

HALFEN MBT REINFORCEMENT COUPLER

Technical Product Information



Existing Structures:

DIBt-Approval Z-1.5-10 also valid for connections of B500 with old reinforcement BSt 420 S



We are one team. **We are Leviat.**

Leviat is the new name of CRH's construction accessories companies worldwide.

Under the Leviat brand, we are uniting the expertise, skills and resources of HALFEN and its sister companies to create a world leader in fixing, connecting and anchoring technology.

The products you know and trust, including HALFEN MBT Reinforcement coupler, will remain an integral part of Leviat's comprehensive brand and product portfolio. As Leviat, we can offer you an extended range of specialist products and services, greater technical expertise, a larger and more agile supply chain and better, faster innovation.

By bringing together CRH's construction accessories family as one global organisation, we are better equipped to meet the needs of our customers, and the demands of construction projects, of any scale, anywhere in the world.

This is an exciting change. Join us on our journey.

Read more about Leviat at [Leviat.com](https://www.leviat.com)



Our product brands include:

Ancon[®]


HALFEN

PLAKA



60
locations

sales in
30+
countries

3000
people worldwide

Imagine. Model. Make.

Leviat.com

HALFEN MBT REINFORCEMENT COUPLER

System overview and benefits

HALFEN MBT – System overview



MBT Standard coupler



MBT Transition coupler



MBT Head coupler

The benefits

- officially approved by the German Building Authority DIBt, Berlin
- also approved for non-predominant static loads
- no preparatory work needed on the rebar ends
- using shear-off screws means fast and safe installation
- efficient and cost-effective installation using standard tools and with low screw shear-off moments
- wide range of standard-, transition- and head-couplers allows planning reliability and flexibility in diverse applications
- ideal for renovation/restructuring and for building extensions projects
- numerous country-specific approvals confirm compliance with international norms for structural analysis



HALFEN MBT REINFORCEMENT COUPLER

System description

System description

The HALFEN MBT Reinforcement coupler is a mechanical connector for 10 to 40mm diameter reinforcing-steel B500B.

The positive transfer of tension and pressure forces from one rebar to the other is achieved via a self-regulating impacting-lock in the coupler.

No preparatory rebar work required:

- no thread cutting
- no ramming
- no crimping
- no welding

The standard reinforcement coupler is approved by the German Building Authority DIBt, Berlin number Z-1.5-10. According to the approval, same diameter rebars from 10 to 28mm can be connected.

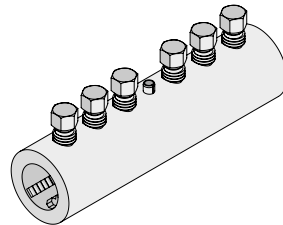
As it is not necessary to rotate the rebar during installation; making assembly easier, especially for long, bent or curved rebars.



Standard use tools are sufficient for installation. However, for efficient and easy installation, special power or electric screwdrivers can be used.

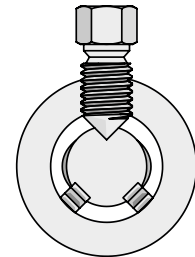
You can purchase or hire specialist tools from us.

The standard coupler consists of a seamless tube with integrated serrated runners and a set number of shear-off screws. The number of screws depends on the diameter of the rebar.

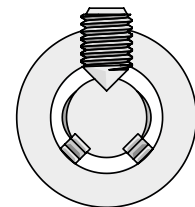


To install; slide the rebar ends into the coupler. A stop-pin is located at the middle of the coupler. Turn the screws in as far as possible. While screwing in the shear-off screws, the special hardened tip digs into the rebar, simultaneously pressing it against the serrated runners. This creates a positive connection between screw-tips and the rebar and between rebar, serrated runners and inner surface of the coupler.

The shear-off screws are turned until each shears off at the predetermined breaking point located outside the coupler.



Coupler with screwed-in shear-off screw



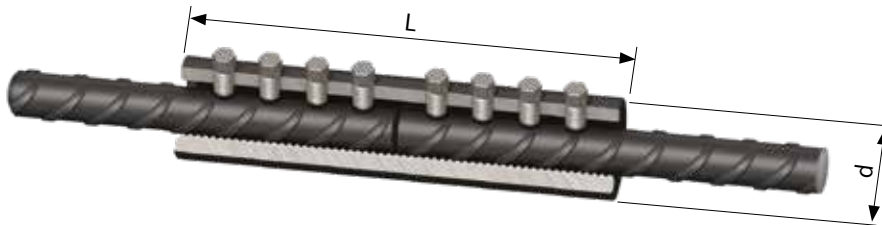
Coupler with sheared-off screw head

This exact shearing off allows an easy visual confirmation of correct installation; this saves costs and time.

