5	Black



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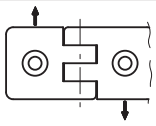
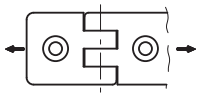
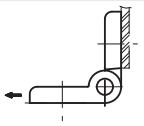
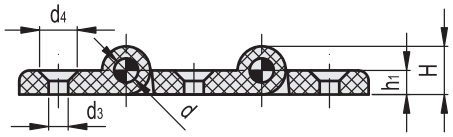
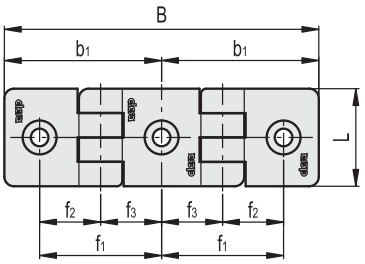
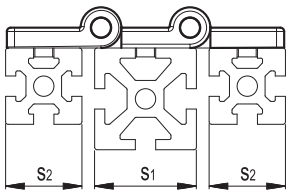
CFI. Double hinges for profiles

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]
CFI.30-30/30 SH-6	440	2570	1850	3710	300	1700
CFI.30-40/40 SH-6	320	2280	1750	3490	220	870
CFI.40-30/30 SH-6	320	2280	1750	3490	220	870
CFI.40-40/40 SH-6	320	2280	1750	3490	220	870
CFI.45-30/30 SH-6	240	2150	1760	3520	190	780
CFI.45-40/40 SH-6	240	2150	1750	3490	190	780
CFI.45-45/45 SH-6	240	2150	1760	3520	190	780
CFI.60-30/30 SH-6	280	1510	1600	3190	180	850
CFI.60-40/40 SH-6	280	1510	1600	3190	180	850
CFI.60-45/45 SH-6	240	1510	1600	3190	180	780







CFI.

Code	Description	s1	s2	L	B	f1 ±0.25	f2	f3	H	h1	b1	d	d3	d4	ß	C# [Nm]	⚖
424111	CFI.30-30/30 SH-6	30	30	36	89	35	17.5	17.5	16	8	44.5	8	6.5	12.5	180°	5	59
424121	CFI.30-40/40 SH-6	30	40	36	109	40	22.5	17.5	16	8	54.5	8	6.5	12.5	165°	5	63
424211	CFI.40-30/30 SH-6	40	30	36	99	40	17.5	22.5	16	8	49.5	8	6.5	12.5	180°	5	62
424221	CFI.40-40/40 SH-6	40	40	36	119	45	22.5	22.5	16	8	59.5	8	6.5	12.5	180°	5	66
424311	CFI.45-30/30 SH-6	45	30	36	104	42.5	17.5	25	16	8	52	8	6.5	12.5	180°	5	63
424321	CFI.45-40/40 SH-6	45	40	36	124	47.5	22.5	25	16	8	62	8	6.5	12.5	180°	5	67
424331	CFI.45-45/45 SH-6	45	45	36	134	50	25	25	16	8	67	8	6.5	12.5	180°	5	69
424411	CFI.60-30/30 SH-6	60	30	36	119	50	17.5	32.5	16	8	59.5	8	6.5	12.5	180°	5	67
424421	CFI.60-40/40 SH-6	60	40	36	139	55	22.5	32.5	16	8	69.5	8	6.5	12.5	180°	5	71
424431	CFI.60-45/45 SH-6	60	45	36	149	57.5	25	32.5	16	8	74.5	8	6.5	12.5	180°	5	73

CFI-C33

Code	Description	s1	s2	L	B	f1 ±0.25	f2	f3	H	h1	b1	d	d3	d4	ß	C# [Nm]	⚖
424111-C33	CFI.30-30/30 SH-6-C33	30	30	36	89	35	17.5	17.5	16	8	44.5	8	6.5	12.5	180°	5	59
424121-C33	CFI.30-40/40 SH-6-C33	30	40	36	109	40	22.5	17.5	16	8	54.5	8	6.5	12.5	180°	5	63
424211-C33	CFI.40-30/30 SH-6-C33	40	30	36	99	40	17.5	22.5	16	8	49.5	8	6.5	12.5	180°	5	62
424221-C33	CFI.40-40/40 SH-6-C33	40	40	36	119	45	22.5	22.5	16	8	59.5	8	6.5	12.5	180°	5	66
424311-C33	CFI.45-30/30 SH-6-C33	45	30	36	104	42.5	17.5	25	16	8	52	8	6.5	12.5	180°	5	63
424321-C33	CFI.45-40/40 SH-6-C33	45	40	36	124	47.5	22.5	25	16	8	52	8	6.5	12.5	180°	5	67
424331-C33	CFI.45-45/45 SH-6-C33	45	45	36	134	50	25	25	16	8	67	8	6.5	12.5	180°	5	69
424411-C33	CFI.60-30/30 SH-6-C33	60	30	36	119	50	17.5	32.5	16	8	59.5	8	6.5	12.5	180°	5	67
424421-C33	CFI.60-40/40 SH-6-C33	60	40	36	139	55	22.5	32.5	16	8	69.5	8	6.5	12.5	180°	5	71
424431-C33	CFI.60-45/45 SH-6-C33	60	45	36	149	57.5	25	32.5	16	8	74.5	8	6.5	12.5	180°	5	73

Suggested tightening torque for assembly screws.

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Hinges

Accessory for profile systems / Zinc die casting

SPECIFICATION

Zinc die casting
plastic coated
black, textured finish

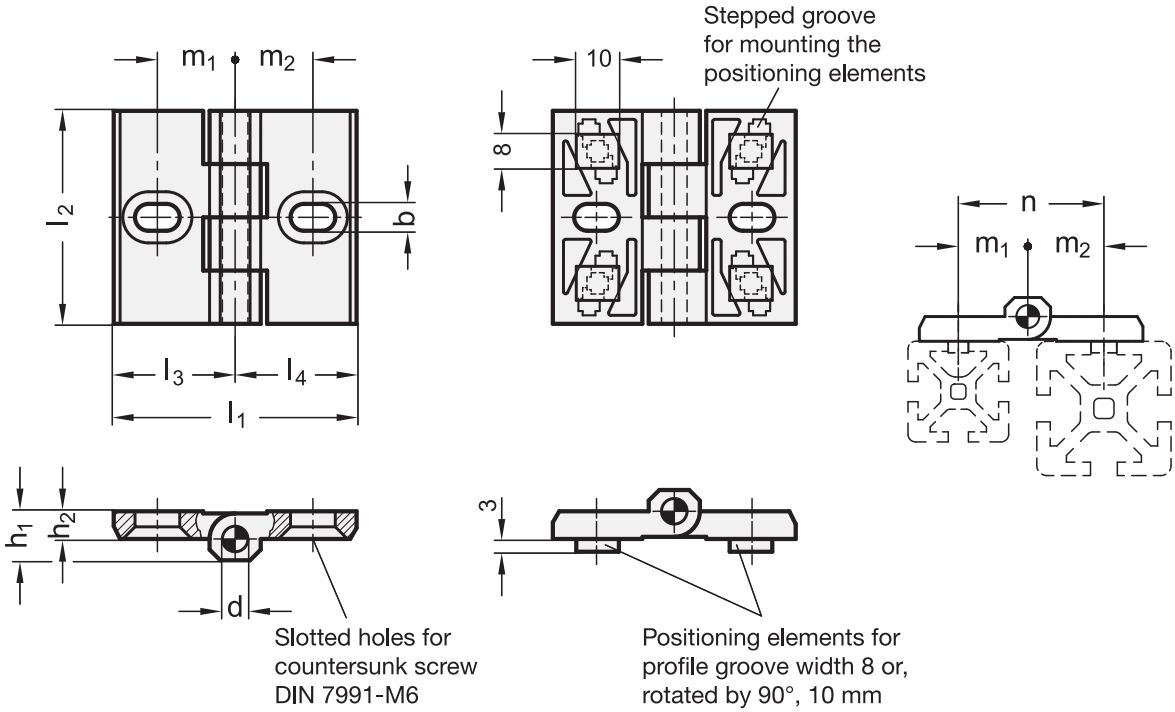
Pin
Stainless Steel AISI 303

INFORMATION

Hinges GN 161 have been designed for commercially available profile rails.
With three different types of hinges only, 66 different groove distances „n" can be accommodated. To achieve this the positioning elements are set in specially marked recesses in the hinge wings.
The rectangular (8x10 mm) positioning elements, two pieces per hinge wing, will prevent a misalignment. They will also carry the weight of the door.
For screwing the hinges onto the profile rails, special T-Nuts are used.

TECHNICAL INFORMATION

- Load rating information (see page A40)
- Stainless Steel characteristics (see page A26)
- List of hinges types (see page 1362)



GN 161

Description	l1	b	d	h1	h2	h3	l2	l3	l4	⚖
GN 161-57	57	6.3	6	12	6.5	13	50	28.5	28.5	107
GN 161-68	68	6.3	6	12	6.5	13	50	28.5	40	128
GN 161-80	80	6.3	6	12	6.5	13	50	40	40	144

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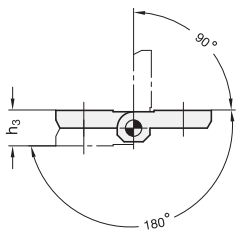
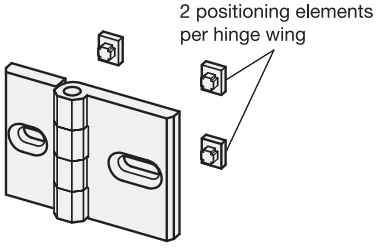
GN 161 | Hinges

GN 161-57 n Groove distance	m1	m2	GN 161-68 n Groove distance	m1	m2	GN 161-80 n Groove distance	m1	m2
33	16.5	16.5	37.5	16.5	21	42	21	21
34	16.5	17.5	38	16.5	21.5	42.5	21	21.5
35	16.5	18.5	39	16.5	22.5	43.5	21	22.5
35.5	16.5	19	40	16.5	23.5	44.5	21	23.5
36.5	16.5	20	42.5	16.5	26	47	21	26
35	17.5	17.5	44	16.5	27.5	48.5	21	27.5
36	17.5	18.5	47.5	16.5	31	52	21	31
36.5	17.5	19	38.5	17.5	21	43	21.5	21.5
37.5	17.5	20	39	17.5	21.5	44	21.5	22.5
37	18.5	18.5	40	17.5	22.5	45	21.5	23.5
37.5	18.5	19	41	17.5	23.5	47.5	21.5	26
38.5	18.5	20	43.5	17.5	26	49	21.5	27.5
38	19	19	45	17.5	27.5	52.5	21.5	31
39	19	20	48.5	17.5	31	45	22.5	22.5
40	20	20	39,5	18.5	21	46	22.5	23.5
-	-	-	40	18.5	21.5	48.5	22.5	26
-	-	-	41	18.5	22.5	50	22.5	27.5
-	-	-	42	18.5	23.5	-	22.5	31
-	-	-	44.5	18.5	26	47	23.5	23.5
-	-	-	46	18.5	27.5	49.5	23.5	26
-	-	-	49.5	18.5	31	51	23.5	27.5
-	-	-	40	19	21	54.5	23.5	31
-	-	-	40.5	19	21.5	52	26	26
-	-	-	41.5	19	22.5	53.5	26	27.5
-	-	-	42.5	19	23.5	57	26	31
-	-	-	45	19	26	55	27.5	27.5
-	-	-	46.5	19	27.5	58.5	27.5	31
-	-	-	50	19	31	62	31	31
-	-	-	41	20	21	-	-	-
-	-	-	41.5	20	21.5	-	-	-
-	-	-	43.5	20	23.5	-	-	-
-	-	-	46	20	26	-	-	-
-	-	-	47.5	20	27.5	-	-	-
-	-	-	51	20	31	-	-	-

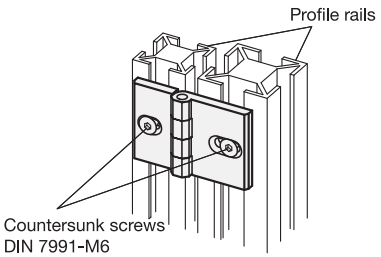
Swivelling range



Assembly instruction



Application example



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Hinge for thin doors

Technopolymer

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

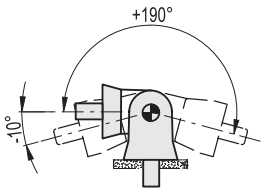
ROTATING PIN
AISI 303 stainless steel.

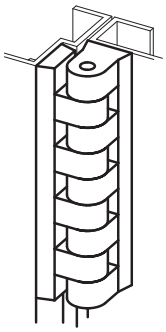
STANDARD EXECUTION
Pass-through holes for M6 countersunk head screws and referring pins for an accurate positioning of the hinge body.

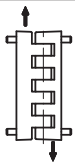
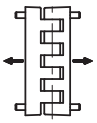
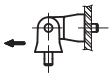
ROTATION ANGLE (APPROXIMATE VALUE)
Max 200° (-10° and +190° being 0° the condition where the two interconnected surfaces are on the same plane).
Do not exceed the rotation angle limit so as not to prejudice the hinge mechanical performance.
To choose the convenient type and the right number of hinges for your application, see the Guidelines (on page 1368).

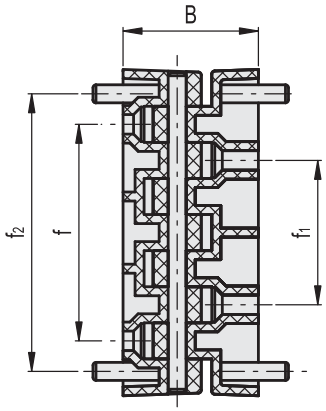
ASSEMBLY INSTRUCTIONS
1. Remove the rotation pin and fit the two separated bodies of the hinge on the door and on the frame.
2. Assembly the two elements together matching the right alignment of the hinge and insert the rotation pin.

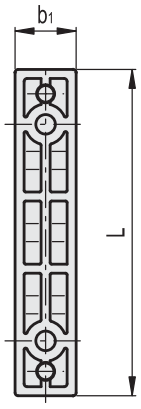
FM design

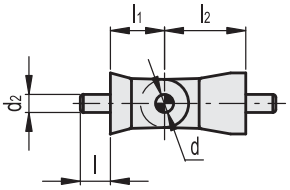




Resistance tests	AXIAL STRESS		RADIAL STRESS		90° ANGLED STRESS	
						
Description	Maximum working load Ea [N]	Load at breakage Ra [N]	Maximum working load Er [N]	Load at breakage Rr [N]	Maximum working load E90 [N]	Load at breakage R90 [N]
CFB.108 SH-6	610	6020	640	5020	520	2200







Code	Description	L	B	d2	l	f±0.25	f1 ±0.25	f2 ±0.25	l1	l2	b1	d	Th-rough holes	C# [Nm]	⚖
422511	CFB.108 SH-6	109	45	6	10	72.5	48.2	92.7	18	27	20.5	6	6.5	3	85

Suggested tightening torque for assembly screws.

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Thin hinge

Technopolymer

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

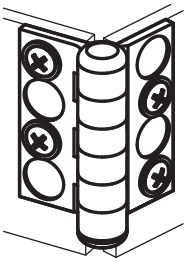
ROTATION PIN AND END-CAPS
Acetal resin based (POM) technopolymer.

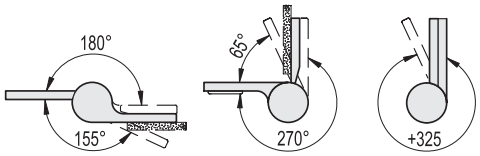
STANDARD EXECUTION
Pass-through holes for self-tapping countersunk head screws diameter 4.8 mm.

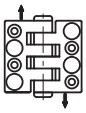
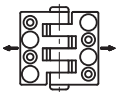
FEATURES AND APPLICATIONS
Completely made of technopolymer and without metal parts, the hinge is suitable for application on machines and equipment in those sectors where laws or particular hygienic, climatic and environmental factors make it mandatory to use corrosion resistant materials.
By replacing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

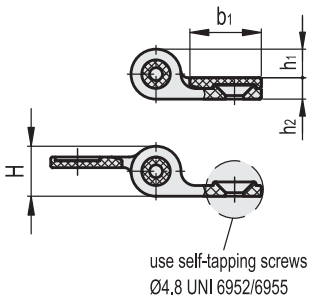
ROTATION ANGLE (APPROXIMATE VALUE)
CFC. hinges have a max rotation angle of 325°. Depending on the type of assembly, the rotation angle of the door can be lower.
Do not exceed the rotation angle limit so as not to prejudice the hinge mechanical performance.
To choose the convenient type and the right number of hinges for your application, see the Guidelines (on page 1368).

