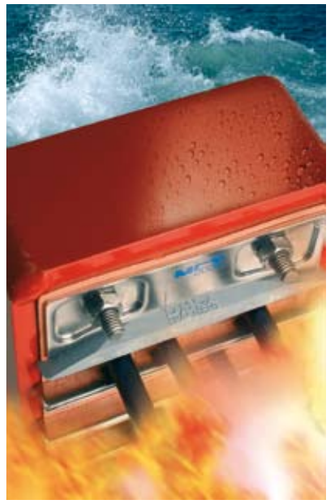
EMC

Electromagnetic Compability

Putting safety first

MCT BRATTBERG

Contens



Production:
Boggi Reklambyrå, Värnamo.

364 - 388174v1
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MCT Brattberg seals cabel and pipe penetrations
in potentially hazardous

environments

Cable and Pipe Penetrations exist whenever services are routed through walls, floor, decks or bulkheads. In an emergency situation these penetrations could allow the passage of hazardus such as fire, water and gas.

The unique MCT Brattberg System has been approved by all leading Marine and Civil Authorities as a certified method of sealing such penetrations.

The MCT Brattbert system is a Multipurpose seal designed to allow penetration without compromising the security of the construction. Each and every cable and pipe is lead trough a frame by its own pair of halogen free module blocks which are then sealad by the use of a compression system.

The E-MCT seal system in addition to all benefits of the MCT system the specific E-MCT seal system provide protection against electromagnetic pulses, electronic sabotage and static electricity.

Where valuable assets are at risk

For almost half a century MCT Brattbergs´ original system for cable and pipe transits has set the standard at sea as well as on land.

The basic idea behind The MCT Brattberg concept is ingeniously simple. It is built around two components: the frame and the insert blocks. The seal is created when the blocks are pressed together in the frame by use of the compression system. It gives a simple and secure installation.

The heart of the system is a rubber material called Lycron, from which the insert blocks are made. It is extremely resistant to fire but MCT Brattberg is much more than a fire and explosion barrier. In addition to extreme heat and enormous pressure changes, the transit withstand smoke, extreme temperature changes, vibrations, sound, damaging insects, chemicals and the effects of ageing.

Necessity for protection

With the growing dependence on computers, communication and control equipment the problem of sensitivity to interference becomes more apparent, given the vulnerability of modern electronic equipment.

The vulnerability can lead to expensive interruptions in production, communication and process control. Consequently, it is essential that two of the most important concerns with modern electronics must be to create a safe and secure environment and to eliminate the risk of interference.

EMC protection from the
E-MCT Brattberg

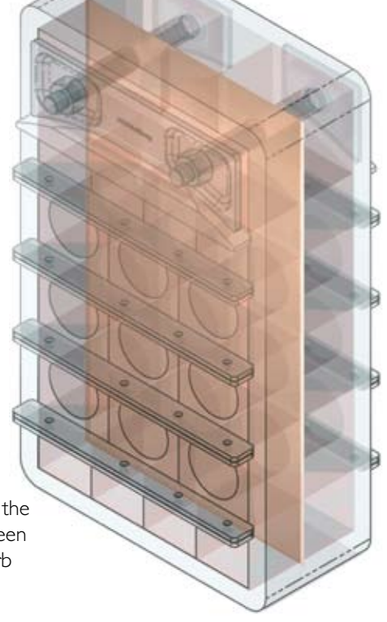
systems

Historically, protection of buildings, personnel and equipment from lightning was achieved by the use of lightning conductors. These measures, however, are inadequate as they provide protection from fire and personal injury only; to eliminate the Electromagnetic Interference (EMI), sometimes known as electronic smog, protection must be more specific.

The protection is achieved by a means known as Electromagnetic Compability (EMC) giving both external and internal interference protection. The MCT Brattberg system is available in a specific EMC version.

Around and in close proximity to every electrical conductor exist a magnetic field. This magnetic field generates/interferes with the current flow, a feature known as induction.
Such induction fields can easily cause important information to be destroyed and, in extreme cases, affect the electronic equipment.

The ability of any cable to intercept such energy depends on how and where it is installed, on its connection to other units and on its construction. The cables screening properties, therefore depend closely on the cable shielding. The cable screen is able to dissipate and absorb magnetic interference fields, therefore protecting its core conductor. These electromagnetic interference pulses can be discharged from screen to earth. The E-MCT System contains a sprung copper sheet which prevents transfer of interference in the cable. Consequently, every E-MCT Transit also works as an extended wall screen.



Benefits of E-MCT Brattberg systems

- Pre-lubricated insert blocks for faster installation with assured continuity.
- Protects against electrical and magnetic interference (EMI), "bugging", electronic sabotage (SEMP) and static electricity (ESD).
- Assists cable management.
- Integral earthing between cables and wall screen.
- Also seals the penetration against the passage of fire, water, gas, sound and environmental hazards.

Design

As with all MCT Brattberg products, the E-MCT Brattberg System comprises of a modular sealing system installed in a frame and sealed by compression system. Uniquely, however, the E-MCT system contains features which ensure earth continuity and screening through the penetration.

Frames are welded into the wall structure to give earth bonding. For round penetrations a steel sleeve is welded to the structure prior to the installation of the RGP transit.

E-MCT moduel blocks have the facility to screen and earth cables and pipes when installed in such frames.

Stayplates are used to key blocks into frames and aid continuity between module blocks.

The compression plate and E-STG endpacker whilst compressing the system, give the facility to allow full screen and earthing bond.

(Alternatively compression is with the E-PTG Presswedge, see page 12).

The E-MCT blocks consists of 2 different materials:
– The special developed rubber material Lycron is halogen free, prelubricated and gives the advantages of fire resistance, low smoke emission, heat insulation an excellent chemical resistance.
- The integral copper sheet allows the discharging and shielding protection between the cable and the system. In order to achieve continuity approximately 10 mm of the outer cable insulation must be removed (see photo). The exposed braiding must be placed in the centre of the insert block.

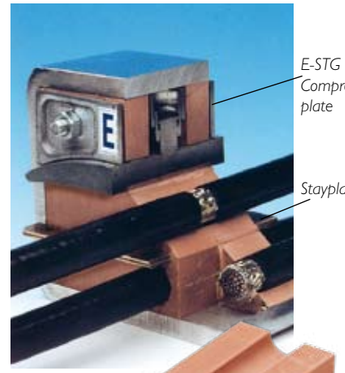
Tested, approved and certified

We have always had and still have the ambition: to be the market´s best choice as regards pipe anc cable transits.