HALFEN MBT REINFORCEMENT COUPLER

HALFEN MBT Standard coupler

MBT Standard coupler – type selection and dimensions



The batch number and the rebar diameter are imprinted on all standard couplers.

E.g. T12 is for a rebar diameter of 12 mm.



Dimensions of MBT Standard coupler

Identification	T10	T12	T14	T16	T18	T20	T22	T25	T26	T28	T30	T32	T36	T40
Rebar Ø [mm]	10	12	14	16	18 ①	20	22 ①	25	26 ①	28	30 ①	32 ①	36 ①	40 ①
Order no.	0710.010-00002	00003	00004	00005	00012	00006	00013	00007	00014	00008	00015	00009	00016	00010
Outer coupler Ø d [mm]	33.4	33.4	42.2	42.2	48.3	48.3	48.3	54.0	66.7	66.7	71.0	71.0	85.0	81.0
Coupler length L [mm]	100	140	160	160	204	204	248	258	312	312	312	312	484	484
Socket size [mm]	13	13	13	13	13	13	13	16	16	16	16	16	19	19
Number of screws	4	6	6	6	8	8	10	8	10	10	10	10	14	14
Weight [kg]	0.52	0.72	1.25	1.25	2.0	1.96	2.38	3.00	5.91	5.80	6.68	6.50	15.30	11.30

① Couplers for these diameters are not covered in the approval (Z-1.5-10).

Application notes for the MBT Standard coupler

General

The requirements stated in DIN EN 1992-1-1 are applicable for planning and dimensioning. All rebars of the same diameter can be connected. According to DIN EN 1992-1-1 section 4.4.1 or 8.2., the same values are required for concrete cover and lateral spacing for couplers as for un-buttet rebars.

Old reinforcement can easily be replaced when requirements demand. The process of coupling rebars between old buildings and new construction is just as simple. It is also very easy to connect in-situ, still intact, rebar to new rebar.

DIBt-Approval Z-1.5-10 is also valid for splices of new reinforcement B500 with old reinforcement type BSt420S on the edge between new and old constructions.

Predominantly static loads

With predominantly static tension and compression loads, standard couplers can be 100% stressed.

In case of connections between B500 and BSt420S the lower resistance of the old BSt420 has to be taken into account.

Non-predominantly static loads

When dimensioning according to DIN EN 1992-1-1, section 6.8 requires that the effects of possible fatigue is taken into account.

The parameter for fatigue-limit is a stress range of $\Delta\sigma_{Rsk} = 95 \text{ N/mm}^2$ with $N = 2 \times 10^6$ assumed load cycles. The Wöhler curve stress exponents have to be assumed as follows:

$k_1 = 3$ and $k_2 = 5$ with $N^* = 10^7$.

For existing structures splicing of B500 and BSt420S is not allowed for fatigue load.



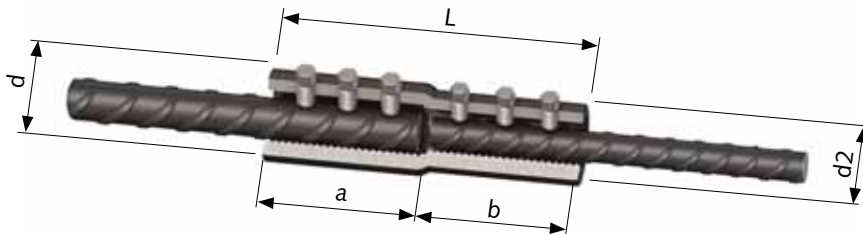
Join of a longitudinal reinforcement using standard couplers

HALFEN MBT REINFORCEMENT COUPLER

HALFEN MBT Transition coupler

MBT Transition coupler – type selection and dimensions

Using a transition coupler, rebars of different diameters can be connected.