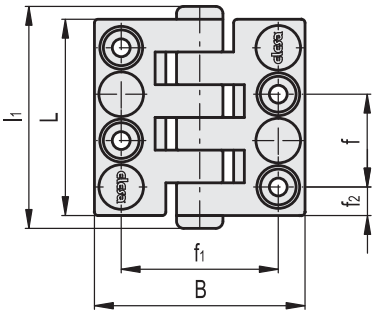
FMdesign





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]
CFC.55 SH-5	750	1500	890	1770	180	270





Code	Description	L	B	f±0.25	f1 ±0.25	f2	H	h1	h2	l1	b1	Through holes	C# [Nm]	⚖
422611	CFC.55 SH-5	55	59	26.1	43.7	8	14	8	6	62	20	4.8	5	20

Suggested tightening torque for assembly screws.

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In line lift-off hinges

Technopolymer

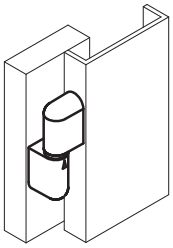
MATERIAL
Glass-fibre reinforced polyamide based (PA) technopolymer, black colour, matte finish.

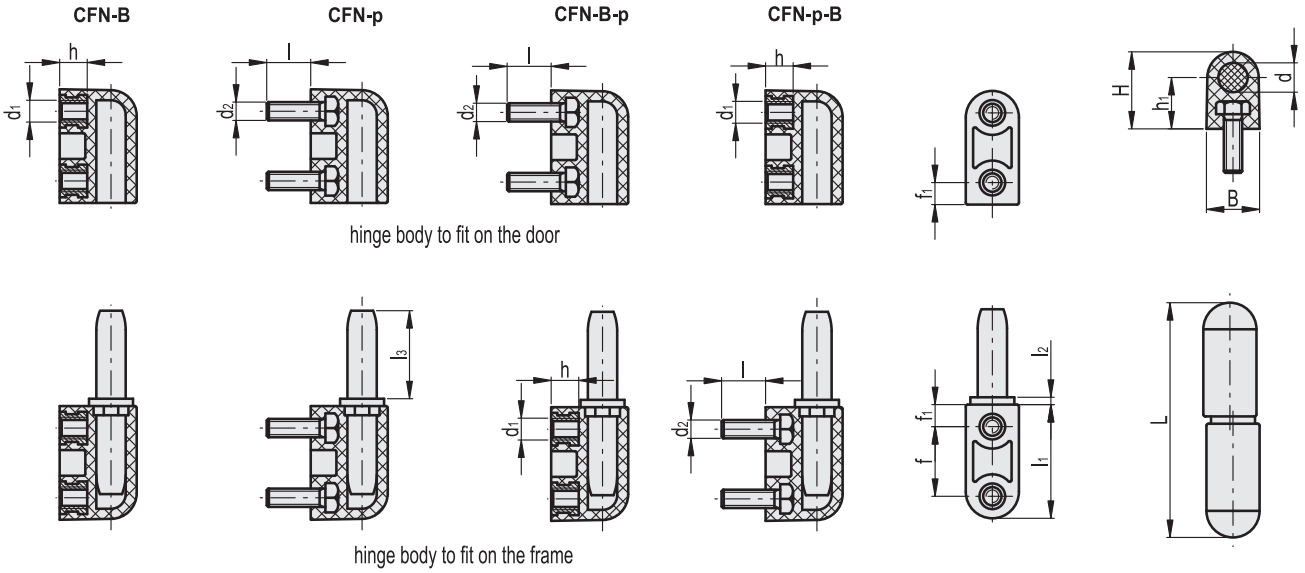
AJUSTABLE PIN WITH OCTAGONAL SLOT
Acetal based (POM) technopolymer, black colour.

STANDARD EXECUTIONS
- **CFN-B**: nickel-plated brass bosses with threaded hole.
- **CFN-p**: nickel-plated steel threaded studs.
- **CFN-B-p**: nickel-plated brass bosses with threaded hole and nickel-plated steel threaded studs.
- **CFN-p-B**: nickel-plated steel threaded studs and nickel-plated brass bosses with threaded hole.

FEATURES
CFN. in line lift-off hinges (ELESA patent) have been designed to adjust possible misalignments between the door and the frame.
To choose the convenient type and the right number of hinges for your application, see the Guidelines (on page 1368).

FM design





Code	Description	L	B	d1	h	d2	l	f	f1	H	h1	l1	l2	l3	d	C# [Nm]	⚖
426111	CFN.65 B-M5	64	14.5	M5	8	-	-	19	6	21	14	31	2	24	8	5	24
426121	CFN.65 p-M5x12	64	14.5	-	-	M5	12	19	6	21	14	31	2	24	8	5	30
426131	CFN.65 B-M5-p-M5x12	64	14.5	M5	8	M5	12	19	6	21	14	31	2	24	8	5	27
426141	CFN.65 p-M5x12-B-M5	64	14.5	M5	8	M5	12	19	6	21	14	31	2	24	8	5	27

Suggested tightening torque for assembly screws.

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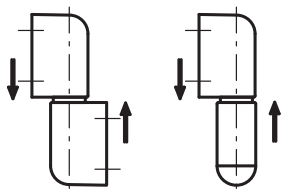
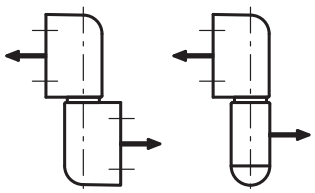
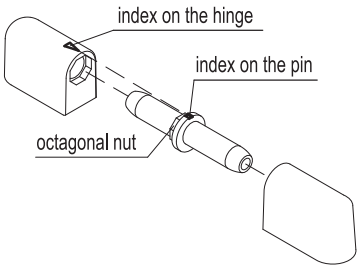
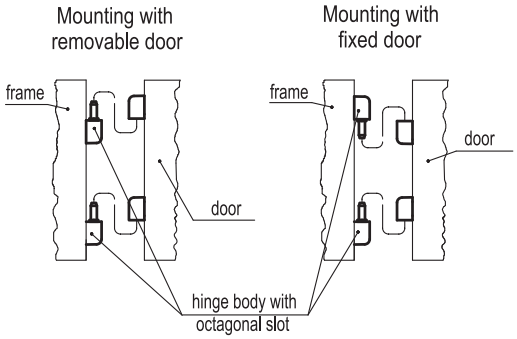
Resistance tests			
AXIAL STRESS		RADIAL STRESS	
			
Parallel planes	Perpendicular planes	Parallel planes	Perpendicular planes
Maximum working load Ea [N]		Maximum working load Er [N]	
590		200	

The elastic deformation, which occurs on the hinge for values of load exceeding the ones indicated in the table, makes the load at breakage meaningless.

ASSEMBLY INSTRUCTIONS

1. Fit the hinge bodies with octagonal slot on the frame and the other two bodies with cylindrical slot on the door.
2. Insert the pins with octagonal slot in the two 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.





OFF LINE ADJUSTMENTS

The pin has an octagonal slot which allows different positions for the adjustment of off line door (fig. 1-2-3-4). To have the door in line with the frame, it can be necessary to adjust the pins of both hinges.

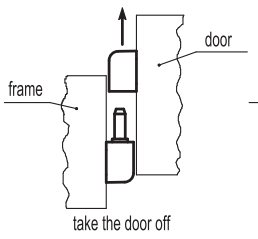


fig.1

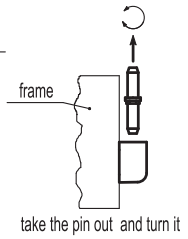


fig.2

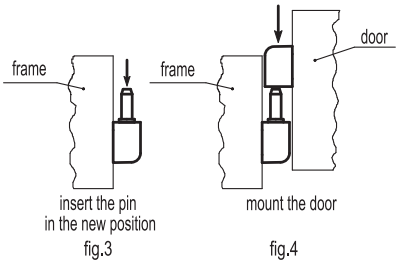
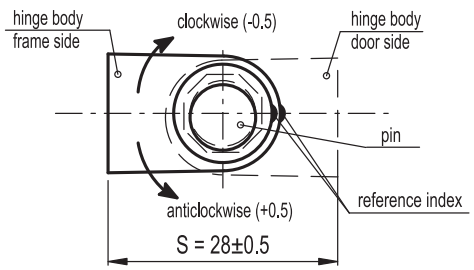


fig.3 fig.4

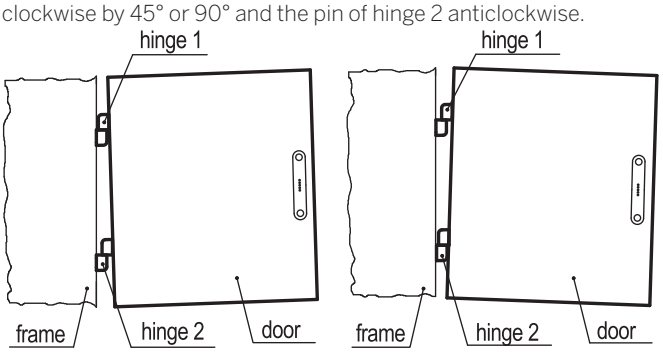
ADJUSTMENT OF THE DOOR

In case the door is off line with the frame, the inclination of the door can be adjusted by turning the octagonal slot of the pins clockwise or anticlockwise.
By turning the pin anticlockwise, the distance S increases (+0.5) while by turning the pin clockwise, it decreases (-0.5).



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 by 45° or 90° and the pin of hinge 2 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 by 45° or 90° and the pin of hinge 2 anticlockwise.



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Offset lift-off hinge

Technopolymer

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

AJUSTABLE PIN WITH OCTAGONAL SLOT
Acetal based (POM) technopolymer, black colour.

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

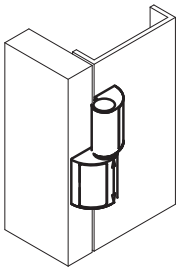
COVERS FOR PIN SLOT
Technopolymer, black colour, matte finish; to be fitted after assembly.

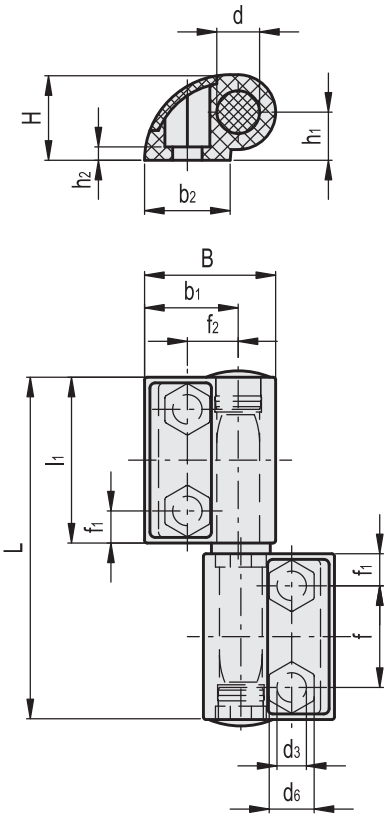
HINGE ASSEMBLY ON FRAME AND DOOR
Pass-through holes for hexagonal head screws, cylindrical head screws with hexagon socket or M5 hexagonal nuts (UNI 5588).

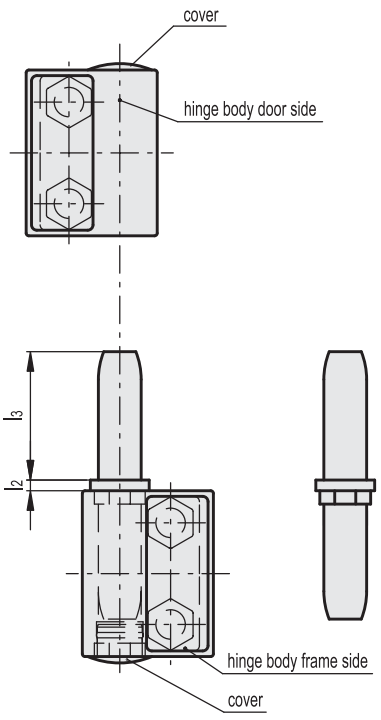
FEATURES AND APPLICATIONS
CFO. offset lift-off hinges (ELESA patent) have been designed to adjust possible misalignments between the door and the frame.
They can be mounted on doors which open on the right or on the left side. Each body of the hinge has a slot for fitting the pin: the opposite side can be closed with the supplied cover.
To choose the convenient type and the right number of hinges for your application, see the Guidelines (on page 1368).

SPECIAL EXECUTIONS ON REQUEST
Screw-covers in different RAL colours.

FM design







Code	Description	L	B	f	f1	f2	H	h1	h2	l1	l2	l3	b1	b2	d	d3	d6	C# [Nm]	⚖
426211-C9	CFO.65 EH-5-C9	64	24.5	19	6	9.5	16	9	2.5	31	2	24	17.5	16	8	5.5	8.5	5	25

Suggested tightening torque for assembly screws.

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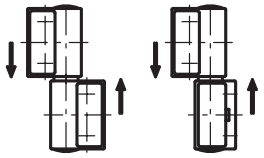
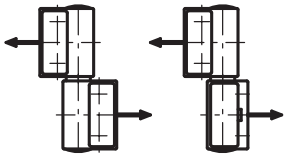
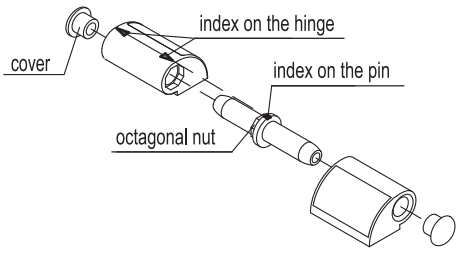
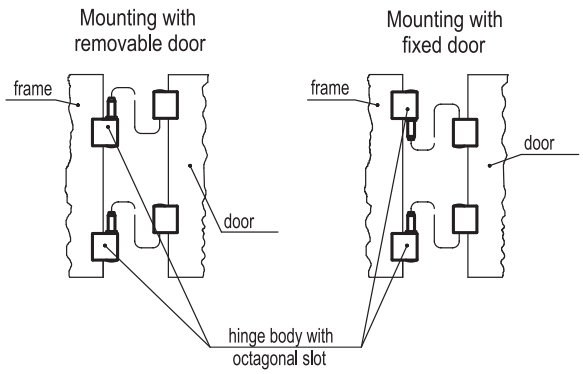
Resistance tests			
AXIAL STRESS		RADIAL STRESS	
			
Parallel planes	Perpendicular planes	Parallel planes	Perpendicular planes
Maximum working load Ea [N]		Maximum working load Er [N]	
290		200	

The elastic deformation, which occurs on the hinge for values of load exceeding the ones indicated in the table, makes the load at breakage meaningless.

ASSEMBLY INSTRUCTIONS

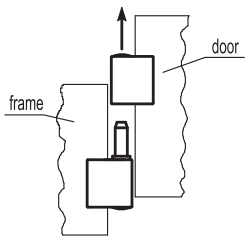
1. Fit the hinge bodies with octagonal slot on the frame and the other two bodies with cylindrical slot on the door.
2. Insert the pins with octagonal slot in the two bodies fitted on the frame by matching the indexes engraved on the pin and on the hinge.
3. Mount the door by matching the hinge bodies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

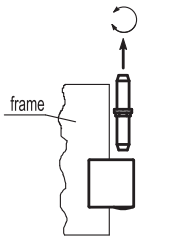


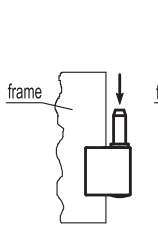


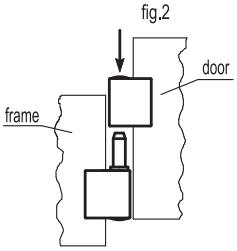
OFF LINE ADJUSTMENTS

The pin has an octagonal slot which allows different positions for the adjustment of off line door (fig. 1-2-3-4). To have the door in line with the frame, it can be necessary to adjust the pins of both hinges.



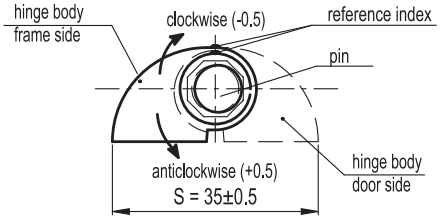






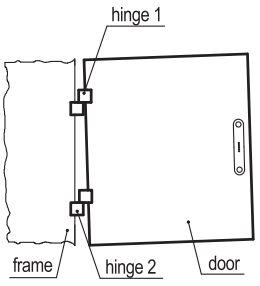
ADJUSTMENT OF THE DOOR

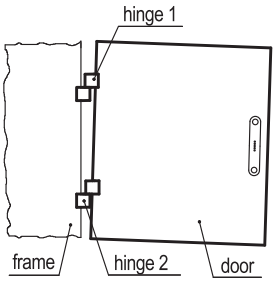
In case the door is off line with the frame, the inclination of the door can be adjusted by turning the octagonal slot of the pins clockwise or anticlockwise.
By turning the pin anticlockwise, the distance S increases (+0.5) while by turning the pin clockwise, it decreases (-0.5).



