



Problems with cracks?



High and Low Pressure Injection Program

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Bold printed N° () = Order N°

Injection packers

(drill hole packers)
made of steel

High-pressure packers for
concrete injections or synthetic
resin injections.

Injection packers 1013 to 1017 are suitable for particularly high pressing power. Injection packers 1010 and 1008 can only absorb lower pressure because of their thinner rubber. They are especially suitable for small cracks or where drilling would cause damage, e.g. on tiles and stones.

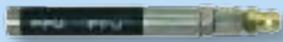
Injection packers 1019 should be used whenever deep drilling and high pressing power are necessary due to corroding concrete.

All injection packers are fitted with cone-head nipples (NK-nipple) suitable both for low pressure and high pressure operation. Since they get unscrewed in any case prior to the injection process, cone-head nipples are added loosely to each box of injection packers.

Upon request we deliver the injection packers with N-nipples (high-pressure nipple).

Injection packer made of steel 8 + 10 mm diameter

suitable for bore holes with 8 mm respectively 10 mm diameter,
thread M5, nipple thread M5 – with low-pressure cone head nipple (1017NK)



(1008) < 8 mm Ø, length overall 75 mm



(1010) < 10 mm Ø, length overall 70 mm



(1010 L) < 10 mm Ø, length overall 115 mm

Injection packer made of steel 13 mm diameter

suitable for bore holes with 14 mm diameter, thread M6,
nipple thread M6 – with low-pressure cone head nipple (1013NK)



(1013) < 13 mm Ø, length overall 70 mm



(1013 L) < 13 mm Ø, length overall 115 mm



(1013 S) < 13 mm Ø, length overall 210 mm



(1013 SS) < 13 mm Ø, length overall 310 mm



(1013 SL) < 13 mm Ø, length overall 610 mm

Injection packer made of steel 16 mm diameter

suitable for bore holes with 16 mm diameter, thread M8,
nipple thread M5 – with low-pressure cone head nipple (1017NK)



(1016) < 16 mm Ø, length overall 65 mm



(1016 L) < 16 mm Ø, length overall 110 mm

Injection packer made of steel 17 mm diameter

suitable for bore holes with 18 mm diameter, thread M8,
nipple thread M5 – with low-pressure cone head nipple (1017NK)



(1017) < 17 mm Ø, length overall 65 mm



(1017 L) < 17 mm Ø, length overall 110 mm



(1017 LL) < 17 mm Ø, length overall 150 mm



(1017 SL) < 17 mm Ø, length overall 300 mm

These offered injection packers
are always onstock but we can
manufacture other sizes and lengths!

Injection packer made of steel 19 mm diameter

suitable for bore holes with 20 mm diameter, thread M10 x 1,0,
nipple thread M7 – with low-pressure cone head nipple (1019NK)



(1019) < 19 mm Ø, length overall 150 mm



(1019 M) < 19 mm Ø, length overall 250 mm



(1019 L) < 19 mm Ø, length overall 410 mm

(1019 LL) < 19 mm Ø, length overall 610 mm

Injection packer made of STAINLESS STEEL 13 mm diameter

all metal parts are made of stainless steel !

Suitable for bore holes with 14 mm diameter, thread M6,
nipple thread M6 – with low-pressure cone head nipple (R1013NK)



(R1013) < STAINLESS
13 mm Ø, length overall 90 mm



(R1013 L) < STAINLESS
13 mm Ø, length overall 115 mm



TWO-PART COMPOSITE PACKERS

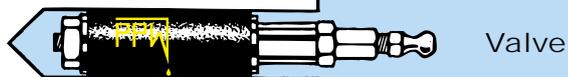
as an alternative for injection packers

Both parts can be combined differently, thus there is a variety of possible applications!

Composite packers are suitable for low pressure and high pressure, due to a low opening pressure of circa 1–2 bar.

The advantage is both the saving of time as described below, and that the pressure elements can be used repeatedly.

Drill-hole packer



Composite packer

consist of a packer element with a valve and a pressure element.

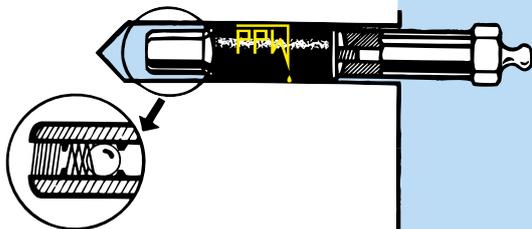
Handling and pressing is the same as with the service-proven drill-hole packers.

The decisive advantage: the pressure element (front part) can be removed after injection without any loss of pressure while, the drill hole can be closed straight away.

This means: less time and labour must be expended

The pressure element, if cleaned well, may be used again more than 5 times.

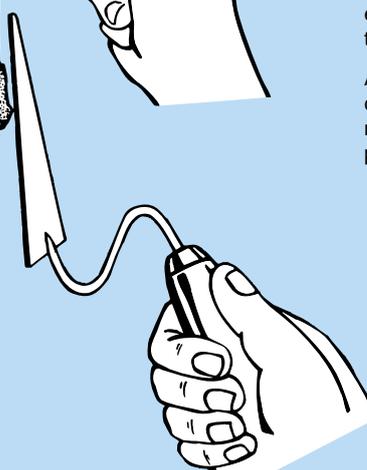
Valve



Lowering the packer element is simple because of pressure elements being available in varying lengths.

The composite packer can be retightened (as opposed to the impact packing element), thus there is no interruption of the injection process.

Another advantage is the fact that the composite packer can be subjected to much higher pressure than a packer with a predetermined breaking point.



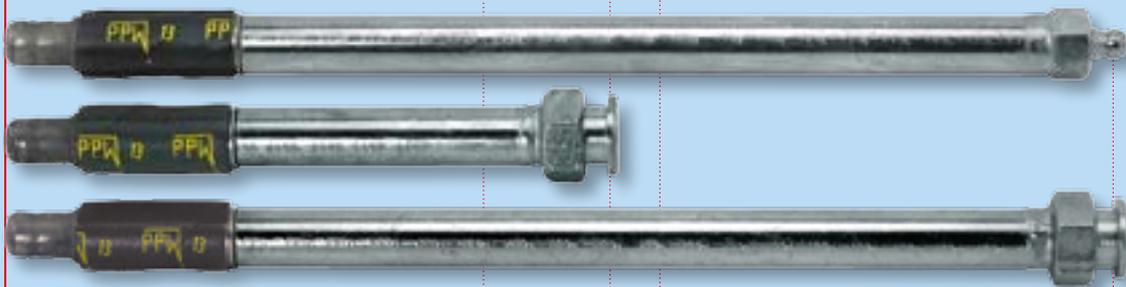
Composite packers completely mounted:



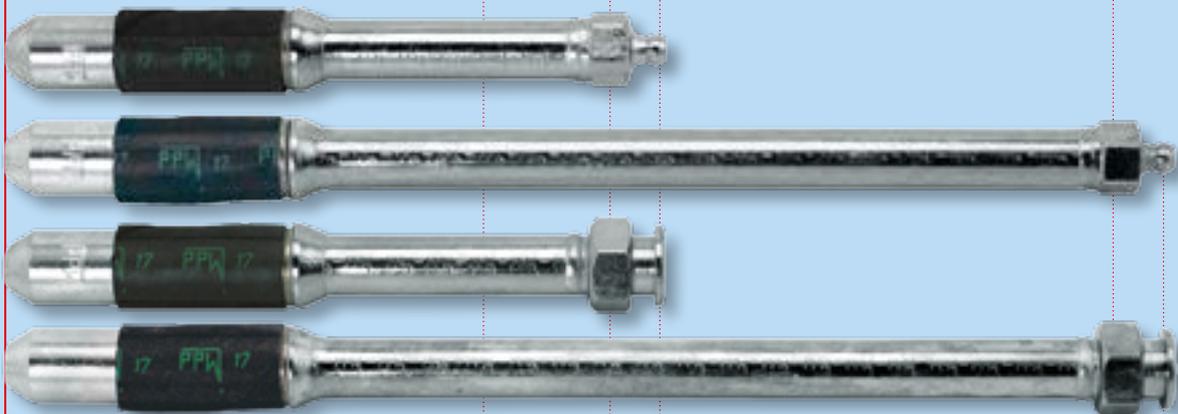
10 mm



13 mm



17 mm



19 mm



Composite packers 10 mm Ø

Packer element steel -
Pressure element
steel galvanized



(V 10 P)<
Packer element
10 mm Ø
60 mm long,
thread M 5



(V 10 D)< Pressure element with cone head
45 mm long, thread M5



(V 10 DL)< Pressure element with cone head
75 mm long, thread M5



(V 10 DF)< Pressure element with flat head
80 mm long, thread M5

Composite packers 13 mm Ø

Packer element V2A
STAINLESS STEEL 1.4301 -
Pressure element steel
galvanized



(RV 13 P)<
Packer element
STAINLESS STEEL
13 mm Ø
50 mm long,
thread M6



(V 13 D)< Pressure element with cone head
45 mm long, thread M 6



(V 13 DL)< Pressure element with cone head
75 mm long, thread M 6



(V 13 DLL)< Pressure element with cone head
175 mm long, thread M 6



(V 13 DF)< Pressure element with flat head
75 mm long, thread M 6



(V 13 DLF)< Pressure element with flat head
175 mm long, thread M 6

Composite packers 13 mm Ø

Packer element steel -
Pressure element
steel galvanized



(V 13 P) <
Packer element
13 mm Ø
50 mm long,
thread M6



(V 13 D) < Pressure element with cone head
45 mm long, thread M 6



(V 13 DL) < Pressure element with cone head
75 mm long, thread M 6



(V 13 DLL) < Pressure element with cone head
175 mm long, thread M 6



(V 13 DF) < Pressure element with flat head
75 mm long, thread M 6



(V 13 DLF) < Pressure element with flat head
175 mm long, thread M 6

Composite packers 17 mm und 19 mm Ø

Packer element steel -
Pressure element
steel galvanized



(V 17 P) <
Packer element
17 mm Ø
70 mm long,
thread M 8 x 1.0



(V 19 P) <
Packer element
19 mm Ø
75 mm long,
thread M 8 x 1.0



(V 17 D) < Pressure element with cone head
75 mm long, thread M 8 x 1.0



(V 17 DL) < Pressure element with cone head
175 mm long, thread M 8 x 1.0



(V 17 DF) < Pressure element with flat head
75 mm long, thread M 8 x 1.0



(V 17 DLF) < Pressure element with flat head
175 mm long, thread M 8 x 1.0

Pressure elements (V17) fit packer elements (V17P) and (V19P) because of the same thread size M 8 x 1.0.

ADHESION PACKERS

... if drilling is impossible ...



Adhesion packer round (1140)<
made of aluminium,
48 mm Ø,
inside thread
M 8 x 1.0
weight circa 13 g



Adhesion packer round (1140 A)<
made of aluminium,
48 mm Ø,
outside thread
M 10 x 1.0
weight circa 13 g



Adhesion packer round (1138)<
made of transparent polycarbonate,
48 mm Ø,
inside thread M 8 x 1.0
weight circa 7 g



Adhesion packer round (1138 A)<
made of transparent polycarbonate,
48 mm Ø, outside
thread M 10 x 1.0
weight circa 7 g



Adhesion packer round (1135)<
made of transparent polycarbonate,
with bevelled filler neck,
inside thread M 8 x 1.0
weight circa 8 g



Adhesion packer oval (1130 A)<
made of aluminium,
size 50 x 100 mm,
outside thread
M 10 x 1.0
weight circa 24 g



Adhesion packer oval (1131)<
made of transparent polycarbonate,
size 50 x 100 mm,
inside thread
M 8 x 1.0
weight circa 15 g



Adhesion packer oval (1131 A)<
made of transparent polycarbonate,
size 50 x 100 mm,
outside thread
M 10 x 1.0
weight circa 15 g



Adhesion packer round (1135 A)<
made of transparent polycarbonate,with
bevelled filler neck,
outside thread
M 10 x 1.0
weight circa 8 g

Suitable nipples for the adhesion packer are on page 12 + 19

Pressure supply hose (1132)< for low pressure injection.

This hose ensures – in combination with our approved adhesion packers – constant and effective filling of cracks.
Depending on the type and extent of the crack, one pressure supply hose (1132) should be used for 3 to 6 adhesion packers. At a pressure of 3 bar, circa 30 ccm of material are taken up.



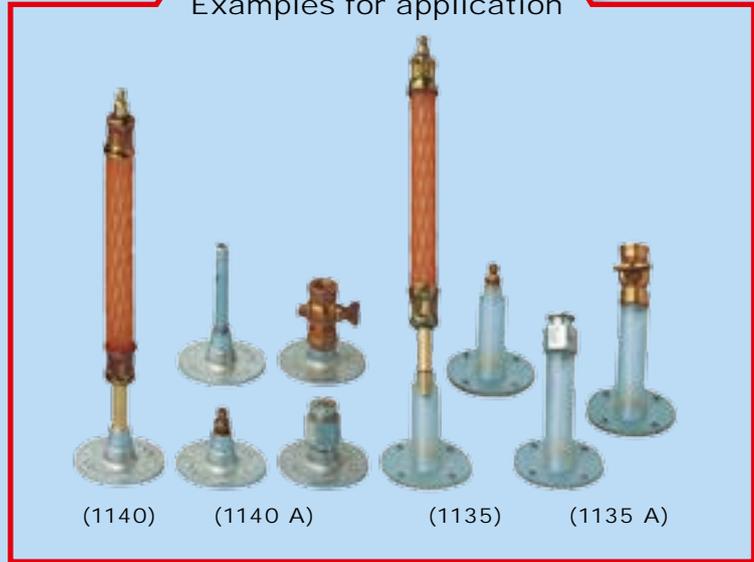


Extension tube (1145)<
made of aluminium, for adhesion packers (1131), (1135), 1138), (1140) overall length 55 mm, outside thread M8 x 1,0, inside thread M6 x 1,0, to be screwed into the adhesion packers. The outside thread is for holding a silicone hose. The inside thread is for screwing in a nipple (1013N) + (1013NK).



Steel pins (1137)<
with smoothed tips and countersunk heads for centering the adhesion packers, they prevent slipping on vertical surfaces. 2 mm Ø, 40 mm long, 100 per bag

Examples for application



Plastic tile packer

The plastic tile packer can be used for injection into small drill holes of 4 and 6 mm diameter.

Stability in the drill hole is secured by the lamellas.

As the plastic tile packer can only be used for lower pressure we deliver them with unassembled low-pressure cone- or flat-head nipples in each box.

(K3004)<
red, 4 mm diameter, length overall circa 40 mm
inner thread M6
with cone-head nipple (1013NK)



(K3004A)<
red, 4 mm diameter, length overall circa 48 mm
outside thread M10 x 1.0
with flat-head nipple (1120)



(K3006)<
green, 6 mm diameter, length overall circa 40 mm
inner thread M6
with cone-head nipple (1013NK)



(K3006A)<
green, 6 mm diameter, length overall circa 48 mm
outside thread M10 x 1.0
with flat-head nipple (1120)



fig. 1:1

We advise for mounting of the plastic tile packers the injector setting aid (K2012E)<.

Accessories for injection packers



- (1017 NK) < M 5 for drill hole packers (1008), (1010), (1016), (1017)
- (1013 NK) < M 6 for drill hole packers (1013) + extension tube (1145)
- (1019 NK) < M 7 for drill hole packers (1019)
- (1146 NK) < M 8 x 1.0 for adhesion packers (1131), (1135), (1138), (1140)

Low-pressure cone-head nipples NK

with loose ball, shortened spring, passivated yellow, opening up at approx. 1 bar and closing by the centered ball.

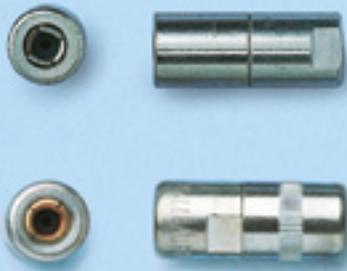
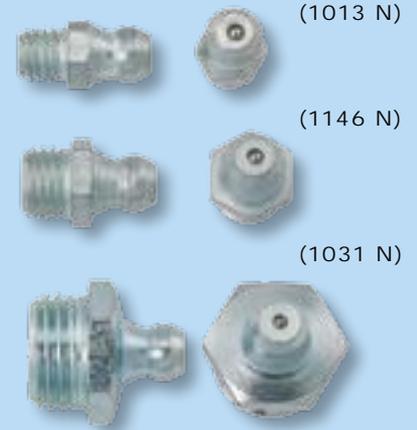
The low-pressure cone-head nipple is suitable for all PPW injection packers for low pressure and high pressure. Problems could be caused by positioning the nipple opening vertically or slanting upward and using viscous injection resin at the same time. In this case we would recommend cone-head nipples for high pressure.