As early as 1983 our quality system was brought in line with the extreme demands applying to the nuclear power industry.

Today MCT Brattberg is assessed and certified by DNV in accordance with the Quality and Environment Management System standard EN ISO 9001 and 14001, for the design, manufacture and supply of fire barrier and sealed transit systems associated with cable and pipe routes in building and marine environments.

As a direct result of this assessments achievement. Quality are carried out by DNV twice annually.



E-MCT module block

MCT 'Brattberg also holds quality certificates and approvals from a wide variety of classification institutions and customers, among them:

ABS (American Bureau of Shipping),
ASC Pty Ltd (Australian Submarine Corp.),
DNV (Det Norske Veritas),
Lloyd´s Register Quality Assurance,
US Navy, Framatone ANP,
Bureau Veritas,
LPCB BRE Certification Ltd

EMP/EMI tested by:

FFV (Research Institute for the Swedish National Defence), Sweden
Karlskrona Shipyard, Sweden
Saab Avionics AB, Sweden
IRD Aish & Co Ltd, UK
LPC H120 Firetest, UK
Siemens AG Research Centre, Germany

RGS

RGSO WITH REMOVABLE END

RGS is MCT Brattberg's standard frame for marine applications. It has a standard internal width of 120 mm and is 60 mm deep. There are four sizes of RGS, denoted by 2, 4, 6 and 8 depending on their height. They may be used in both vertical and/or horizontal multiple frames (see page 10).

The RGS is welded into an accurately pre-cut hole in the deck or bulkhead. As with all our frames, RGS is produced in steel, stainless steel, or aluminium. For installations where cables are already in place, specify RGSO, which has a removable end. RGS weight charts can be found on the next page.

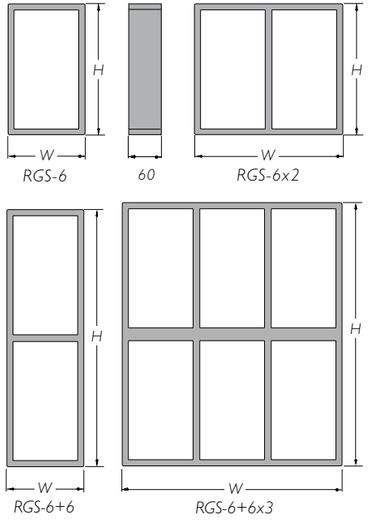
Size chart in mm

Size in mm

FRAME SIZE	H (height)	W (width)/Multiple Frames x 1	x 2	x 3	x 4	x 5	x 6	x n
RGS-2	121	140,5	271	401,5	532	662,5	793	W = 10 +
RGS-4	179,5	- " -	- " -	- " -	- " -	- " -	- " -	130,5 x n
RGS-6	238	- " -	- " -	- " -	- " -	- " -	- " -	
RGS-8	296,5	- " -	- " -	- " -	- " -	- " -	- " -	
RGS-2+2	242		- " -	- " -	- " -	- " -	- " -	
RGS-2+4	300,5		- " -	- " -	- " -	- " -	- " -	
RGS-2+6	359		- " -	- " -	- " -	- " -	- " -	
RGS-2+8	417,5		- " -	- " -	- " -	- " -	- " -	
RGS-4+4	359		- " -	- " -	- " -	- " -	- " -	
RGS-4+6	417,5		- " -	- " -	- " -	- " -	- " -	
RGS-4+8	476		- " -	- " -	- " -	- " -	- " -	
RGS-6+6	476		- " -	- " -	- " -	- " -	- " -	
RGS-6+8	534,5		- " -	- " -	- " -	- " -	- " -	
RGS-8+8	593		- " -	- " -	- " -	- " -	- " -	
RGS-2+2	232	140,5						
RGS-2+4	290,5	- " -						
RGS-2+6	349	- " -						
RGS-2+8	407,5	- " -						
RGS-4+4	349	- " -						
RGS-4+6	407,5	- " -						
RGS-4+8	466	- " -						
RGS-6+6	466	- " -						
RGS-6+8	524,5	- " -						
RGS-8+8	583	- " -						

n = number of frames wide.
Tolerances single frame:
Height ± 1 mm, Width ± 0,8 mm.
Material thickness is 10 mm.

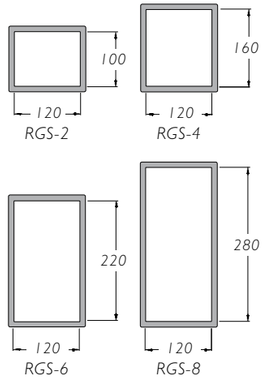
All measurements are in millimeters.



RGS

WEIGHT CHART

Standard frames come in four sizes: 2, 4, 6 and 8. They are all the same width. Height differences are shown below. The material is 10 mm thick.