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 by 45° or 90° and the pin of hinge 2 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 anticlockwise by 45° or 90° and the pin of hinge 2 clockwise.





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GN 161.1

Hinges

detachable / zinc die casting

SPECIFICATION

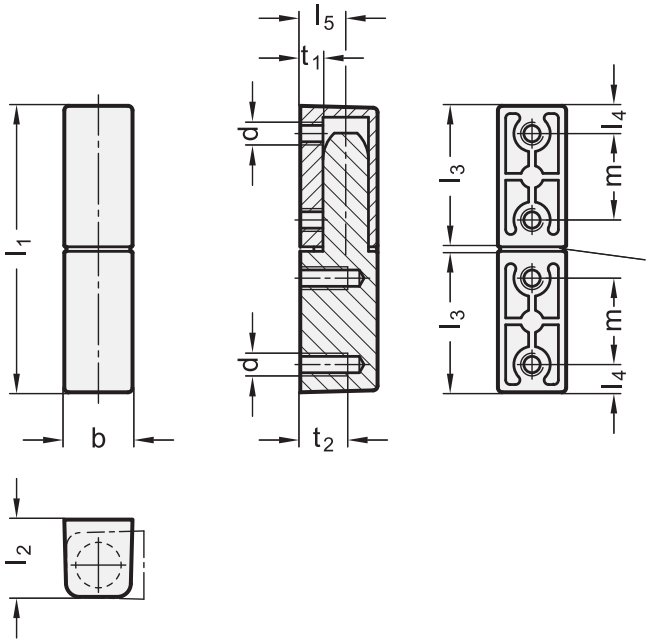
Zinc die casting
plastic coated
black, RAL 9005, textured finish **SW**
silver, RAL 9006, textured finish **SR**

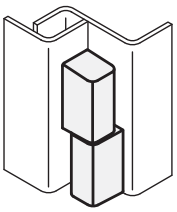
INFORMATION

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.

TECHNICAL INFORMATION

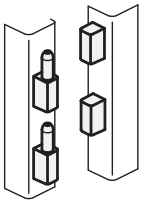
- List of hinges types (see page 1362)



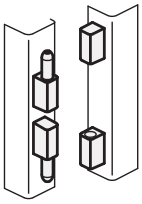


Assembly possibilities

Door to be unhinged



Door not to be unhinged



GN 161.1

Description	b	l1	d	l2	l3	l4	l5	m	t1	t2	Radial load in N	Axial load in N	⚖
GN 161.1-15-63-SR	15	63	M 5	17	31	6.1	10	19	5	10	2300	1500	73
GN 161.1-15-63-SW	15	63	M 5	17	31	6.1	10	19	5	10	2300	1500	72

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GN 161.2

Hinges

detachable / zinc die casting

SPECIFICATION

Types

- Type **R**: fixed bearing (pin) right
- Type **L**: fixed bearing (pin) left

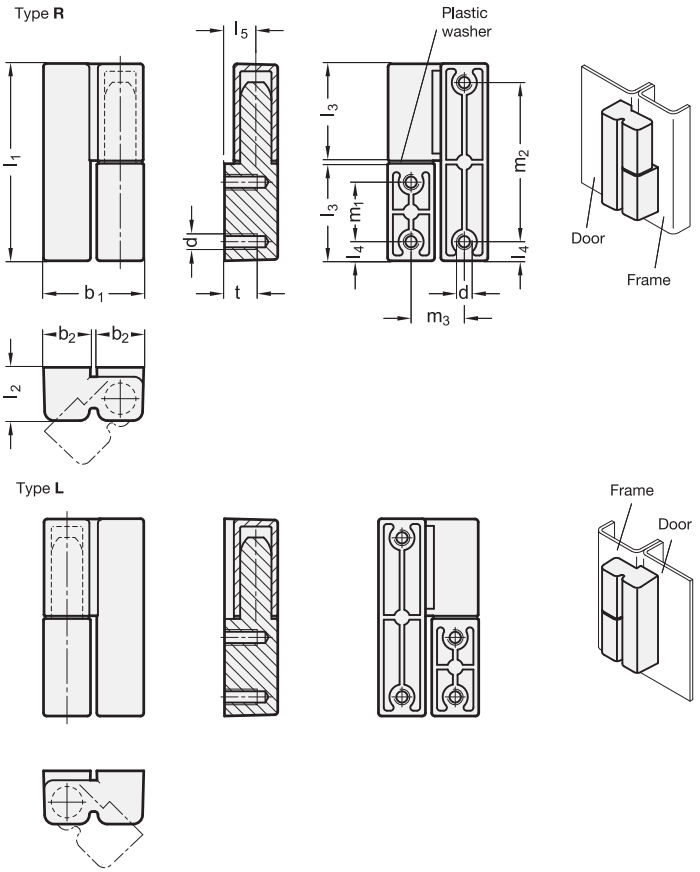
Zinc die casting
plastic coated
black, RAL 9005, textured finish **SW**
silver, RAL 9006, textured finish **SR**

INFORMATION

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.

TECHNICAL INFORMATION

- List of hinges types (see page 1362)



GN 161.2

Description	b1	l1	b2	d	l2	l3	l4	l5	m1	m2	m3	t	Radial load in N	Axial load in N	⚖
GN 161.2-32-63-R-SR	32	63	15	M 5	17	31	6.1	10	19	50.8	17	10	700	2000	125
GN 161.2-32-63-R-SW	32	63	15	M 5	17	31	6.1	10	19	50.8	17	10	700	2000	125
GN 161.2-32-63-L-SR	32	63	15	M 5	17	31	6.1	10	19	50.8	17	10	700	2000	125
GN 161.2-32-63-L-SW	32	63	15	M 5	17	31	6.1	10	19	50.8	17	10	700	2000	124

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GN 128

Hinges

detachable, for welding / Steel

SPECIFICATION

Types

- Type **ST**: with fixed steel pin
- Type **MS**: with fixed brass pin
- Type **STL**: with loose steel pin
- Type **STS**: with fixed steel pin and lubricating nipple

Steel, blank

Pin

- Steel, blank (Types ST / STS / STL)
- Brass, turned, blank (Type MS)

Washer
Brass

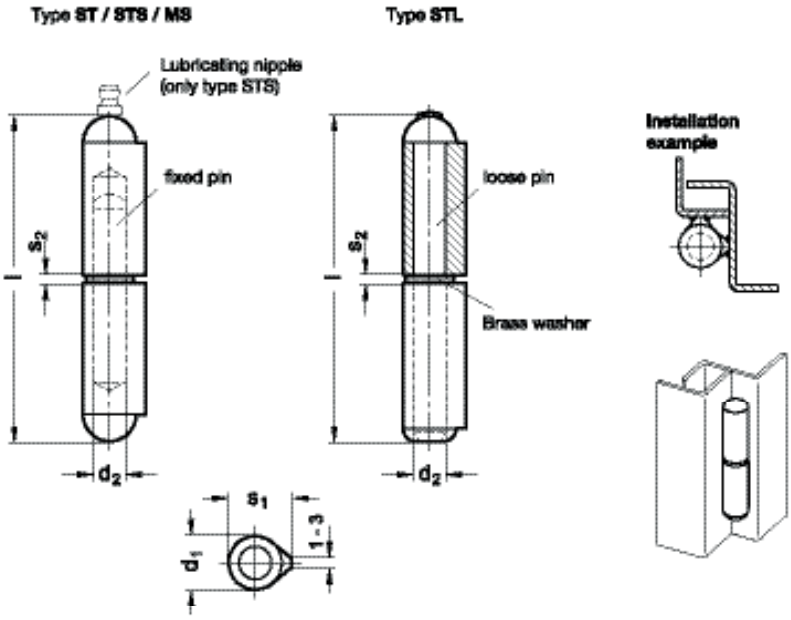
Lubricating nipple DIN 71412-D
Steel, zinc plated

INFORMATION

Hinges GN 128 are produced from drawn weldable profiled steel extrusions.
Types ST, STS and MS feature a hinge pin fixed in the lower half of hinge. Type 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 Type STS hinge has an additional lubricating nipple DIN 71412-D which allows the hinges to be lubricated without dismantling the hinges.

TECHNICAL INFORMATION

- List of hinges types (see page 1362)



*Complete with type index of the Hinges

ST MS STL STS

GN 128

Description	l	d1	d2	s1	s2	⚖
GN 128-40-*	40**	8	5	10	2	15
GN 128-50-*	50**	8	5	10	2	19
GN 128-60-*	60**	10	6	12	2	35
GN 128-80-*	80	13	8	15.5	2	83
GN 128-100-*	100	16	10	20	3	167
GN 128-120-*	120	16	11	20	3	202
GN 128-135-*	135	18	12	23	3	286
GN 128-150-*	150	20	13	25.5	3	393
GN 128-180-*	180	20	14	25.5	3	472
GN 128-200-*	200	23	16	28.5	3	680

** only in Type ST/MS available | Weight type MS

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GN 128.2

Hinges

detachable, for welding, Stainless Steel / Aluminium

SPECIFICATION

Version in Stainless Steel

AISI 304 **NI**
Pin / Washer
Stainless Steel AISI 303

AISI 316 **A4**
Pin / Washer
Stainless Steel AISI 316

Version in Aluminium

weldable, 3.3206 **AL**

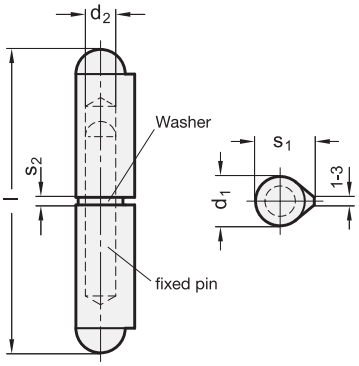
Pin / Washer
Stainless Steel AISI 303

INFORMATION

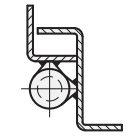
Hinges GN 128.2 are produced from drawn weldable profiled Stainless Steel or Aluminium extrusions.
The pin is fixed in the lower half.

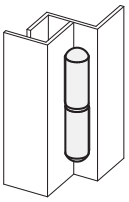
TECHNICAL INFORMATION

- Stainless Steel characteristics (see page A26)
- List of hinges types (see page 1362)



Example of installation





GN 128.2-AL

Description	l	d1	d2	s1	s2	⚖
GN 128.2-60-AL	60	10	6	12	2	17
GN 128.2-80-AL	80	13	8	15.5	2	38
GN 128.2-100-AL	100	16	10	20	3	75
GN 128.2-120-AL	120	16	11	20	3	90
GN 128.2-150-AL	150	20	13	25.5	3	180
GN 128.2-180-AL	180	20	14	25.5	3	221

GN 128.2-A4

STAINLESS STEEL

Description	l	d1	d2	s1	s2	⚖
GN 128.2-80-A4	80	13	8	15.5	2	86
GN 128.2-100-A4	100	16	10	20	3	150
GN 128.2-120-A4	120	16	11	20	3	204

GN 128.2-NI

STAINLESS STEEL

Description	l	d1	d2	s1	s2	⚖
GN 128.2-60-NI	60	10	6	12	2	36
GN 128.2-80-NI	80	13	8	15.5	2	85
GN 128.2-100-NI	100	16	10	20	3	164
GN 128.2-120-NI	120	16	11	20	3	199
GN 128.2-150-NI	150	20	13	25.5	3	394
GN 128.2-180-NI	180	20	14	25.5	3	400

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Hinges for removable doors

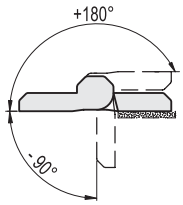
SUPER-technopolymer

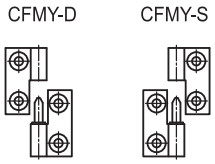
MATERIAL
Glass-fibre reinforced polyamide based (PA) SUPER-technopolymer, black colour, matte finish.

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

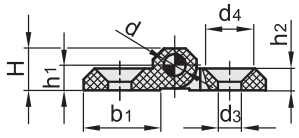
STANDARD EXECUTIONS
Pass-through holes for countersunk head screws.
- **CFMY-D**: rotation pin fitted on the right hinge body.
- **CFMY-S**: rotation pin fitted on the left hinge body.

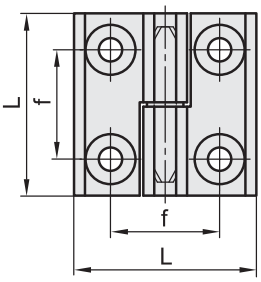
ROTATION ANGLE (APPROXIMATE VALUE)
Max 270° (-90° and +180° being 0° the condition where the two interconnected surfaces are on the same plane).
Do not exceed the rotation angle limit so as not to prejudice the hinge mechanical performance.
To choose the convenient type and the right number of hinges for your application, see the Guidelines (on page 1368).





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]
CFMY.60	2050	1600	1250





Code	Description	L	f±0.25	H	h1	h2	b1	d	d3	d4	C# [Nm]	⚖
425981	CFMY.40 SH-4-D	40	25	9	5.5	5	14	4	4.5	8.5	3	14
425982	CFMY.40 SH-4-S	40	25	9	5.5	5	14	4	4.5	8.5	3	14
425971	CFMY.50 SH-6-D	50	30	11.5	6.5	6	18	6	6.5	12.5	5	30
425972	CFMY.50 SH-6-S	50	30	11.5	6.5	6	18	6	6.5	12.5	5	30
425965	CFMY.60 SH-6-D	60	36	15	8.5	8	26	6	6.5	12.5	5	41
425966	CFMY.60 SH-6-S	60	36	15	8.5	8	26	6	6.5	12.5	5	41
425961	CFMY.60-SH-8-D	60	36	15	8.5	8	26	8	8.5	16.5	5	41
425962	CFMY.60-SH-8-S	60	36	15	8.5	8	26	8	8.5	16.5	5	41

Suggested tightening torque for assembly screws.

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GN 337

Hinges

Detachable, Zinc die casting / Stainless Steel

SPECIFICATION

Type

- Type **A**: 2x2 bores for countersunk screws

Identification no.

- Version **1**: fixed bearing (pin) right
- Version **2**: fixed bearing (pin) left

Version in Zinc die casting ZD

Zinc die casting
plastic coated
black, RAL 9005, textured finish **SW**
silver, RAL 9006, textured finish **SR**

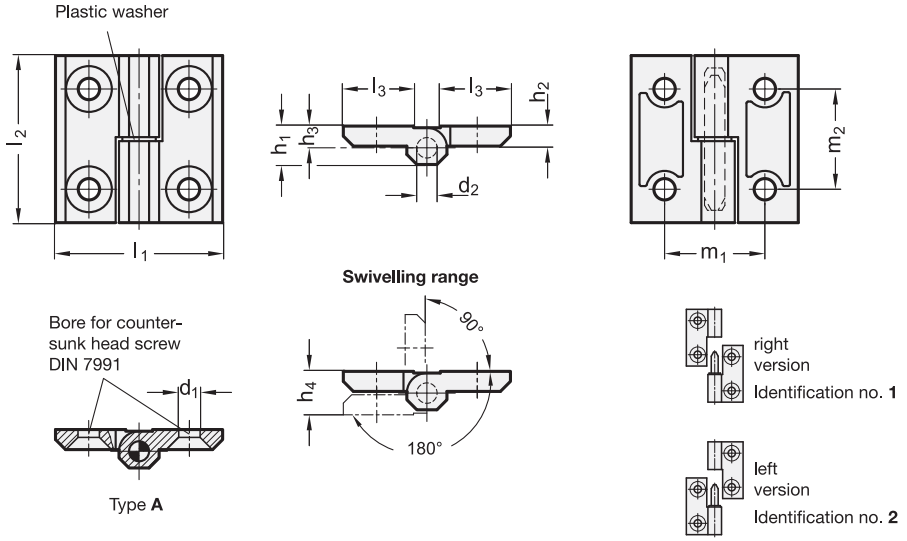
Version in Stainless Steel NI

Stainless Steel AISI CF-8
matt shot-blasted **GS**

Pin
Stainless Steel AISI 303

TECHNICAL INFORMATION

- Stainless Steel characteristics (see page A26)
- Load rating information (see page A40)
- List of hinges types (see page 1362)



*Complete with colour index of the Hinges (SW or SR)

SW RAL9005 SR RAL9006

GN 337-ZD

Description	l1	l2	d1	d2	h1	h2	h3	h4 +0.5	l3	m1	m2	⚖
GN 337-ZD-40-40-A-1-*	40	40	5.3	4	9	5	5.5	11	16	25	25	43
GN 337-ZD-50-50-A-1-*	50	50	6.4	6	11.5	6	6.5	13	21	30	30	40
GN 337-ZD-60-60-A-1-*	60	60	8.3	8	15	8	8.5	17	26	36	36	80
GN 337-ZD-40-40-A-2-*	40	40	5.3	4	9	5	5.5	11	16	25	25	80
GN 337-ZD-50-50-A-2-*	50	50	6.4	6	11.5	6	6.5	13	21	30	30	150
GN 337-ZD-60-60-A-2-*	60	60	8.3	8	15	8	8.5	17	26	36	36	155

GN 337-NI

STAINLESS STEEL

Description	l1	l2	d1	d2	h1	h2	h3	h4 +0.5	l3	m1	m2	⚖
GN 337-NI-40-40-A-1-GS	40	40	5.3	4	9	5	5.5	11	16	25	25	50
GN 337-NI-50-50-A-1-GS	50	50	6.4	6	11.5	6	6.5	13	21	30	30	100
GN 337-NI-60-60-A-1-GS	60	60	8.3	8	15	8	8.5	17	26	36	36	200
GN 337-NI-40-40-A-2-GS	40	40	5.3	4	9	5	5.5	11	16	25	25	60
GN 337-NI-50-50-A-2-GS	50	50	6.4	6	11.5	6	6.5	13	21	30	30	100
GN 337-NI-60-60-A-2-GS	60	60	8.3	8	15	8	8.5	17	26	36	36	200

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Hinges with snap-in positions

screw-covers, technopolymer

MATERIAL
Acetal resin based (POM) technopolymer, black colour, matte finish.

