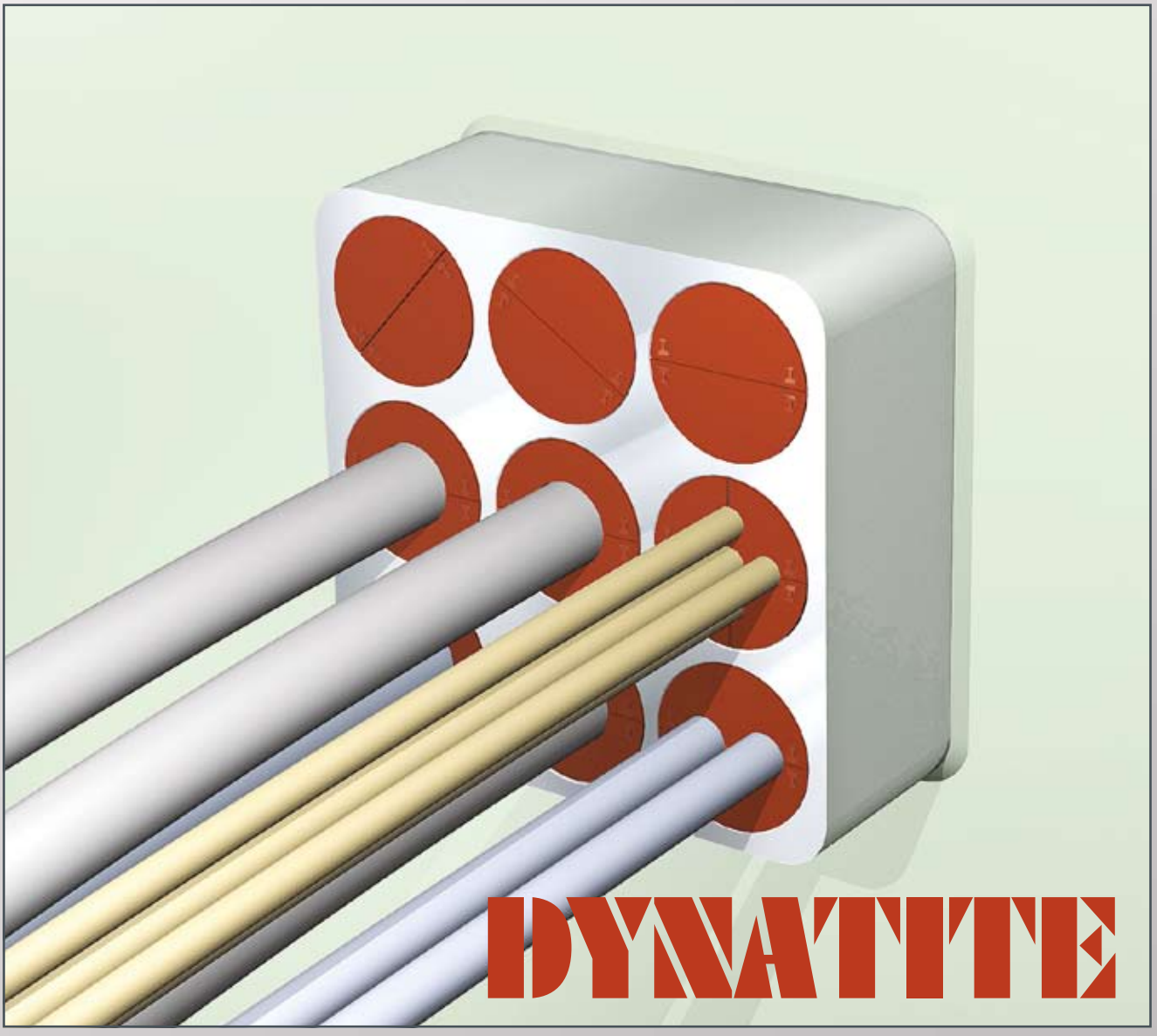
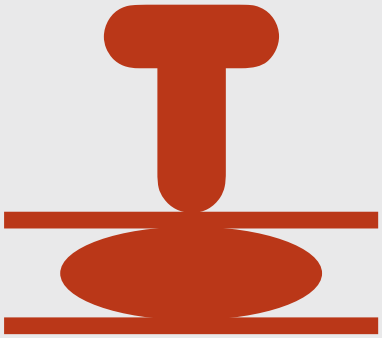
DYNATITE® PRESSURE SEALING SYSTEM: ACTIVATION UNDER INSTANTANEOUS PRESSURE LOAD



SEALING SYSTEM BASED ON SLIPSIL® AND DYNATITE® TECHNOLOGY: VERY HIGH PRESSURE RATINGS BY DYNAMIC SEALING UNDER PRESSURE LOAD

DYNATITE

SEALING SYSTEM BASED ON SLIPSIL® AND DYNATITE® TECHNOLOGY: HIGH PERFORMANCE BY DYNAMIC SEALING UNDER PRESSURE LOAD



Websites: http://www.actifoam.com, www.beele.com, www.firsto.com, www.nofirno.com, www.rise-systems.com, www.rise-nofirno.com, www.riswat.com and www.slipsil.com

BEELE ENGINEERING BV
CSD INTERNATIONAL BV

BEELE Engineering and CSD International have been working in the field of water and gas tight and fireproof sealing of conduits for pipes and cables for more than 35 years. In the field of passive fire prevention, we have invested substantial amounts of money in the development of systems which are capable withstanding fires for extended periods of time. Passive fire prevention is a very complicated matter due to the fact that cable and pipe penetrations have to be designed to the actual circumstances at site and not for a laboratory test. In case of a catastrophe penetrations are subject not only to flame erosion and very high temperatures, but also to mechanical loads due to collapsing cableways and possibly a jet of fire-fighting water. This means that the performance in actual situations can differ dramatically from that in a regular fire test. In fact, the systems could only be applied as tested to guarantee the required fire safety.

And this means discussions and limitations!

We have ensured that our systems will function under all circumstances, and the classification societies have awarded us signed and stamped installation drawings of our sealing systems. Approved for steel and aluminium partitions. Guaranteed safety in your installation will be the result.

The R&D department of BEELE Engineering is constantly working in the field of rubber and systems techniques to optimize the existing systems and to develop new concepts for cable and pipe conduits on board of vessels and offshore installations. Although installation of the CSD sealing systems is in fact an easy matter, a full training programme can be given in-house by our engineers. Because the advantages and possibilities of passive fire prevention and evacuation signposting can most effectively be discovered in an environment that matches the practical situation as closely as possible, we have constructed an unique research and development centre. As far is known, this R&D centre is the only institute world-wide where visitors can experience for themselves all the aspects of fire prevention and evacuation signposting systems.

Above an impression of the research and development centre with a training and schooling institute for passive fire prevention products and systems and for the improvement of evacuation signposting systems in buildings and on board ships. The centre consists of a presentation theatre seating up to 45 persons, and a mock-up covering about 500 square metres in which various evacuation signposting systems are installed to enable their effectiveness to be determined in the dark.

The behaviour of escaping persons inside the test facility is recorded from a separate technical area (with an associated showroom) by means of infra-red cameras and an audio-video system.

In addition the centre comprises three laboratories with a total surface area of about 300 square metres in which, respectively, large-scale fire tests, mechanical tests, and light emission investigations are performed.

DYNATITE

DYNATITE® has been developed specially for those applications where a high degree of (instantaneous) tightness is required and, for all, to maintain this performance on long term. The engineers of our R&D centre have combined the basics of the AQUASTOP®, NOFIRNO® and SLIPSIL® technology in the development of a single and multi-cable transit system which is easy to install, less vulnerable than any comparable system, maintenance friendly and without showing any degradation during service life.

DYNATITE® stands for dynamic tightness. The system is primarily suitable for all situations in which a sudden pressure exposure will occur. The objective is not only to hold multi-cable and pipe transits in situ, but also completely tight. Reference is made to the Thunderhorse accident on which compressive sealing type systems dramatically failed during water ingress. There are numerous other occasions where disasters as flooding and explosions easily could create substantial damage when sealing systems would fail.

In such “explosive” situations the sealing system will be exposed to an instantaneous pressure load and should therefore be able to settle itself rather quick. DYNATITE® is such a dynamic sealing system. Since rubber is incompressible, only an optimized profiling of the rubber parts can fulfil this requirement. A further objective of the development is to avoid large numbers of contact surfaces between rubber parts. The used rubber polymer should be able to reset itself when the pressure load disappears. It might be obvious that the development of the DYNATITE® system departed from the SLIPSIL® sealing plugs and the NOFIRNO® rubber. SLIPSIL® has shown to be able to handle pressure tightness of up to 3 bar easily, whereby the superb NOFIRNO® rubber offers a high degree of flexibility.

To allow dynamic sealing, the flange of the SLIPSIL® plug has been modified to enable a tight fit in the conduit opening. The depth of the conduit opening is such that the flange of the DYNATITE® plug is flush with the front side of the DYNATITE® conduit sleeve or conduit module. A retainer ring with engineered dimensions is positioned inside the conduit opening to function as a hold of the sealing plug and to allow deformation of the rubber mass. The inner surface of the conduit opening is for such applications of utmost importance. For this reason the conduit sleeves and multi-passage modules are milled from solid steel, stainless steel or aluminum. This guarantees precise dimensions and a smooth surface during service life. These are major conditions to obtain the optimum performance of the system when it is required.

The DYNATITE® multi-cable transit system is less compact than for instance the RISE® system, but it offers quite some advantages.

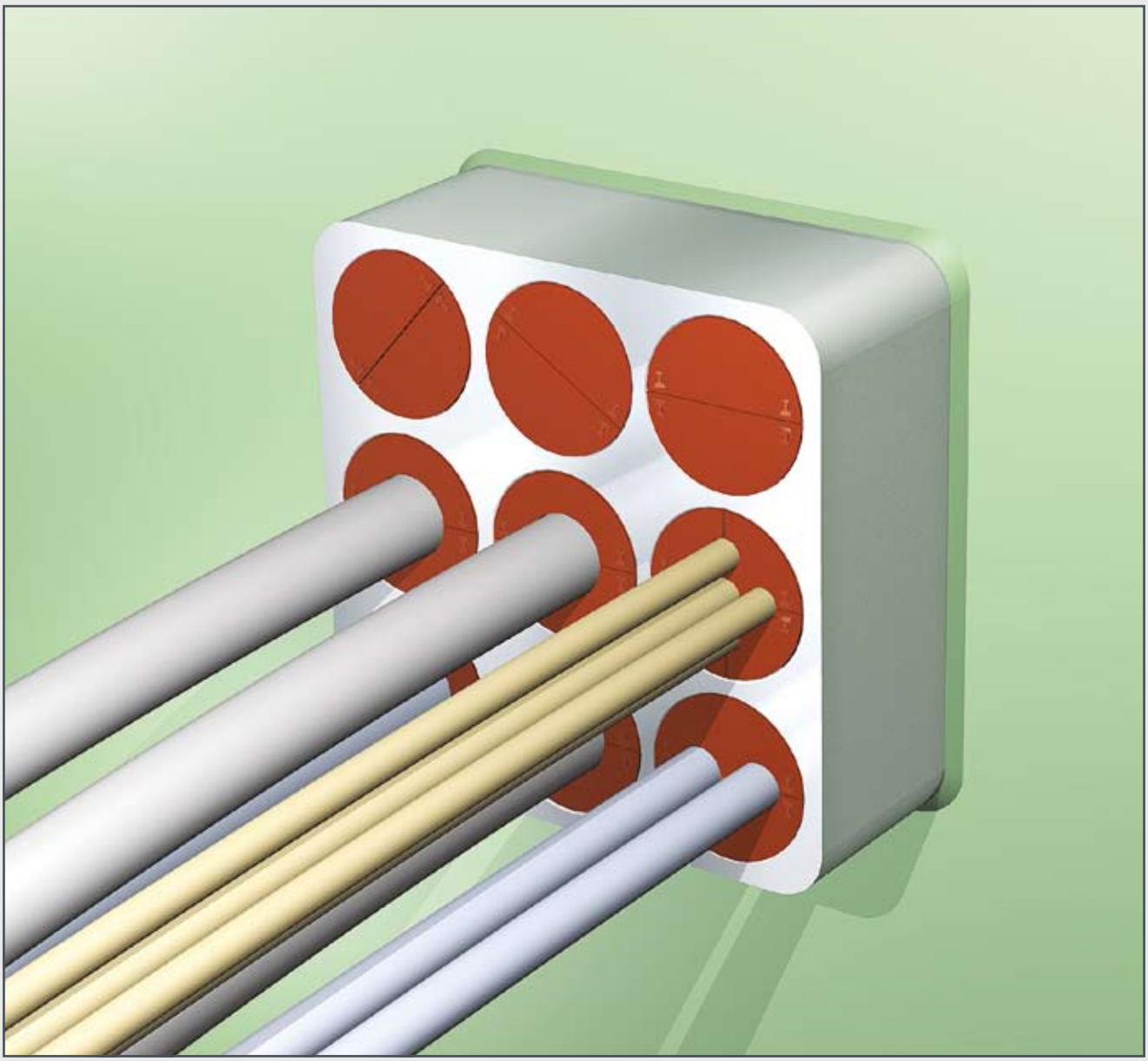
1) Pressure loads of more than 10 bar can be coped with easily
2) Ease of installation, just grease and push
3) Self-correcting under pressure load (even when the plug halves are not equally inserted correction will take place under pressure)
4) Individual ducting has an advantage when modifying the cable set during service life
5) More easy access than with highly filled penetrations