Weight chart in kilograms

Weight in kilograms

MATERIAL	FRAME SIZE	W (width)/Multiple Frames x 1	x 2	x 3	x 4	x 5	x 6
MILD STEEL	RGS-2	2,2	3,9	5,7	7,4	9,2	10,9
	RGS-4	2,7	4,6	6,5	8,4	10,3	12,2
	RGS-6	3,2	5,4	7,6	9,8	12,0	14,2
EN 10025-2	RGS-8	3,8	6,3	8,9	11,4	14,0	16,5
S355JR	RGS-2+2	3,6	8,1	11,9	15,7	19,5	23,3
1.0045	RGS-2+4	4,2	8,8	12,8	16,7	20,7	24,6
A36	RGS-2+6	4,8	9,5	13,6	17,8	21,9	26,0
	RGS-2+8	5,5	10,3	14,7	19,1	23,5	27,9
	RGS-4+4	4,8	9,5	13,6	17,8	21,9	26,0
	RGS-4+6	5,5	10,3	14,7	19,1	23,5	27,9
	RGS-4+8	5,9	11,1	15,8	20,5	25,1	29,8
	RGS-6+6	5,9	11,1	15,8	20,5	25,1	29,8
	RGS-6+8	6,5	12,0	17,0	22,1	27,1	32,1
	RGS-8+8	7,2	12,9	18,3	23,7	29,1	34,5
STAINLESS STEEL	RGS-2	2,2	4,0	5,8	7,6	9,4	11,2
	RGS-4	2,8	4,7	6,7	8,6	10,6	12,6
	RGS-6	3,3	5,5	7,8	10,0	12,3	14,5
	RGS-8	3,9	6,5	9,1	11,7	14,3	16,9
	RGS-2+2	3,7	8,3	12,2	16,1	20,0	23,9
EN 10088-2	RGS-2+4	4,3	9,0	13,1	17,1	21,2	25,2
1.4404	RGS-2+6	4,9	9,7	14,0	18,2	22,5	26,7
AISI 316L	RGS-2+8	5,6	10,6	15,1	19,6	24,1	28,6
	RGS-4+4	4,9	9,7	14,0	18,2	22,5	26,7
	RGS-4+6	5,6	10,6	15,1	19,6	24,1	28,6
	RGS-4+8	6,0	11,4	16,2	21,0	25,8	30,6
	RGS-6+6	6,0	11,4	16,2	21,0	25,8	30,6
	RGS-6+8	6,7	12,3	17,5	22,6	27,8	32,9
	RGS-8+8	7,4	13,2	18,8	24,3	29,9	35,4
ALUMINIUM	RGS-2	0,8	1,4	2,0	2,6	3,2	3,8
	RGS-4	1,0	1,6	2,3	3,0	3,6	4,3
	RGS-6	1,1	1,9	2,7	3,4	4,2	5,0
EN 755-2	RGS-8	1,3	2,2	3,1	4,0	4,9	5,8
EN AW-6082	RGS-2+2	1,3	2,8	4,2	5,5	6,9	8,2
	RGS-2+4	1,5	3,1	4,5	5,9	7,2	8,6
	RGS-2+6	1,7	3,3	4,8	6,2	7,7	9,1
	RGS-2+8	1,9	3,6	5,2	6,7	8,3	9,8
	RGS-4+4	1,7	3,3	4,8	6,2	7,7	9,1
	RGS-4+6	1,9	3,6	5,2	6,7	8,3	9,8
	RGS-4+8	2,1	3,9	5,5	7,2	8,8	10,4
	RGS-6+6	2,1	3,9	5,5	7,2	8,8	10,4
	RGS-6+8	2,3	4,2	6,0	7,7	9,5	11,2
	RGS-8+8	2,5	4,5	6,4	8,3	10,2	12,1

RGB

RGBO WITH REMOVABLE END

RGB is MCT Brattbergs standard frame for embedment or built-in.
For EMC protection the frame shall be welded into the wall structure or to a facing place to get eart bounding.
RGB comes in four different sizes, in varying height and designates RGB-2, RGB-4, RGB-6 and RGB-8. The width dimension is always the same, 120 mm, as well as the depth 60 mm.
The frame profiles width are 60 mm and the thickness of the material is 6 mm.
For installations where cables already are in place the RGBO frame with openable gable is used. More information about combination frames can be found on page 10.

RGB

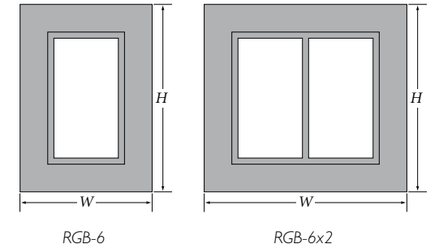
RGBO

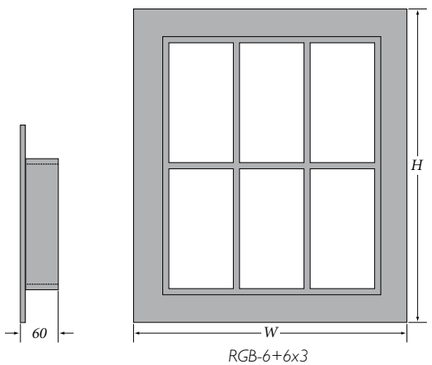
Size chart in mm

Size in mm

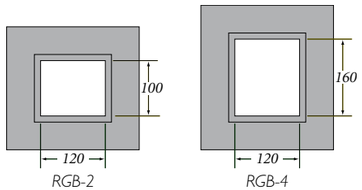
FRAME SIZE	H (height)	W (width) Combination frames x 1	x 2	x 3	x 4	x 5	x 6	x n
RGB-2	221	240.5	371	501.5	632	762.5	893	W = 110+
RGB-4	279.5	- „ -	- „ -	- „ -	- „ -	- „ -	- „ -	130.5 x n
RGB-6	338	- „ -	- „ -	- „ -	- „ -	- „ -	- „ -	
RGB-8	396.5	- „ -	- „ -	- „ -	- „ -	- „ -	- „ -	
RGB-2+2	332	- „ -	- „ -	- „ -	- „ -	- „ -	- „ -	
RGB-2+4	390.5	- „ -	- „ -	- „ -	- „ -	- „ -	- „ -	
RGB-2+6	449	- „ -	- „ -	- „ -	- „ -	- „ -	- „ -	
RGB-2+8	507.5	- „ -	- „ -	- „ -	- „ -	- „ -	- „ -	
RGB-4+4	449	- „ -	- „ -	- „ -	- „ -	- „ -	- „ -	
RGB-4+6	507.5	- „ -	- „ -	- „ -	- „ -	- „ -	- „ -	
RGB-4+8	566	- „ -	- „ -	- „ -	- „ -	- „ -	- „ -	
RGB-6+6	566	- „ -	- „ -	- „ -	- „ -	- „ -	- „ -	
RGB-6+8	624.5	- „ -	- „ -	- „ -	- „ -	- „ -	- „ -	
RGB-8+8	683	- „ -	- „ -	- „ -	- „ -	- „ -	- „ -	

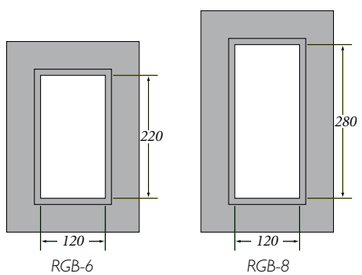
n = number of frames in width.
Tolerances single frame: 3.5 mm.
Thickness of material 6 mm except for internal horizontal and vertical walls in combination frames such as 10 mm.





Standard frames in four different sizes: 2, 4, 6 and 8 which mark different heights. All have the same width.
See below.