Cone-head nipples for high pressure N

silver-coloured galvanized.

Important! The ball in the high-pressure nipple releases the opening only at circa 30 bars.

- (1017 N) < M 5 for drill hole packers (1008), (1010), (1016), (1017)
- (1013 N) < M 6 for drill hole packers (1013) + extension tube (1145)
- (1019 N) < M 7 for drill hole packers (1019)
- (1146 N) < M 8 x 1.0 for adhesion packers (1131), (1135), (1138), (1140)
- (1025 N) < M 10 x 1.0 for drill hole packers (1025)
- (1031 N) < M 14 x 1.5 for drill hole packers (1031)



- (1042 V) < Nipple gripper with 4 gripping clamps, fits any cone-head nipple, with plastic lining on the inside. Thread M 10 x 1.0 inside
- (1042 Va) < Nipple gripper with 4 gripping clamps, as above, but with close gripping clamps.

Packer extractor

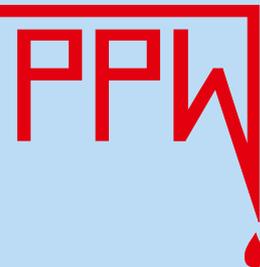
for extracting the protruding part of a packer. Slide the packer extractor over the protruding packer. When turned anti-clockwise, the inner rolls will grip the packer tube and make it come out. Since the packer extractor is square on the inside and hexagonal on the outsides, it can be used with a ratchet and/or drill, screw driver, etc.

- (1351 C) for packer (1013)
- (1351 D) for packer (1016), (1017)
- (1351 E) for packer (1019)



Hose connections

We manufacture
other required sizes!



Hose connection (1106)<

made of brass, square 17 mm
G ¼' to 6 mm
overall length 35 mm



Mandrel packer for hoses (1109)<

made of brass, square 13 mm
flat-head nipple (1120 B)
top diameter 12 mm
base diameter 6 mm
overall length 88 mm



Mandrel packer for hoses (1108)<

made of steel, galvanized, square 17 mm
cone-head nipple (1025 NK)
diameter 8 mm
overall length 55 mm



Mandrel packer for hoses (1107)<

made of brass, square 12 mm
cone-head nipple (1013 N)
top diameter 8 mm,
base diameter 6.2 mm
overall length 50 mm



Cracks?

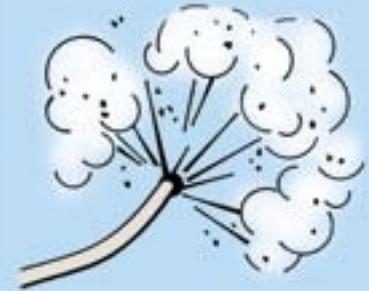
In the event of cracks in concrete parts fast action is required.



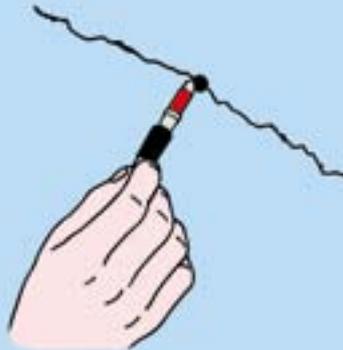
First the cracks have to be drilled, in case of a linear course of the cracks directly, in case of a diagonal course of the cracks lateral staggered. For our plastic injection packers (K2010L) you have to drill a hole 10 mm diameter for the plastic injection packer (K1012) a hole 12 mm diameter.



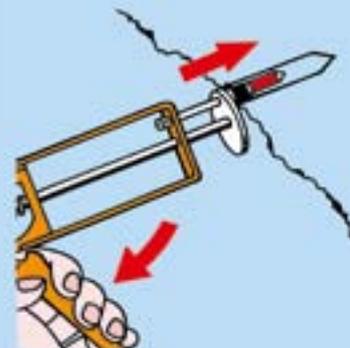
It is important to clean the drill holes well. Blowing them out with compressed air works best.



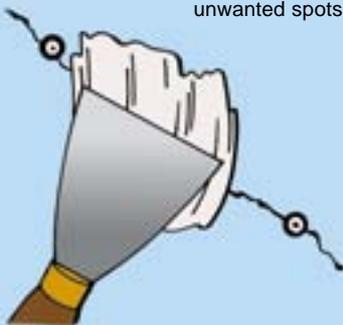
Packer setting:
The plastic injection packer is set into the hole by hand, including the black rubber.



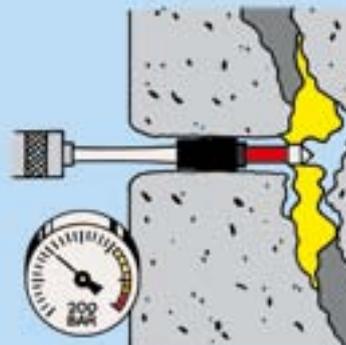
The leading plate of the setting-clamp tool is easily positioned over the nipple-head of the plastic injection packer and arrested. By working the handle the black rubber will be pushed over the shaft of the packer to the front and clamped into the drill hole. The packer is solidly clamped in the drill hole.



Carefully seal the cracks so no synthetic resin can escape in unwanted spots.



The packer is now seated firmly in the drill hole so you can inject through a normal nipple gripper with up to 200 bar pressure. The injection medium flows out of the packer beneath the red rubber and also prevents the backflow of the material. After the hardening of the medium the packer can easily be shortened.



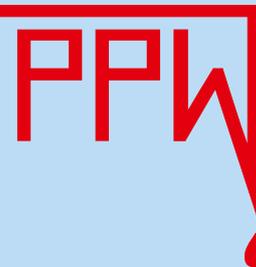
Plastic injection packer

(European Patent)

Plastic packer will often be used as low priced alternative for injection packers. Normal drive-in packer with lamellas have the disadvantage that the drill hole has to be very accurate to the diameter, or the packer won't keep in the hole.

Because of its remarkable combination of integrated nipple-head and two rubber parts it is possible to inject synthetic resin up to 200 bar pressure through the plastic injection packer.

The red rubber at the tip of the packer functions as a non-backflow valve. The injection medium flows out beneath the red rubber during injection but cannot flow back into the packer because of the counter pressure.



(K2010L)