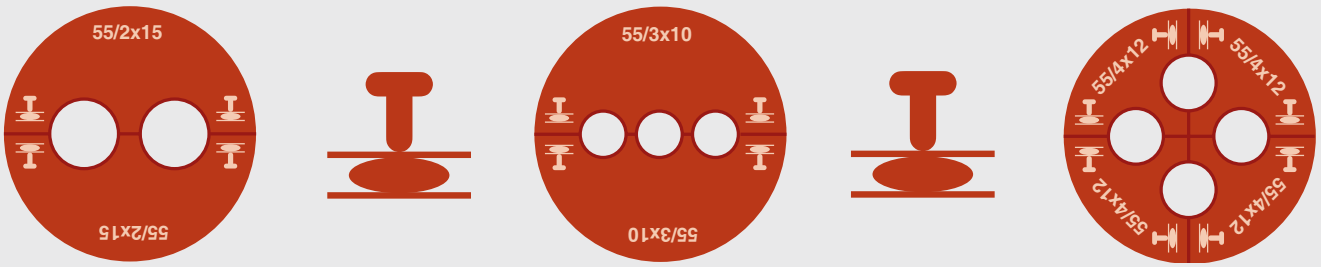
Specially developed for application in the columns of semi-submersible rigs, the system can be used in quite some other hazardous areas. To name some: partitions between hazardous and non-hazardous area, blast walls, explosion proof areas, tsunami areas and all those situations where a sudden pressure might arise.

When the DYNATITE® plugs are installed at both ends of a sleeve or module, whereby in the centre of the conduit a retainer ring is positioned, the pressure load can be withstood from both sides. Always one of the DYNATITE® plugs will hold the system tight. For this purpose also retainer flanges can be fixed to the front side of conduit sleeves. In this simple way a single conduit can easily be upgraded to DYNATITE®.

DYNATITE

The DYNATITE® system is specially developed for those applications where an instantaneous excessive pressure might occur. In certain circumstances the pressure might rise in a split second to very high values. Other than with explosions this pressure might turn after dynamic into a static one when a flooding occurs.
The objective of the DYNATITE® system is to allow for a dynamic adjustment of the DYNATITE® sealing plugs. For this reason DYNATITE® multi-passage units are manufactured with exact fitting dimensions to adopt the sealing plugs and to allow the required movement of the rubber. In this simple way pressures in excess of 10 bar can easily be coped with. The DYNATITE® dynamic sealing system holds also static tight after dynamic exposure.

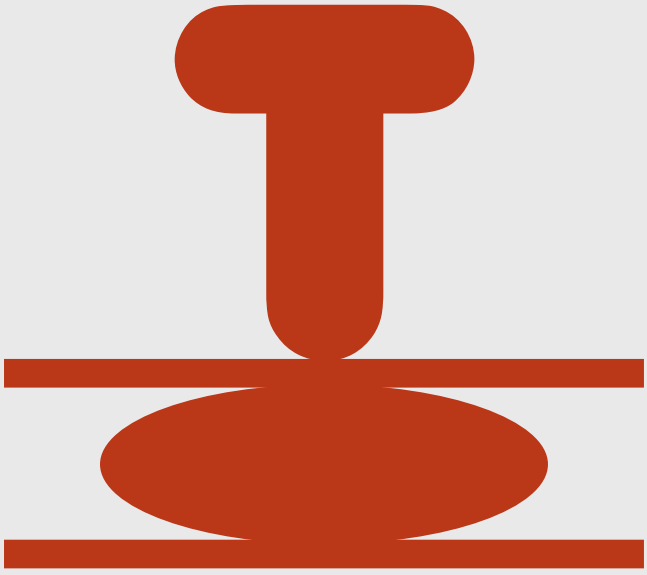




DYNATITE

The DYNATITE® plugs are derived from the SLIPSIL® plugs and are also made of NOFIRNO® rubber. The SLIPSIL® plugs can already easily handle pressures up to 3 bar, but with higher pressure loads the plug might be forced out off or into the conduit sleeve. To overcome this problem the unique DYNATITE® system has been developed. The DYNATITE® plugs have a flange which has the same outer dimensions as the inside diameter of the conduit sleeve. The profiling and the length of the plugs is similar as those of the SLIPSIL® plugs. The plugs are clearly marked with the DYNATITE® logo on the flange. The specific terracotta colour of the DYNATITE® plugs is unique for the BEELE plug line. In this way the origin of the sealing plugs can easily be determined, even after installation.
The DYNATITE® plugs are tightly fitting into the DYNATITE® conduit sleeves and the DYNATITE® multi-passage units.

For manufacturing DYNATITE® plugs use is made of a high quality rubber grade.
NOFIRNO® rubber has excellent weathering properties, UV and ozone resistance and long term behaviour. Service life of the plugs easily exceeds 20 years under normal environmental conditions.
The plugs can be used in a very wide temperature range. Even at low temperatures down to -50° C the rubber stays flexible and does not harden excessively as other rubber types will do. This guarantees tightness even at low temperatures. The rubber can also be used in applications up to +180° C.
For dynamic sealing it is of utmost importance that the sealing plugs maintain their flexibility over an extend period of time.
Sealing systems are safety devices. Only highest quality can do the job, not only when newly installed but also after a long service life. With DYNATITE® plugs this safety is guaranteed for a very long time!



TIGHT FOR SURE

DYNATITE® sealing plugs are made of NOFIRNO® fire resistant rubber, our most superior rubber grade. This rubber is compounded under special conditions in our factory to obtain the outstanding properties for use in a wide variety of applications.

DYNATITE

Based on the new design SLIPSIL® plugs which has been developed by the engineers of BEELE Engineering, the DYNATITE® plugs offer similar properties as those plugs.
Rubber engineering expertise and more than 30 years practical experience with sealing systems have contributed to an excellent product for dynamic sealing applications.
In view of the incompressibility of rubbers, the design work focused on finding an ideal solution to allow rubber to move in the right directions under mechanical loads. To cope with instantaneous pressure loads an ultimate displacement of the rubber is needed. For this reason the flange has been modified to enable functioning as a guidance for the movement inside the conduit sleeve.
To direct the pressure load on the top of the plug in a proper way to the profiles at inner and outer side of the plug, a retainer ring is needed inside the conduit sleeve. In this way optimum compression takes place.

Our most superior rubber grade, which is suitable for gas and water tight ducting and for fire rated applications as well, has been selected for DYNATITE® plugs.
For decades we have been involved with gas and watertight and fire safe rubbers. The drawbacks of certain rubber types are halogen content, hardness of the highly filled rubbers, hardening during lifetime and high permanent deformation sets. All these features will have an impact on performance in the long run. NOFIRNO® rubber does not have the above drawbacks. NOFIRNO® rubber does not age and is weathering resistant. Not only the selection of the rubber polymer and additives is determining. The processing conditions for optimized compounding in our factory assure highest performance of the rubber.
NOFIRNO® rubber is traceable to prevent counterfeiting and to guarantee users that they get the BEELE quality they are paying for.

NOFIRNO

DYNATITE® sealing plugs are made of NOFIRNO® rubber which will not be consumed in fire conditions. From the way of surface charring and the rubber residues inside the product, it can easily be determined whether or not NOFIRNO® has been used.

DYNATITE

The DYNATITE® system for multi-cable transits consists of DYNATITE® multi-passage units and fitting DYNATITE® plugs made of NOFIRNO® rubber. With a view on the high pressure loads, the multi-passage units are milled from solid steel in our factory. A smooth surface of the conduit openings is a must, also in the long run. Multi-passage units preferably should be made of stainless steel. They can be manufactured with different types of configurations. The retainer rings are positioned in such a way that they are exactly fitting to the length of the DYNATITE® plugs. The standard sizes of the multi-passage units are 180x180 mm, 76 mm high.

To enable most compact installation of the DYNATITE® system, the DYNATITE® sealing plugs are available for sealing a single ducted cable or several same diameters cables.
DYNATITE® sealing plugs are made of NOFIRNO® rubber to enable the use of the DYNATITE® system for gas and water tight applications and also for fire rated constructions.
The sealing plugs exist of two, three or four equal parts allowing the plugs to be inserted after the cables have been ducted.
The DYNATITE® sealing plugs have an exact fitting flange for the insertion in the conduit opening.
For ease of installation the plugs are greased with CSD® lubricant and can then be pushed into the conduit opening.

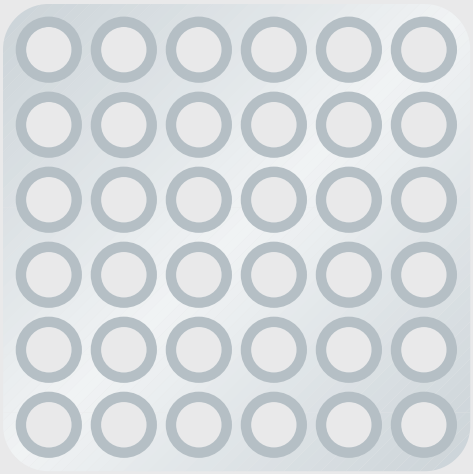
LUBRICATE AND PUSH: THE PLUG SLIDES IN

The side in which the DYNATITE® plug(s) are inserted is the exposed face of the unit.
The DYNATITE® multi-passage units can be welded into a steel or aluminum structure. For this reason the corners of the multi-passage units are rounded off to avoid any welding stresses. When the pressure load might occur from both sides, a double sided DYNATITE® multi-passage unit has to be installed. Double-sided units are a must for fire rated penetrations. The units are also available with a flange to enable bolting to the construction. The DYNATITE® multi-passage units can be supplied on order up to sizes of 720 mm wide.

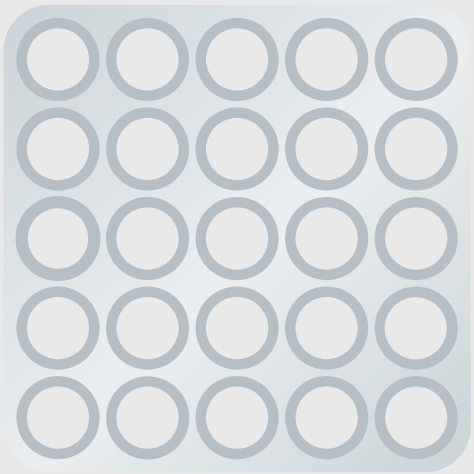
Installation of the DYNATITE® plugs is as simple as with the SLIPSIL® plugs. Grease and push and the plug slides in. The only difference with the SLIPSIL® plugs is that the flange of the DYNATITE® plug is flush with the front side of the multi-passage unit. The flange acts as an enclosure of the conduit opening and has to be flush with the front side of the multi-passage unit to avoid any damage to the rubber during pressure exposure and to enable guidance of the rubber plug during exposure to high pressure loads. After the pressure is removed the plugs will come back into their original position.

DYNATITE

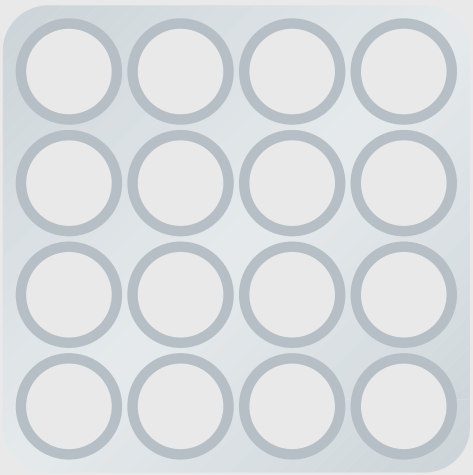
Specially for cable installations the DYNATITE® system has been developed as a multi-cable transit. The multi-cable transits are available as standard units measuring 180x180 mm and 76 mm high. The units are milled from solid steel, stainless steel or aluminum to enable to carry the high pressure loads. The retainer rings at the back side are 4 mm wide for the series 25, 32 and 41 and 7,5 mm for the series 55 and 82. Due to the material thickness at the back, the units can be welded in a steel or aluminum construction. For this reason the units have rounded corners to avoid any welding stresses. The units can also be delivered with a flange.