Weight chart in kilograms

Weight in kilograms

MATERIAL	FRAME SIZE	W (width) Combination frames x 1	x 2	x 3	x 4	x 5	x 6
STEEL	RGB-2	3.1	5.0	6.9	8.8	10.7	12.6
	RGB-4	3.8	5.9	8.1	10.2	12.4	14.6
	RGB-6	4.4	6.8	9.2	11.5	13.8	16.3
	RGB-8	5.0	7.7	10.4	13.1	15.8	18.5
SS EN 10025-S235JRG2	RGB-2+2	5.0	7.9	10.9	13.9	16.8	19.8
	RGB-2+4	5.6	9.0	12.4	15.7	19.1	22.4
DIN RST 37-2	RGB-2+6	6.2	9.9	13.6	17.3	21.0	24.7
	RGB-2+8	6.9	11.0	15.1	19.2	23.3	27.4
BS 4360 gr. 40	RGB-4+4	6.2	9.9	13.6	17.3	21.,0	24.7
NS 17100	RGB-4+6	6.9	11.0	15.1	19.2	23.3	27.4
	RGB-4+8	7.4	11.8	16.2	20.6	25.0	29.4
	RGB-6+6	7.4	11.8	16.2	20.6	25.0	29.4
	RGB-6+8	8.1	13.0	17.9	22.7	27.6	32.4
	RGB-8+8	8.9	14.2	19.5	24.9	30.2	35.5
STAINLESS STEEL	RGB-2	3.2	5.1	7.1	9.0	11.0	12.9
	RGB-4	3.9	6.1	8.3	10.5	12.7	14.9
	RGB-6	4.5	6.9	9.4	11.8	14.2	16.7
	RGB-8	5.2	7.9	10.7	13.5	16.2	19.0
DIN 1,4404	RGB-2+2	5.1	8.1	11.2	14.2	17.2	20.3
	RGB-2+4	5.8	9.2	12.7	16.1	19.6	23.0
ASTM/316 L	RGB-2+6	6.3	10.1	13.9	17.8	21.6	25.4
AiSi 316 L	RGB-2+8	7.1	11.3	15.5	19.7	23.9	28.1
	RGB-4+4	6.3	10.1	13.9	17.8	21.6	25.4
BS 970 gr: 316 S11	RGB-4+6	7.1	11.3	15.5	19.7	23.9	28.1
NS 14450	RGB-4+8	7.6	12.1	16.6	21.1	25.6	30.1
	RGB-6+6	7.6	12.1	16.6	21.1	25.6	30.1
	RGB-6+8	8.4	13.3	18.3	23.3	28.3	33.3
	RGB-8+8	9.1	14.6	20.0	25.5	31.0	36.4
ALUMINIUM	RGB-2	1.1	1.8	2.5	3.1	3.8	4.4
	RGB-4	1.4	2.1	2.9	3.6	4.4	5.1
	RGB-6	1.6	2.4	3.2	4.1	4.9	5.7
	RGB-8	1.8	2.7	3.7	4.6	5.6	6.5
EN AW6082	RGB-2+2	1.8	2.8	3.9	4.9	5.9	7.0
	RGB-2+4	2.0	3.2	4.4	5.5	6.7	7,9
DIN ALMG SI 1	RGB-2+6	2.2	3.5	4.8	6.1	7.4	8.7
A 6082	RGB-2+8	2.4	3.9	5.3	6.7	8.2	9.6
	RGB-4+4	2.2	3.5	4.8	6.1	7.4	8.7
BS H30/6082 TF	RGB-4+6	2.4	3.9	5.3	6.7	8.2	9.6
NS 17305	RGB-4+8	2.6	4.2	5.7	7.2	8.8	10.3
	RGB-6+6	2.6	4.2	5.7	7.2	8.8	10.3
	RGB-6+8	2.9	4.6	6.3	8.0	9.7	11.4
	RGB-8+8	3.2	5.0	6.9	8.7	10.6	12.5

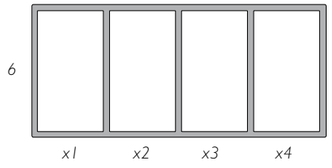
Multiple Frames

RGS frame

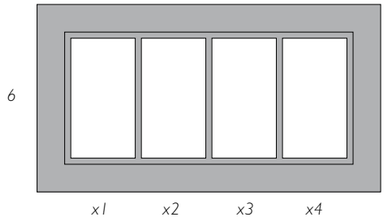
RGB frame

HORIZONTAL MULTIPLE FRAMES

Horizontal multiple frames are described by listing the frame type and size x the desired number of horizontal openings.



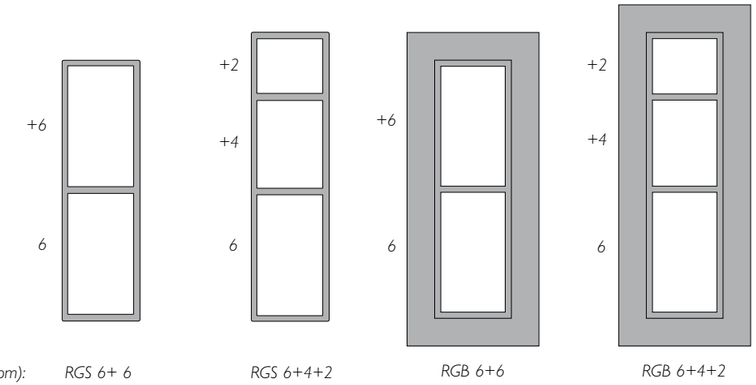
Designation: *RGS 6x4*



RGB 6x4

VERTICAL MULTIPLE FRAMES

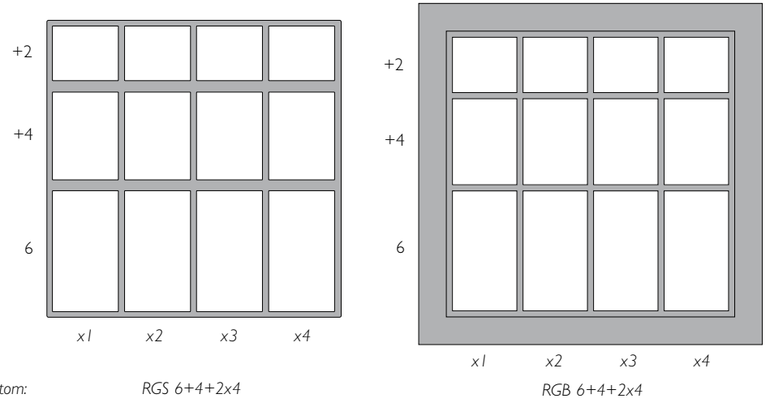
Vertical multiple frames are described by listing the bottom frame type and size + the next frame type and size.



Designation (starting at bottom): *RGS 6+ 6* *RGS 6+4+2* *RGB 6+6* *RGB 6+4+2*

VERTICAL AND HORIZONTAL MULTIPLE FRAMES

List the entire vertical frames x the desired number of horizontal repetitions.