Dimensions of MBT Transition coupler

Identification	RDZ 16/12	RDZ 16/14	RDZ 20/12	RDZ 20/16	RDZ 25/16	RDZ 25/20	RDZ 28/20	RDZ 28/22	RDZ 28/25	RDZ 32/20	RDZ 32/25	RDZ 32/28	RDZ 40/32
Rebar Ø [mm]	16/12	16/14	20/12	20/16	25/16	25/20	28/20	28/22	28/25	32/20	32/25	32/28	40/32
Order no. 0710.020-	00005	00006	00007	00001	00008	00002	00003	00009	00004	00010	00011	00012	00013
Outer Ø coupler d [mm]	42.2	42.2	48.3	48.3	54.0	54.0	66.7	66.7	66.7	71.0	71.0	71.0	81.0
Outer Ø coupler d2 [mm]	26.4	42.2	33.4	48.3	42.2	54.0	48.3	41.7	54.0	48.3	54.0	66.7	71.0
Coupler length L [mm]	160	160	150	160	155	180	204	253	258	177	231	286	335
Length a-b [mm]	80-80	80-80	80-70	80-80	75-80	90-90	102-102	129-124	129-129	75-102	102-129	130-156	178-157
Socket size a-b [mm]	13-13	13-13	13-13	13-13	16-13	16-13	16-13	16-13	16-16	16-13	16-16	16-16	19-16
Number of screws a-b	3-3	3-3	3-3	3-3	2-3	3-3	3-4	4-5	4-4	2-4	3-4	4-5	5-5
Weight [kg]	1.30	1.25	1.13	1.56	1.51	2.23	2.94	3.61	3.98	2.55	3.70	5.71	7.47

Application example of MBT Transition couplers

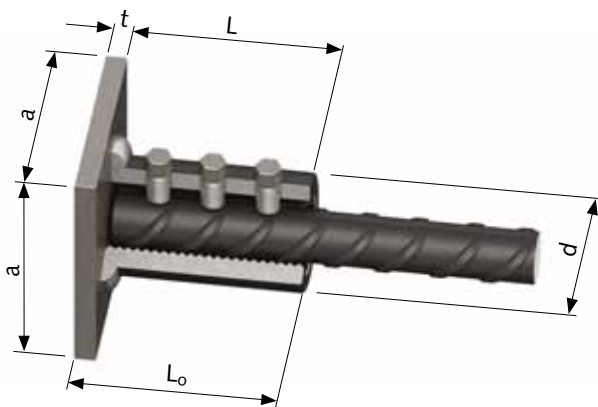


Support column with transition couplers

HALFEN MBT REINFORCEMENT COUPLER

HALFEN MBT Head coupler

MBT Head coupler – type selection and dimensions



Head couplers are particularly suitable for the following fields of application:

- end zones of reinforcing steel
- end zones in pile cages
- slack rock anchors
- pressure distribution plates
- weld-on end-sockets

Dimensions of MBT Head coupler

Identification	EV 10	EV 12	EV 14	EV 16	EV 18	EV 20	EV 22	EV 25	EV 26	EV 28	EV 30	EV 32	EV 34	EV 36	EV 40
Rebar Ø [mm]	10	12	14	16	18	20	22	25	26	28	30	32	34	36	40
Order no. 0710.040-	00001	00002	00003	00004	00005	00006	00007	00008	00009	00010	00011	00012	00013	00014	00015
Outer coupler Ø d [mm]	33.4	33.4	42.2	42.2	48.3	48.3	48.3	54.0	66.7	66.7	71.0	71.0	75.0	85.0	81.0
Coupler length L [mm]	55	75	82	82	104	104	126	129	156	156	156	156	215	247	247
Total length L ₀ [mm]	65	85	92	92	114	114	136	139	168	168	171	171	230	262	262
Plate thickness t [mm]	10	10	10	10	10	10	10	10	12	12	15	15	15	15	15
Plate a x a [mm]	70	70	70	80	90	90	90	100	110	110	130	130	130	150	150
Socket size [mm]	13	13	13	13	13	13	13	16	16	16	16	16	19	19	19
Number of screws	2	3	3	3	4	4	5	4	5	5	5	5	6	7	7
Weight [kg]	0.64	0.74	1.01	1.07	1.58	1.58	1.72	2.29	3.81	4.14	5.08	4.72	5.17	9.13	8.30

Application examples of MBT Head couplers



End zones in multiple piles



End zone detail in one pile

HALFEN MBT REINFORCEMENT COUPLER

Corrosion protection and installation

Corrosion protection

If the couplers are installed in building component exposed to more extreme environmental conditions than those stated in DIN EN 1992-1-1, exposition classes X0 or XC1, i.e. the environment is not permanently dry, then fill the coupler with an appropriate corrosion protection agent e.g. Denso-Fill paste.