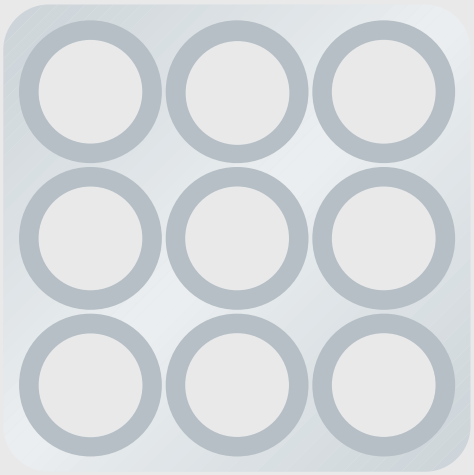
DYNATITE® multi-cable transit type DT 36x25 with 36 openings for plug series 25, allowing 36 cables 5-12 mm to be ducted.



DYNATITE® multi-cable transit type DT 25x32 with 25 openings for plug series 32, allowing 25 cables 5-16 mm to be ducted.

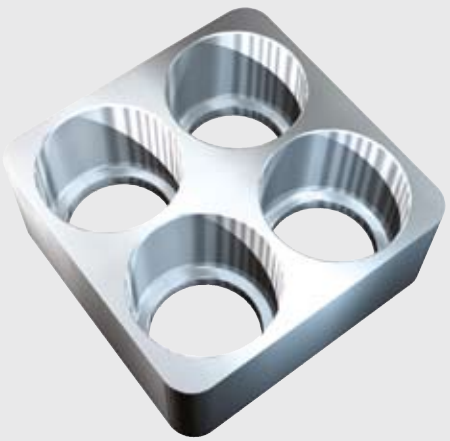


DYNATITE® multi-cable transit type DT 16x41 with 16 openings for plug series 41, allowing 16 cables 10-26 mm to be ducted.



DYNATITE® multi-cable transit type DT 9x55 with 9 openings for plug series 55, allowing 9 cables 10-34 mm to be ducted.

DYNATITE® multi-cable transit type DT 4x82 with 4 openings for plug series 82, allowing 4 cables 32-62 mm to be ducted.



DYNATITE® multi-cable transit type DT 4x82. At the back side of each of the conduit openings the retainer rings are visible.

DYNATTE

cable diameter	plug type	article number	plug length
blind	25/0	45.0100	54
5-6	25/5-6	45.0105	54
6-7	25/6-7	45.0106	54
7-8	25/7-8	45.0107	54
8-9	25/8-9	45.0108	54
9-10	25/9-10	45.0109	54
10-11	25/10-11	45.0110	54
11-12	25/11-12	45.0111	54
12	25/12	45.0112	54

type DT 36x25

cable diameter	plug type	article number	plug length
blind	32/0	45.0500	54
5-6	32/5-6	45.0505	54
6-7	32/6-7	45.0506	54
7-8	32/7-8	45.0507	54
8-9	32/8-9	45.0508	54
9-10	32/9-10	45.0509	54
10-11	32/10-11	45.0510	54
11-12	32/11-12	45.0511	54
12-13	32/12-13	45.0512	54
13-14	32/13-14	45.0513	54
14-15	32/14-15	45.0514	54
15-16	32/15-16	45.0515	54
16	32/16	45.0516	54

type DT 25x32

cable diameter	plug type	article number	plug length
blind	41/0	45.1000	54
10-11	41/10-11	45.1010	54
11-12	41/11-12	45.1011	54
12-14	41/12-14	45.1012	54
14-16	41/14-16	45.1013	54
16-18	41/16-18	45.1014	54
18-20	41/18-20	45.1015	54
20-22	41/20-22	45.1016	54
22-23	41/22-23	45.1017	54
23-24	41/23-24	45.1018	54
24-25	41/24-25	45.1019	54
25	41/25	45.1020	54

type DT 16x41

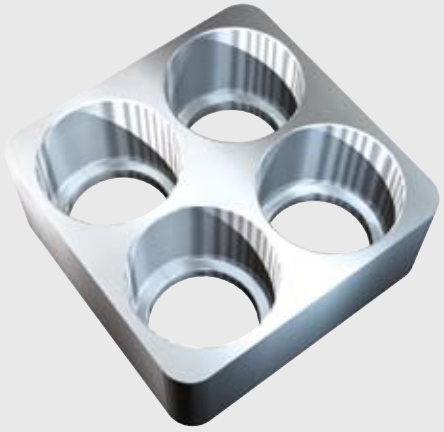
DYNATITE

cable diameter	plug type	article number	plug length
blind	55/0	45.1400	66
10-12	55/10-12	45.1409	66
12-14	55/12-14	45.1410	66
14-16	55/14-16	45.1411	66
16-18	55/16-18	45.1412	66
18-20	55/18-20	45.1413	66
20-22	55/20-22	45.1414	66
22-24	55/22-24	45.1415	66
24-26	55/24-26	45.1416	66
26-28	55/26-28	45.1417	66
28-30	55/28-30	45.1418	66
30-31	55/30-31	45.1419	66
31-32	55/31-32	45.1420	66
32-33	55/32-33	45.1421	66
33-34	55/33-34	45.1422	66
34	55/34	45.1423	66

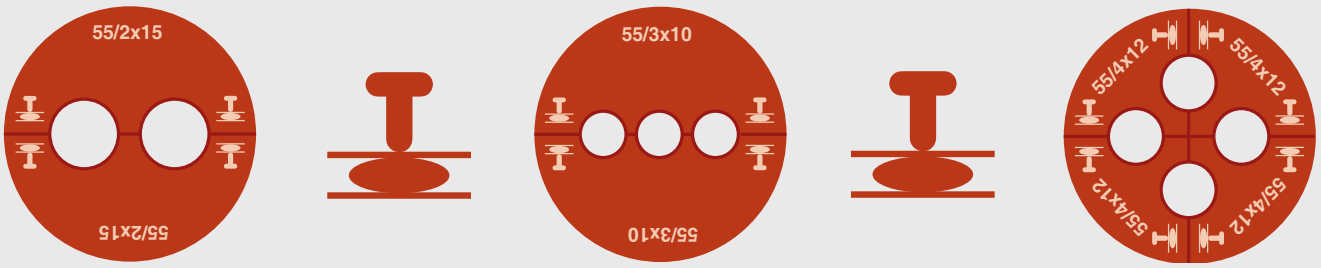
type DT 9x55

cable diameter	plug type	article number	plug length
blind	82/0	45.2400	66
32-34	82/32-34	45.2420	66
34-36	82/34-36	45.2421	66
36-38	82/36-38	45.2422	66
38-40	82/38-40	45.2423	66
40-42	82/40-42	45.2424	66
42-44	82/42-44	45.2425	66
44-46	82/44-46	45.2426	66
46-48	82/46-48	45.2427	66
48-50	82/48-50	45.2428	66
50-52	82/50-52	45.2429	66
52-54	82/52-54	45.2430	66
54-56	82/54-56	45.2431	66
56-58	82/56-58	45.2432	66
58-60	82/58-60	45.2433	66
60	82/60	45.2434	66

type DT 4x82

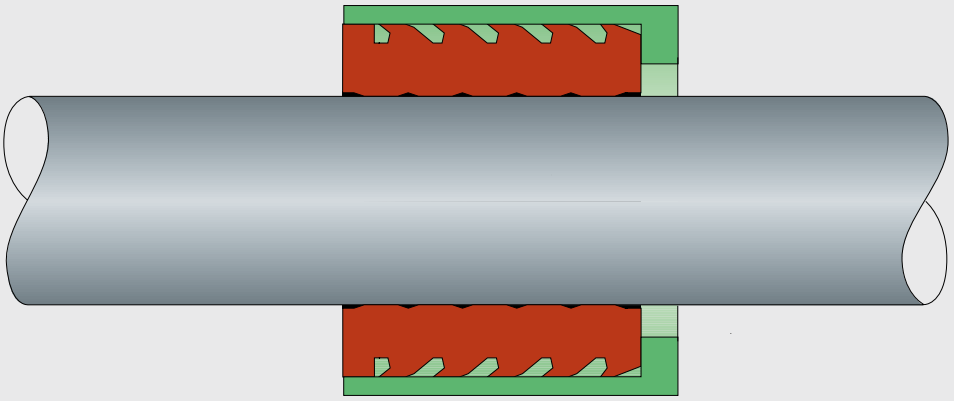


DYNATITE® plugs of the series 41, 55 and 82 are also available as multi-sealing plugs for sealing conduit openings through which 2, 3 or 4 same diameter cables are ducted. This allows more flexibility in installation. The multi-plugs allow also for more compactness of the transit system. The DYNATITE® multi-sealing plug for 4 and 5 same diameter cables consists of 4 equal parts; the triangle plugs for 3 same diameter cables of 3 equal parts and the sealing plugs with 1, 2 and 3 openings consist of two parts. NOFIRNO® blind profiles can be used to seal the openings in the multi-plugs which are not occupied with cables. DYNATITE® blind plugs are used to seal the spare openings in the multi-passage units. See also page 6.

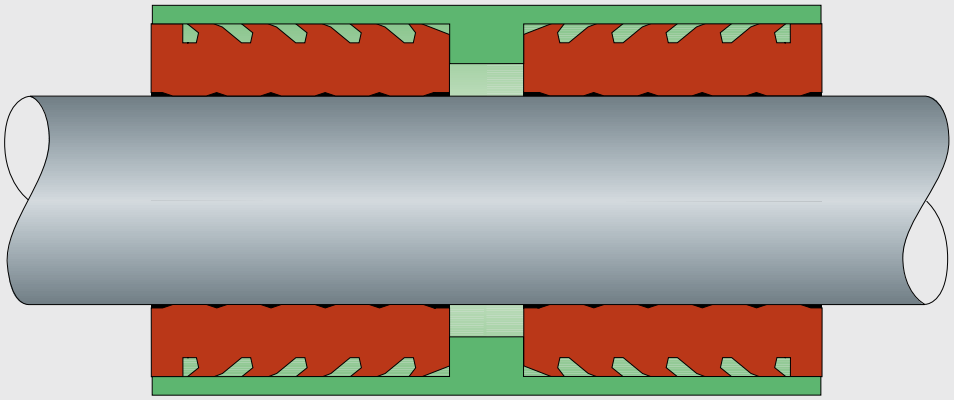


DYNATITE

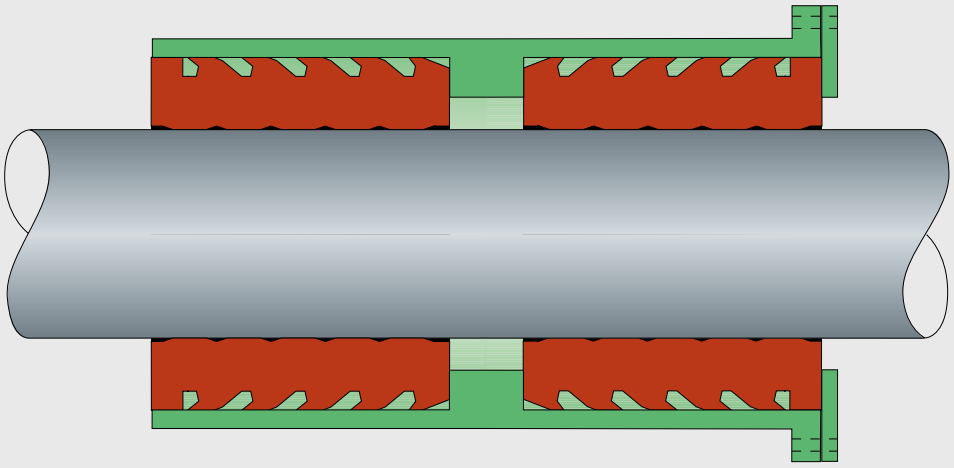
The DYNATITE® system for single cable and pipe penetrations consists of DYNATITE® conduit sleeves and fitting DYNATITE® plugs made of NOFIRNO® rubber. With a view on the high pressure loads, the conduit sleeves are milled from solid steel in our factory. A smooth surface of the conduit openings is a must, also in the long run. Conduit sleeves preferably should be made of stainless steel. The conduit sleeves can be manufactured for different types of applications. Below some of the solutions. The retainer rings are positioned in accordance with the length of the DYNATITE® plugs. The single penetrations can be used for max. pipe sizes up to 168 mm.



When the side from which the pressure load will occur, a single sided DYNATITE® conduit sleeve can be installed. The side in which the DYNATITE® plug will be inserted is the exposed face of the unit. The DYNATITE® conduit sleeve can be supplied with a flange to enable bolting to the construction.