Designation starting at bottom: *RGS 6+4+2x4*

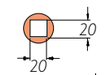
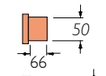
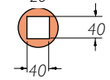
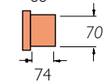
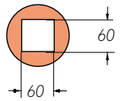
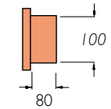
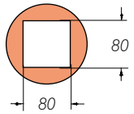
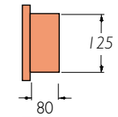
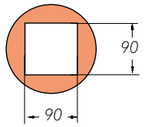
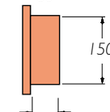
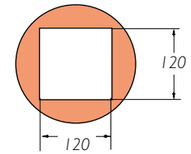
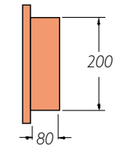
RGB 6+4+2x4

NOTE: All multiple frame designations must be preceded by the frame type.

E-RGP-round holes

The E-RGP is a round Lycron frame for assembly in pipes. A copper sheet forms the contact between insert block and pipe housing. The seal is available in 6 sizes with the designations E-RGP -50/L60, -70 , -100, -125, -150 and -200.

E-RGP is a circular seal for holes or pipes.

Size in mm		
RGP SIZE	PACKIANG SPACE	LENGHT AND DIAMETER
E-RGP 50/L60		
E-RGP 70		
E-RGP 100		
E-RGP 125		
E-RGP 150		
E-RGP 200		

Weight in kilograms		
E-RGP 50/L60	E-RGP 70	E-RGP 100
0,25	0,4	0,7
E-RGP 125	E-RGP 150	E-RGP 200
1,0	1,8	3,0

Sleeves

The round sleeve is used to house the E-RGP seal. The sleeve is available in six different sizes. There are several types to choose from, with and without flanges, for welding and for bolting, plus an open version. For more information, contact MCT Brattberg.

Components

STAYPLATE

To be placed between each row of blocks. Stayplates simplyfies installation, increases stability and anchores blocks within the frame. Plates come in stainless steel.

COMPRESSION PLATE

Usually assembled above top row of blocks. The plate bolt is tightened to compress blocks around cables, while providing room for E-STG endpacking.
Matreial: Cast iron hot galvanized.

TWEEZERS

Can be used to fit E-insert or spare blocks. Grips the metal sheet and assists installation of the last row of blocks.

E-STG ENDPACKING

Installed between compression plate and the top of the frame, completing the seal. Made of Lycron with galvanized or stainless steel fittings. The copper sheet forms a contact between the frame and compression plate.

E-PTG PRESSWEDGE

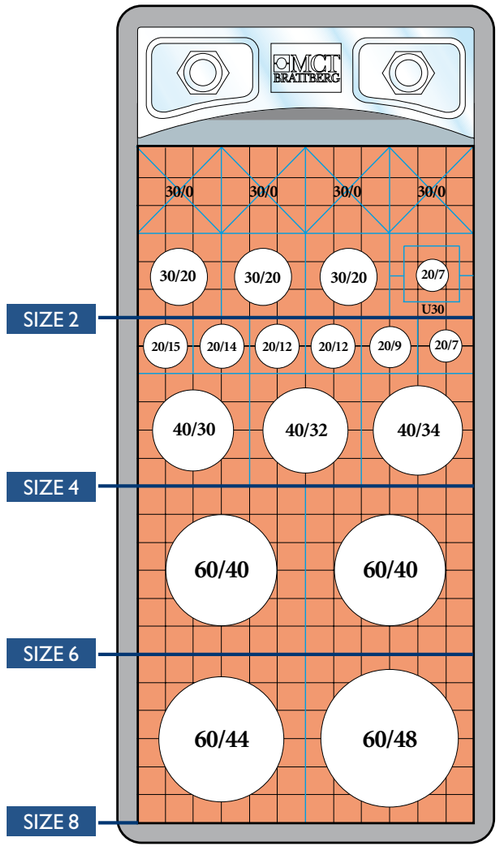
Can be used as an alternative to compression plate and E-STG. Can also be placed anywhere in the frame. Made of Lycron, with galvanized or stainless steel fittings. The copper sheet forms a contact between the frame and the stayplate. Must always be installed in combination with a stayplate.

ENDPACKING PULLER

Weight in kilograms			
E-STG	E-PTG	COMPRESSION PLATE	STAYPLATE
0,6	0,82	0,63	0,13

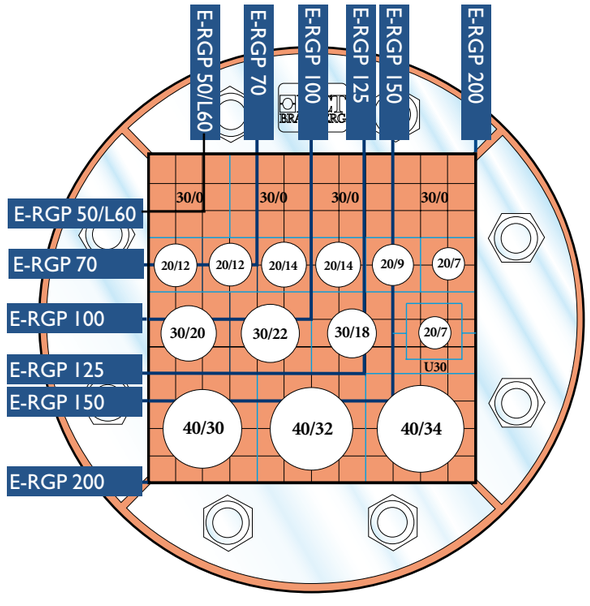
Packing Space

RGS-maximum number of cables and pipes							
	BLOCK SIZE						
FRAME SIZE	15	20	30	40	60	90	120
	MAXIMUM NUMBER OF CABLES AND PIPES						
RGS 2	32	18	8	3	2	-	-
RGS 4	64	36	16	9	4	1	1
RGS 6	96	54	24	12	6	2	1
RGS 8	128	72	32	18	8	2	2



E-RGP-maximum number of cables and pipes							
	BLOCK SIZE						
RGP SIZE	15	20	30	40	60	90	120
	MAXIMUM NUMBER OF CABLES AND PIPES						
E-RGP-50/L60	1	1	-	-	-	-	-
E-RGP-70	4	4	1	1	-	-	-
E-RGP-100	16	9	4	1	1	-	-
E-RGP-125	16	16	4	4	1	-	-
E-RGP-150	36	16	9	4	1	1	-
E-RGP-200	64	36	16	9	4	1	1

Sample packing space plans (RG-Plans) for RGS (below left) and RGP (below right). We recommend placing the larger cables at the bottom.