Article name	Order no.
Denso-Fill paste 250 g cartridge	0711.010-00001
Denso-Fill paste 20 kg container	0711.010-00002

The coupler has to be filled with the paste on-site prior to installation. The rebar has to be inserted into the coupler so that the paste seeps out of the coupler. Excess paste has to be wiped off and the filled gap between coupler and rebar smoothed off. The manufacturer's product information and application note have to be observed.

Following quantity of the corrosion protection paste is needed for filling the inside of standard couplers:

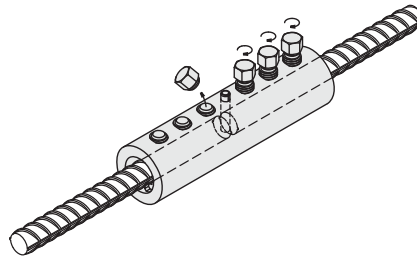
Reinforcement coupler	Rebar Ø [mm]	Net weight [g]
MBT T10	10	approx. 25
MBT T12	12	approx. 30
MBT T14	14	approx. 55
MBT T16	16	approx. 55
MBT T20	20	approx. 80
MBT T25	25	approx. 120
MBT T28	28	approx. 205
MBT T32	32	approx. 220
MBT T40	40	approx. 250

Installation

The HALFEN MBT Reinforcement coupler is a mechanical coupler for connecting reinforcing-steel B500B.

The threads in the drill hole and the shear-off screws have to be clean and free of rust.

During installation, the coupler is slid on the free end of the rebar. A pin marks the middle of the coupler and provides a stop.



If the pin is missing, mark half the of the coupler length on the rebar and slide the coupler on the rebar up to said mark.

The shear-off screws can be sheared off manually. For this purpose we recommend using a MBT power screwdriver

with a 1" ratchet and socket: Appropriate sockets can be purchased from us. No torque wrench is necessary.

We recommend using a special electric screwdriver for a larger number of couplers.

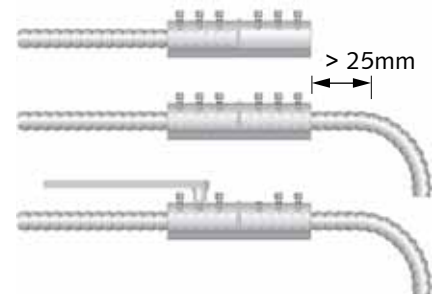


Using impact tools or extension for the ratchet is not permitted.

Once all shear-off screws are sheared off as planned, the reinforcement coupler is correctly installed.



No bends or curves are permitted in the rebar less than 25 mm distance from the coupler.



HALFEN MBT REINFORCEMENT COUPLER

Installation tools

Selecting an appropriate tool


We recommend using an electric screwdriver for maximum efficiency when shearing off the screws. Up to a rebar diameter of 22 mm, the screws of the corresponding coupler can be sheared off using a manual 1" ratchet.

A power screwdriver is the ideal tool to manually tighten MBT Couplers for rebar diameter of 25 to 40 mm. All tools and appropriate sockets can be purchased or hired from us.



MBT Special socket

Tool selection

Coupler	Number of shear-off screws	Socket size	Torque [Nm]	Number of couplers			
				5	10	15	20
MBT T10	4	13 (1/2")	55	 <p>Ratchet</p>	 <p>Electric screwdriver</p>		
MBT T12	6	13 (1/2")	55				
MBT T14	6	13 (1/2")	108				
MBT T16	6	13 (1/2")	108				
MBT T18	8	13 (1/2")	108				
MBT T20	8	13 (1/2")	108				
MBT T22	10	13 (1/2")	108				
MBT T25	8	16 (5/8")	275				
MBT T26	10	16 (5/8")	275				
MBT T28	10	16 (5/8")	275				
MBT T30	10	16 (5/8")	360				
MBT T32	10	16 (5/8")	360				
MBT T36	14	19 (3/4")	600				
MBT T40	14	19 (3/4")	525				

Manual installation with a ratchet

For a small number of screws, a ratchet can be used for shearing off the screw heads. For installing MBT Couplers with a rebar diameter of 25 to 32 mm a ratchet is sufficient. Ratchet extensions are not permitted. We recommend a power screwdriver or an electric screwdriver for these sizes to ensure even pressure over all screws.