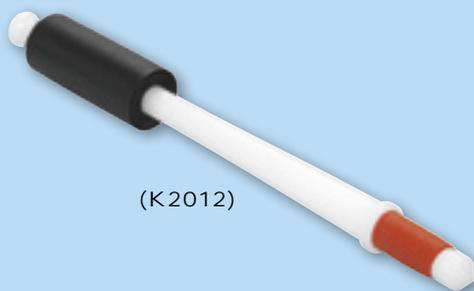
Plastic injection packer

(K2010L)<

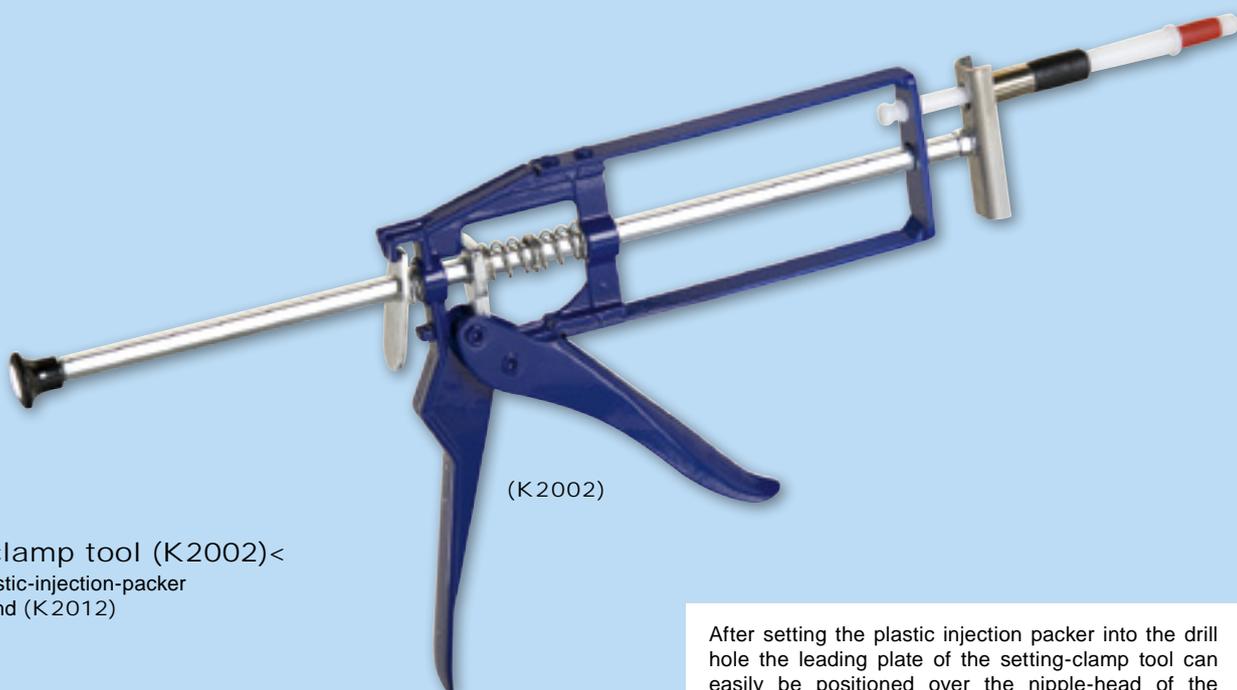
10 mm diameter, 120 mm length overall

(K2012)<

12 mm diameter, 120 mm length overall



(K2012)



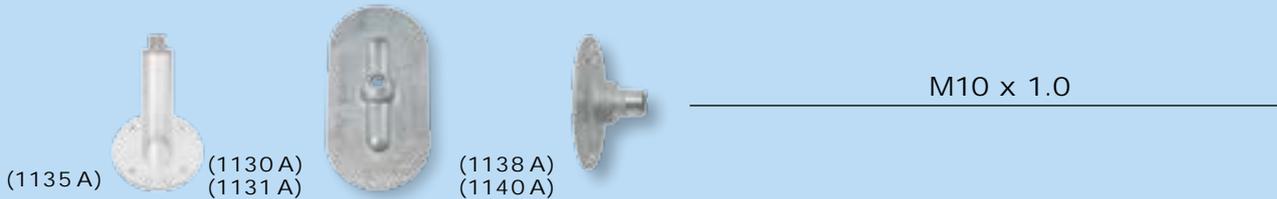
(K2002)

Setting-clamp tool (K2002)<

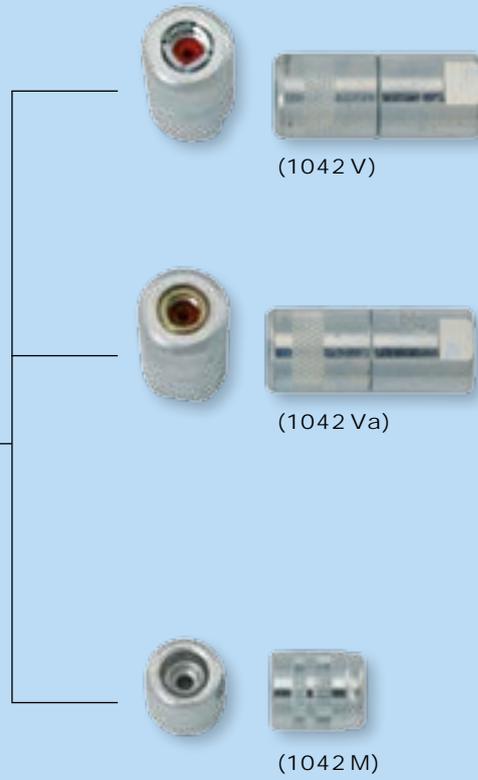
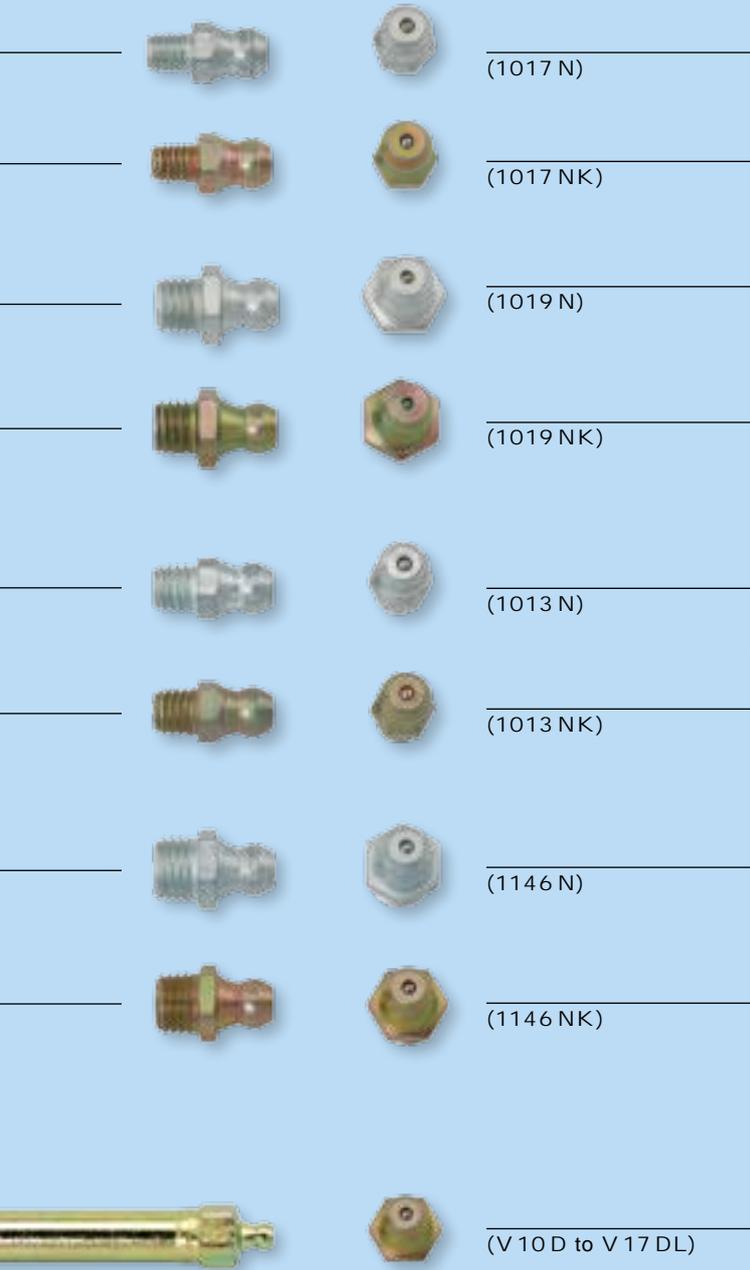
usable for plastic-injection-packer
(K2010L) and (K2012)

After setting the plastic injection packer into the drill hole the leading plate of the setting-clamp tool can easily be positioned over the nipple-head of the packer. By working the handle of the setting-clamp tool, the black rubber will be drawn and clamped into the drill hole. Through the integrated nipple-head injection can be made with high pressure. Because of the packer material there is no risk of corrosion in opposition to injection packers made of steel.

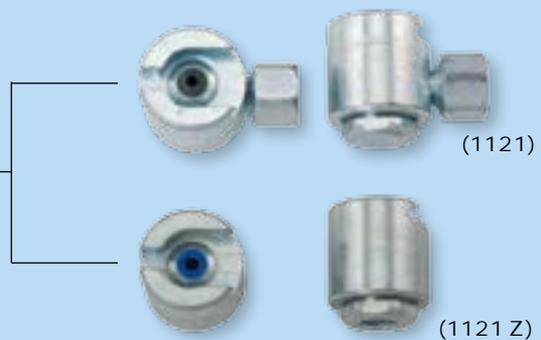
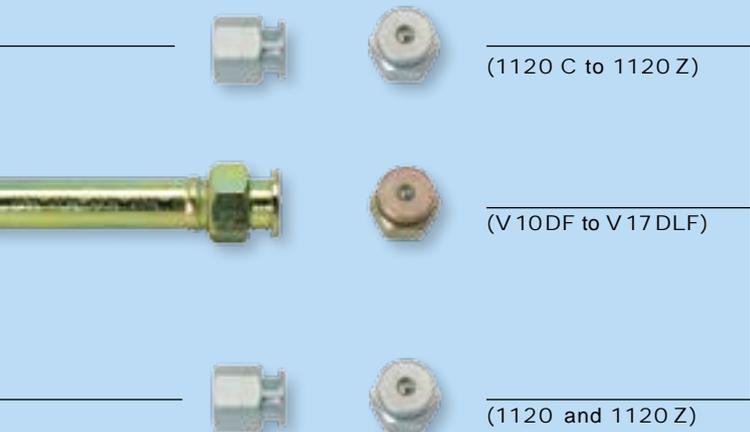
This is how you can combine packers and accessory equipment.