When the pressure load might occur from both sides, a double sided DYNATITE® conduit sleeve can be installed. This is a must for fire rated penetrations or in installations where a vertical load on the ducted pipe may occur.
The DYNATITE® conduit sleeve can be supplied with a flange to enable bolting to the construction.

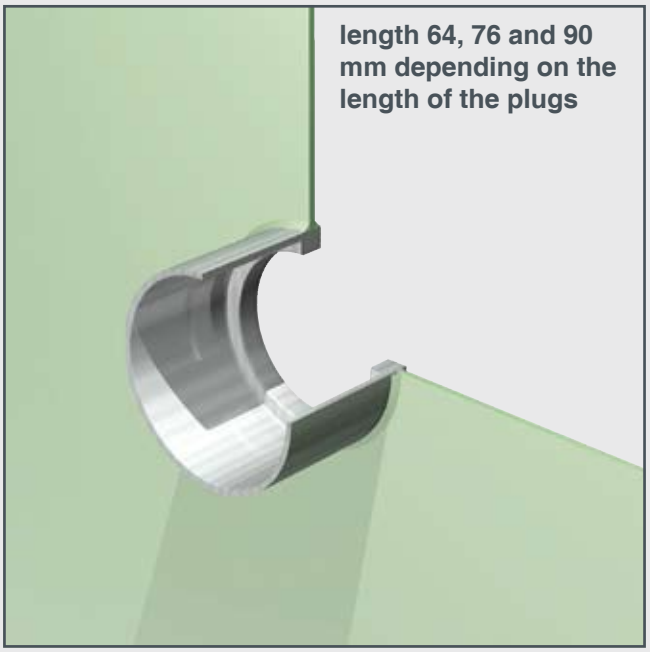


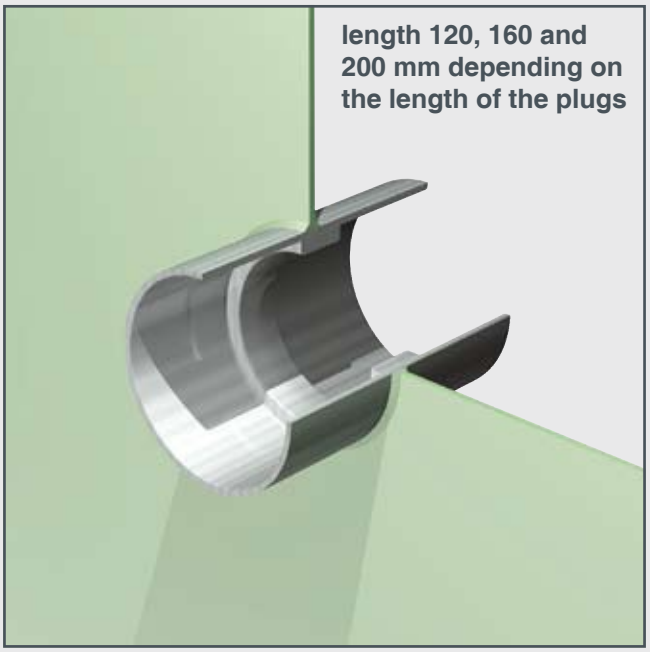
When the system is used in blast walls an extra retainer flange might be fixed to the double sided DYNATITE® conduit sleeve. When the wall is moving inwards due to the blast the retainer ring will hold the DYNATITE® plug in place.
It is also possible to install such a retainer flange at both sides when exposure is to be expected from both sides. This will secure that the DYNATITE® plug(s) will always be hold inside the conduit.
Retainer flanges can also be used for upgrading to DYNATITE®.

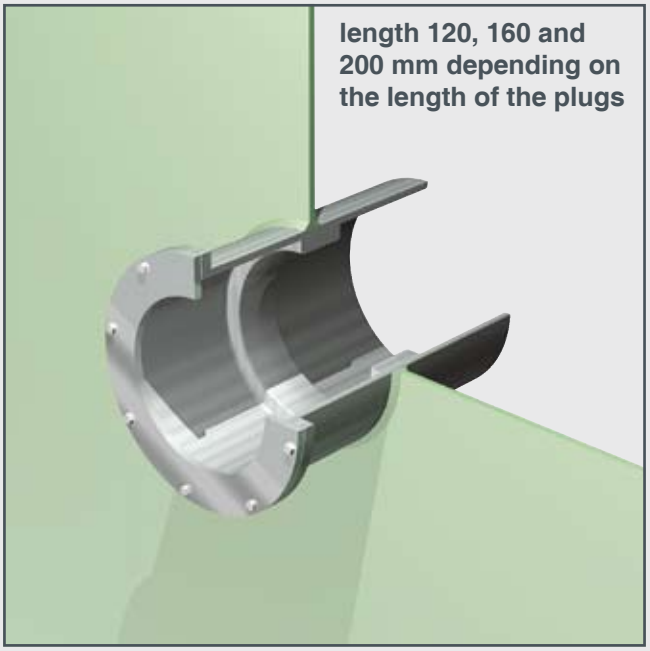
Installation of the DYNATITE® plugs is as simple as with the SLIPSIL® plugs. Grease and push and the plug slides in. The only difference with the SLIPSIL® plugs is that the flange of the DYNATITE® plug is flush with the front side of the conduit sleeve. The flange acts as an enclosure inside the conduit sleeve and in this way to enable guidance of the rubber plug during exposure to high pressure loads. Furthermore it enables to install a retainer flange at the outside of the conduit sleeve. The DYNATITE® system allows for an instantaneous pressure load exceeding 10 bar. After the pressure is removed the plug will come back into its original position.

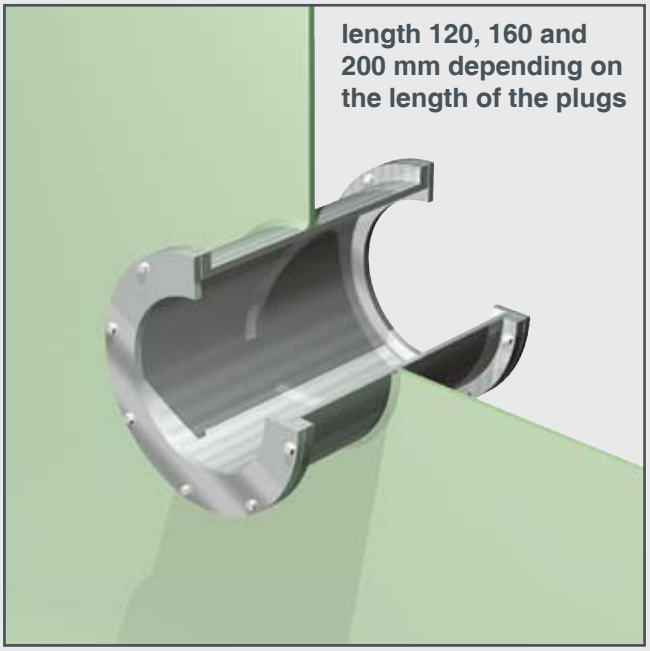
DYNATITE

Specially for pipe installations the DYNATITE® system has been developed as a single transit with larger dimensions to enable use for larger service pipes. The single transits are available single and double sided (pressure exposure at both sides). The units are mild from solid steel, stainless steel or aluminum. The retainer rings at the back side are 4 mm wide for the series 25, 32 and 41, 7,5 mm for the series 55 and 82 and 10 mm for the series 100 up to 207 mm. Due to the material thickness at the back or in the centre, the units can be welded into a steel or aluminum construction. The units can also be delivered with a flange to enable bolting to the structure.





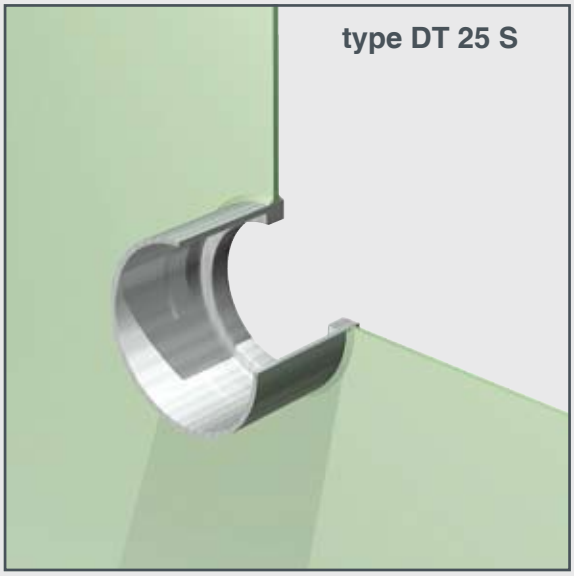




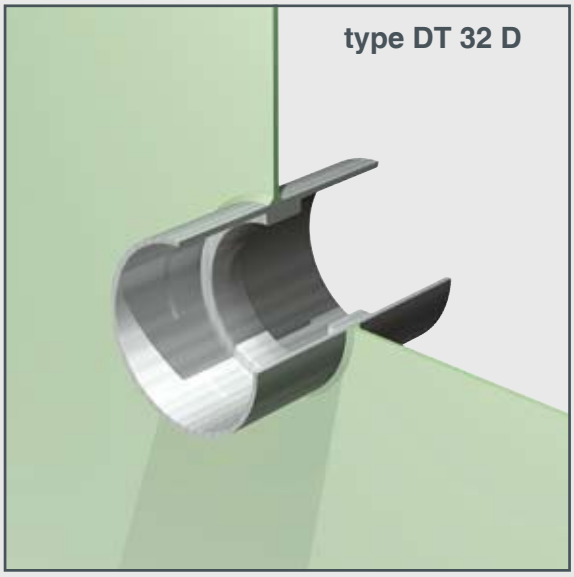
Specially for pipe installations in blast walls the DYNATITE® system has been modified with a flange at the front side of the DYNATITE® sleeve. These conduit sleeves are available with a flange and a retainer ring inside the sleeve for applications where the pressure side is known. In blast walls with a possible pressure exposure from both sides a DYNATITE® sleeve without a retainer ring inside the sleeve but with retainer flanges at both sleeve ends can be used. The units are milled from solid steel, stainless steel or aluminum to be capable to carry the high pressure loads. The units can also be delivered with a flange to enable bolting to the structure.

DYNATTE

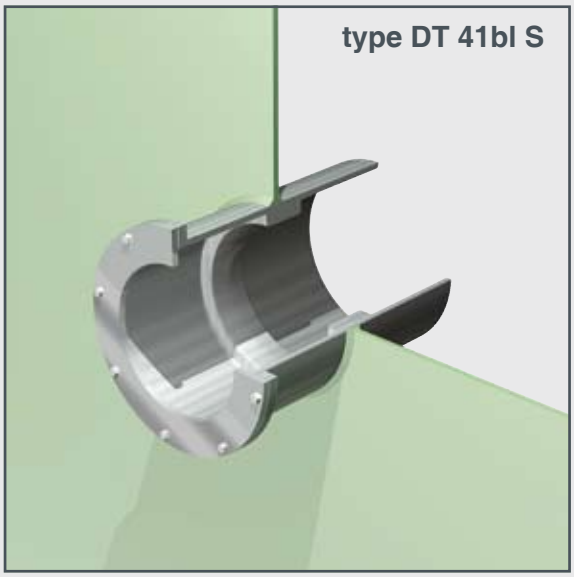
pipe diameter	plug type	article number	plug length
5-6	25/5-6	45.0105	54
6-7	25/6-7	45.0106	54
7-8	25/7-8	45.0107	54
8-9	25/8-9	45.0108	54
9-10	25/9-10	45.0109	54
10-11	25/10-11	45.0110	54
11-12	25/11-12	45.0111	54
12	25/12	45.0112	54



pipe diameter	plug type	article number	plug length
5-6	32/5-6	45.0505	54
6-7	32/6-7	45.0506	54
7-8	32/7-8	45.0507	54
8-9	32/8-9	45.0508	54
9-10	32/9-10	45.0509	54
10-11	32/10-11	45.0510	54
11-12	32/11-12	45.0511	54
12-13	32/12-13	45.0512	54
13-14	32/13-14	45.0513	54
14-15	32/14-15	45.0514	54
15-16	32/15-16	45.0515	54
16	32/16	45.0516	54