Article name	Order no.
MBT Ratchet 1", 600 mm long	0711.020-00008

Rebar Ø [mm]	Article name	Order no.
10 to 22	MBT Socket 1" square to 1/2" hexagon, size 10 up to 22	0711.020-00002

HALFEN MBT REINFORCEMENT COUPLER

Installation tools

Manual installation with a power screwdriver

For maximum efficiency, it is recommended to use a power screwdriver to shear off a moderate number of size 25 to 40 mm rebar diameter. A complete tool kit contains the appropriate sockets and a special brace. The power screwdriver is operated manually - no electric power connection is required. Because of the integrated gear high torques are possible with only little physical effort.



Rebar Ø [mm]	Article name	Order no. (rental device)
25 to 40	MBT Power screwdriver tool kit, rental device, MBT 25-40	0711.025-00002

Installation with an electric screwdriver

For a high number of screws or a large MBT Coupler diameter, using one of the MBT Electric screwdrivers is recommended. The side-brace on the screwdrivers ensures a correct smooth torque transmission to the screw-head. Using a MBT Electric screwdriver, the installation process is efficient and safe. The tool kit includes the required sockets for installing MBT Couplers. If requested, it is also possible to purchase an electric screwdriver from us.

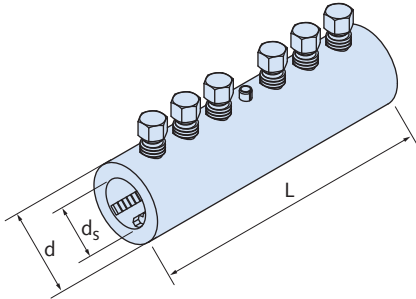


Rebar Ø [mm]	Article name	Order no. (rental device)
10 to 40	MBT Electric screwdriver tool kit type Baier BSA 720 or Lösomat including sockets	0711.025-00001

HALFEN MBT REINFORCEMENT COUPLER

Tender specifications for MBT

Pos. 001 – HALFEN Reinforcement coupler type MBT T (Standard coupler)



HALFEN Reinforcement coupler type MBT T 12, standard coupler for connection of reinforcing steel diameter $d_s = 12$ mm.

Officially approved by the German Building Authority DIBt, Berlin, approval no. Z-1.5-10 for use under predominantly static loads and non-predominantly static loads,

type MBT T 12

with T = standard coupler,

with coupler length $L = 140$ mm,

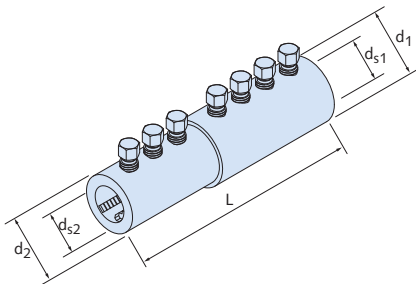
outer coupler diameter $d = 33.4$ mm and 2×3 shear off screws,

12 = B500B reinforcing steel diameter d_s [mm]

or equivalent, deliver and install according to the General Certificate of Approval and the manufacturer's instructions.

Observe the manufacturer's instructions on using appropriate tools to shear off the screws.

Pos. 002 – HALFEN Reinforcement coupler type MBT RDZ 16/14 (Transition coupler)



HALFEN Reinforcement coupler type MBT RDZ 16/14, transition coupler for connection of reinforcing steel with different diameters $d_{s1}/d_{s2} = 16/14$ [mm].

type MBT RDZ 16/14

with RDZ = transition coupler,

with coupler length $L = 160$ mm,

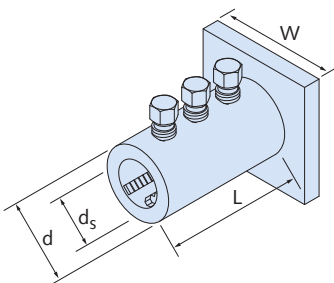
outer coupler diameter $d_1/d_2 = 42.2/42.2$ [mm] and $3 + 3$ shear off screws,

16/14 = B500B reinforcing steel diameter d_{s1}/d_{s2} [mm]

or similar, deliver and install according to the manufacturer's instructions.

Observe the manufacturer's instructions on using appropriate tools to shear off the screws.

Pos. 003 – HALFEN Reinforcement coupler type MBT EV 25 (Head coupler)



HALFEN Reinforcement coupler type MBT EV 25, head coupler for reinforcing steel diameter $d_s = 25$ mm.

type MBT EV 25

with EV = head coupler,

with coupler length $L = 129$ mm,

outer coupler diameter $d = 54.0$ mm,

4 shear-off screws and anchor plate $100 \times 100 \times 10$ [mm],

25 = B500B reinforcing steel diameter d_s [mm]

or similar, deliver and install according to the manufacturer's instructions.