Cone-head



Flat-head



Injection packers with flat-head nipple for injection of viscous media, fits sliding coupling (1121)



(1013 LF) < 13 mm Ø, overall length 115 mm, thread M 6 with flat-head nipple (1120 C)



(1013 SF) < 13 mm Ø, overall length 210 mm, thread M 6 with flat-head nipple (1120 C)



(1013 TF) < 13 mm Ø, overall length 310 mm, thread M 6 with flat-head nipple (1120 C)



(1017 LF) < 17 mm Ø, overall length 110 mm, thread M 8 with flat-head nipple (1120 B)



(1017 FL) < 17 mm Ø, overall length 150 mm, thread M 8 with flat-head nipple (1120 B)



(1019 F) < 19 mm Ø, overall length 150 mm, thread M 10 x 1.0 with flat-head nipple (1120)



(1019 LF) < 19 mm Ø, overall length 400 mm, thread M 10 x 1.0 with flat-head nipple (1120)

Injection packers for the injection of cement suspension or other viscous injection media with wider nipple hole



(1019 FZ) < 19 mm Ø, overall length 150 mm, thread M 10 x 1.0 with flat-head nipple (1120 Z)



(1019 HF) < 19 mm Ø, overall length 220 mm, thread M 10 x 1.0 with flat-head nipple (1120 Z)

(1019 MF) < 19 mm Ø, overall length 250 mm, thread M 10 x 1.0 with flat-head nipple (1120 Z)

These offered injection packers are always on stock but we can manufacture every size you require.

Accessories



Flat-head nipple (1120 D)<
 entry hole 1.5 mm
 with ball + spring supplied unassembled
16 mm Ø, thread M 5
 fits injection packer (1010)



Flat-head nipple (1120 C)<
 entry hole 2.5 mm
 with ball + spring supplied unassembled
16 mm Ø, thread M 6
 fits injection packer (1013)

16 mm Ø, fits sliding
 coupling (1121)

Flat-head nipple (1120 B)<
 entry hole 4.0 mm
 with ball + spring supplied unassembled
16 mm Ø, thread M 8
 fits injection packer (1016/1017)

Flat-head nipple (1120)<
 entry hole 4.5 mm
 with ball + spring supplied unassembled
16 mm Ø, thread M 10 x 1.0 mm
 fits injection packer (1019)



Sliding coupling (1121)<
 16 mm Ø,
 for flat-head nipple (1120) – (1120 Z),
 for injection packers (1013 LF) – (1019 LF)
 and for composite packers-pressure element
 (V 10 DF) – (V 17 DLF)
 thread M10 x 1.0

Injection-packer accessories especially for viscous media



Flat-head nipple
 (1120 Z)<
 Entry hole 5 mm, with ball + spring supplied
 unassembled, **16 mm Ø**, thread M 10 x 1.0 mm,
 fits injection packer (1019) and sliding
 coupling (1121) and (1121 Z)



Flat-head nipple
 (1125 Z)<
 Entry hole 6 mm, with ball + spring supplied
 unassembled, **22 mm Ø**, thread G1/4",
 fits injection packer (1025) and sliding
 coupling (1126 Z)



Sliding coupling
 (1121 Z)<
 fits (1120 Z), straight entry,
 large passage connecting,
16 mm Ø, thread M 10 x 1.0
 (onto hoses etc.)

Sliding coupling
 (1126 Z)<
 fits (1125 Z), straight entry,
 large passage, connecting,
22 mm Ø, thread G 1/4"
 (onto hoses etc.)

Reducing connections

(1010 R)
inside thread M 5,
outside thread M 10 x 1.0, fits
between packer (1010), nipple
(1120), stop cock (1170)

(1013 R)
inside thread M 6,
outside thread M 10 x 1.0, fits
between packer (1013),
nipple (1120), stop cock (1170)

(1017 R)
inside thread M 8, outside thread
M 10 x 1.0, fits between packer (1017) or
(1016), nipple (1120),
stop cock (1170)

(1019 R)
inside thread M 10 x 1.0
outside thread G 1/8",
fits between packer (1019),
stop cock (1171)

(1132 R)
inside thread M 5 to
inside thread M 8 x 1.0

(1140 R)
outside thread M 10 x 1.0 to
outside thread M 8 x 1.0

(1031 RF)
inside thread G 3/8",
outside thread
M 10 x 1.0, fits
between packer (1031),
nipple (1120),
and stop cock (1170)

(1031 RN)
inside thread
G 3/8" to inside
thread M 14 x 1.5,
fits between
packer (1031),
nipple (1031N)

(1049 R)
inside and
outside thread
G 1", fits
between
packer (1049),
stop cock
(1176) and
(1186)

(1049 RF)
inside thread G 1"
to outside thread M 10 x 1.0
fits between packer (1049)
and nipple (1120)



(1025 R)
for low pressure
inside thread G 1/4"
to inside thread
M 10 x 1.0, fits between
packer (1025),
nipple (1025N)



(1025 RN)
for high pressure
inside thread G 1/4"
to inside thread
M 10 x 1.0, fits between
packer (1025),
nipple (1025N)



(1025 RF)
inside thread G 1/4"
to outside thread
M 10 x 1.0, fits between
packer (1025),
nipple (1120)
and stop cock (1170)



(1039 R)
inside and outside threads
G 3/4" to inside thread
M 14 x 1.5, fits between
packer (1039), nipple
(1031N), stop cock (1175)
and (1185)



(1039 RF)
inside thread
G 3/4", to outside thread
M 10 x 1.0, fits between
packer (1039),
nipple (1120),
stop cock (1170)



Toggle nut

for quick bolting without using a
screw spanner

(1025 KM)
for packer (1025) thread G 1/4"

(1031 KM)
for packer (1031) thread G 3/8"

(1039 KM)
for packer (1039) thread G 3/4"



Ball valve for packers

for thin fluid media, to be screwed
to the rear exit opening of the packer
(one nut will then be omitted)

(1025 V)
for packer (1025) thread G 1/4"

(1031 V)
for packer (1031) thread G 3/8"

(1039 V)
for packer (1039) thread G 3/4"

The new DIN designation G"-resp. corresponds to the former R".

Injection packers for the injection of cement suspension and other viscous injection media



directly fits stop cocks (1172) and (1182) on page 30:

- (1025) < 25 mm Ø, overall length 240 mm, thread G 1/4"
- (1025 L) < 25 mm Ø, overall length 600 mm, thread G 1/4"



directly fits stop cocks (1173) and (1183) on page 30:

- (1031) < 31 mm Ø, overall length 300 mm, thread G 3/8"
- (1031 L) < 31 mm Ø, overall length 600 mm, thread G 3/8"
- (1031 SL) < 31 mm Ø, overall length 1200 mm, thread G 3/8"



directly fits stop cocks (1175) and (1185) on page 30:

- (1039) < 42 mm Ø, overall length 300 mm, thread G 3/4"
- (1039 L) < 42 mm Ø, overall length 600 mm, thread G 3/4"
- (1039 SL) < 42 mm Ø, overall length 1200 mm, thread G 3/4"



directly fits stop cocks (1176) and (1186) on page 30:

- (1049) < 50 mm Ø, overall length 600 mm, thread G 1"
- (1049 L) < 50 mm Ø, overall length 1200 mm, thread G 1"

We offer you packers 1049 with thread G1" as special design in every rubber diameter.

