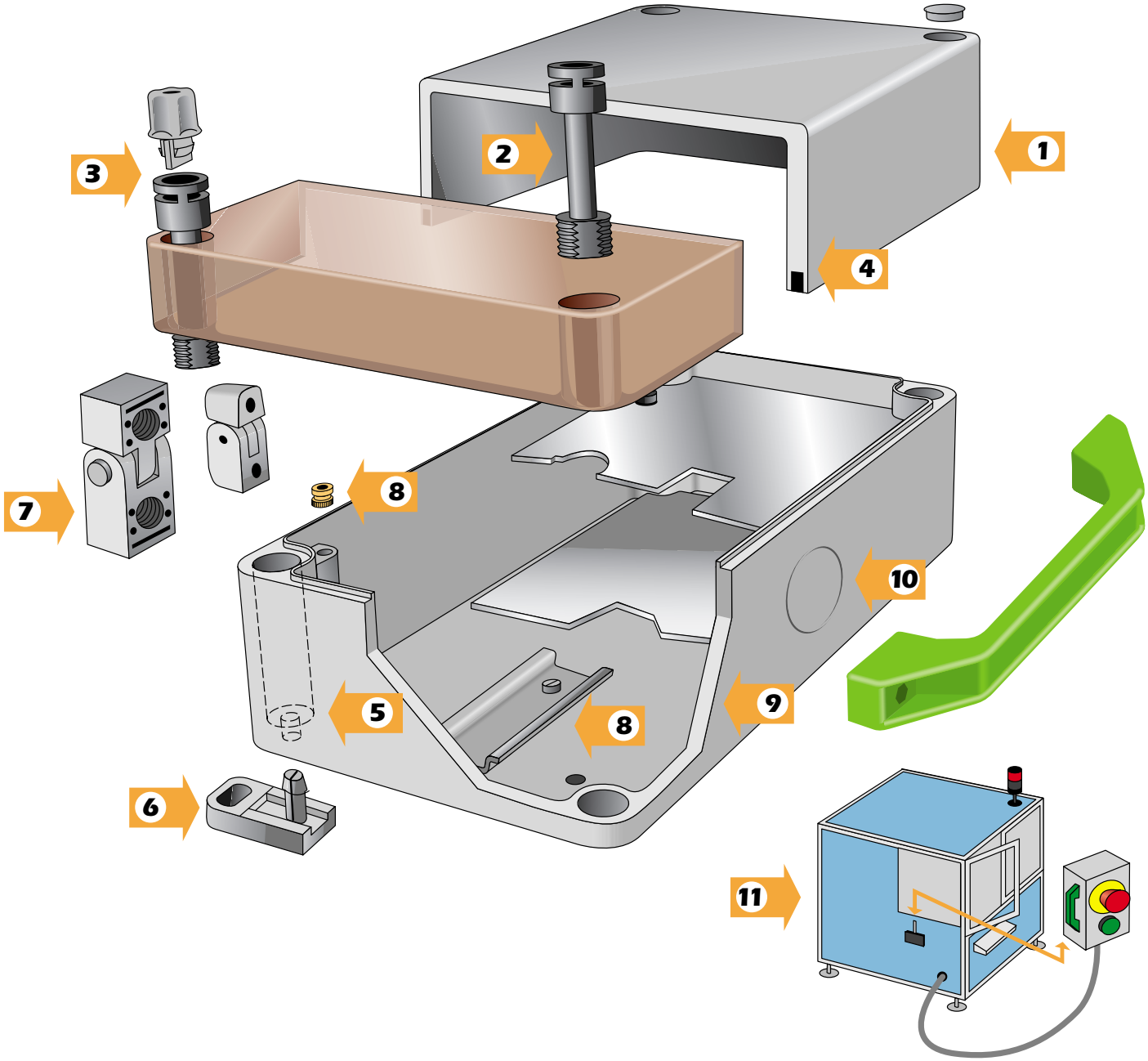
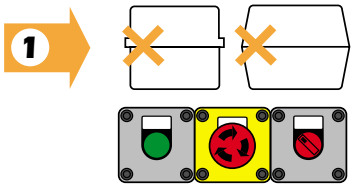
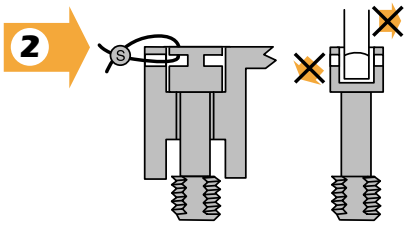
CONSTRUCTION PRINCIPLES APPLIED





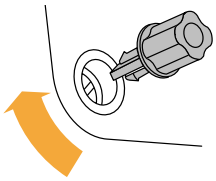
Box design has been studied to assure high level flexibility of use. Various types of covers, two heights, opaque or transparent version. The uninterrupted shape, the rounded corners, the embedded screws and the plastic material guarantee maximum safety and ease of operation during installation. The parallel walls permit fastening to the sides and installation of the boxes side by side, thereby facilitating use in complicated or particularly difficult situations.