Combination frame width compared with width of cable size						
Cabletype	Frame-size	Cable tray's width in mm				
		150	200	300	400	600
Signal		6	6 x 2	6 x 3	6 x 4	6 x 5
Power		4	4 x 2	4 x 3	4 x 4	4 x 5
Comb.		6	6 x 2	6 x 3	6 x 4	6 x 5

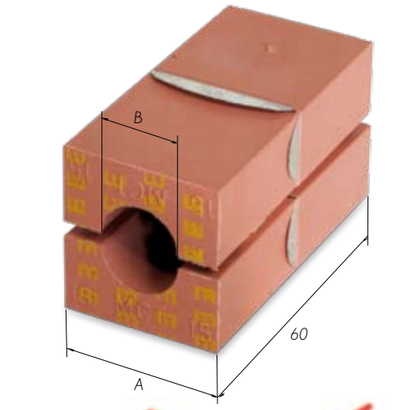
Choosing the correct E-Insert Blocks

Our standard range of E-blocks accomodates cables beween 4 and 54 mm in diameter. It is important that the insert block is the right size, with respect to the cable, to ensure a proper seal.

Measure the cable diameters carefully and choose E-insert blocks accordingly. With the sizing chart on next page you can choose the correct size of E-insert blocks.

E-Blocks are referred to by their width (A) and hole diameter (B). Thus a E-block with a width of 15 mm and a hole diameter of 4 mm is referred to as 15/4. This designation is moulded into the E-block.

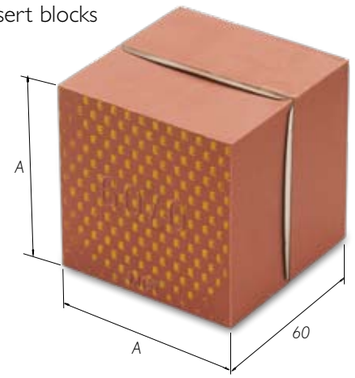
The E-MCT block has an integral copper sheet as discharging and shielding protection between the cable and the system.
There are 2 different designs of copper sheets, one for outer cable diameters up to 10 mm and one for outer cable diameters over 10 mm. The design guarantees good contact without damaging the cable braid. In order to correctly install the E-MCT modules they are marked with a yellow E on one of the short ends. The marking also indicates that it is an E-MCT Brattberg System.



Spare Blocks

Surplus room in each frame is filled out with solid E-insert blocks. Called spares, they bear the designation A/0. The copper sheet forms contact between surrounding blocks and the frame.

E-Blocks are referred to by their width (A), followed by the designation /0 (indicating solid). Thus a E-block with a width and height of 15 mm is referred to as 15/0. The length of E-insert blocks is always 60 mm.

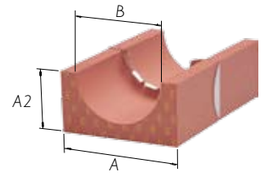


E-BLOCK SIZE Width (A) = Height (A)	E-BLOCK DESIGNATION
5 ×120	E-24 × 5/0
10 ×120	E-12 × 10/0
15 × 15	E-15/0
20 × 20	E-20/0
30 × 30	E-30/0
40 × 40	E-40/0
60 × 60	E-60/0

Size in mm

CABLE DIAM.	A			B
	15	20	30	
3.5-4.5	E-15/4	E-20/4		4
4.5-5.5	E-15/5	E-20/5		5
5.5-6.5	E-15/6	E-20/6		6
6.5-7.5	E-15/7	E-20/7		7
7.5-8.5	E-15/8	E-20/8		8
8.5-9.5	E-15/9	E-20/9		9
9.5-10.5		E-20/10		10
10.5-11.5		E-20/11		11
11.5-12.5		E-20/12	E-30/12	12
12.5-13.5		E-20/13	E-30/13	13
13.5-14.5		E-20/14	E-30/14	14
14.5-15.5		E-20/15	E-30/15	15
15.5-16.5		E-20/16	E-30/16	16
16.5-17.5			E-30/17	17
17.5-18.5			E-30/18	18
18.5-19.5			E-30/19	19
19.5-20.5			E-30/20	20
20.5-21.5			E-30/21	21

CABLE DIAM.	A			B
	30	40	60	
21.5-22.5	E-30/22	E-40/22		22
22.5-23.5	E-30/23	E-40/22		23
23.5-25.5	E-30/24	E-40/24		24
25.5-27.5		E-40/26		26
27.5-29.5		E-40/28		28
29.5-31.5		E-40/30		30
31.5-33.5		E-40/32	E-60/32	32
33.5-35.5		E-40/34	E-60/34	34



Blocks are referred to by their width (A) and hole diameter (B). Thus a module with a width of 15 mm and a hole diameter of 4 mm is referred to as E 15/4.

CABLE DIAM.	A		B
	60	90	
35.5-37.5	E-60/36		36
37.5-39.5	E-60/38		38
39.5-41.5	E-60/40		40
41.5-43.5	E-60/42		42
43.5-45.5	E-60/44		44
45.5-47.5	E-60/46		46
47.5-49.5	E-60/48		48
49.5-51.5	E-60/50	90/50	50
51.5-53.5	E-60/52	90/52	52
53.5-55.5	E-60/54	90/54	54
55.5-57.5		90/56	56
57.5-59.5		90/58	58
59.5-61.5		90/60	60
61.5-63.5		90/62	62
63.5-65.5		90/64	64
65.5-67.5		90/66	66
67.5-69.5		90/68	68
69.5-71.5		90/70	70

Special and larger modules can be made to order.

Weight in grams per half

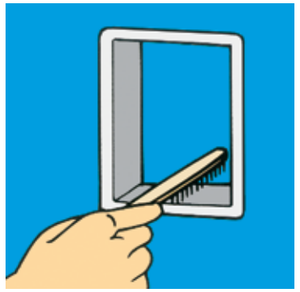
E-BLOCK	WEIGHT
E-24 × 5/0	58
E-12 × 10/0	113
E-15/0	20
E-20/0	38
E-30/0	84
E-40/0	150
E-60/0	338
E-15/4	10
E-15/5	10
E-15/6	10
E-15/7	10
E-15/8	9
E-15/9	8
E-20/4	18
E-20/5	18
E-20/6	17
E-20/7	17
E-20/8	16

E-BLOCK	WEIGHT
E-20/9	15
E-20/10	14
E-20/11	13
E-20/12	13
E-20/13	12
E-20/14	11
E-20/15	10
E-20/16	9
E-30/12	36
E-30/13	36
E-30/14	35
E-30/15	34
E-30/16	33
E-30/17	31
E-30/18	30
E-30/19	28
E-30/20	27
E-30/21	25