Quick coupling

made of brass, pressure-tight up to 30 bars,
seals resistant to oil, acid and lye

(1162 A)
fit to packer (1025),
G 1/4" outer thread

(1163)
fit to packer (1031),
G 3/8" inside thread

(1165)
fit to packer (1039),
G 3/4" inside thread

(1166)
fit to packer G 1,
G 1" inside thread



(1161)
blind coupling to close
the quick coupling

Injection pump R 1001

with standard pressure gauge, complete for high-pressure injection.

This pump permits easy and fast injection of synthetic resin at a pressure of max. 400 bar (building up) into concrete with the aid of our injection packers.

The handling of the injection-pump is easy, and it requires virtually no maintenance.

The injection-pump R 1001 has a coupling flanged to the reduction gearing to attach any standard electric drill with holding attachment for accessory equipment. The chuck must be detachable and the spanner flat behind it must be 17 mm (cf. page 25).

An even working pressure and a consistent delivery is ensured by the electronics of the drill. After removing the chuck from the drill, it is coupled directly to the injection pump. On request, we can supply a coupling for your drill to your specifications for an extra charge.

The indicating scale of the pressure gauge is 0–600 bar. The delivery volume of the injection pump R 1001 is circa 30 litres per hour.

The tank has a capacity of 1 litre.

Weight excluding drill circa 4 kg.

Scope of delivery:

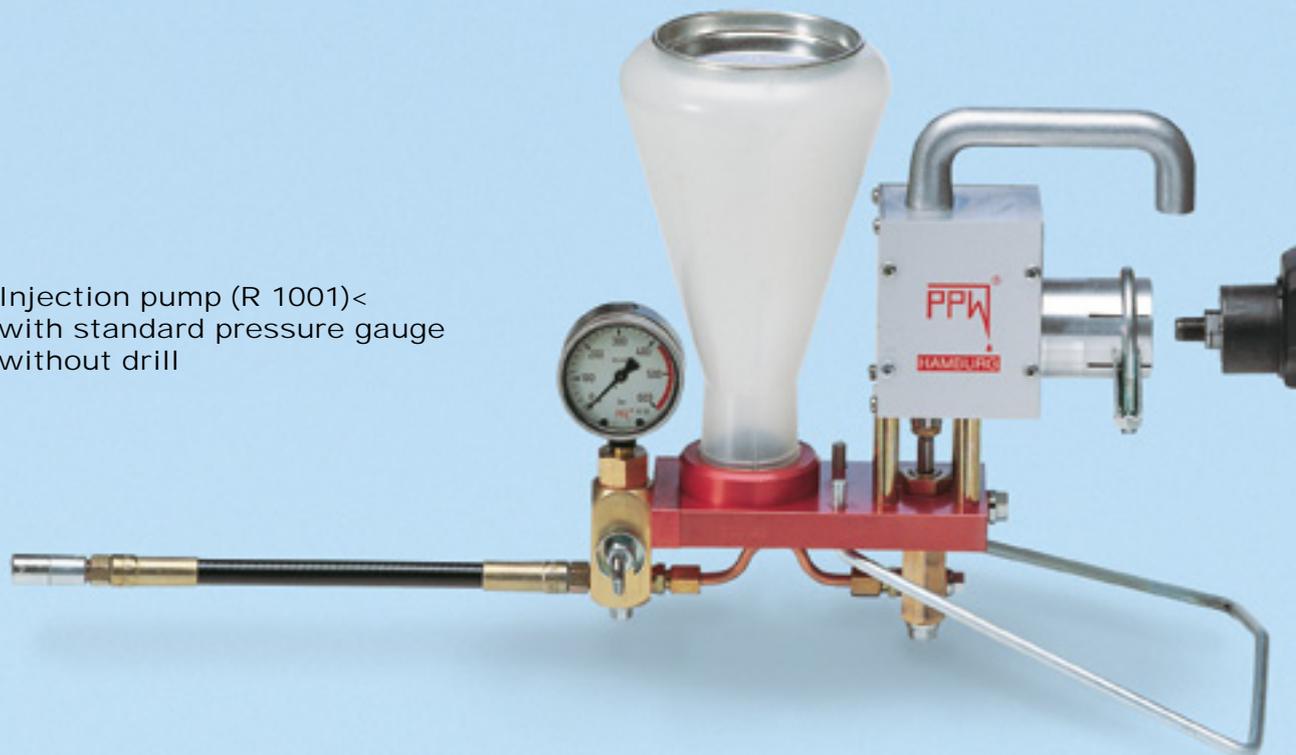
POLYPLAN injection pump R 1001, complete with standard pressure gauge 1001 WE, maximum pressure hose 1043 S, nipple gripper 1042 V, 1 set of spanners, and 1 brush for cleaning, all packed in one box with a list of spare parts, assembly drawing, and operating instructions.

Drive: Electric drill or compressed-air machine (cf. page 24)



Steel-plate case (1001 ST) < with handle and two locks, circa 400 x 400 x 200 mm. For the (R 1001)- or (R 1001 D)-pump complete with accessory equipment in the delivery box.

Injection pump (R 1001) < with standard pressure gauge without drill



Injection pump R 1001 D with pressure-relief device

for high-pressure injection

The injection pump R 1001D is identical to the pump (R 1001) but is additionally provided with a pressure-relief device adjustable from circa 5 to 200 bar. Thus it meets the requirements of "ZTV-RISS 93 - Technical guidelines for filling cracks in concrete structures".

The pressure-relief device is an adjustable valve with which the required pressure can be set. This pressure can be read off the pressure gauge. Any excess injection resin is returned to the injection pump via a low-pressure hose.

Scope of delivery:

POLYPLAN injection pump R 1001 D, complete with standard pressure gauge 1001 WE, maximum-pressure hose 1043 S, nipple gripper 1042 V, high-pressure cock 1171, 1 set of spanners and 1 brush for cleaning, all packed in one box with a list of spare parts, assembly drawing, and operating instructions.

Drive: Electronic drill or compressed-air machine (cf. page 24).

Pressure-relief device 1001 DB

without single illustration

The pressure-relief device 1001 DB can be supplementarily fitted to almost all modern-type POLYPLAN injection pumps R 1001.



Injection pump (R 1001 D) <
with pressure-relief device
and with standard pressure
gauge



Electronical drill (703)

720 Watt, suitable for
all Polyplan pumps



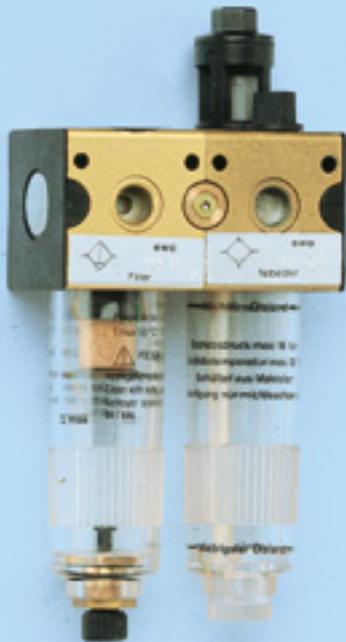
For use in confined spaces at risk
of containing explosive mixtures
we offer as drive of our pumps:

Compressed-air machine (D 501)

with shaft 17 spanner flat,
infinitely variable throttle valve and
short
connecting hose.



*Please note:
for using the compressed-air
machine the drill holding of the
injection pump (ET 11) has to
be replaced with (ET 11D).



A long service life of the compressed-
air machine is ensured through:
Maintenance unit (D 502)
complete,
water separator and oiler

High duty injection pump 1002

with standard pressure gauge
for high-pressure injection

This injection pump permits easy and fast injection of synthetic resin at a pressure of max. 400 bar (building up) into concrete with the aid of our injection packers.

The handling of the injection pump is easy, and it requires virtually no maintenance.

By an energy-saving two-cylinder system and the use of high-quality materials a delivery of circa 100 litres per hour is ensured with the same drive power. The high delivery rate permits the use of a second working hose resulting in greatly reduced injection times. The closed resin tank has a capacity of 5 litres. The drive is via an electric drill with a power output of minimum 700 watt.

This high duty injection pump 1002 is offered as an alternative solution to converted airless units.

Description:

The injection pump 1002 has a coupling flanged to the reduction gearing to attach any standard electric drills with holding attachment for accessory equipment. The chuck must be detachable and the spanner flat behind it must be 17 mm (see above). An even working pressure is ensured by the electronics of the drill.