ROTATING PIN
Acetal based (POM) technopolymer, black colour.

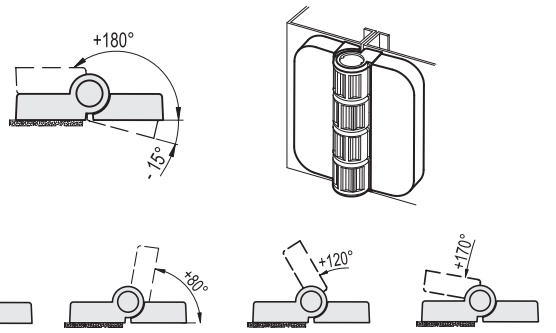
SCREW-COVERS
Polyester based (PBT) technopolymer, black colour, matte finish, snap-in assembly.

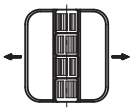
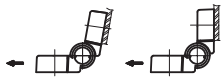
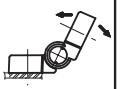
STANDARD EXECUTIONS
- **CFP-SH**: pass-through holes for countersunk head screws.
- **CFP-CH**: pass-through holes for cylindrical head screws.
- **CFP-EH**: pass-through holes for hexagonal head screws.

ROTATION ANGLE (APPROXIMATE VALUE)
- 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.
- This hinge can be used combined with the hinge type CFQ. with the same design, without detent position.
- 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 (on page 1368).

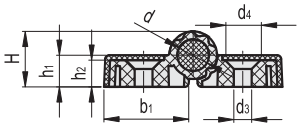
RESISTANT TORQUE
All detent positions guarantee a resistant torque of about 1.1 Nm (which is the torque that must be applied to free the detent device of the hinge).
The hinge had been tested with more than 10.000 opening and closing cycles and the value of the resistant torque was unchanged.

FM design

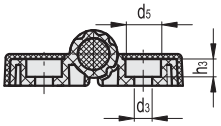


AXIAL STRESS		RADIAL STRESS		80° AND 90° ANGLED STRESS		120° ANGLED STRESS		170° ANGLED STRESS		Resistant torque
										
Maximum working load Ea [N]	Load at breakage Ra [N]	Maximum working load Er [N]	Load at breakage Rr [N]	Maximum working load E80 e E90 [N]	Load at breakage R80 e R90 [N]	Maximum working load E120 [N]	Load at breakage R120 [N]	Maximum working load E170 [N]	Load at breakage R170 [N]	[Nm]
300	1220	350	1970	345	620	285	855	400	1410	1.1

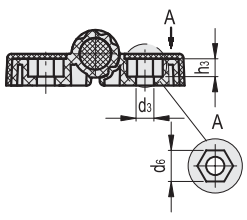
CFP-SH

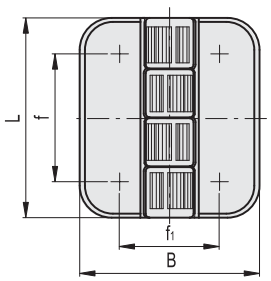


CFP-CH



CFP-EH





Code	Description	L	B	f	f1	H	h1	h2	h3	b1	d	d3	d4	d5	d6	C# [Nm]	⚖
426311-C9	CFP.50 SH-4-C9	50	45	32	25	14	8	7	-	21.5	8	4.5	8.5	-	-	1.5	17
426312-C9	CFP.50 CH-4-C9	50	45	32	25	14	8	7	4.5	21.5	8	4.5	-	8.5	-	1.5	17
426313-C9	CFP.50 EH-4-C9	50	45	32	25	14	8	7	4.5	21.5	8	4.5	-	-	7	1.5	17

Suggested tightening torque for assembly screws.

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Hinges with snap-in positions

Technopolymer

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

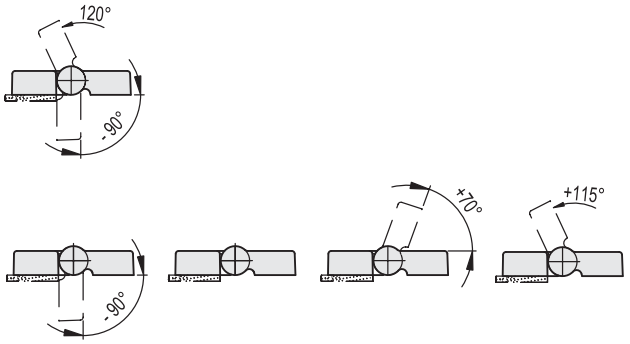
ROTATING PIN
AISI 303 stainless steel.

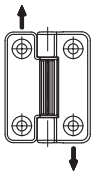
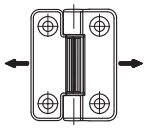
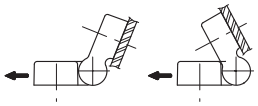
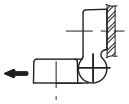
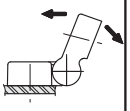
STANDARD EXECUTIONS
- **CFV-SH**: pass-through holes for countersunk head screws.
- **CFV-EH**: pass-through holes for hexagonal head screws.

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 (on page 1368).

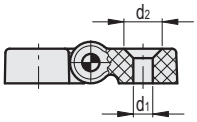
RESISTANT TORQUE
All detent positions guarantee a resistant torque of about 3 Nm (which is the torque that must be applied to free the detent device of the hinge).
The hinge had been tested with more than 20.000 opening and closing cycles and the value of the resistant torque was unchanged.

FM design

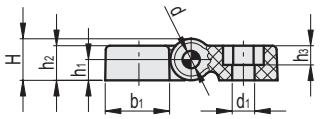


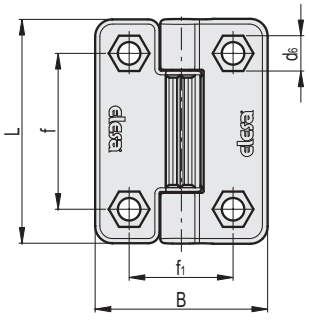
Resistance tests	AXIAL STRESS		RADIAL STRESS		70° e 115° ANGLED STRESS		90° ANGLED STRESS		Resistant torque
									
Description	Maximum working load Ea [N]	Load at breakage Ra [N]	Maximum working load Er [N]	Load at breakage Rr [N]	Maximum working load E70 E115 [N]	Load at breakage R70 R115 [N]	Maximum 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

CFV-SH



CFV-EH





Code	Description	L	B	f	f1	H	h1	h2	h3	b1	d	d1	d2	d6	C# [Nm]	⚖
427626	CFV.65 SH-6	65	49.5	45	30	12	6	10	-	18.5	5	6.5	12.5	-	4	38
427621	CFV.65 EH-6	65	49.5	45	30	12	6	10	5	18.5	5	6.5	-	10	4	38

Suggested tightening torque for assembly screws.

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Hinges with adjustable friction

Technopolymer

MATERIAL
Acetal based (POM) technopolymer. 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.

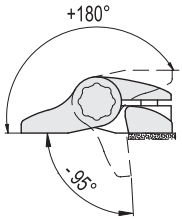
STANDARD EXECUTIONS
Assembly by means of pass-through holes for cylindrical head screws.
- **CFU**: black colour, matte finish.
- **CFU-CLEAN**: white colour similar to RAL 9002, matte finish.

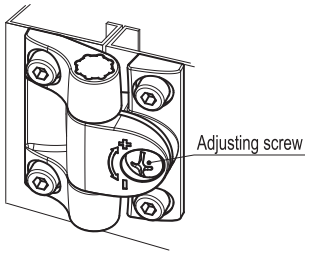
FEATURES AND APPLICATIONS
The main feature of CFU. hinge is the possibility to adjust the resistant torque of the door on which it is assembled, facilitating the door clamping in the various positions of opening, partial opening and closing.
To adjust the friction force, simply turn the screw on the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

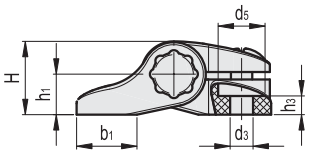
ROTATION ANGLE (APPROXIMATE VALUE)
Max 275° (-95° and +180° being 0° the condition where the two interconnected surfaces are on the same plane).
Do not exceed the rotation angle limit so as not to prejudice the hinge mechanical performance.

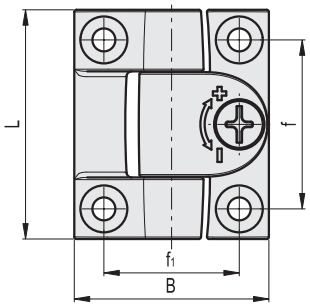
RESISTANT TORQUE
The resistant torque values of 1.4 and 4 Nm can be obtained by applying a maximum tightening torque of 0.8 Nm (CFU.40) and 4 Nm (CFU.60) on the adjusting screw.
The hinge had been tested with more than 60.000 opening and closing cycles and the values of the resistant torque was unchanged.
To choose the convenient type and the right number of hinges for your application, see the Guidelines (on page 1368).

ELESA Original design



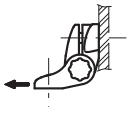
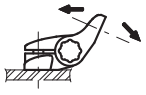






Code	Description	Code	Description	L	B	f±0.25	f1 ±0.25	H	h1	h3	b1	d3	d5	C# [Nm]	⚖
427512	CFU.40 CH-4	427513	CFU.40 CH-4 CLEAN	43	36.5	31.7	25.5	14	7.5	3.5	11.5	4.5	9	1	26
427522	CFU.60 CH-6	427523	CFU.60 CH-6 CLEAN	63.5	56.5	47.5	38	21	11.5	6.5	17.5	6.5	12.5	3	49

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

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GN 437

Hinges

with adjustable friction / zinc die casting

SPECIFICATION

Type

Type **A**: 2x2 bores for countersunk screws

Zinc die casting **ZD**
plastic coated
black, RAL 9005, textured finish **SW**
silver, RAL 9006, textured finish **SR**

Friction cone
Plastic (Polyacetal POM)
temperature resistant up to 80 °C

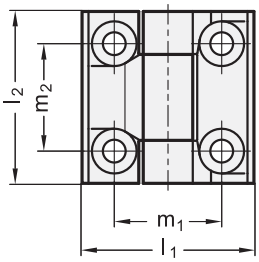
Set screw / Hexagon nut
Steel zinc plated, blue passivated

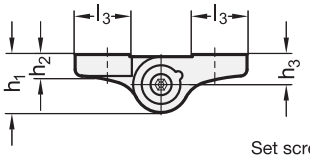
INFORMATION

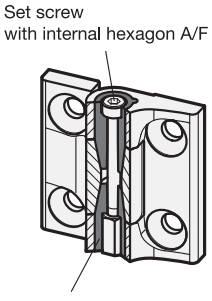
The setscrew in the hinges GN 437 allows the mobility of the hinge to be changed. This also generates a constant braking torque adjustable across the whole of the rotating range. The rotation of doors and flaps is so inhibited, also preventing the inadvertent movement.
The friction torque is accomplished by interlocking two slim friction cones. The large friction surface and the hard-wearing plastic of the friction cones guarantee a long service life with virtually constant stiffness.
Owing to the structure and the prestress of the friction cones, the hinge has virtually no radial play and no play at all in axial direction.

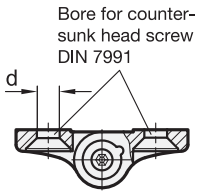
TECHNICAL INFORMATION

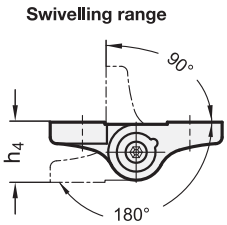
- Load rating information of hinges (see page A40)
- Plastic characteristics (see page A2)
- List of hinges types (see page 1362)

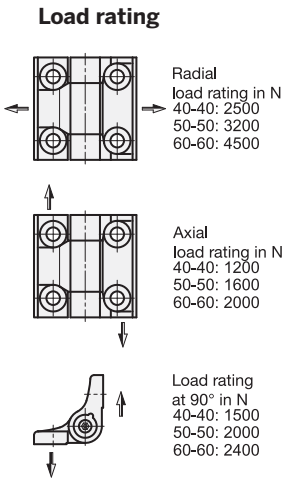












GN 437

Description	l1	l2	d	h1	h2	h3	h4	l3	m1	m2	A/F	Max. recommended tightening torque of the set screw in Nm	Friction torque in Nm ≈	⚖
GN 437-ZD-40-40-A-SR	40	40	5.3	13.5	5	7	14	13	25	25	2.5	0.5	2	53
GN 437-ZD-40-40-A-SW	40	40	5.3	13.5	5	7	14	13	25	25	2.5	0.5	2	50
GN 437-ZD-50-50-A-SR	50	50	6.5	15.5	6	8	16	16.5	30	30	3	0.75	4	91
GN 437-ZD-50-50-A-SW	50	50	6.5	15.5	6	8	16	16.5	30	30	3	0.75	4	90
GN 437-ZD-60-60-A-SR	60	60	8.3	18.5	7.5	9.5	19	20	36	36	4	1.5	6.5	161
GN 437-ZD-60-60-A-SW	60	60	8.3	18.5	7.5	9.5	19	20	36	36	4	1.5	6.5	161

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Hinges
with built-in safety switch

SUPER-technopolymer

MATERIAL

- **Hinge body**: self-extinguish high-rigidity SUPER-technopolymer, black or grey colour RAL 7040 (C33).
- **Rotation pin**: glass-fibre reinforced polyamide-based tecnopolymer (PA), black or grey colour RAL 7040 (C33).
- **Assembly kit** (see assembly instructions):
  - n°4 technopolymer covers (fig.3).
  - n°4 technopolymer bushings (fig.4 and 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) wich 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

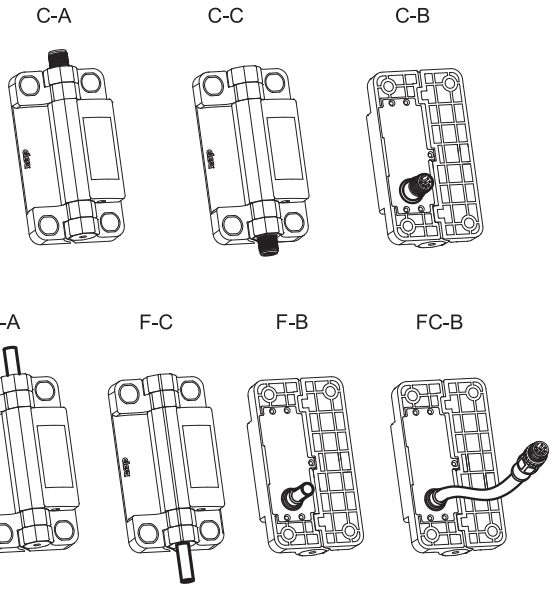
CFSW. hinge must be mounted with the side containing the microswitch on the fixed part (frame structure) and the other side on the movable part (door). The executions shown below refer to the hinges with the micro-switch on the right side.

- **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 8 X AWG 22.

Contact blocks in the standard execution:

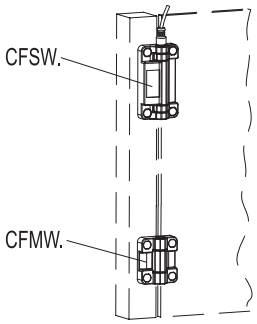
- **NO-NC-NO-NC**: 2 NO contacts + 2 NC contacts.
- **NO-NC-NC-NC**: 1 NO contact + 3 NC contacts.