The anti-corrosion thermoplastic resin captive screws have a special type of thread, which permits fast tightening in only 4 turns. The head of the screws is designed for use also with automatic tightening units. The cylindrical shape embraces the tool and prevents this leaving the slot even at very high pressure and high speed of rotation. The head of the screws also features openings, which permit application of a safety seal after tightening. This is positioned using a hole in the cover without affecting overall dimensions and the shape of the box.

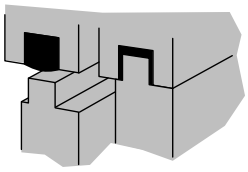
CONSTRUCTION PRINCIPLES APPLIED

3



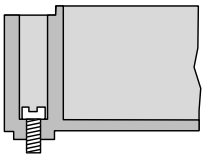
The knobs provided for manual tightening fit into the head of the screw and are the ideal solution in the case of containers for which easy, trouble-free opening must be assured

4



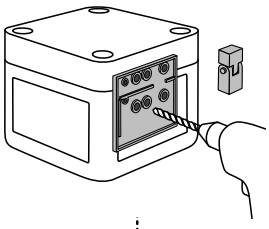
The seal, moulded in a single piece, uses the "groove and tongue system" which prevents protrusions or splicing cuts and endows the container with an IP 66-protection rating.

5



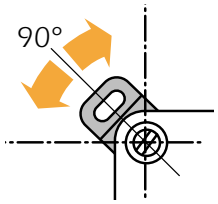
The fastening holes are located in hollows in line with the screws of the cover, therefore outside the area protected by the seal. They cannot be tampered with once the container has been closed. The fastening template for correct insulation is clearly stamped on the lower base of the box. Alternate fastening holes to other systems are provided on the bottom of the box. Once the screws have been drawn up, their housings can be covered with specific plugs provided together with the box.

6



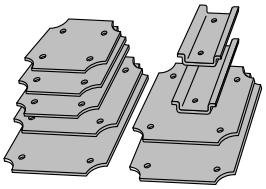
Two versions of hinges are available according to the dimensions of the container. Drilling for assembly is facilitated by a plate, which firmly fits into the side to be drilled. The plate is furnished with the hinge kit.

7



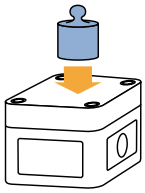
The boxes can be wall mounted using purpose-designed thermoplastic brackets provided in the kit. Installation is simple and does not require use of screws.
The brackets can rotate by 90°
to facilitate installation.

8



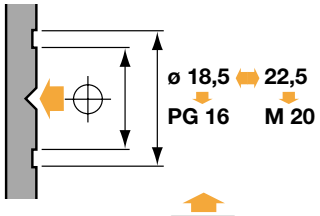
The bottom of the box is pre-engineered for insertion of plates or DIN guides for installation of terminal boards and other components, and, in some models, an upper plate can be installed for equipment assembly. Fastening is afforded by brass inserts.

9



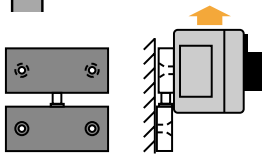
The characteristics of the thermoplastic material, without halogens, and therefore without any emissions of hazardous gases and the high gauge walls guarantee use also in cases in which the container is installed in particularly harsh environments.
Insulation class ⧈

10



The template for drilling any cable infeed hole is impressed on one side of the base of the box with a centre mark for tool positioning. The various dimensions for the PG or Metric system are indicated.

11



A device is also available for wall-mounting of the boxes that permits trouble-free, safe and efficient removal. Handles can be applied for safe gripping to avoid accidental activation of the buttons.

REASONS FOR CHOOSING ELFIN CONTAINERS

When choosing the container to be used, the first aspect to be considered is undeniably size. However, subsequently it is advisable to analyse how the boxes behave in the environmental conditions in which they are required to operate, that is to say protection ratings and characteristics of the material.
This chapter describes the characteristics of the materials used to produce the 080 Series boxes in order to achieve product quality and to facilitate final selection by the user.

BOX MATERIAL	Polycarbonate with glassfiber	RAL 7035 Grey
YELLOW COVER MATERIAL	Polycarbonate	RAL 1004 Yellow
COVER MATERIAL TRANSPARENT	Polycarbonate	Smoky grey
SEAL MATERIAL	Polyurethane	Moulded
SCREW MATERIAL	Polyammides	Black
HINGE MATERIAL	Polycarbonate with fiberglass	RAL 7035 Grey
KNOB MATERIAL	Polyammides	RAL 7035 Grey
HANDLE MATERIAL	Polyammides	RAL 6010 Green
CABLE CLAMP MATERIAL	Polyammides	RAL 7035 Grey
BRACKET MATERIAL	Polyammides with glassfiber	RAL 7035 Grey
UPPER PLATE MATERIAL	Aluminium	Anodised
PLATE MATERIAL	Steel	Galvanised
GUIDE MATERIAL	Steel	Galvanised
PROTECTION RATING	IP 66 - CEI EN 60529	
TEMPERATURE LIMITS	-10°C ÷ +50°C	
APPROVALS	Bureau Veritas	