After removing the chuck from the drill, it is coupled directly to the injection pump. On request, we can supply a coupling for your drill to your specifications for an extra charge.

Weight excluding drill circa 9 kg.

Scope of delivery:

High duty injection pump 1002 complete with pressure gauge 1001 WE, maximum pressure hose 1045 S 2000 mm long, nipple gripper 1042 V, 1 set of spanners, 1 brush for cleaning, all packed in one box with a list of spare parts, assembly drawing and operating instructions.

Drive: Electric drill or compressed-air machine (see page 24).



For the drive of our pumps and screwers electric drills or compressed-air machines are required. Our pumps are provided with a claw with 17 mm slot as connector. The drive machine must have a shaft with 17 mm spanner flat.

High duty injection pump (1002)<

with standard pressure gauge, without drill



POLYPLAN hose pump 1200 S

for injecting and filling with resin, foam and cement suspensions up to 0,2 mm graining

By developing highly flexible, pressure-resistant-hoses and constructing a 3-chamber system, pressures up to circa 15 bar can be reached with this pump while maintaining consistently good delivery. Because this pump can not be contaminated by resin etc. its applications are unrestricted. No more cleaning problems!

The pumped liquids will no longer come into contact with the pump mechanism. Upon completion of a work step, or when the pot life of the liquids is exceeded, just insert another hose within 3 minutes, and the pump will again be ready for operation. Operating pressure may reach up to circa 15 bar. The liquids to be pumped can be taken directly from their containers. Small containers will fit into the supporting basket. With free flow, the delivery can reach 200 l/h. (Viscosity and counterpressure will reduce the delivery rate.) The pump is of solid construction, entirely maintenance-free and unaffected by outside influences.

Description:

The hose-pump 1200 S is equipped with a coupling flanged to the reduction gearing and designed to take any commercial electronic drill with holding attachment for accessory equipment. The chuck must be detachable and the spanner flat behind it must be 17 mm.

For the injection, use only low-pressure nipples, do not use high-pressure nipples!

On request we can supply an attachment for your drill to your specifications (drawing or sample) for an extra charge.

An even working pressure and uniform delivery is ensured by the electronics of the drill. Please also note the various combinations available for the connection of hose and packers.

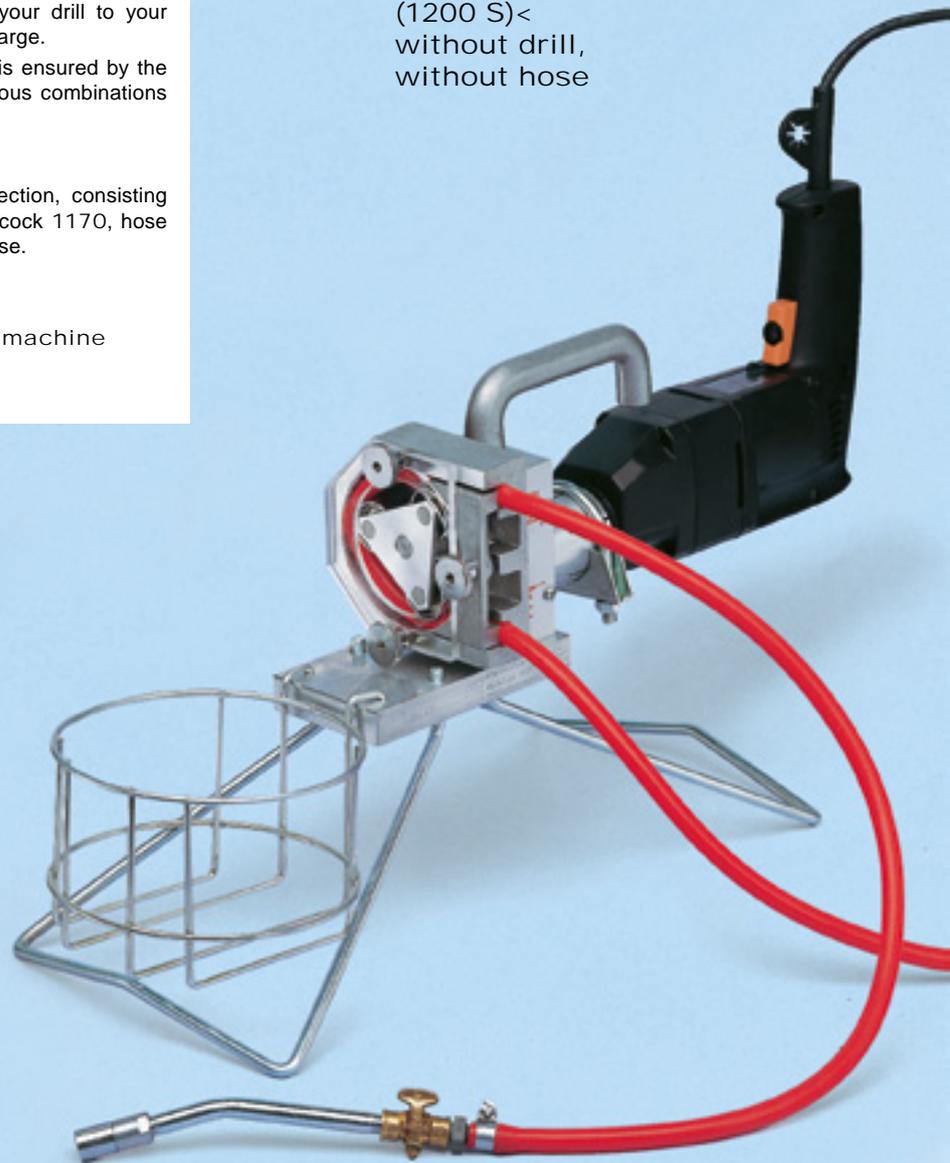
Scope of delivery:

Hose-pump 1200 S complete with hose connection, consisting of: nipple gripper 1042 V, hand pipe 1042 R, cock 1170, hose connector 1284 and clamp 1285 but without hose.

Weight without drill circa 3 kg.

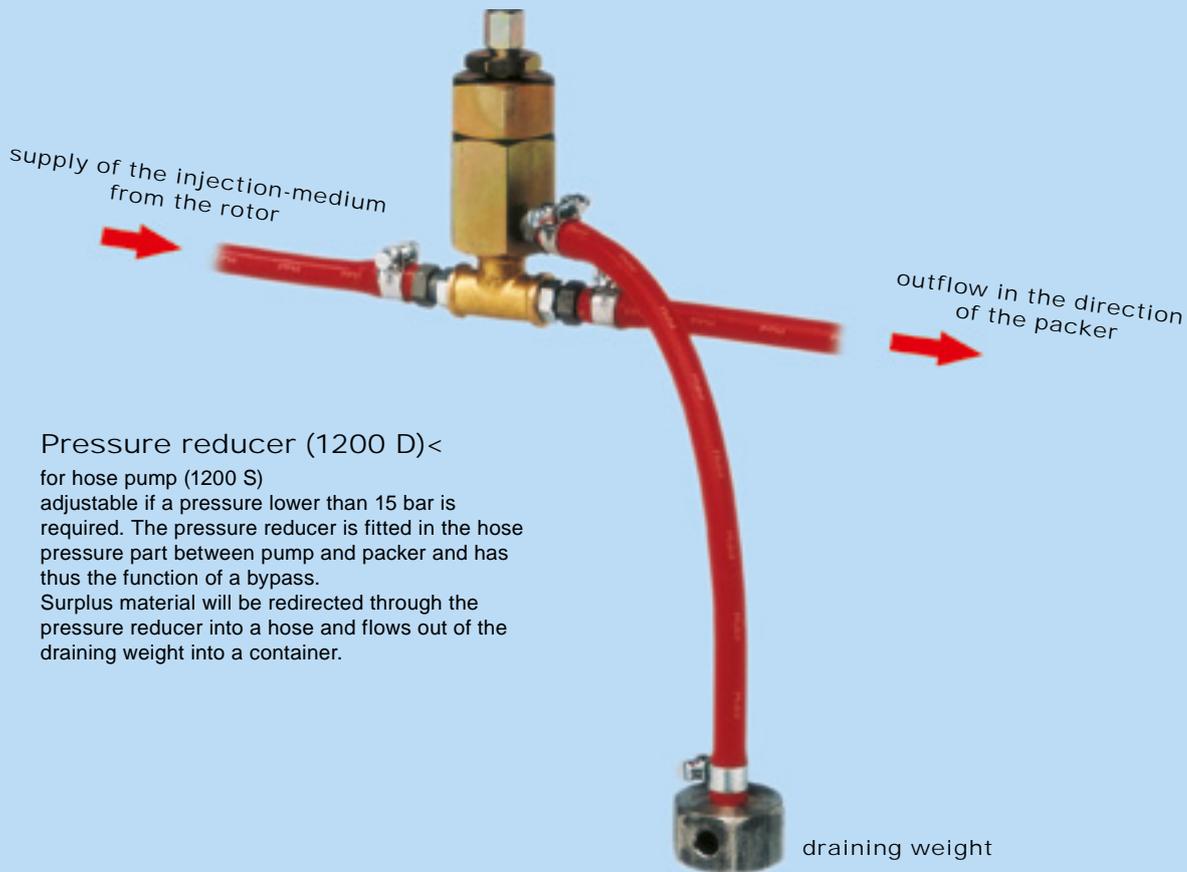
Drive: Electric drill or compressed-air machine (cf. page 24).