ELESA Original design

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, PLe in compliance with EN ISO 13849-1 or security category 4 in compliance with EN 954-1 with redundant structure.



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ACCESSORIES ON REQUEST
- FC.M12x1: extensions with 8 pole M12 female axial connector.
- PMW. (see page 1433): 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 ovelapping 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 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 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. (on page 1434) . 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.

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).

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

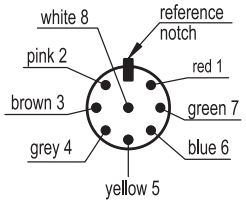


Fig.1

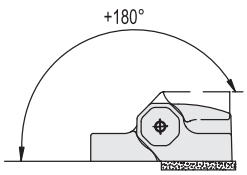


Fig.2

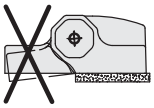
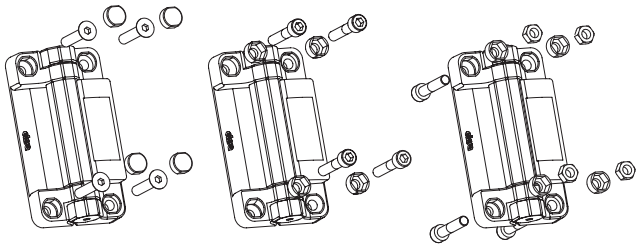


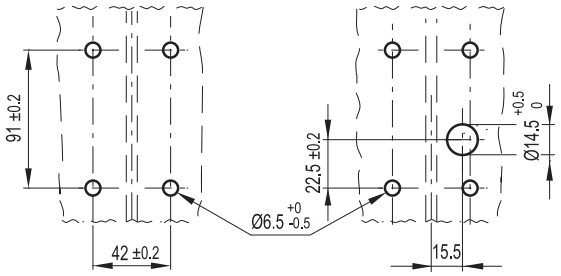
Fig.3 Fig.4 Fig.5



Drilling template

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

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



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

Double insulation

Positive opening in compliance with EN 60947-5-1

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	-	4 A
	120 V	-	4 A
	250 V	-	4 A
	400 V	-	4 A
DC13 standard IEC 60947-5-2 Typical applications: electromagnet controls in direct current	24 V	2 A	2 A
	125 V	-	0.4 A
	250 V	-	0.3 A

Remark: the category of usage AC 15 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.

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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 UNI EN ISO 13857).
- 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 means of a screwdriver turning the assembly screw clockwise (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, UNI EN ISO 14119 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.

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)
C 300 AC control	120 V	1.5 A	Therm. current 2.5 A	24 V / 2 A limited voltage-limited current / class 2 circuit
	240 V	0.75 A		
Q 300 DC control	125 V	0.55 A	Therm. current 2.5 A	
	250 V	0.27 A		

Fig.6

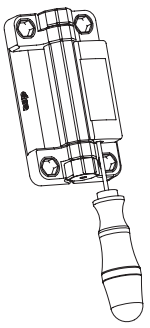
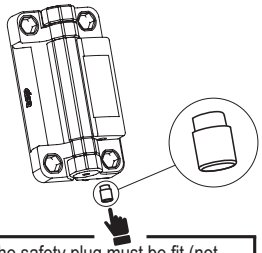
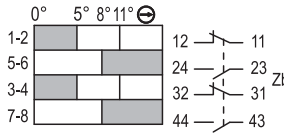


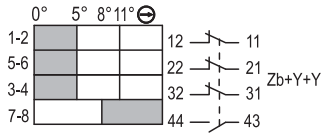
Fig.7



Stroke diagram **2NO+2NC** (production setting)

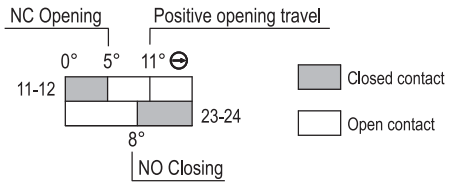


Stroke diagram **1NO+3NC** (production setting)



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



Mechanical features (values approved by IMQ)	**Electrical features** (values approved by IMQ)	
Type of contacts: Ag 999	Thermic power Ith	Cable 4 A
		Connector 2.5 A
Maximum working frequence: 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 UI 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: minimum 2° / sec., maximum 90° / sec.	Short circuit conditioned current: 1000 A	
	Pollution degree: 3	
	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.

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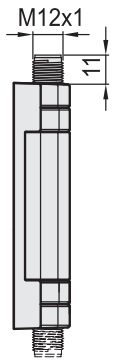
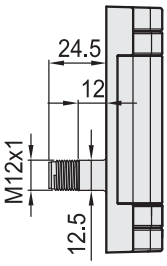
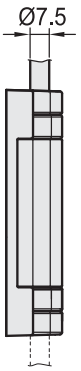
CFSW-C-A
CFSW-C-C



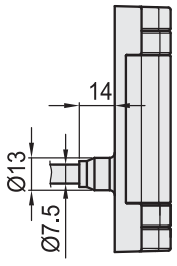
CFSW-C-B



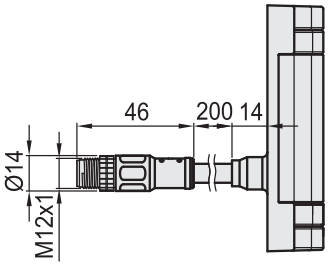
CFSW-F-A
CFSW-F-C

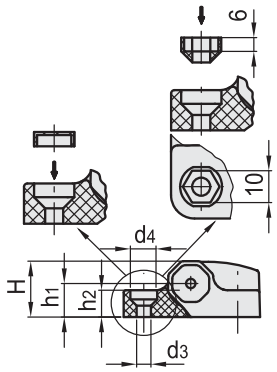


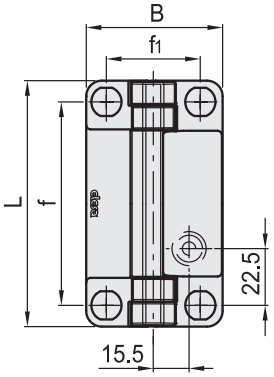
CFSW-F-B



CFSW-FC-B







Code	Description	Code	Description	L	B	f	f1	H	h1	h2	d3	d4	C# [Nm]	⚖
426601	CFSW.110-6-2NO+2NC-C-A	426601-C33	CFSW.110-6-2NO+2NC-C-A-C33	110	60	91±0.2	42±0.2	25	15	12	6.5	12	5	150
426602	CFSW.110-6-2NO+2NC-C-C	426602-C33	CFSW.110-6-2NO+2NC-C-C-C33	110	60	91±0.2	42±0.2	25	15	12	6.5	12	5	150
426603	CFSW.110-6-2NO+2NC-C-B	426603-C33	CFSW.110-6-2NO+2NC-C-B-C33	110	60	91±0.2	42±0.2	25	15	12	6.5	12	5	150
426611	CFSW.110-6-2NO+2NC-F-A-2	426611-C33	CFSW.110-6-2NO+2NC-F-A-2-C33	110	60	91±0.2	42±0.2	25	15	12	6.5	12	5	280
426612	CFSW.110-6-2NO+2NC-F-C-2	426612-C33	CFSW.110-6-2NO+2NC-F-C-2-C33	110	60	91±0.2	42±0.2	25	15	12	6.5	12	5	280
426613	CFSW.110-6-2NO+2NC-F-B-2	426613-C33	CFSW.110-6-2NO+2NC-F-B-2-C33	110	60	91±0.2	42±0.2	25	15	12	6.5	12	5	280
426615	CFSW.110-6-2NO+2NC-F-A-5	426615-C33	CFSW.110-6-2NO+2NC-F-A-5-C33	110	60	91±0.2	42±0.2	25	15	12	6.5	12	5	475
426616	CFSW.110-6-2NO+2NC-F-C-5	426616-C33	CFSW.110-6-2NO+2NC-F-C-5-C33	110	60	91±0.2	42±0.2	25	15	12	6.5	12	5	475
426617	CFSW.110-6-2NO+2NC-F-B-5	426617-C33	CFSW.110-6-2NO+2NC-F-B-5-C33	110	60	91±0.2	42±0.2	25	15	12	6.5	12	5	475
426619	CFSW.110-6-2NO+2NC-FC-B	426619-C33	CFSW.110-6-2NO+2NC-FC-B-C33	110	60	91±0.2	42±0.2	25	15	12	6.5	12	5	475
426661	CFSW.110-6-1NO+3NC-C-A	426661-C33	CFSW.110-6-1NO+3NC-C-A-C33	110	60	91±0.2	42±0.2	25	15	12	6.5	12	5	150
426662	CFSW.110-6-1NO+3NC-C-C	426662-C33	CFSW.110-6-1NO+3NC-C-C-C33	110	60	91±0.2	42±0.2	25	15	12	6.5	12	5	150
426663	CFSW.110-6-1NO+3NC-C-B	426663-C33	CFSW.110-6-1NO+3NC-C-B-C33	110	60	91±0.2	42±0.2	25	15	12	6.5	12	5	150
426671	CFSW.110-6-1NO+3NC-F-A-2	426671-C33	CFSW.110-6-1NO+3NC-F-A-2-C33	110	60	91±0.2	42±0.2	25	15	12	6.5	12	5	280
426672	CFSW.110-6-1NO+3NC-F-C-2	426672-C33	CFSW.110-6-1NO+3NC-F-C-2-C33	110	60	91±0.2	42±0.2	25	15	12	6.5	12	5	280
426673	CFSW.110-6-1NO+3NC-F-B-2	426673-C33	CFSW.110-6-1NO+3NC-F-B-2-C33	110	60	91±0.2	42±0.2	25	15	12	6.5	12	5	280
426675	CFSW.110-6-1NO+3NC-F-A-5	426675-C33	CFSW.110-6-1NO+3NC-F-A-5-C33	110	60	91±0.2	42±0.2	25	15	12	6.5	12	5	475
426676	CFSW.110-6-1NO+3NC-F-C-5	426676-C33	CFSW.110-6-1NO+3NC-F-C-5-C33	110	60	91±0.2	42±0.2	25	15	12	6.5	12	5	475
426677	CFSW.110-6-1NO+3NC-F-B-5	426677-C33	CFSW.110-6-1NO+3NC-F-B-5-C33	110	60	91±0.2	42±0.2	25	15	12	6.5	12	5	475
426679	CFSW.110-6-1NO+3NC-FC-B	426679-C33	CFSW.110-6-1NO+3NC-FC-B-C33	110	60	91±0.2	42±0.2	25	15	12	6.5	12	5	475

Suggested tightening torque for assembly screws.

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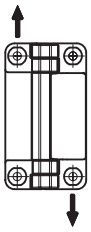
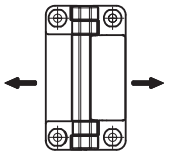
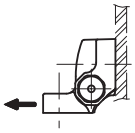
Resistance tests	AXIAL STRESS	RADIAL STRESS	90° ANGLED STRESS
			
Description	Max limit static load Sa [N]	Max limit static load Sr [N]	Max limit static load S90 [N]
CFSW.110	2100	2800	1300

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]
P_1 = 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
D_1 = 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 ($d_T = d_1 + d_2 + ... + dn$). In case of only two hinge assembled, d_T is simply the distance between them.

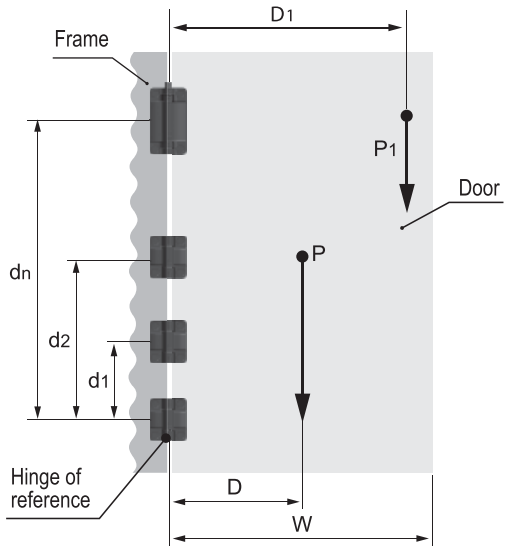
Conditions to be checked in order to ensure a correct functioning with two or more hinges.

$$\frac{(P+P1)}{N} \cdot k < Sa$$

$$\frac{[(P \cdot D)+(P1 \cdot D1)]}{d_T} \cdot k < Sr$$

$$\frac{[(P \cdot D)+(P1 \cdot D1)]}{d_T} \cdot k < S90$$

Hinged door on a vertical axis



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
d_T = 1,5 m d_2 = 1 m d_1 = 0,5 m
P_1 = 196 N (20 Kg) D_1 = 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.

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CFSW. and CFMW. assembly kit for profiles

SUPER-technopolymer

PLATE
Glass-fibre reinforced polyamide (PA) SUPER-technopolymer, black colour, matte finish.

SCREWS AND NUTS
AISI 304 stainless steel.

FEATURES AND APPLICATIONS
PMW assembly plate allows the mounting of CFSW.110 and CFMW.110 hinges on standard profiles of 30, 35, 40, 45 and 50 mm with T-slot.
The mounting on profiles of 40 mm can also be performed without the use of assembly plate.
The fixing screws of the plate to the profile are not accessible after the assembly of the hinges (Fig. 1). Therefore, even with the use of PMW assembly plate, CFSW. and CFMW. hinges remain tamperproof.
The supply of the plate includes:
- 2 countersunk screws M6x12 (for CFSW.110).
- 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 plate 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 979) (not included in supply).
- Fit CFSW.110 or CFMW.110 hinge (fig. 1) on the relative plate 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 plate, properly assembled as indicated in the assembly instructions, guarantees the max limit static load of CFSW. and CFMW.

ELESA Original design

Fig.1

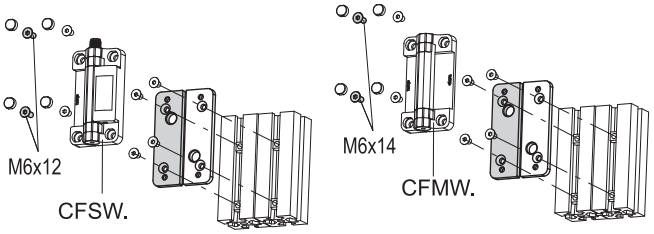
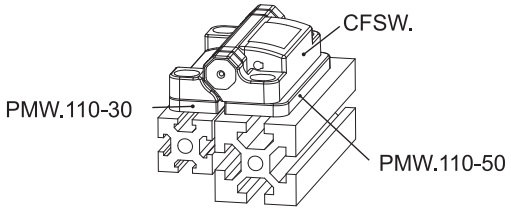
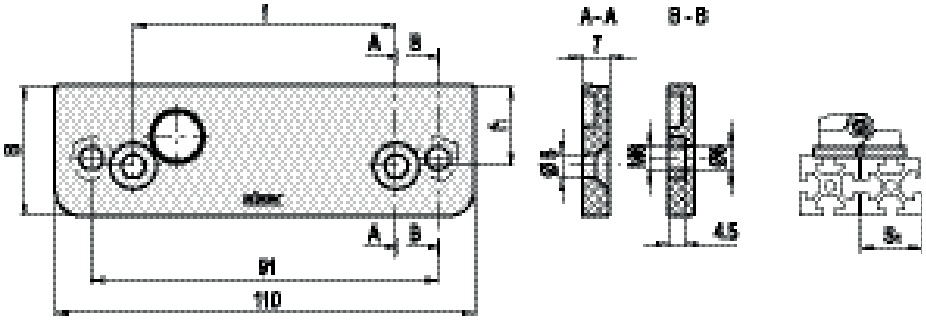


Fig.2





Code	Description	s1	B	f	f1	⚖
51901	PMW.110-30	30	28	73	14.5	26
51903	PMW.110-35	35	28	72	16.5	27
51904	PMW.110-40	40	28	70.5	19	29
51905	PMW.110-45	45	34	69	21	31
51907	PMW.110-50	50	34	69	24	28

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Hinges

SUPER-technopolymer

MATERIAL
Glass-fibre reinforced polyamide (PA) SUPER-technopolymer, black or grey colour RAL 7040 (C33), matte finish.

ROTATING PIN
Glass-fibre reinforced polyamide based (PA) technopolymer, black or grey colour RAL 7040 (C33).

ASSEMBLY KIT (SEE ASSEMBLY):
- n°4 technopolymer covers (fig.1).
- n°4 technopolymer bushings (fig.2 and fig.3).

MOUNTING
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. CFSW. (see page 1428).

ROTATION ANGLE (APPROXIMATE VALUE)
Max 180° (0° 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.
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 (on page 1368).