E-BLOCK	WEIGHT
E-30/22	24
E-30/23	22
E-30/24	21
E-40/22	57
E-40/24	54
E-40/26	50
E-40/28	47
E-40/30	42
E-40/32	37
E-40/34	32
E-60/32	131
E-60/34	127
E-60/36	122
E-60/38	116
E-60/40	110
E-60/42	104
E-60/44	98
E-60/46	91

E-BLOCK	WEIGHT
E-60/48	84
E-60/50	77
E-60/52	59
E-60/54	61
E-90/50	287
E-90/52	279
E-90/54	273
E-90/56	262
E-90/58	255
E-90/60	243
E-90/62	239
E-90/64	229
E-90/66	220
E-90/68	211
E-90/70	204

Installation E-RGS, E-RGB

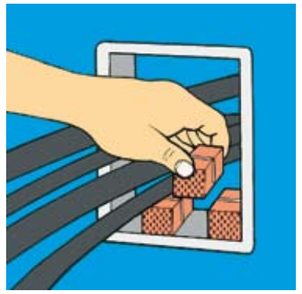


1

Clean the inside of the frame carefully to ensure good electrical contact between the metal sheet and the frame.

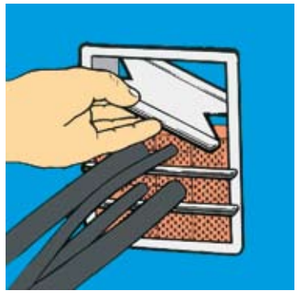
2

Pull cables to final position. Mark cable 30 mm from front edge of frame. Remove cable sheat 5 mm on either side of the line.



3

When packing the transit, ensure all the insert blocks have "E" marking facing the installet.



4

Position the stayplates betweean each layer of insert blocks.

5

Before the final row of blocks, the compression plate is installed.
Alternatively, the E-PTG Presswedge can be fitted.

6

Tweezers can be used, if required to aid installation of the last row of blocks.

7

Tighten the compression plate bolt until the tongue of the E-STG-1 slides into position around the bolt (32 mm maximum from the inside of the frame to the top of the compression plate).

8

Put the endpacking with the tongue around the bolt. Tighten the nuts in the endpacking until approximately 10-12 mm of free threads are visible.

PRESSURE APPLICATIONS RGS, RGSC, RGSF, RGSK, RGSR AND RGSbtb

Make sure the frame is clean and lubricate the inside of the frame thoroughly. Lubricate all Lycron parts carefully with the MCT Brattberg lubricant.

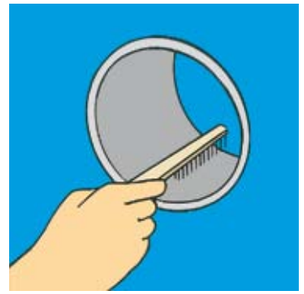
Place the compression plate in the center so that the rubber can come up between the compression plate and the frame on both sides of the plate.

The seal may not be pressurized within 48 hours of installation. This allows for the settlement of the system (based on a 20°C ambient temperature). NOTE. The lower the temperature, the longer the needed settlement time.

Test pressure 5 bar.

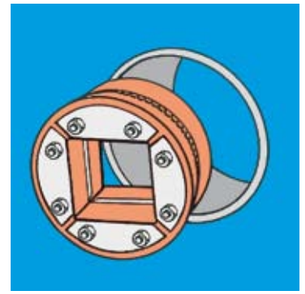
NOTE. For pressurized applications, all components must be replaced with new material after removal and refitting.

Installation E-RGP



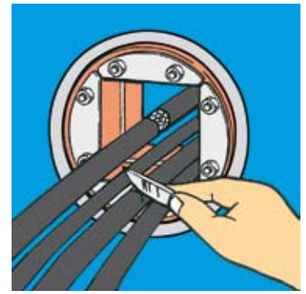
1

Thorougly clean the inside of the frame. Check that frame dimensions agree with stated tolerances.



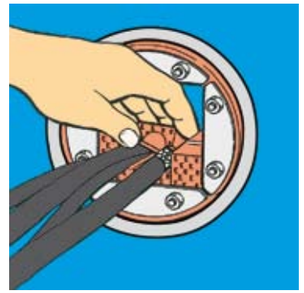
2

Place the E-RGP in the correct position in the opening.



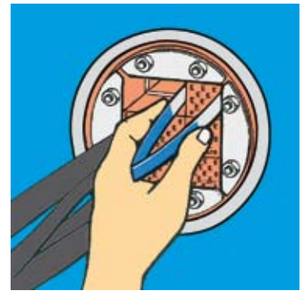
3

Pull the cables to final position. Mark cable 30 mm from front edge of frame. Remove cable sheat 5 mm on either side of the line.



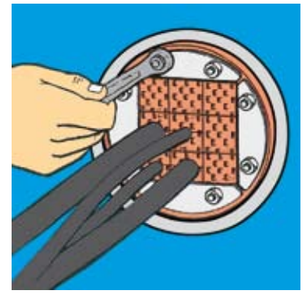
4

When packing the transit, ensure all the insert blocks have "E" markings thread is visible.



5

Tweezers can be used, if required, to aid installation of last row of blocks.



6

Tighten the nuts so that 10-12 mm of the protruding thread is visible.

PRESSURE APPLICATIONS E-RGP

Clean the inside of the pipe and the outside of the E-RGP prior to installtion, but apply no lubricant to either surface.

Lubricate all the Lycron parts carefully with the MCT Brattberg lubricant.

The E-RGP seal may not be pressurized within 48 hours of installation - this allows for the settlement of the system (based on a 20°C ambient temperature). NOTE. The lower the temperature, the longer the needed settlement time.

Test pressure 4.5 bar. In the case of higher pressure, please contact MCT Brattberg.

NOTE. For pressurized applications, all components must be replaced after removal and refitting.

Packing Plan

The correct frame size can be determined by using this plan.

The numbers 2, 4, 6 and 8 in the margin represent the packing space available in frames size 2, 4, 6 and 8 respectively.

It is not neccessary to show stayplates and compression components as the required space has already been allowed for. RG-Packing Plans will be supplied free of charge upon request.