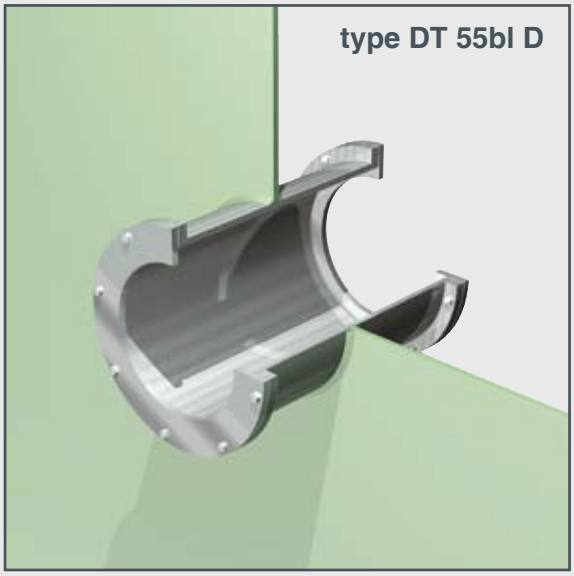


pipe diameter	plug type	article number	plug length
10-11	41/10-11	45.1010	54
11-12	41/11-12	45.1011	54
12-14	41/12-14	45.1012	54
14-16	41/14-16	45.1013	54
16-18	41/16-18	45.1014	54
18-20	41/18-20	45.1015	54
20-22	41/20-22	45.1016	54
22-23	41/22-23	45.1017	54
23-24	41/23-24	45.1018	54
24-25	41/24-25	45.1019	54
25	41/25	45.1020	54

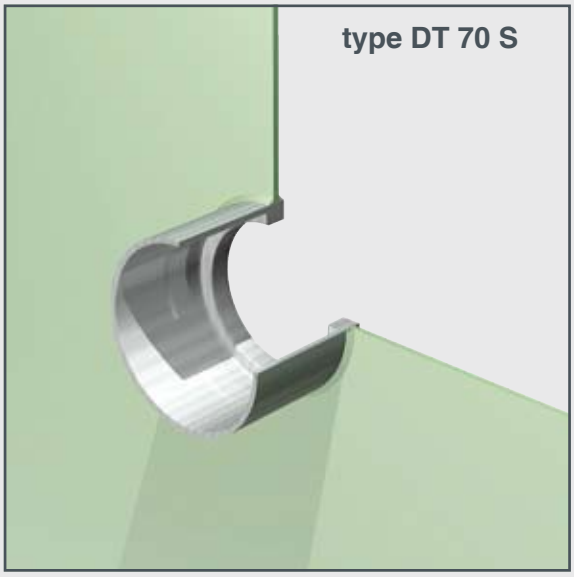


DYNATTE

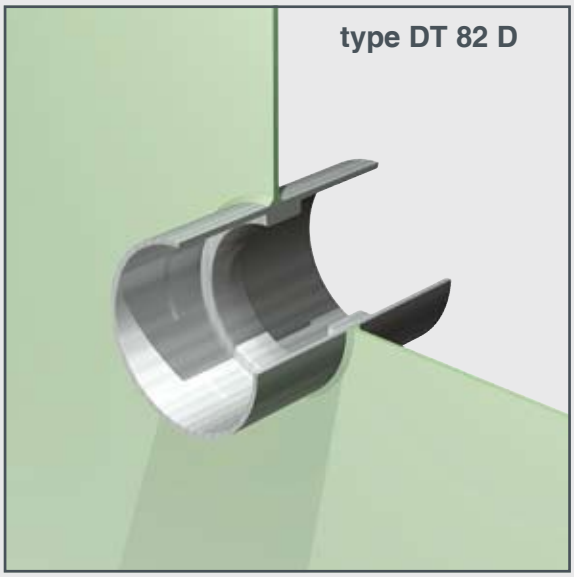
pipe diameter	plug type	article number	plug length
10-12	55/10-12	45.1409	66
12-14	55/12-14	45.1410	66
14-16	55/14-16	45.1411	66
16-18	55/16-18	45.1412	66
18-20	55/18-20	45.1413	66
20-22	55/20-22	45.1414	66
22-24	55/22-24	45.1415	66
24-26	55/24-26	45.1416	66
26-28	55/26-28	45.1417	66
28-30	55/28-30	45.1418	66
30-31	55/30-31	45.1419	66
31-32	55/31-32	45.1420	66
32-33	55/32-33	45.1421	66
33-34	55/33-34	45.1422	66
34	55/34	45.1423	66



pipe diameter	plug type	article number	plug length
22-24	70/22-24	45.2015	66
24-26	70/24-26	45.2016	66
26-28	70/26-28	45.2017	66
28-30	70/28-30	45.2018	66
30-32	70/30-32	45.2019	66
32-34	70/32-34	45.2020	66
34-36	70/34-36	45.2021	66
36-38	70/36-38	45.2022	66
38-40	70/38-40	45.2023	66
40-42	70/40-42	45.2024	66
42-44	70/42-44	45.2025	66
44-46	70/44-46	45.2026	66
46-48	70/46-48	45.2027	66
48-50	70/48-50	45.2028	66
50	70/50	45.2029	66

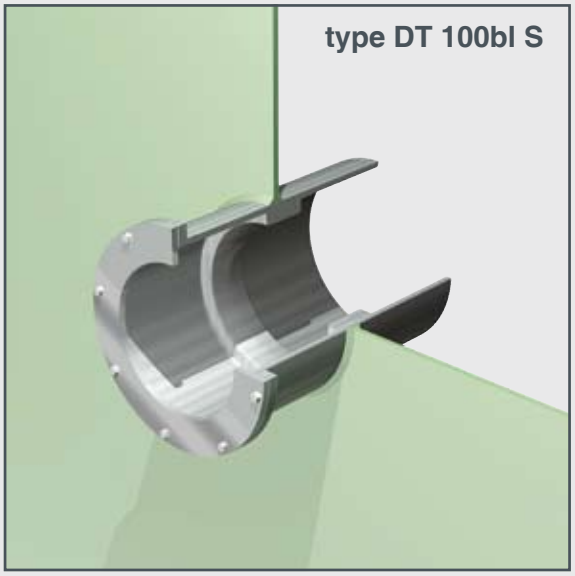


pipe diameter	plug type	article number	plug length
32-34	82/32-34	45.2420	66
34-36	82/34-36	45.2421	66
36-38	82/36-38	45.2422	66
38-40	82/38-40	45.2423	66
40-42	82/40-42	45.2424	66
42-44	82/42-44	45.2425	66
44-46	82/44-46	45.2426	66
46-48	82/46-48	45.2427	66
48-50	82/48-50	45.2428	66
50-52	82/50-52	45.2429	66
52-54	82/52-54	45.2430	66
54-56	82/54-56	45.2431	66
56-58	82/56-58	45.2432	66
58-60	82/58-60	45.2433	66
60	82/60	45.2434	66

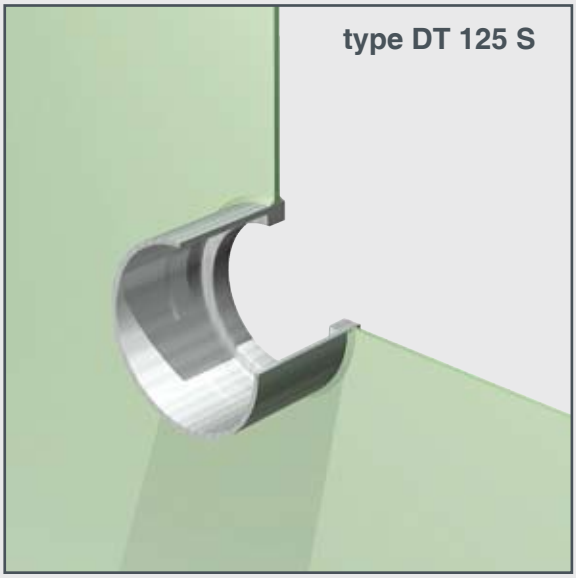


DYNATTE

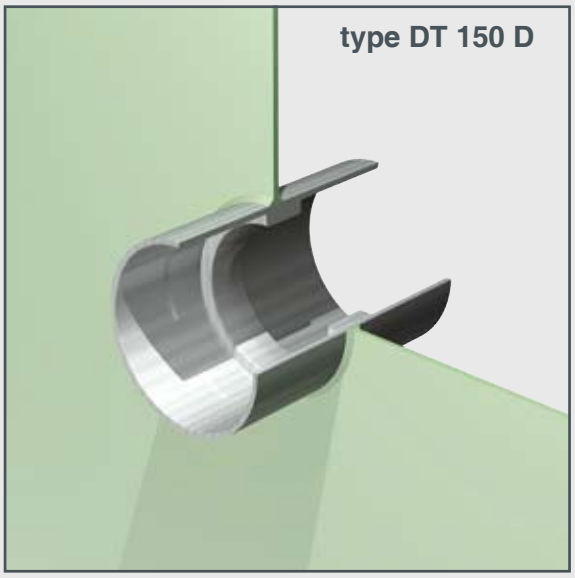
pipe diameter	plug type	article number	plug length
48-50	100/48-50	45.2824	66
50-52	100/50-52	45.2825	66
52-54	100/52-54	45.2826	66
54-56	100/54-56	45.2827	66
56-58	100/56-58	45.2828	66
58-60	100/58-60	45.2829	66
60-62	100/60-62	45.2830	66
62-64	100/62-64	45.2831	66
64-66	100/64-66	45.2832	66
66-68	100/66-68	45.2833	66
68-70	100/68-70	45.2834	66
70-72	100/70-72	45.2835	66
72-74	100/72-74	45.2836	66
74-75	100/74-75	45.2837	66
75	100/75	45.2838	66



pipe diameter	plug type	article number	plug length
62-64	125/62-64	45.3631	66
64-66	125/64-66	45.3632	66
66-68	125/66-68	45.3633	66
68-70	125/68-70	45.3634	66
70-72	125/70-72	45.3635	66
72-74	125/72-74	45.3636	66
74-76	125/74-76	45.3637	66
76-78	125/76-78	45.3638	66
78-80	125/78-80	45.3639	66
80-82	125/80-82	45.3640	66
82-84	125/82-84	45.3641	66
84-86	125/84-86	45.3642	66
86-88	125/86-88	45.3643	66
88-90	125/88-90	45.3644	66
90-92	125/90-92	45.3645	66
92	125/92	45.3646	66

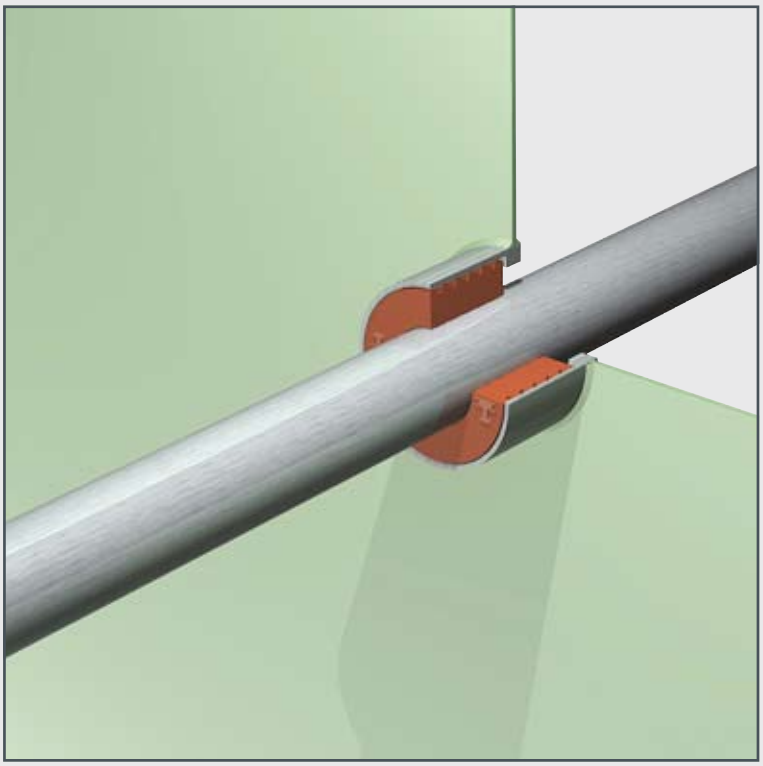


pipe diameter	plug type	article number	plug length
92-94	150/92-94	45.4022	79
94-96	150/94-96	45.4023	79
96-98	150/96-98	45.4024	79
98-100	150/98-100	45.4025	79
100-102	150/100-102	45.4026	79
102-104	150/102-104	45.4027	79
104-106	150/104-106	45.4028	79
106-108	150/106-108	45.4029	79
108-110	150/108-110	45.4030	79
110-112	150/110-112	45.4031	79
112-114	150/112-114	45.4032	79
114-116	150/114-116	45.4033	79
116-118	150/116-118	45.4034	79
118-120	150/118-120	45.4035	79
120-122	150/120-122	45.4036	79
122-124	150/122-124	45.4037	79
124-125	150/124-125	45.4038	79
125	150/125	45.4039	79