ELESA Original design

Fig.1

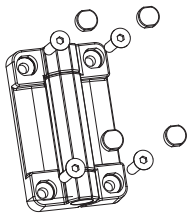


Fig.2

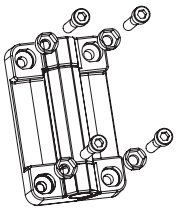
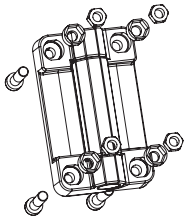


Fig.3



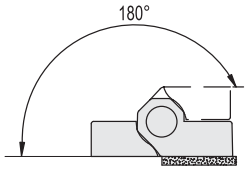
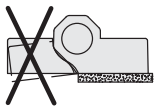
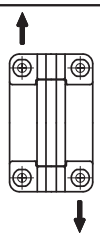
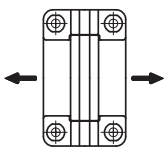
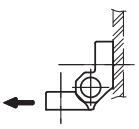


Fig.4



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

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

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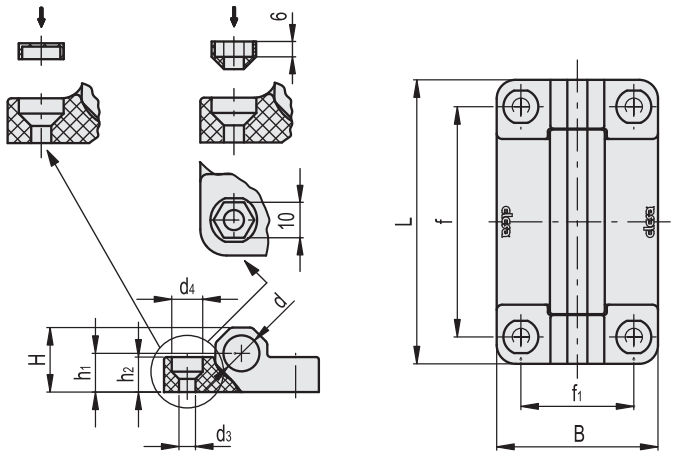

Code	Description	Code	Description	L	B	f±0.25	f1 ±0.25	H	h1	h2	d	d3	d4	C# [Nm]	⚖
425951	CFMW.70-SH-6	425951-C33	CFMW.70-SH-6-C33	70	60	50	42	25	15	15	13.5	6.5	12	5	80
425956	CFMW.110-SH-6	425956-C33	CFMW.110-SH-6-C33	110	60	91	42	25	15	15	12	6.5	12	5	125

Suggested tightening torque for assembly screws.

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Hinges with built-in safety switch

SUPER-technopolymer

MATERIAL

Self-extinguish high-rigidity SUPER-technopolymer, black colour, matte finish.
Thanks to its housing made out of SUPER-technopolymer, the CFSQ 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.

ROTATING PIN

AISI 303 stainless steel.

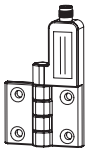
STANDARD EXECUTIONS

Assembly by means of pass-through holes for M6 countersunk-head screws UNI 5933, DIN 7991.
Starting work angle 0°:
- **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.

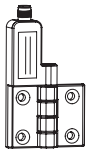
Starting work angle -90°:
- **C-A-D-EA**: axial connector, microswitch on the right.
- **C-A-S-EA**: axial connector, microswitch on the left.
- **C-B-D-EA**: rear connector, microswitch on the right.
- **C-B-S-EA**: rear connector, microswitch on the left.

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

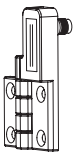
CFSQ-C-A-D
CFSQ-C-A-D-EA



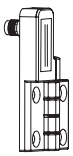
CFSQ-C-A-S
CFSQ-C-A-S-EA



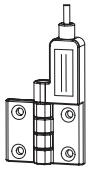
CFSQ-C-B-D
CFSQ-C-B-D-EA



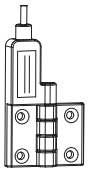
CFSQ-C-B-S
CFSQ-C-B-S-EA



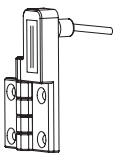
CFSQ-F-A-D



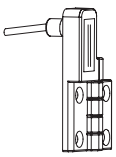
CFSQ-F-A-S



CFSQ-F-B-D



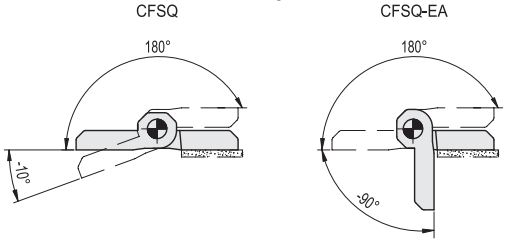
CFSQ-F-B-S



ROTATION ANGLE (APPROXIMATE VALUE)

CFSQ: max 190° (-10° and +180° see Fig.1).
CFSQ-EA: max 270° (-90° and +180° see Fig.1).
0° is the condition where the interconnected surfaces are on the same plane.
See Built-in safety switch functioning and maintenance.
The hinge must not be stressed by any negative angle of less than -10° (CFSQ) and -90° (CFSQ-EA).

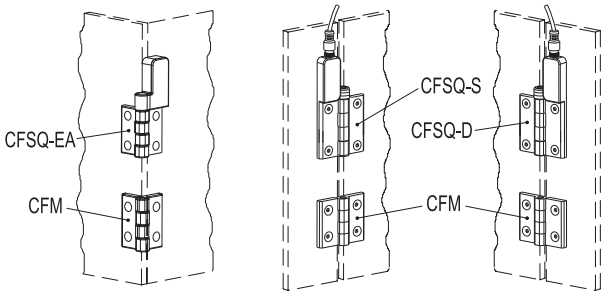
Fig.1



ELESA Original design

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 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.
- 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.



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ACCESSORIES ON REQUEST
- FC.M12x1: 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.

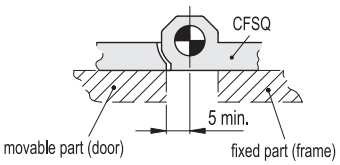
ASSEMBLY INSTRUCTIONS
- Fit the hinge body with the built-in switch on the fixed part (frame) and the other body on the door. The distance between the axis of the hinge pin and the door must be at least 5 mm (fig.3).
- Leave the least clearance between the holes in the mounting walls and the diameter 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 external mechanical stops to prevent the door from opening completely against the hinge body assembled on the frame or exceeding the angle where the two interconnected surfaces are on the same plane.
- The CFSQ hinge must always be assembled with at least a second complementary hinge CFM. (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).

BUILT-IN SAFETY SWITCH FUNCTIONING AND MAINTENANCE
- The angle nominal variation required for switching the microswitch is of 6° (see stroke diagram). In normal conditions of use, when the mechanical life of the device is completed, the nominal variation may increase up to 9 °. We suggest to check the proper functioning of the hinge according to UNI EN ISO 13857.
- 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 immediately stop. 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, UNI EN ISO 14119, EN ISO 12100.
- The hinge must always be assembled and connected by qualified operators who have to check regularly the hinge perfect functioning.

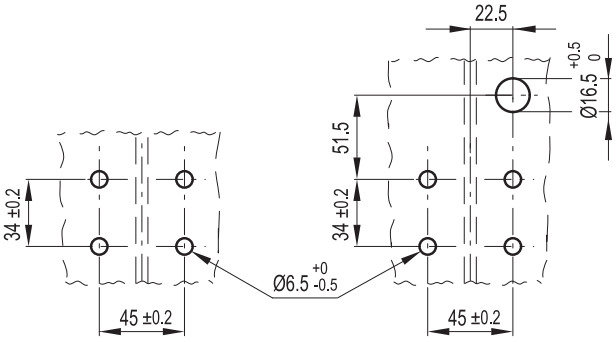
Fig.3



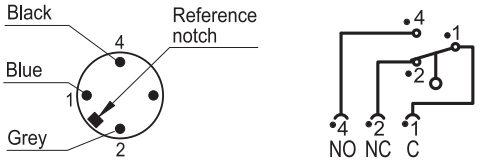
Drilling template

CFSQ-C-A
CFSQ-C-A-EA
CFSQ-F-A

CFSQ-C-B
CFSQ-C-B-EA
CFSQ-F-B

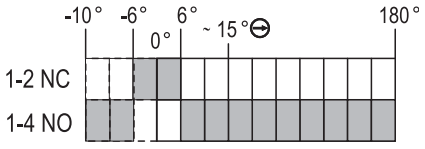


Cable/connector wiring

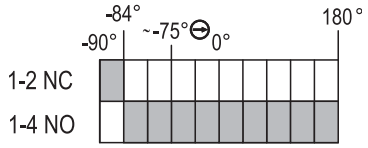


Stroke diagram

CFSQ



CFSQ-EA



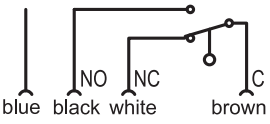
Positive opening

in compliance with EN 60947-5-1

Double insulation

In compliance with:
IEC EN 60947-5-1:2003+A1:2009
Low voltage control auxiliaries
Approved by UL: E360222

Extension cable wiring
(see accessory on request)



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CFSQ

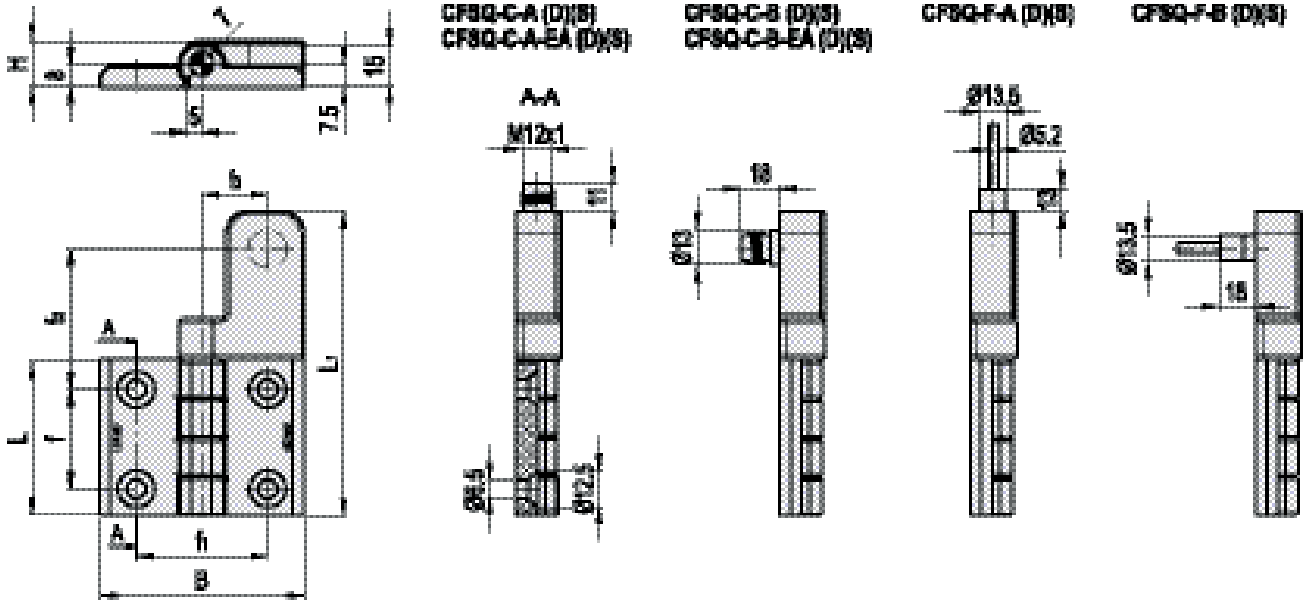
Hinges with built-in safety switch

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

Description	Electrical features	Environmental rating
CFSQ.60-SH-6-C	4A at 24 Vac/dc (resistive load)	Types 1 and 4X "indoor use only"
CFSQ.60-SH-6-F	B3000 pilot duty 4A at 240 Vac (resistive load) 4A at 240 Vdc (resistive load)	
Environmental conditions for assembly: maximum permissible ambient temperature 40°C		

Mechanical features	Electrical features	
Type of contact: Ag 90 Ni 10	Thermic power Ith	Cable 10 A
		Connector: 4 A
Maximum working frequence: 600 cycles/hour *	Short-circuit protection: 6A gl	
Mechanical life-span (test carried in compliance with IEC EN 60947-5-1): 10^6	Seal voltage at nominal pulse 4 KV	
	Insulation nominal voltage Ui = 250V	
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	

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



Code	Description	Code	Description	L	B	L1	f	f1	f2	f3	H	C# [Nm]	⚖
427011	CFSQ.60-SH-6-C-A-D	427011-EA	CFSQ.60-SH-6-C-A-D-EA	53	70	110	34	45	-	-	16	5	96
427013	CFSQ.60-SH-6-C-A-S	427013-EA	CFSQ.60-SH-6-C-A-S-EA	53	70	110	34	45	-	-	16	5	96
427015	CFSQ.60-SH-6-C-B-D	427015-EA	CFSQ.60-SH-6-C-B-D-EA	53	70	110	34	45	51.5	22.5	16	5	96
427017	CFSQ.60-SH-6-C-B-S	427017-EA	CFSQ.60-SH-6-C-B-S-EA	53	70	110	34	45	51.5	22.5	16	5	96

Code	Description	L	B	L1	f	f1	f2	f3	H	C# [Nm]	⚖
427021	CFSQ.60-SH-6-F-A-D-2	53	70	110	34	45	-	-	16	5	196
427023	CFSQ.60-SH-6-F-A-S-2	53	70	110	34	45	-	-	16	5	196
427025	CFSQ.60-SH-6-F-B-D-2	53	70	110	34	45	51.5	22.5	16	5	196
427027	CFSQ.60-SH-6-F-B-S-2	53	70	110	34	45	51.5	22.5	16	5	196
427031	CFSQ.60-SH-6-F-A-D-5	53	70	110	34	45	-	-	16	5	330
427033	CFSQ.60-SH-6-F-A-S-5	53	70	110	34	45	-	-	16	5	330
427035	CFSQ.60-SH-6-F-B-D-5	53	70	110	34	45	51.5	22.5	16	5	330
427037	CFSQ.60-SH-6-F-B-S-5	53	70	110	34	45	51.5	22.5	16	5	330

Suggested tightening torque for assembly screws.

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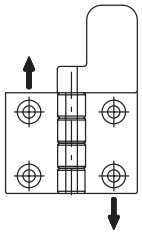
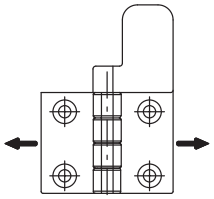
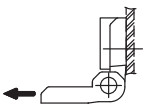
	AXIAL STRESS	RADIAL STRESS	90° ANGLED STRESS
Resistance tests			
Description	Max. limit stati load Sa [N]	Max. limit stati load Sr [N]	Max. limit stati load S90 [N]
CFSQ	2100	2800	1300
CFSQ-EA	1200	1500	600

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.

Examples of suitability check

P = weight of the door [N]
P_1 = 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
D_1 = distance [metres] between the hinge axis and the additional extra load application point
N = number of hinges
k = safety factor
d_1 ... d_n = distances (metres) of all the hinges from the hinge of reference
$d_T = d_1 + d_2 + ... + d_n$ in case of only two hinges assembled, d_T is simply the distance between them

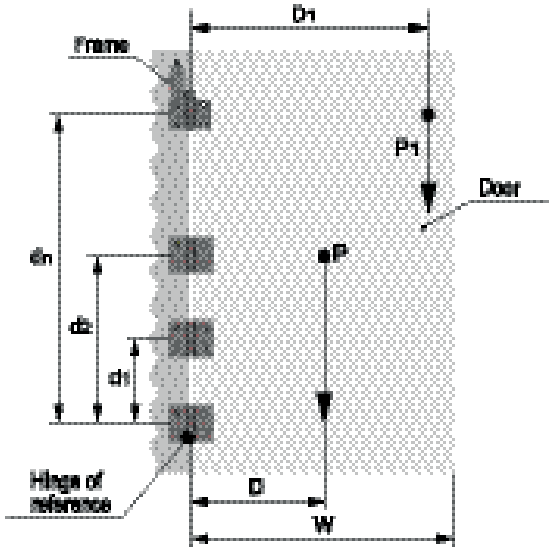
Conditions to be checked in order to ensure a correct functioning with two or more hinges.

$$\frac{(P+P1)}{N} \cdot k < Sa$$

$$\frac{[(P \cdot D)+(P1 \cdot D1)]}{d_T} \cdot k < Sr$$

$$\frac{[(P \cdot D)+(P1 \cdot D1)]}{d_T} \cdot k < S90$$

Hinged door on a vertical axis



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

Example hinge CFSQ.80-SH-6

P = 294 N (30 Kg) D = 0,4 m N = 3
d_1 = 1,5 m d_2 = 1 m d_3 = 0,5 m
P_1 = 196 N (20 Kg) D_1 = 1,2 m

$$\frac{480}{3} = 160 \cdot k < 2100$$

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

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

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.