Observe the manufacturer's instructions on using appropriate tools to shear off the screws.

Further tender specifications can be downloaded from our homepage www.halfen.com





Leviat[®]
A CRH COMPANY

Innovative engineered products and construction solutions that allow the industry to build safer, stronger and faster.



Worldwide contacts for Leviat:

Australia

Leviat

98 Kurrajong Avenue,
Mount Druitt Sydney, NSW 2770
Tel: +61 - 2 8808 3100
Email: info.au@leviat.com

Austria

Leviat

Leonard-Bernstein-Str. 10
Saturn Tower, 1220 Wien
Tel: +43 - 1 - 259 6770
Email: info.at@leviat.com

Belgium

Leviat

Borkelstraat 131
2900 Schoten
Tel: +32 - 3 - 658 07 20
Email: info.be@leviat.com

China

Leviat

Room 601 Tower D, Vantone Centre
No. A6 Chao Yang Men Wai Street
Chaoyang District
Beijing · P.R. China 100020
Tel: +86 - 10 5907 3200
Email: info.cn@leviat.com

Czech Republic

Leviat

Business Center Šafránkova
Šafránkova 1238/1
155 00 Praha 5
Tel: +420 - 311 - 690 060
Email: info.cz@leviat.com

France

Leviat

18, rue Goubet
75019 Paris
Tel: +33 - 1 - 44 52 31 00
Email: info.fr@leviat.com

Germany

Leviat

Liebigstrasse 14
40764 Langenfeld
Tel: +49 - 2173 - 970 - 0
Email: info.de@leviat.com

Italy

Leviat

Via F.lli Bronzetti N° 28
24124 Bergamo
Tel: +39 - 035 - 0760711
Email: info.it@leviat.com

Malaysia

Leviat

28 Jalan Anggerik Mokara 31/59
Kota Kemuning, 40460 Shah Alam
Selangor
Tel: +603 - 5122 4182
Email: info.my@leviat.com

Netherlands

Leviat

Oostermaat 3
7623 CS Borne
Tel: +31 - 74 - 267 14 49
Email: info.nl@leviat.com

New Zealand

Leviat

2/19 Nuttall Drive, Hillsborough,
Christchurch 8022
Tel: +64 - 3 376 5205
Email: info.nz@leviat.com

Norway

Leviat

Vestre Svanholmen 5
4313 Sandnes
Tel: +47 - 51 82 34 00
Email: info.no@leviat.com

Poland

Leviat

Ul. Obornicka 287
60-691 Poznan
Tel: +48 - 61 - 622 14 14
Email: info.pl@leviat.com

Singapore

Leviat

14 Benoi Crescent
Singapore 629977
Tel: +65 - 6266 6802
Email: info.sg@leviat.com

Spain

Leviat

Polígono Industrial Santa Ana
c/ Ignacio Zuloaga, 20
28522 Rivas-Vaciamadrid
Tel: +34 - 91 632 18 40
Email: info.es@leviat.com

Sweden

Leviat

Vädersgatan 5
412 50 Göteborg
Tel: +46 - 31 - 98 58 00
Email: info.se@leviat.com

Switzerland

Leviat

Hertistrasse 25
8304 Wallisellen
Tel: +41 - 44 - 849 78 78
Email: info.ch@leviat.com

United Kingdom

Leviat

A1/A2 Portland Close
Houghton Regis LU5 5AW
Tel: +44 - 1582 - 470 300
E-Mail: info.uk@leviat.com

United States of America

Leviat

6467 S Falkenburg Rd.
Riverview, FL 33578
Tel: (800) 423-9140
Email: info.us@leviat.us

For countries not listed

Email: info@leviat.com

Leviat.com

For information on certified management systems and standards see www.ancon.co.uk | www.aschwanden.com | www.halfen.com

Notes regarding this catalogue

© Protected by copyright. The construction applications and details provided in this publication are indicative only. In every case, project working details should be entrusted to appropriately qualified and experienced persons. Whilst every care has been exercised in the preparation of this publication to ensure that any advice, recommendations or information is accurate, no liability or responsibility of any kind is accepted by Leviat for inaccuracies or printing errors. Technical and design changes are reserved. With a policy of continuous product development, Leviat reserves the right to modify product design and specification at any time.



Imagine. Model. Make.

Leviat.com