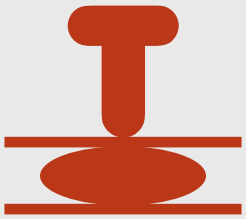


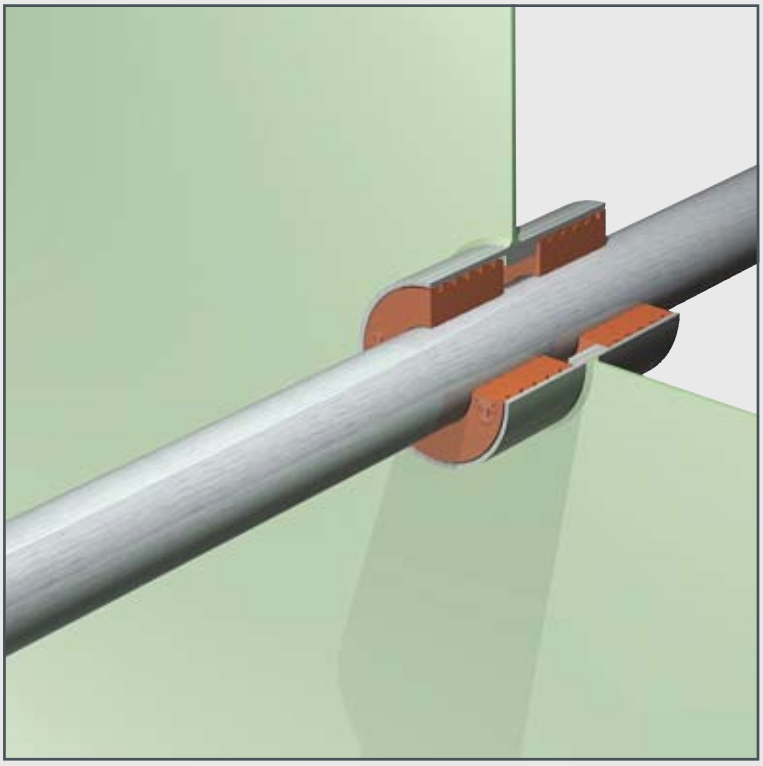
DYNATITE

The DYNATITE® system for single cable and pipe penetrations consists of DYNATITE® conduit sleeves and fitting DYNATITE® plugs made of NOFIRNO® rubber. With a view on the high pressure loads, the conduit sleeves are milled from solid steel in our factory. A smooth surface of the conduit openings is a must, also in the long run. Conduit sleeves preferably should be made of stainless steel. The conduit sleeves can be manufactured for different types of applications. Below some of the solutions. The retainer rings are positioned in accordance with the length of the DYNATITE® plugs. The single penetrations can be used for max. pipe sizes up to 168 mm.

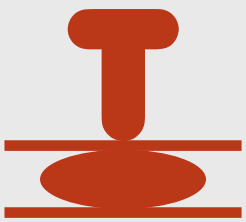


When the side from which the pressure load will occur is known, a single sided DYNATITE® conduit sleeve can be installed. The side of the conduit sleeve in which the DYNATITE® plug will be inserted is the exposed face of the sleeve. The retainer ring is at the opposite side of the conduit sleeve.
The DYNATITE® conduit sleeves can be welded into the steel or aluminum structure. The thickness at the back of conduit sleeve enables welding.
The DYNATITE® conduit sleeves can also be delivered with a flange when the sleeve has to be bolted to the structure. In such a case a profiled NOFIRNO® gasket has to be placed between the conduit sleeve and the structure.



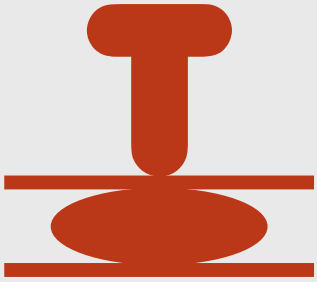


When the pressure load can be expected from both sides, double sided conduit sleeves should be used. Double-sided sleeves are a must for fire rated penetrations.
The DYNATITE® double sided conduit sleeves have a retainer ring in the centre of the sleeve. They can be welded into the steel or aluminum structure, preferably symmetrically because of the material thickness of the retainer ring in the centre of the sleeve.
The DYNATITE® conduit sleeves can also be supplied with a flange to enable bolting to the structure. Between the flange and the structure a profiled gasket made of NOFIRNO® rubber should be applied.

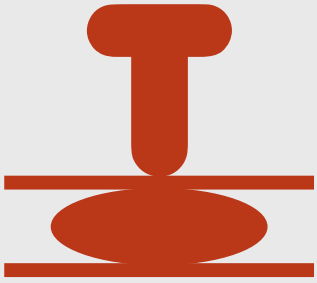


DYNATITE

1) Before starting the installation procedure, any dirt, oil residues or welding spots should be removed from the DYNATITE® conduit sleeve.



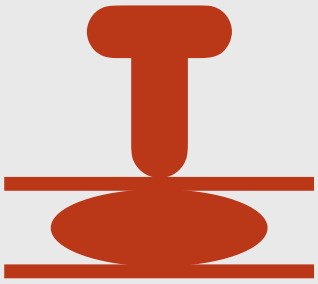
2) Then the inside wall of the conduit sleeve is treated with CSD® lubricant along a distance which approximately corresponds with the length of the DYNATITE® sealing plug.



DYNATITE

3) The inside surfaces of both segments of the DYNATITE® sealing plug are then treated with CSD® lubricant.

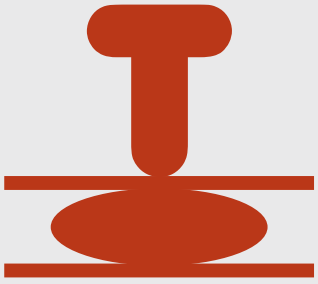
For selecting the right sealing plug, look for the plug series and the plug type in this series on the basis of the ID of the sleeve and the OD of the ducted pipe.

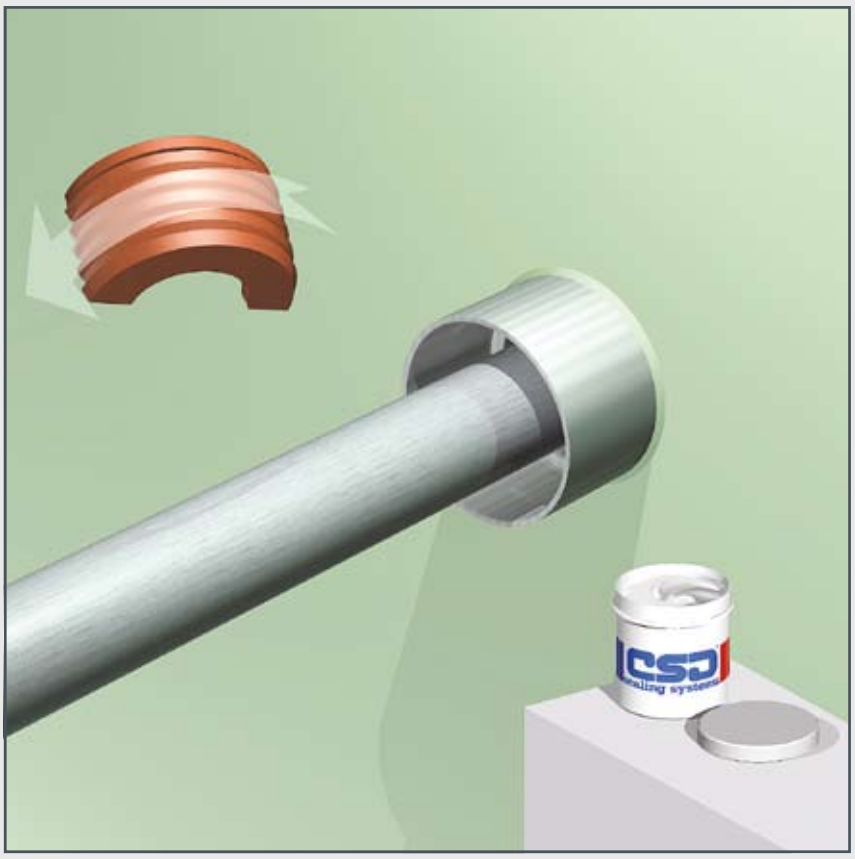


Note: the sealing plugs with a thin wall (like for instance 55/34) are less easy to install and have a smaller surface fto enable compression. It is advisable to select a larger plug series.

4) The segments of the DYNATITE® sealing plug are also treated with CSD® lubricant on the outside.

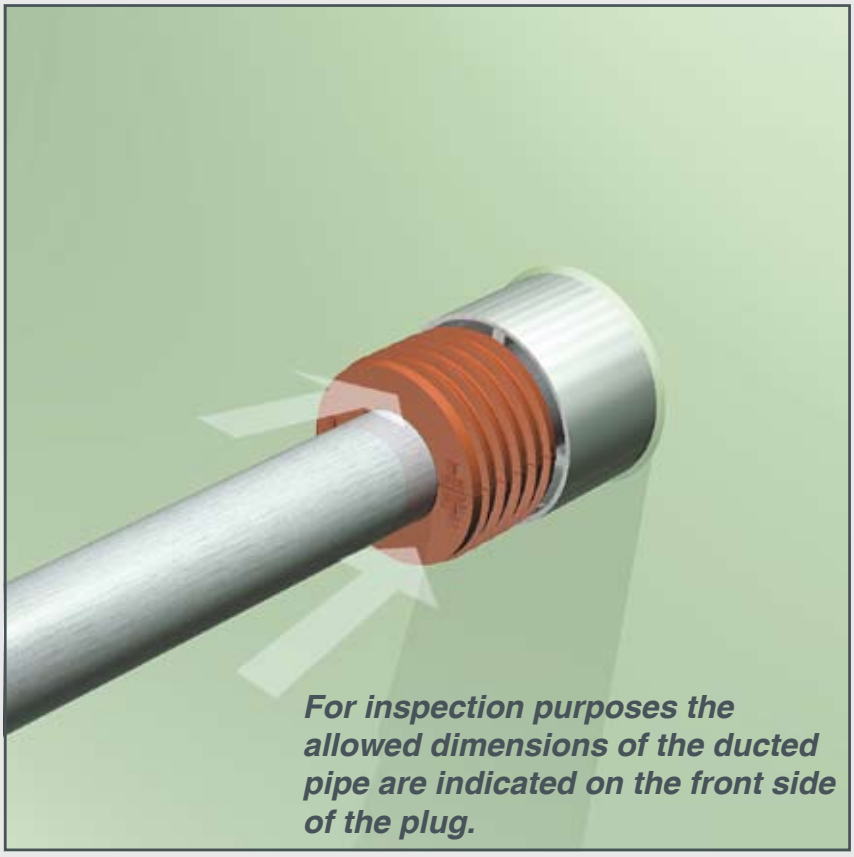
Please refer to the Safety Data Sheet of the CSD® lubricant for more information.





DYNATITE

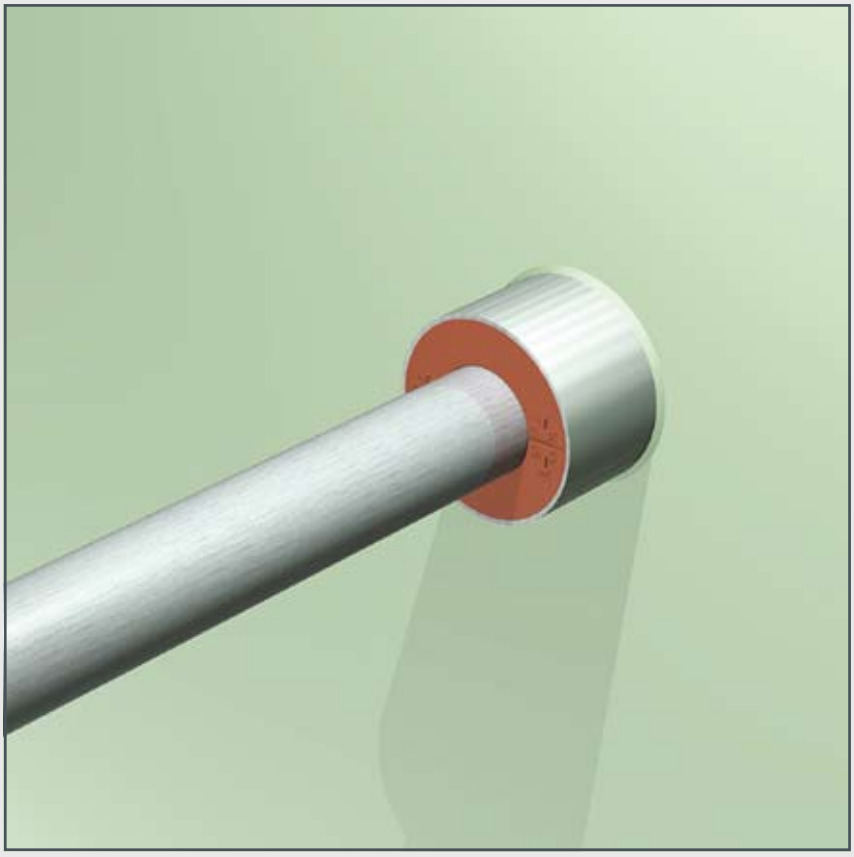
5) Both segments of the DYNATITE® sealing plug are placed around the ducted pipe and then pushed into the DYNATITE® conduit sleeve as far as the first serration. The first serration is smaller than the other serrations to make this procedure very easy.