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Hinges with safety switch

Zinc die casting

SPECIFICATION

Types

- Type **A**: Connector plug at the top
- Type **AK**: Cable at the top
- Type **B**: Connector plug from the bottom
- Type **BK**: Cable from the bottom
- Type **C**: Connector plug on the backside, with 0.2 m cable
- Type **CK**: Cable from the back

Zinc die casting
plastic coated
silver metallic

Pin
Stainless Steel AISI 303

INFORMATION

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.

ON REQUEST

- Hinges with operation angle > 0°
- Hinges with other contact terminations

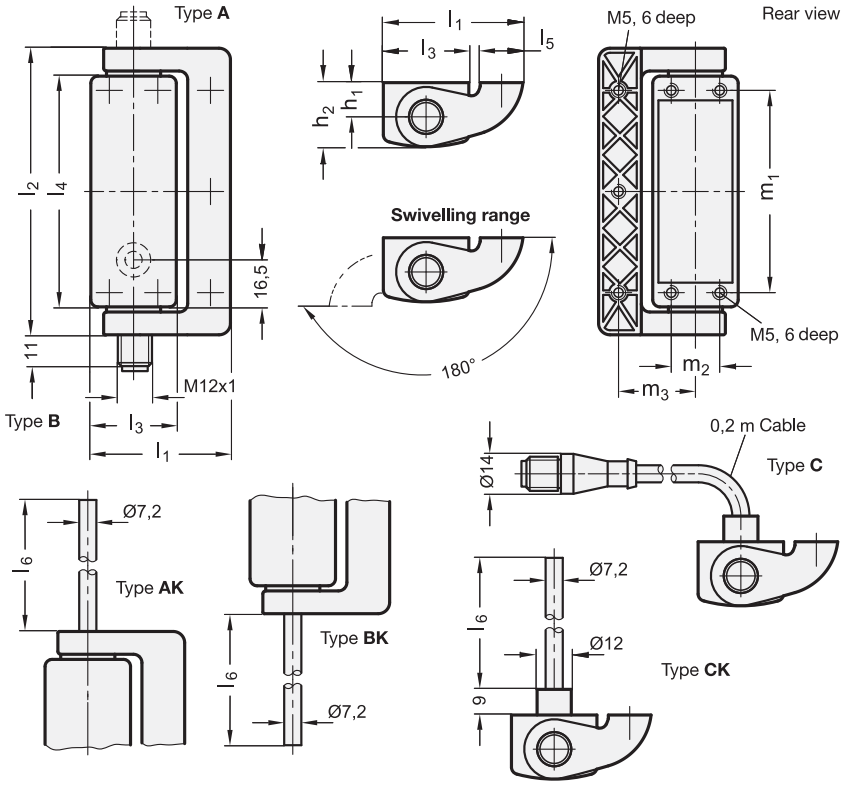
ACCESSORIES

Cable with connection coupling
8-pole, 5 or 10 meters long:

- Cables with conntector coupling GN 330-M12x1-8-G-5 (see page 1448)
- Cables with conntector coupling GN 330-M12x1-8-G-10 (see page 1448)
- Mounting plates, flat GN 139.3 (see page 1444)
- Mounting plates, angled GN 139.4 (see page 1444)

TECHNICAL INFORMATION

- Load rating information of hinges (see page A40)



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GN 139.1

Hinges with safety switch

GN 139.1

Description	l1	l2	l3	l4	l5	l6 in m	h1	h2	m1	m2	m3	⚖
GN 139.1-49-101-A	49	101	30	81	15	-	12	22.5	71	17	27	325
GN 139.1-79-101-A	79	101	30	81	30	-	12	22.5	71	17	50	425
GN 139.1-49-101-AK-2	49	101	30	81	15	2	12	22.5	71	17	27	511
GN 139.1-79-101-AK-2	79	101	30	81	30	2	12	22.5	71	17	50	612
GN 139.1-49-101-AK-5	49	101	30	81	15	5	12	22.5	71	17	27	729
GN 139.1-79-101-AK-5	79	101	30	81	30	5	12	22.5	71	17	50	829
GN 139.1-49-101-B	49	101	30	81	15	-	12	22.5	71	17	27	325
GN 139.1-79-101-B	79	101	30	81	30	-	12	22.5	71	17	50	427
GN 139.1-49-101-BK-2	49	101	30	81	15	2	12	22.5	71	17	27	512
GN 139.1-79-101-BK-2	79	101	30	81	30	2	12	22.5	71	17	50	612
GN 139.1-49-101-BK-5	49	101	30	81	15	5	12	22.5	71	17	27	729
GN 139.1-79-101-BK-5	79	101	30	81	30	5	12	22.5	71	17	50	828
GN 139.1-49-101-C	49	101	30	81	15	-	12	22.5	71	17	27	364
GN 139.1-79-101-C	79	101	30	81	30	-	12	22.5	71	17	50	457
GN 139.1-49-101-CK-2	49	101	30	81	15	2	12	22.5	71	17	27	519
GN 139.1-79-101-CK-2	79	101	30	81	30	2	12	22.5	71	17	50	618
GN 139.1-49-101-CK-5	49	101	30	81	15	5	12	22.5	71	17	27	742
GN 139.1-79-101-CK-5	79	101	30	81	30	5	12	22.5	71	17	50	843

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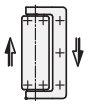
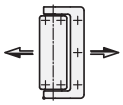
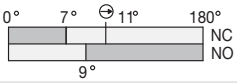
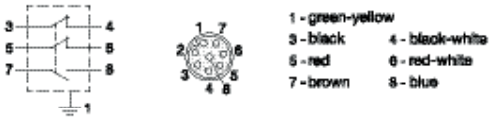
Mechanical features				
Maximum load Information with safety factor	**Load direction**			
Examples of calculation	**I1 = 49**	1500 N	1000 N	1000 N
	I1 = 79	750 N	500 N	500 N
Fixing	from the back, 7 x threads M5, 6 mm deep			
Recommended torque	5 Nm (Screws M5)			
Protection class	IP67 / IP69K (Mind the cable conduit!)		acc. to EN 60529	
Switching principle, contact opening	Slow-action contacts, force-fitted, with positive opening		acc. to IEC 60947-5-1, K	
Contact material	Silver alloy			
Operating travel diagram (scheme)	The switching points are adjustable up to 4° in direction of 0°.			
Maximum operating frequency	600 operating cycles / hour		acc. to IEC 60947-5-1, one operating cycle includes one opening / one closing action	
Mechanical life span	10^6 operating cycles		acc. to IEC 60947-5-1, one operating cycle includes one opening / one closing action	
Actuating speed	min. 2° / second, max. 90° / second		acc. to IEC 60947-5-1, one operating cycle includes one opening / one closing action	

Electrical features / Safety features			
Utilization category	AC 15: 24 Vac / 2A / DC 13: 24 Vdc / 2A (connector plug), AC 15: 250 Vac / 4A / DC 13: 250 Vdc / 0,3 A (cable)		acc. to EN 60947-5-1
Contacts, termination 8-pole connector M12 or cable with 2 m or 5 m length **Pin and cable assignment**			
Type of cable	Type N 7 x0.5 mm², 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 (connector plug) / 250 Vac (cable)		
Short-circuit protection	2 A, 500 V, Typ gG (connector plug) / 6 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	
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	CE IMQ c UL us		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 instruction for GN 139.1 which is included with every delivery and which is also available as PDF download from „www.elesa-ganter.com“ under ‚Downloads‘.

The hinges with safety switch must be mounted and commissioned by qualified technical personnel in compliance with the details given in the operating instruction 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.

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GN 139.2

Hinges without safety switch

Zinc die casting

SPECIFICATION

Zinc die casting
plastic coated
silver metallic

Pin
Stainless Steel AISI 303

INFORMATION

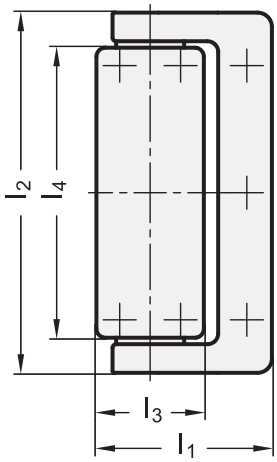
With the exception of the connector plug, hinges without safety switch GN 139.2 do not differ in their external appearance from hinges with safety switch GN 139.1 (see page 1440). With the concealed screw connection at the back, the hinge is also tamper-proof. The compact design combines safety and attractive appearance.
The design with broad hinge halves is intended for mounting to glass or polycarbonate doors.

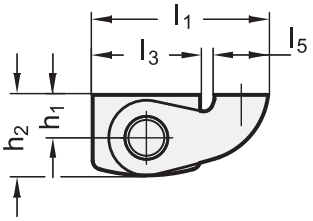
TECHNICAL INFORMATION

- Load rating information of hinges (see page A40)

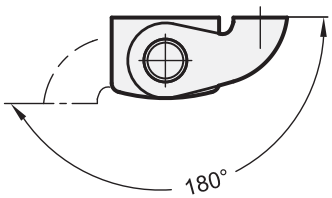
MECHANICAL FEATURES

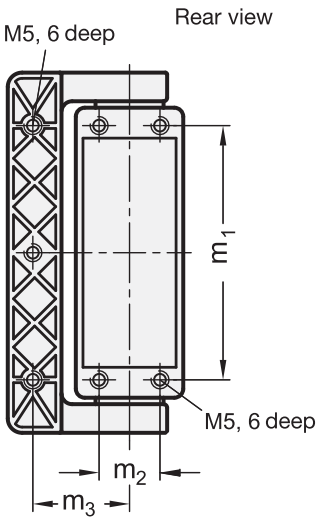
Mechanical features of Hinges GN 139.1 (see page 1440)





Swivelling range





GN 139.2

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	308
GN 139.2-79-101	79	101	30	81	30	12	22.5	71	17	50	400

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GN 139.3

Mounting plates

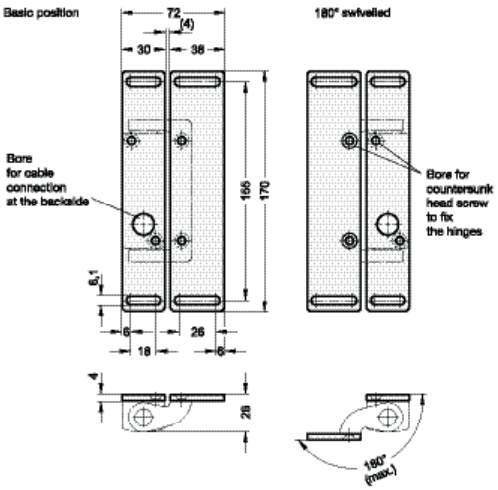
for hinges with safety switch GN 139.1 / GN 139.2, flat

SPECIFICATION

Steel
Zinc plated and plastic coated
silver metallic

INFORMATION

The flat mounting plate GN 139.3 allows the hinges GN 139.1 (see page 1440) / GN 139.2 (see page 1443) to be attached from the front.
The long slotted holes also allow the attachment to profile systems.
Countersunk screws for fixing the hinges to the mounting plate are an included part of the order.



GN 139.3

Description	l	⚖
GN 139.3-170	170	358

GN 139.4

Mounting plates

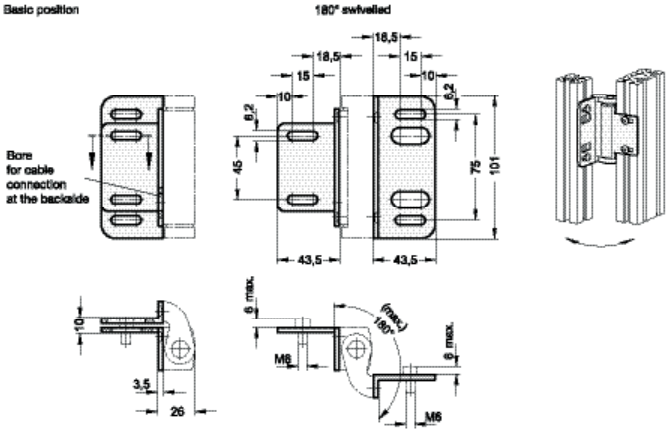
for hinges with safety switch GN 139.1 / GN 139.2, angled

SPECIFICATION

Zinc die casting
plastic coated
silver metallic

INFORMATION

The angled mounting plate GN 139.4 allows the hinges GN 139.1 (see page 1440) / GN 139.2 (see page 1443) to be attached between frame and door, i.e. the door gap.
The long slotted holes also allow the attachment to profile systems.
Countersunk screws for fixing the hinges to the mounting plate are an included part of the order.



GN 139.4

Description	l	⚖
GN 139.4-101	101	241

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GN 139.5

Hinges with safety switch

Stainless Steel

SPECIFICATION

Types

- 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 < 0.8 µm

Pin
Stainless Steel AISI 316L

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. Hinges GN 139.6 (see page 1447) without switching function act as additional hinges, e.g. for larger doors or gates where several hinges are required.

TECHNICAL INFORMATION

- Stainless Steel characteristics (see page A26)
- Load rating information of hinges (see page A40)

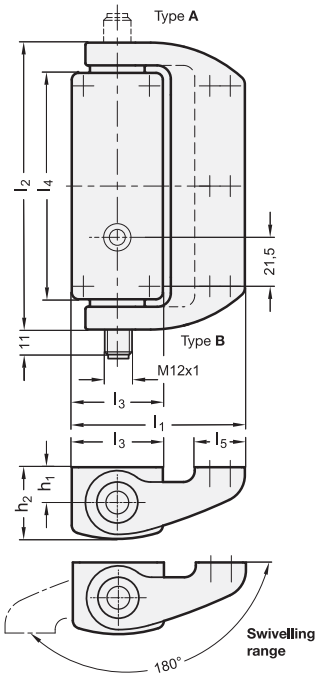
ACCESSORY

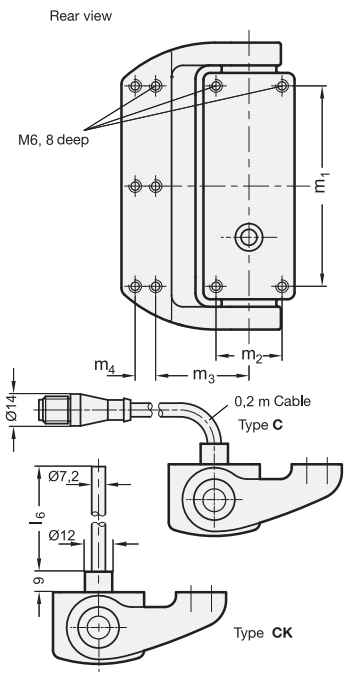
Cable with connector coupling
8-pole, 5 or 10 meter long:

- Cables with conntector coupling GN 330-M12x1-8-G-5 (see page 1448)
- Cables with conntector coupling GN 330 -M12x1-8-G-10 (see page 1448)

ON REQUEST

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





GN 139.5 — **STAINLESS STEEL**

Description	l1	l2	l3	l4	l5	l6	l7	l8	m1	m2	m3	m4	⚖
GN 139.5-76-126-A	76	126	40	99.4	22	-	15.5	31.5	88	29	41	9	1055
GN 139.5-76-126-B	76	126	40	99.4	22	-	15.5	31.5	88	29	41	9	1058
GN 139.5-76-126-C	76	126	40	99.4	22	-	15.5	31.5	88	29	41	9	1100
GN 139.5-76-126-CK-2	76	126	40	99.4	22	2	15.5	31.5	88	29	41	9	1034
GN 139.5-76-126-CK-5	76	126	40	99.4	22	5	15.5	31.5	88	29	41	9	1283

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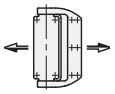
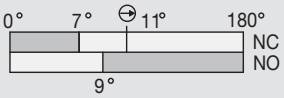
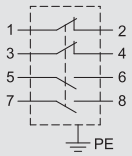
Mechanical features				
Maximum load Information with safety factor Examples of calculation	Load direction			
	F max.	2000 N	2000 N	2000 N
Fixing	from the back, 10 x threads M6, 8 mm deep			
Recommended torque	10 Nm (Screws M6)			
Protection class	IP67 / IP69K (Mind the cable conduit!)		acc. to EN 60529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

Electrical features / Safety features			
Utilization category	AC 15: 24 Vac / 2A / DC 13: 24 Vdc / 2A (connector plug), AC 15: 250 Vac / 4A / 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 assign-ment		1 - black 2 - black-white 3 - red 4 - red-white 5 - brown 6 - blue 7 - purple 8 - purple-white PE - yellow-green (only type CK)	
Type of cable	9x0,34 mm², 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	CE EAC cULus		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 instruction for GN 139.5 which is included with every delivery and which is also available as PDF downloads from „www.elesa-ganter.com“ under ‚Downloads‘.
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.