POLYCARBONATE THERMOPLASTIC

Its physical-mechanical properties make polycarbonate the ideal material for the construction of thermoplastic containers and boxes. Its main characteristics are as follows:

- High resistance to temperatures
- Excellent insulating properties also in the presence of damp
- Self-extinguishing
- High resistance to shock also assured by use of glassfiber
- Strong resistance to chemical agents
- Possibility of constructing products with excellent finish
- Possibility of making transparent covers
- Stability to ultraviolet rays (1)
- Ease of machining (shearing, drilling, etc.)
- Possibility of painting, gluing or soldering

POLYURETHANE

The type of seal used is one of the major factors in guaranteeing the quality of the container. Product seal and duration are closely tied to the type of material used and its position.
The 080 Series boxes are equipped with a polyurethane seal whose properties make it the ideal material to protect a container.
Its main characteristics are as follows

- Almost null residual compression
- The material is moulded directly in the groove of the covers, thus guaranteeing immobility and continuity
- High resistance to temperatures (from -50° to +130°C)
- High resistance to atmospheric agents

1) Use of transparent covers is not recommended in tropical climates

CHARACTERISTICS OF THE MATERIAL USED TO CONSTRUCT THE 080 SERIES CONTAINERS

The resistance characteristics of the materials used to produce the 080 Series are given in the tables below. When assessing these data, it is advisable to take into account the concentration of chemical agents and temperatures. If the casing is liable to be affect of mixes of chemical products it is advisable to make a careful examination to assess effective resistance.

CHEMICAL RESISTANCE OF THERMOPLASTIC MATERIALS

	acetone	formic acid	gasoline	butane	butyl alcohol	calcium chloride	diesel oil	acetic acid	formaldehyde	frigerio 113	fruit juice	glycerol	fuel oil	hydraulic oil	potassium chloride	linseed oil	ethylene chloride	lactic acid	mineral oil	engine oil	sodium carbonate	sodium chloride	nitric acid	hydrochloric acid	lubricant	sulphuric acid	soapy water	detergent	water (soft and salty)	tartaric acid	zinc sulfate	citric acid
Polyammides	◒	○	●	●	●	●	?	○	●	?	●	●	●	●	●	●	○	10%	●	●	●	10%	○	○	●	○	●	?	●	●	?	10%
Polycarbonate	○	30%	◒	●	?	●	◒	10%	?	●	●	◒	◒	●	●	●	○	10%	●	●	●	●	10%	20%	●	50%	◒	●	●	10%	●	10%
Polyurethane	○	?	●	?	?	?	●	?	?	?	●	●	●	●	●	●	○	?	●	●	?	●	○	○	●	?	◒	◒	●	●	?	?

Legend: ● resistant to all concentrations ◒ resistant to certain concentrations ○ not resistant % resistant to concentrations up to % ? no indication

TECHNICAL CHARACTERISTICS OF THERMOPLASTIC MATERIALS

	MECHANICAL												THERMAL						ELECTRIC				PHYSICAL					
	Ultimate tensile strength at 23°C	Ultimate tensile strength at 70°C	Yield elongation/Ultimate elongation at 23°C	Bending modulus at 23°C	Fatigue strength limit, 10^6 cycles, at 23°C	Izod impact resistance with shearing at 23°C	Izod impact resistance with shearing at 40°C	Melting point	Coefficient of linear thermal expansion -40 +29°C	Distortion temperature at 1.8 Mpa	Distortion temperature at 0.5 Mpa	Maximum continuous operative temperature (UL)	Transverse resistivity, 23°C, 0.2% water	Surface resistivity	Dielectric constant 10^2 - 10^6 Hz	Dielectric loss factor 10^6 Hz	Dielectric strength over a short period (2.3 mm)	Arc resistance	Density	Water absorption, 24 hours saturation at 23°C	Rockwell M hardness	Rockwell R hardness (Shore D)	Friction coefficient/without lubricant	Flash point
ASTM-D Standards	638	638	638	790	671	256	256	2133	696	648	648		257	257	150	150	149	495	792	570	785	785		UL
Unit	MPa	MPa	%	MPa	MPa	J/m	J/m	°C	10^{-5}/m°C	°C	°C	°C	Ω m	Ω			MV/m	S	g/cm^3	%				94
Polycarbonate	60	48	7/115	2170	7	850	106	220	6,7	135	140	125	10^{14}	10^{15}	2,9	0,011	15	10	1,2	0,16	M74	R120	0,45	V1
Polyammides	77	41	30/300	1210	21	112	27	255	7	90	235	100	10^{11}	–	8-4,6	0,1	17	–	1,14	1,2	M59	R108	0,4	V2

PHYSICAL CHARACTERISTICS OF SEALS

	Temperature stability	Resistance	Ultimate strength	Hardness	Specific weight	Residual compression
Unit	°C	MPa	%	Shore A	g/cm^3	%
Polyurethane	-50 +130	0,4	110	12	0,33	5