For inspection purposes the allowed dimensions of the ducted pipe are indicated on the front side of the plug.

6) Then both segments of the DYNATITE® sealing plug are pushed by hand evenly, serration by serration, further into the DYNATITE® conduit sleeve.

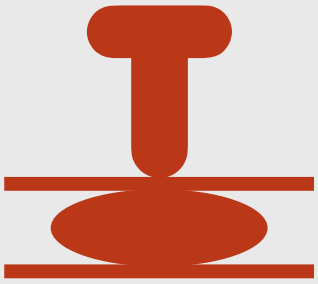
Larger plugs can be tapped in using a hammer and a piece of wood.

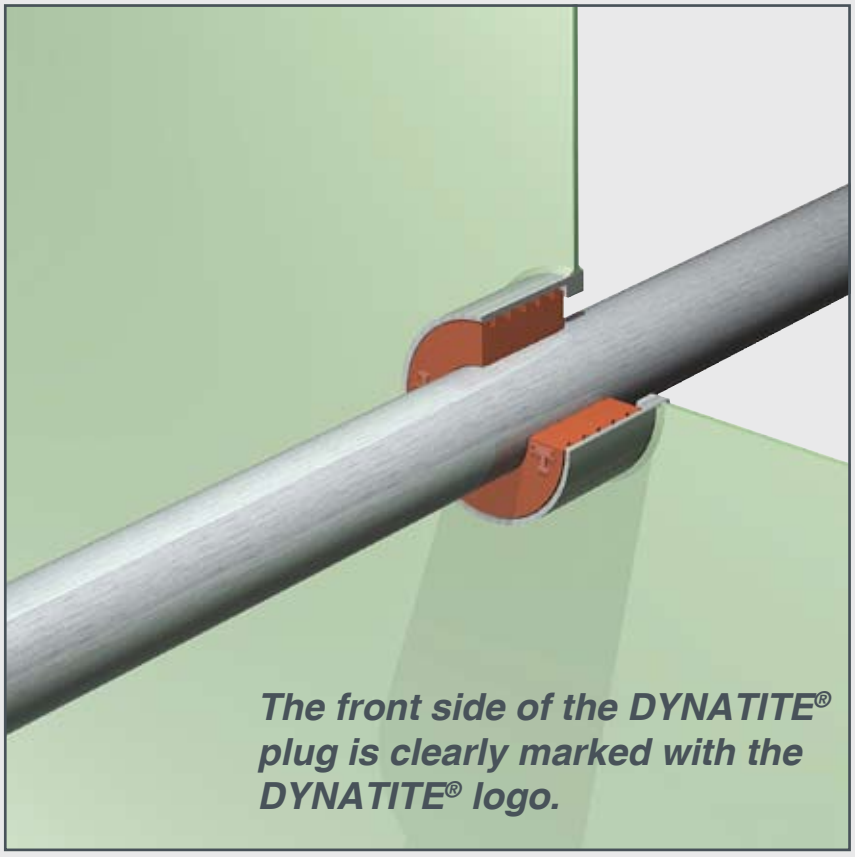


DYNATITE

7) The flanged edge of the sealing plug must be flush against the front side of the conduit sleeve.

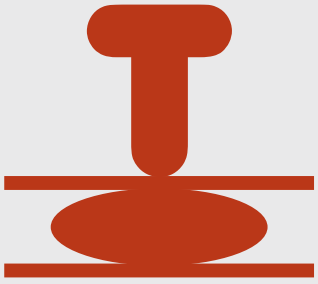
Not only the right choice of the sealing plug, but also proper installation is a determining factor for the degree of tightness of the sealing plugs.

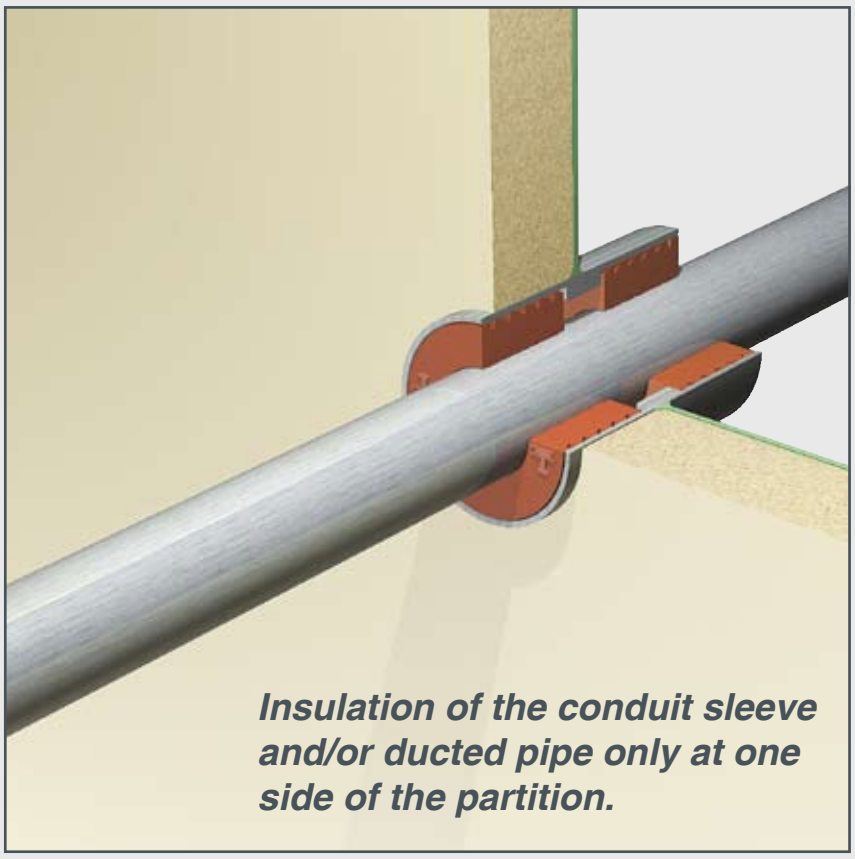




The front side of the DYNATITE® plug is clearly marked with the DYNATITE® logo.

8) For fire rated transits a double sided DYNATITE® conduit sleeve has to be applied.
The DYNATITE® sealing plugs have to be inserted in both ends of the DYNATITE® conduit sleeve.





Insulation of the conduit sleeve and/or ducted pipe only at one side of the partition.

DYNATITE

To be able to cope with the enormous loads at 15 bar, the DYNATITE multiple passage unit is milled from solid stainless steel. Retainer rings are at the back side of each hole.

DYNATITE

The DYNATITE plugs have a modified flange compared to SLIPSIL plugs. The unit is higher than the length of the plugs to create a base of 10 mm for welding into the construction.

DYNATITE

This unit is for SLIPSIL plugs 32 series and can adapt cables up to 16 mm. The unit is 180x180 mm. At a pressure of 15 bar the load is 3840 kg. Grease and push installation.

DYNATITE

The flange of the DYNATITE plugs has an OD similar to the ID of the passage holes. After installation the front side of the plug is flush with the surface of the unit.

DYNATTE

The reason for milling the unit from solid stainless steel is to obtain a very smooth inner surface of the holes. This will secure that the plugs will be compressed easily when pressurized.

DYNATITE

Easy access to the ducted cables and no disassembling complete penetrations when something has to be changed. This unit is suitable for cables ranging from 5-16 mm.

DYNATITE

DYNATITE is almost as compact as regular block type systems. Wall separation of the holes is only 3 mm. Unit is 180x180 mm, block frame will be 240x140 mm (outer dimensions).

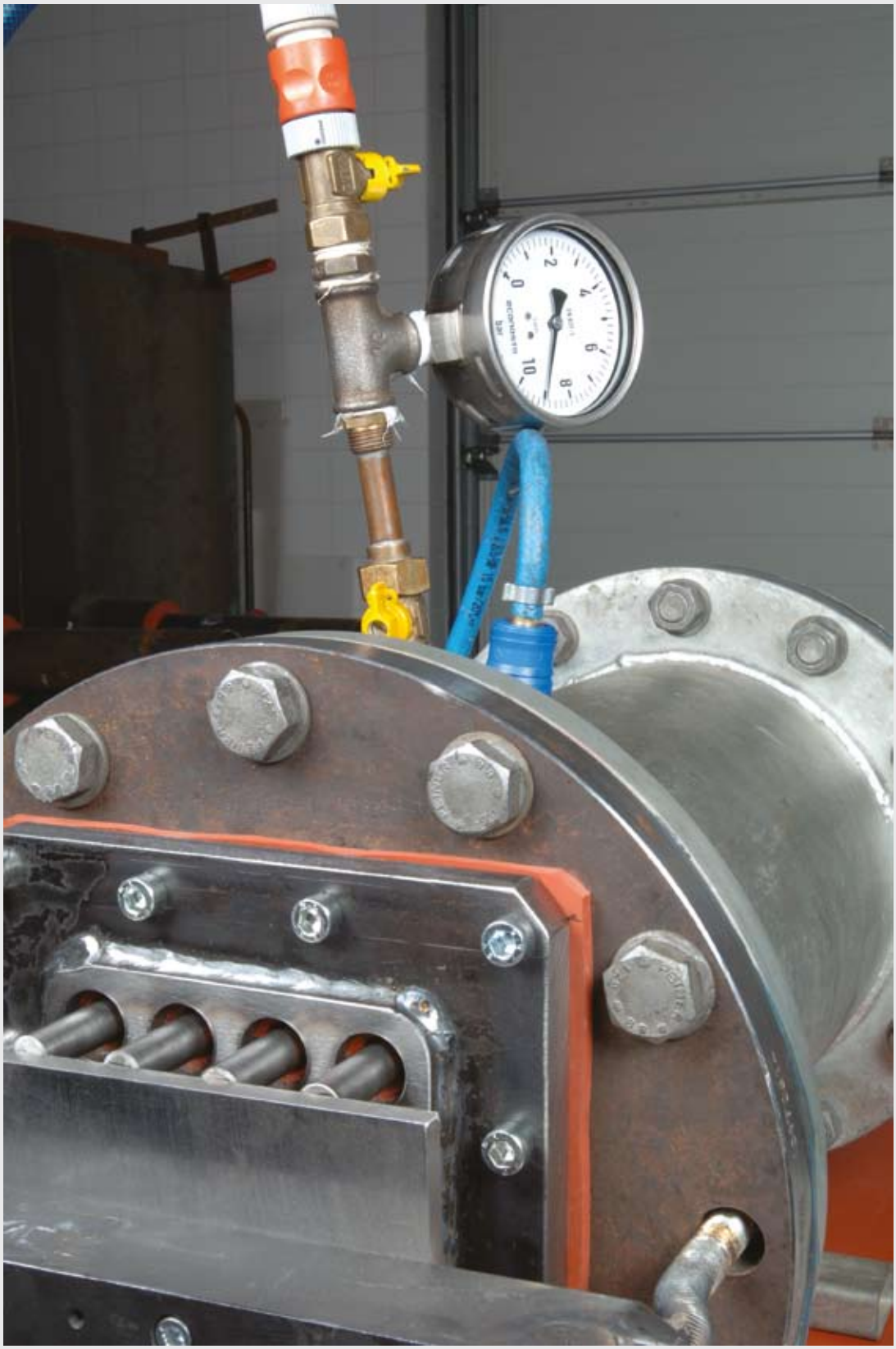
DYNATITE

The holes at the back side are smaller since a retainer ring is inside each hole to hold the DYNATITE plug in place during compression.