E-STG

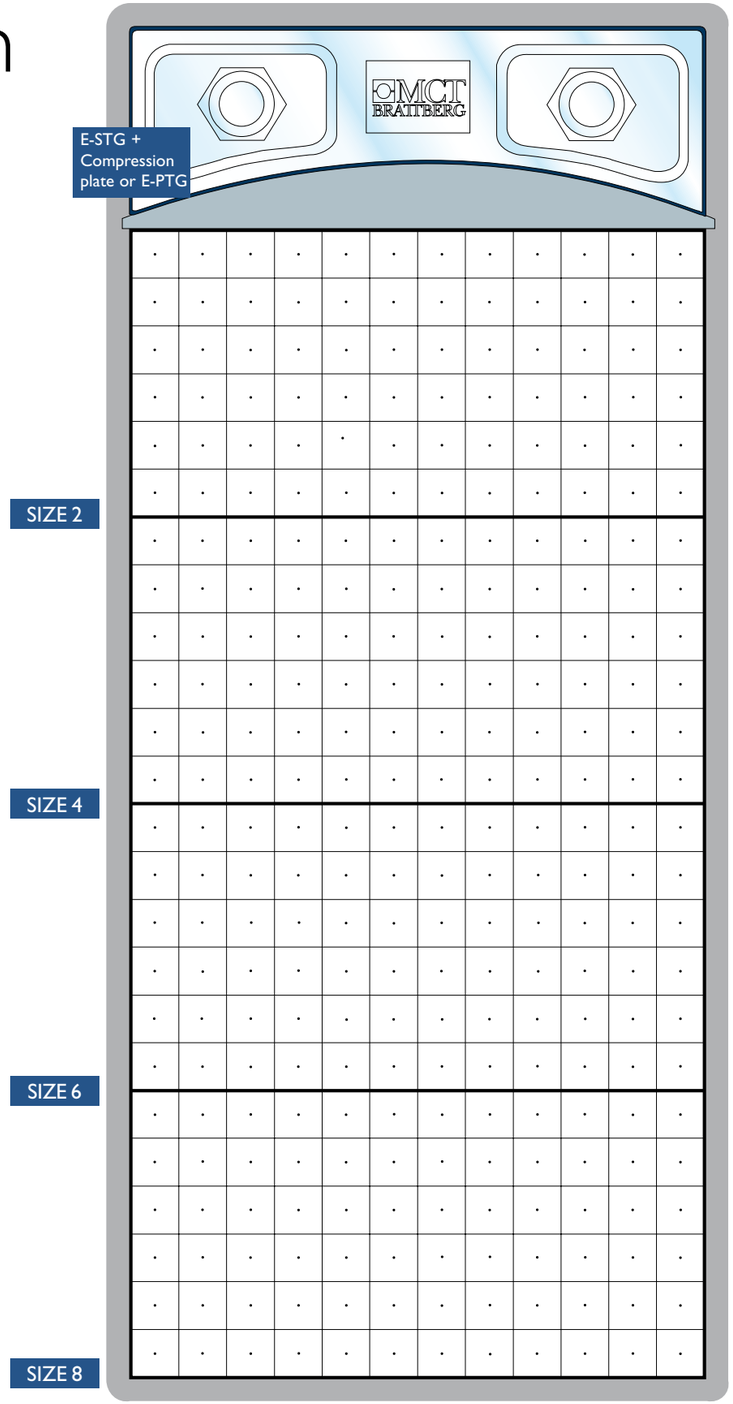
Compression plate

E-PTG

Stayplate

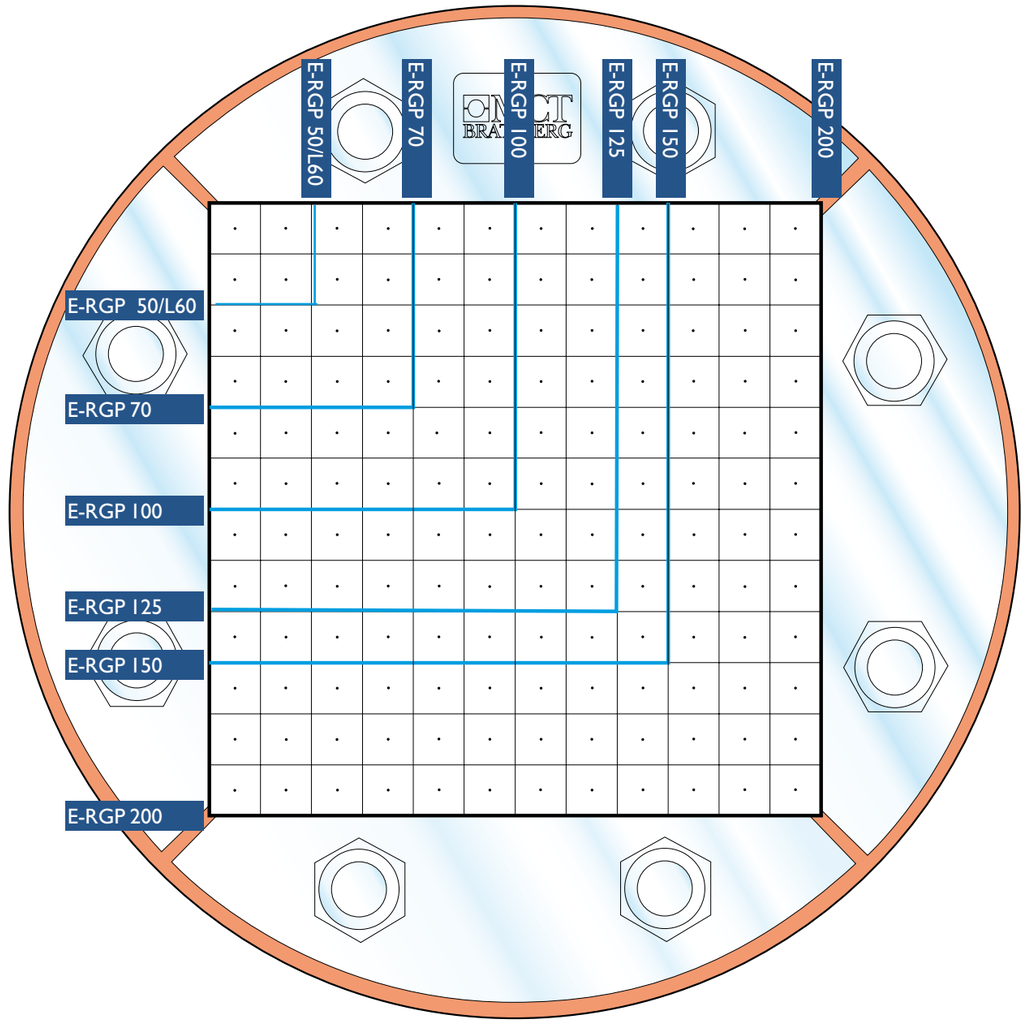
Lubricant

E-Blocks



E-RGP

E-Blocks



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