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GN 139.6

Hinges without safety switch

Stainless Steel

SPECIFICATION

Stainless Steel precision casting

- AISI 316L
- polished, Ra < 0.8 µm

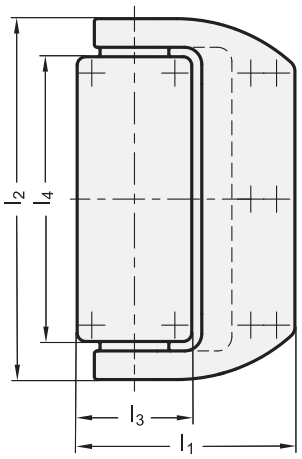
Pin
Stainless Steel AISI 316L

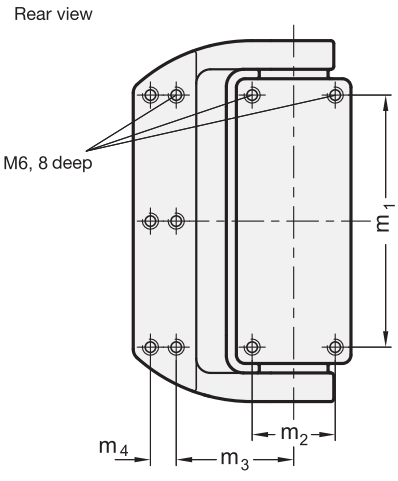
INFORMATION

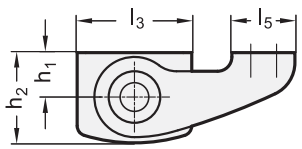
With the exception of the connector plug, the hinge without safety switch GN 139.6 do not differ in their external appearance from hinges with safety switch GN 139.5 (see page 1445). With the concealed screw connection at the back, the hinge is also tamper-proof.
The compact design combines safety and attractive appearance.
The design with broad hinge halves is intended for mounting to glass or polycarbonate doors.

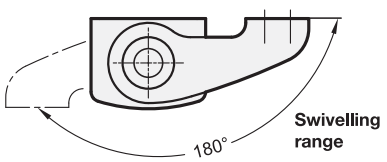
TECHNICAL INFORMATION

- Stainless Steel characteristics (see page A26)
- Load rating information of hinges (see page A40)
- Mechanical features of Hinges GN 139.5 (see page 1446)









GN 139.6 — **STAINLESS STEEL**

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	909

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Cables with connector coupling M12x1

SPECIFICATION

Types

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

Handle (Housing)
Plastic
Polyurethan-Elastomer TPU

Cable (Outer sheath)
Polyurethan PUR
black

Temperature resistance: -40 °C ... +90 °C

Insulating resistance: > 10^9 Ω

Degree of pollution: 3 / 2
according to EN 60664-1

Protection class: IP67
(in screwed condition)
according to EN 60529

Connecting nut M12x1
Brass, nickel plated

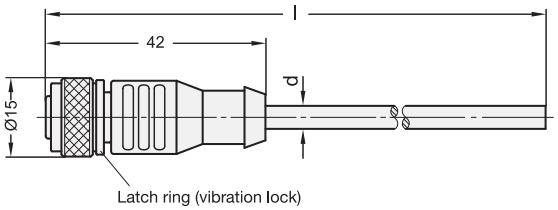
INFORMATION

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

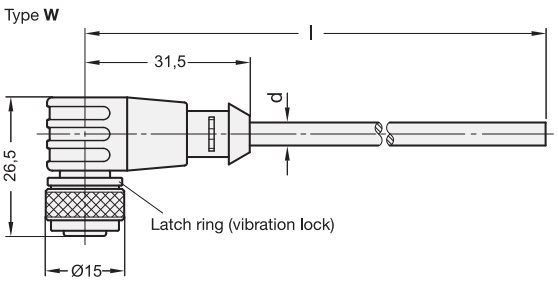
ON REQUEST

- other cable lengths l

Type **G**



Type **W**



GN 330

Description	Connector	Number of contacts	l	⚖
GN 330-M12x1-4-G-5	M 12 x 1	4	5	160
GN 330-M12x1-5-G-5	M 12 x 1	5	5	210
GN 330-M12x1-8-G-5	M 12 x 1	8	5	230
GN 330-M12x1-12-G-5	M 12 x 1	12	5	250
GN 330-M12x1-4-G-10	M 12 x 1	4	10	399
GN 330-M12x1-8-G-10	M 12 x 1	8	10	512
GN 330-M12x1-12-G-10	M 12 x 1	12	10	468
GN 330-M12x1-8-W-5	M 12 x 1	8	5	265
GN 330-M12x1-12-W-5	M 12 x 1	12	5	246
GN 330-M12x1-8-W-10	M 12 x 1	8	10	400
GN 330-M12x1-12-W-10	M 12 x 1	12	10	460

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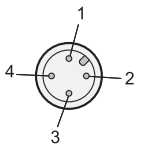
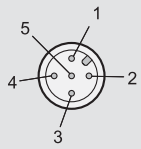
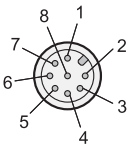
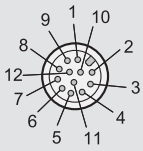
GN 330

Cables with connector coupling M12x1

Cable with plug-in connector	d Outside diameter	Cross-section	Operating voltage acc. to IEC 60 664-1	Current load rating acc. to IEC 60512-3	Contact assignment
4-pole (4-wire)	5	4 x 0.34 mm²	max. 250 V	4 A	 1 - brown 2 - white 3 - blue 4 - black
5-pole (5-wire)	5	5 x 0.34 mm²	max. 60 V	4 A	 1 - brown 2 - white 3 - blue 4 - black 5 - grey
8-pole (8-wire)	6	8 x 0.25 mm²	max. 30 V	2 A	 1 - white 2 - brown 3 - green 4 - yellow 5 - grey 6 - pink 7 - blue 8 - red
12-pole (12-wire)	6	12 x 0.14 mm²	max. 30 V	1.5 A	 1 - brown 2 - blue 3 - white 4 - green 5 - pink 6 - yellow 7 - black 8 - grey 9 - red 10 - purple 11 - grey / pink 12 - red / blue

OTHER CABLE PROPERTIES

This adaptable cable, suitable for drag chains, features and outer jacket made of PUR and a core insulation made of polypropylene. It is free of PVC, silicon and halogens. UL and CSA approvals are available.

The cable is also resistant to oil, chemical, hydrolysis, microbes and welding sparks and flame retardant under IEC 60332-2-2 which makes the cable the perfect choice in many applications.

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Hinges

consisting of two or three parts / Steel

SPECIFICATION

Types

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

Steel zinc plated, blue passivated

Pin
Brass, nickel-plated

Washer
Brass, nickel-plated

Hexagon nut ISO 4032
Steel zinc plated, blue passivated

Serrated washer DIN 6797
for securing screws
zinc plated, blue passivated

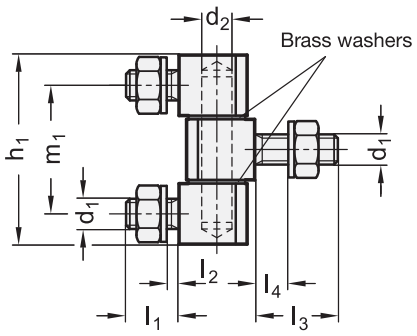
INFORMATION

Hinges GN 129 are used for doors which are flush with the frame on the outside. These 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.

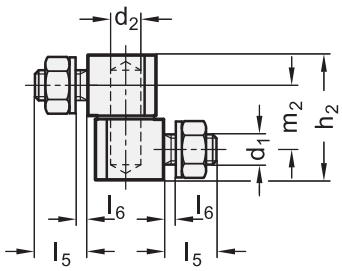
TECHNICAL INFORMATION

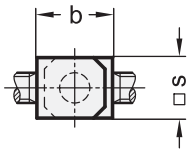
- List of hinges types (see page 1362)

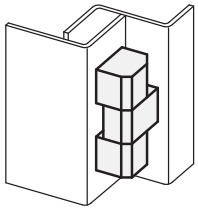
Type **D**

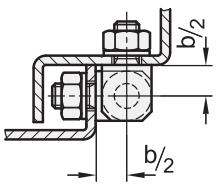


Type **Z**









GN 129

Description	s	b	d1	d2	h1	h2	l1	l2	l3	l4 max.	l5	l6	m1	m2	⚖
GN 129-12-D	12	15	M 6	6	39.2	-	10	5	-	9	-	-	27.2	-	60
GN 129-16-D	16	20	M 8	8	49	-	14	8	-	16	-	-	33	-	135
GN 129-12-Z	12	15	M 6	6	-	25.6	-	5	14	-	10	5	-	13.6	39
GN 129-16-Z	16	20	M 8	8	-	32.5	-	8	22	-	14	8	-	16.5	80

GN 129.2

Hinges

consisting of three parts, Steel / Stainless Steel

SPECIFICATION

Type

Type **C**: Fixing from the back side

Version in Steel

Hinge
Steel zinc plated, blue passivated **ST**

Pin
Brass, nickel plated

Washer
Brass, nickel plated

Hexagon nut ISO 4032
Steel zinc plated, blue passivated

Serrated washer DIN 6797 for securing screws
Steel zinc plated, blue passivated

Version in Stainless Steel

Hinge body, pin, washer

- Stainless Steel AISI 303 **NI**
- Stainless Steel AISI 316L **A4**

Hexagon nut ISO 4032
Stainless Steel AISI 304

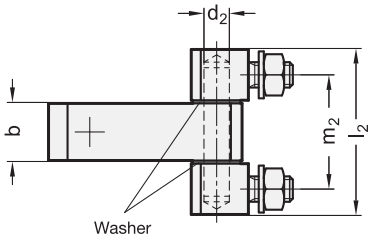
Serrated washer DIN 6797 for securing screws
Stainless Steel AISI 304

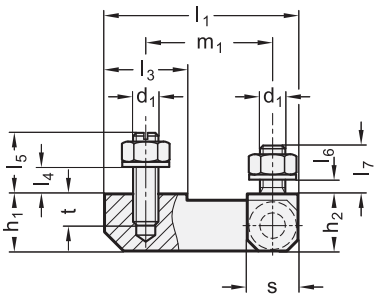
INFORMATION

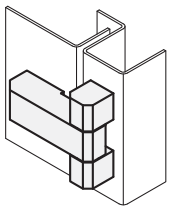
Hinges GN 129.2 are used for doors which are flush with the frame on the outside. Once assembled, they cannot be unhinged.
With the fixing from the inside, they are especially suitable for doors and trap doors which must not be detachable from the outside as an anti-tamper device.

TECHNICAL INFORMATION

- Stainless Steel characteristics (see page A26)
- List of hinges types (see page 1362)







GN 129.2

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	M 6	6	13	13.5	18	6	11	5	10	30	28.2	12	9	97
GN 129.2-50-51-C-ST	50	51	18	M 8	8	18	18	26	8	14	8	14	29	35	16	11	213
GN 129.2-53-40-C-ST	53	40	13	M 6	6	13	13.5	26	6	11	5	10	38	28.2	12	9	108
GN 129.2-61-51-C-ST	61	51	18	M 8	8	18	18	26	8	14	8	14	40	35	16	11	240

GN 129.2-A4 STAINLESS STEEL

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	M 6	6	13	13.5	18	6	11	5	10	30	28.2	12	9	100
GN 129.2-50-51-C-A4	50	51	18	M 8	8	18	18	26	8	14	8	14	29	35	16	11	214

GN 129.2-NI STAINLESS STEEL

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	M 6	6	13	13.5	18	6	11	5	10	30	28.2	12	9	97
GN 129.2-50-51-C-NI	50	51	18	M 8	8	18	18	26	8	14	8	14	29	35	16	11	213

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GN 129.3

Hinges

consisting of three parts / Steel

SPECIFICATION

Type

Type **A**: Fixing from the front side

Steel zinc plated, blue passivated **ST**

Pin
Brass, nickel plated

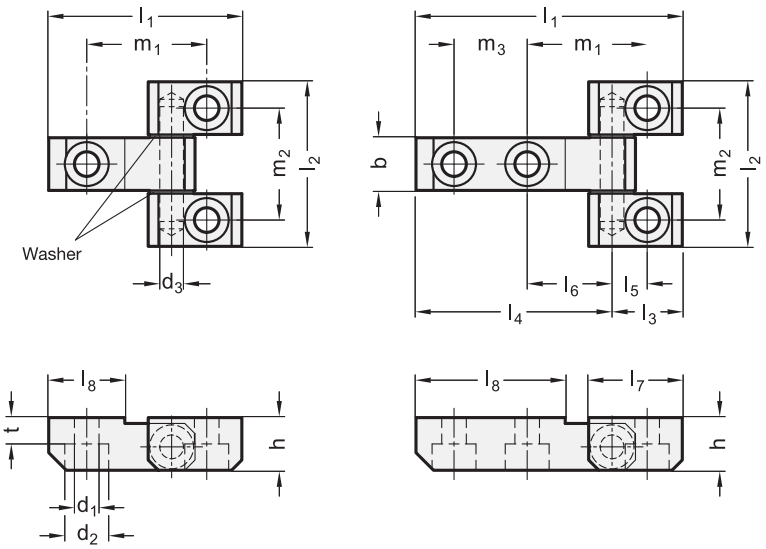
Washer
Brass, nickel plated

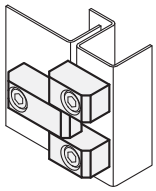
INFORMATION

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.

TECHNICAL INFORMATION

- List of hinges types (see page 1362)





GN 129.3

Description	l1	l2	b	d1	d2	d3	h	l3	l4 max.	l5	l6 max.	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	228
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	271

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GN 129.5

Stainless Steel-Hinges

consisting of three parts

SPECIFICATION

Type

Type **D**: consisting of three parts

Hinge body, pin, washer

- Stainless Steel AISI 303 **NI**
- Stainless Steel AISI 316L **A4**

Hexagon nut ISO 4032
Stainless Steel AISI 304

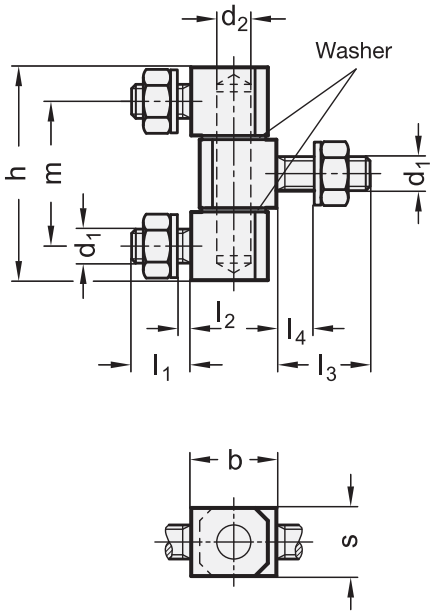
Serrated washer DIN 6797 for securing screws
Stainless Steel AISI 304

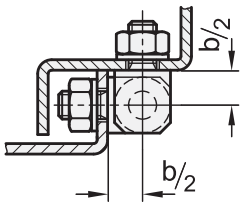
INFORMATION

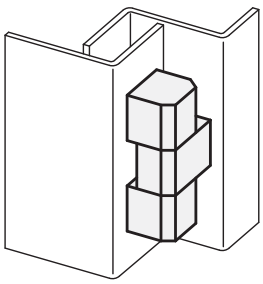
Stainless Steel-Hinges GN 129.5 are used for doors which are flush with the frame on the outside. Once assembled, they cannot be unhinged.
With the fixing from the inside, they are especially suitable for doors and trap doors which must not be detachable from the outside as an anti-tamper device.

TECHNICAL INFORMATION

- Stainless Steel characteristics (see page A26)
- List of hinges types (see page 1362)







GN 129.5-NI — **STAINLESS STEEL**

Description	s	b	d1	d2	h	l1	l2	l3	l4 max.	m	⚖
GN 129.5-12-D-NI	12	15	M 6	6	39.2	10	5	14	9	27.2	57
GN 129.5-16-D-NI	16	20	M 8	8	49	14	8	22	16	33	134

GN 129.5-A4 — **STAINLESS STEEL**

Description	s	b	d1	d2	h	l1	l2	l3	l4 max.	m	⚖
GN 129.5-12-D-A4	12	15	M 6	6	39.2	10	5	14	9	27.2	61
GN 129.5-16-D-A4	16	20	M 8	8	49	14	8	22	16	33	140

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