DYNATITE

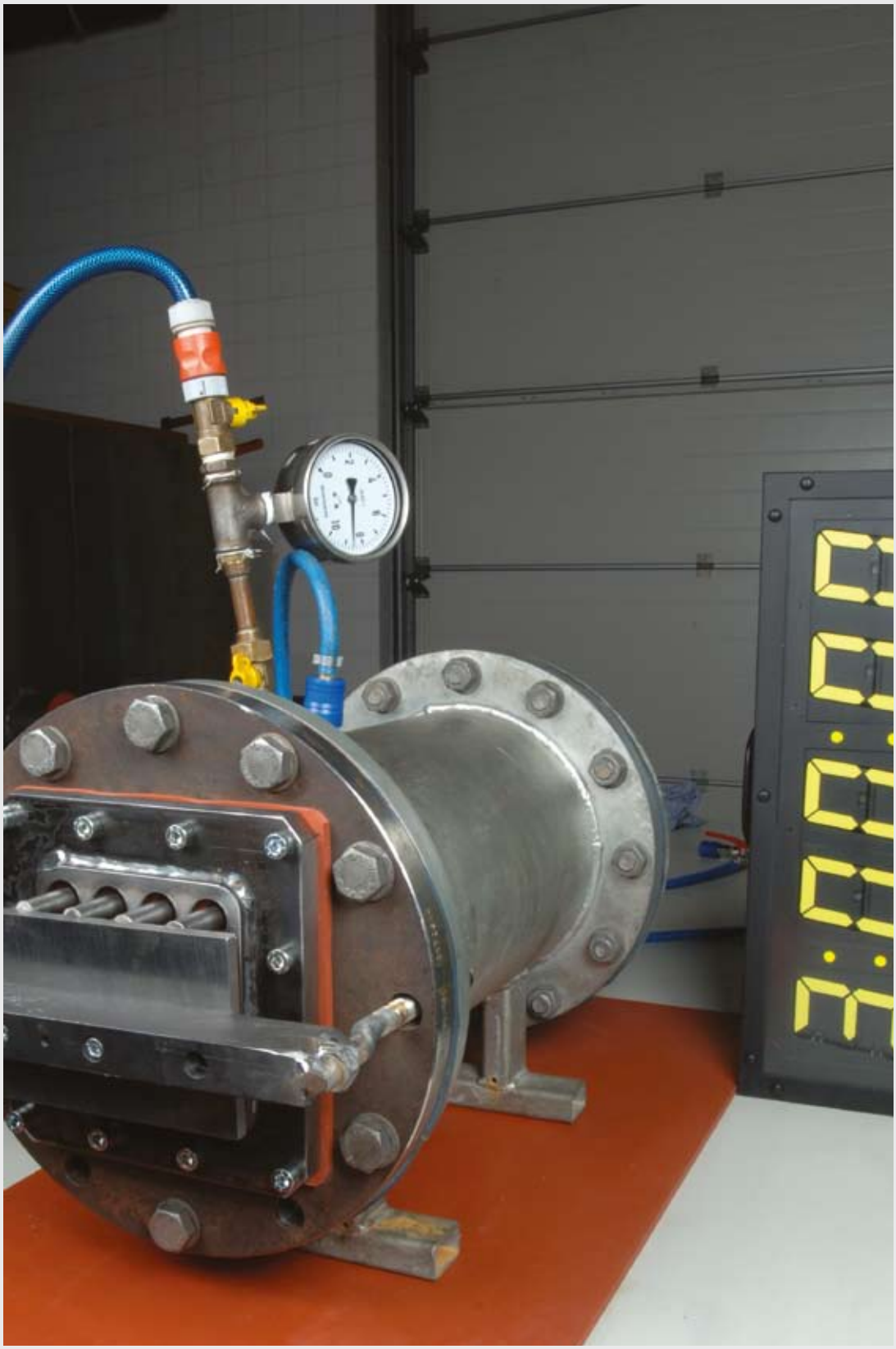
Under pressure load the plugs can be fairly compressed due to the interspacing of the profiling of the plugs and the rubber used. The higher the load, the more tightness will be obtained.

DYNATITE



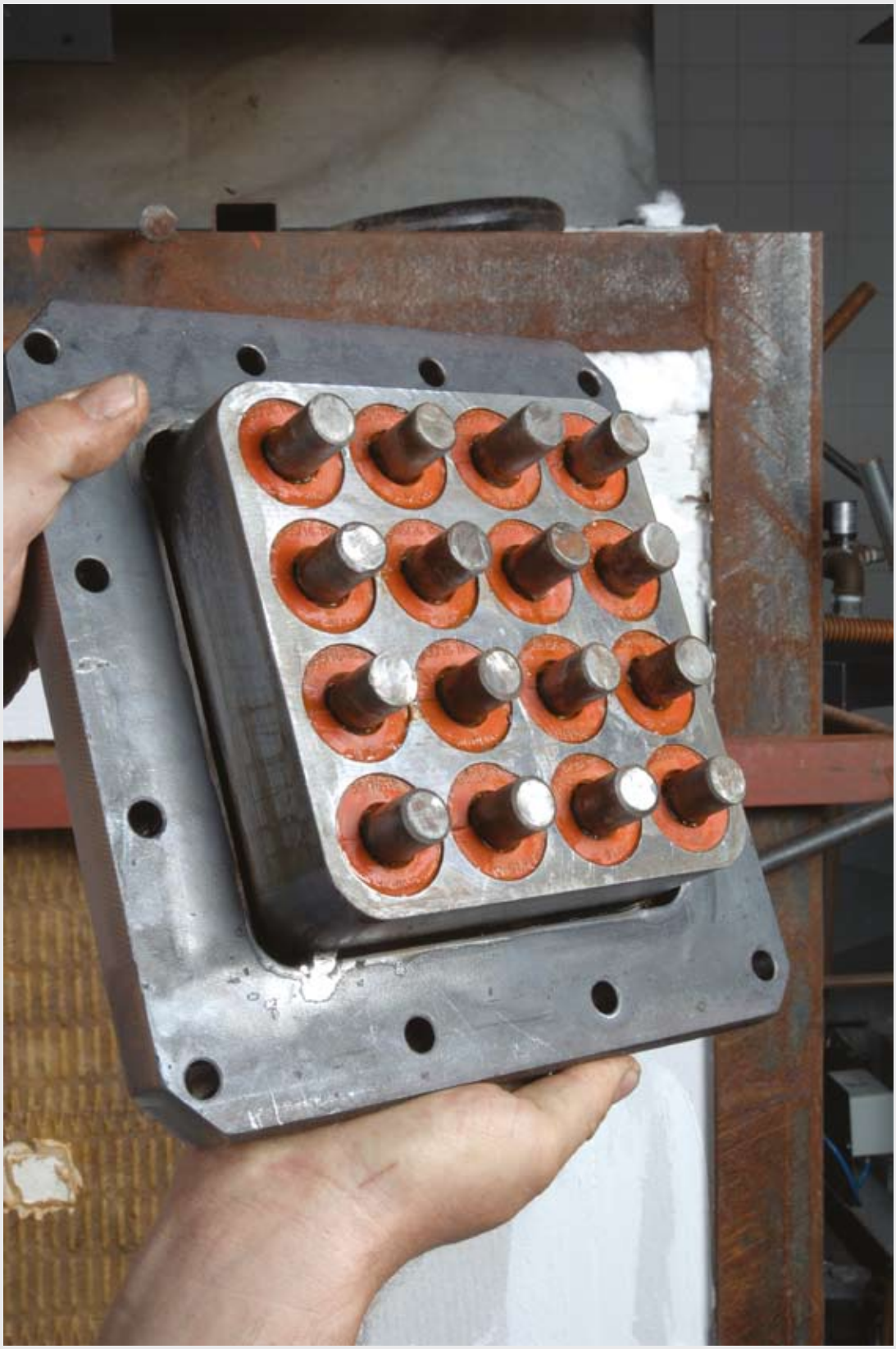
To simulate a disaster an instantaneous pressure of 9 bar can be exposed to the DYNATITE system without any leakage occurring.

DYNATITE



The pressure can be hold for a very long time. After 3 hours the pressure was released and shortly after a shock of 9 bar was applied again. This was repeated several times.

DYNATITE



The multi-unit after 120 hours exposure to a pressure load of 9 bar. No visible changes to the sealing plugs. After disassembling they were found to be the same size as new.

ARTIST IMPRESSION OF THE FIRST PHASE OF THE NEW FACTORY NEXT TO OUR R&D CENTRE

1) machines specially developed for compounding and processing of rubbers under controlled conditions to obtain optimum quality
2) machines specially developed for compounding and manufacturing of all types of sealants under controlled processing
3) moisture treatment installation and processing equipment for manufacturing of electrically conductive sealants and rubbers
4) a complete line of injection moulding presses ranging from 40 tons up to 400 tons for manufacturing sealing plugs and other rubber components
5) a complete line of compression moulding presses up to 300 tons for manufacturing larger type sealing plugs and ULEPSI rubber plates
6) processing installation for after-curing of rubber products to obtain the required compression set (long term behaviour)
7) extruder line including cooling system and cutting and slitting installation for manufacturing insert and filler sleeves for the RISWAT system
8) fully automatic extruder lines with a length of 20 meters, including cooling system and automatic cutting, slitting and sorting installation for manufacturing rubber insert and filler sleeves and rubber strips of the RISE system
9) extruder line for manufacturing luminescent profiles and hoses
10) injection moulding machine for manufacturing thermoplastic YFESTOS products and other plastic parts
11) completely equipped die-making shop for the in-house production of all tooling for rubber and plastics manufacturing
12) modern laser equipment for engraving the type codes in the dies for rubber manufacturing and for marking products with bar and 2D-matrix codes
13) mixing and airless spraying facilities for the NOFIRNO boards

Together with highly advanced systems and technologies we offer highest quality products.

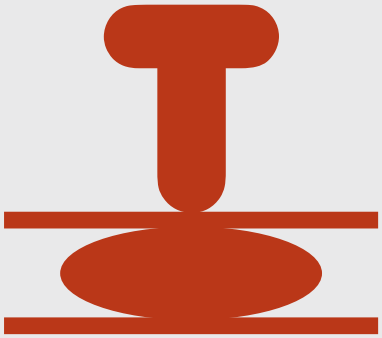
BEELE ENGINEERING

YOUR RELIABLE PARTNERS

CSJ

DYNATITE

SEALING SYSTEM BASED ON SLIPSIL® AND DYNATITE® TECHNOLOGY: HIGH PERFORMANCE BY DYNAMIC SEALING UNDER PRESSURE LOAD



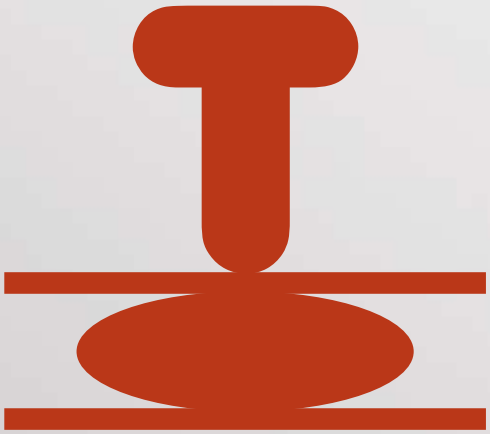
Websites: http://www.actifoam.com, www.beele.com, www.firsto.com, www.nofirno.com, www.rise-systems.com, www.rise-nofirno.com, www.riswat.com and www.slipsil.com

ASK FOR THE SEPARATE BROCHURES ON OUR PRODUCT RANGES:

* RISE® MULTI-CABLE TRANSIT SYSTEM
* RISE® SEALING SYSTEM FOR SINGLE AND MULTI-PIPE PENETRATIONS
* RIACNOF® MULTI-CABLE TRANSIT SYSTEM
* RISE®/NOFIRNO® MULTI-ALL-MIX CABLE AND PIPE TRANSITS
* RISE®-ULTRA SINGLE PLASTIC PIPE PENETRATIONS
* RISWAT® GAS AND WATERTIGHT CABLE AND PIPE DUCTS
* SLIPSIL® SEALING PLUGS FOR PIPE ENTRIES
* SLIPSIL®-SQ MULTI-CABLE TRANSITS
* DYNATITE® DYNAMIC HIGH PRESSURE SEALS
* BEESEAL® MULTI-PIPE AND CABLE PENETRATIONS
* ACTIFOAM® TEMPORARY SEALS AND CAVITY SEALS
* FIRSTO® FIRESTOPS FOR CABLE TRAY PENETRATIONS
* NOFIRNO® CAVITY SEALS, COATINGS AND SEALANTS
* ULEPSI® TANK SUPPORTS FOR BITUMEN TANKERS

sealing systems

CONDUIT SEALING DEVICES OF AN AMAZING SIMPLICITY WITH AN OUTSTANDING PERFORMANCE



BEELE Engineering and CSD International have been involved with fire, water and gas tight sealing for more than 30 years. We have developed and tested products proven to provide the utmost in sealing protection around the world. To receive our complete civil construction and/or marine products catalogues, please contact your distributor or local representative.

Distributed by:

BEELE Engineering bv - CSD International bv
Beunkdijk 11 - 7122 NZ AALTEN - THE NETHERLANDS
Tel. +31 543 461629 - Fax +31 543 461786 - E-mail: info@beele.com
Websites: http://www.actifoam.com, www.beele.com, www.csdplugs.com, www.firsto.com, www.nofirno.com, www.rise-systems.com, www.riswat.com and www.slipsil.com