POLYPLAN hose pump
(1200 S) <
without drill,
without hose





Silicone pressure hose (1207)<
red, 6 mm inside Ø x 2.4 mm wall thickness,
double-walled with intermediate layer of fabric,
working pressure must not exceed 15 bar,
bursting pressure circa 30 bar.



Pressure reducer (1200 D)<
for hose pump (1200 S)
adjustable if a pressure lower than 15 bar is
required. The pressure reducer is fitted in the hose
pressure part between pump and packer and has
thus the function of a bypass.
Surplus material will be redirected through the
pressure reducer into a hose and flows out of the
draining weight into a container.

Accessories for POLYPLAN injection pumps



Maximum-pressure hose

with 2 steel-wire mesh inserts, inside and outside layers of hose made of polyurethane polyamid, thread connection M 10 x 1.0 outside, operating pressure 450 bar, bursting pressure 1800 bar.

- (1043 SK) < 300 mm overall length
- (1043 S) < 500 mm overall length
- (1044 S) < 1000 mm overall length
- (1045 S) < 2000 mm overall length
- (1046 S) < 5000 mm overall length
- (1047 S) < 10000 mm overall length



- (1042 V) < Nipple gripper with 4 gripping clamps, fits any cone-head nipple, with plastic lining on the inside. Thread M 10 x 1.0 inside



- (1042 Va) < Nipple gripper with 4 gripping clamps, as above, but with close gripping clamps.



- (1121) < Sliding coupling
16 mm Ø,
for flat-head nipple (1120) – (1120 Z),
for injection packers (1013 LF) – (1019 LF)
and for composite packers-pressure element
(V 10 DF) – (V 17 DLF)
thread M10 x 1.0



- (1042 Z) < Threaded intermediate piece to join maximum-pressure hoses, cocks, etc., thread M 10 x 1.0.



- (1051) < Axial swivel joint to be screwed between injection packer and maximum-pressure hose or pump respectively to form a tightly screwed connection. Thread M 10 x 1.0 inside and outside.

- (1051 G) < as above, with large passage, thread connection G 1/4".

Pressure gauge for hose pump (1200 M)<

A pressure gauge with pressure transmitter, made of VITON, can be supplied for the hose pump 1200 S. Indicating scale 0–40 bar.

The pressure gauge is supplied with a T-joint, thread M 10 x 1.0 and can be screwed to the hand pipe 1042 R.



Pressure gauges with diaphragm



(1001 ME)<
pressure gauge with
pressure transmitter
with metal diaphragm

indicating scale
0–600 bar



(1001 WN)<
with teflon diaphragm,
indicating scale
0–100 bar



(1001 WE)<
with teflon diaphragm,
indicating scale
0–600 bar

(1001 WM)<
with teflon diaphragm,
indicating scale
0–60 bar

* These pressure gauges can be fitted by us to the required injection-pumps for an extra charge.

Accessories for injection packers



High-pressure socket stop cock

with inside threads on both ends

- | | | |
|--------|--------------------------|--------------------------|
| (1171) | thread connection G 1/8" | nominal pressure 630 bar |
| (1172) | thread connection G 1/4" | nominal pressure 630 bar |
| (1173) | thread connection G 3/8" | nominal pressure 500 bar |
| (1174) | thread connection G 1/2" | nominal pressure 400 bar |
| (1175) | thread connection G 3/4" | nominal pressure 315 bar |
| (1176) | thread connection G 1" | nominal pressure 315 bar |



Stop cock

- (1170) with tread connection M 10 x 1.0



Ball cock

made of brass with inside threads on both ends

- | | | |
|--------|----------------------------|-------------------------|
| (1182) | thread connection G 1/4" | nominal pressure 30 bar |
| (1183) | thread connection G 3/8" | nominal pressure 30 bar |
| (1184) | thread connection G 1/2" | nominal pressure 25 bar |
| (1185) | thread connection G 3/4" | nominal pressure 25 bar |
| (1186) | thread connection G 1" | nominal pressure 25 bar |
| (1187) | thread connection G 1 1/4" | nominal pressure 20 bar |

Solar Balance

For exactly weighing out portions of resin up to 20 kg or 50 kg respectively.

Very suitable for use on building sites with its dustproof protected and closed form. The solar balance is always ready for use and easy to transport, because neither an adapter nor a battery is needed. Excess energy will be stored and used under poor lighting conditions.

The adjustments are simply implemented with one function key. Hold function for storing the display, as well as automatic turning-off and zero-positioning are available.

The plate is about 30 x 30 cm large and made of break-proof plastic.

Available in two types:

up to 20 kg weight – 20 gr display partition:

(2320)

up to 50 kg weight – 50 gr display partition:

(2350)



Beyond this injection program we deliver tools for liquid coatings, glas-fibre reinforced and polyester processing.



Please ask for our actual tool catalogue!

PACKING SYSTEM G

consisting of packing part + pressure tube

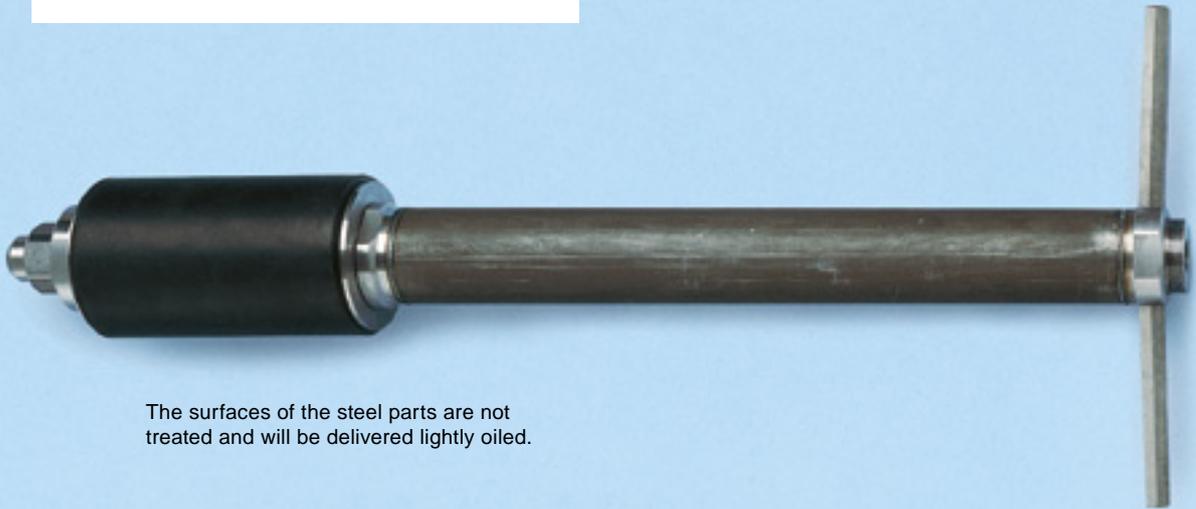
The recoverable packing system "G" has the decisive advantage that, within size 1 or size 2, it can be combined and re-used. The minimum opening for all packers is 24 mm diameter. Each size consists of a packing part and a pressure tube:

G 1" thread – size 1
G 2" thread – size 2

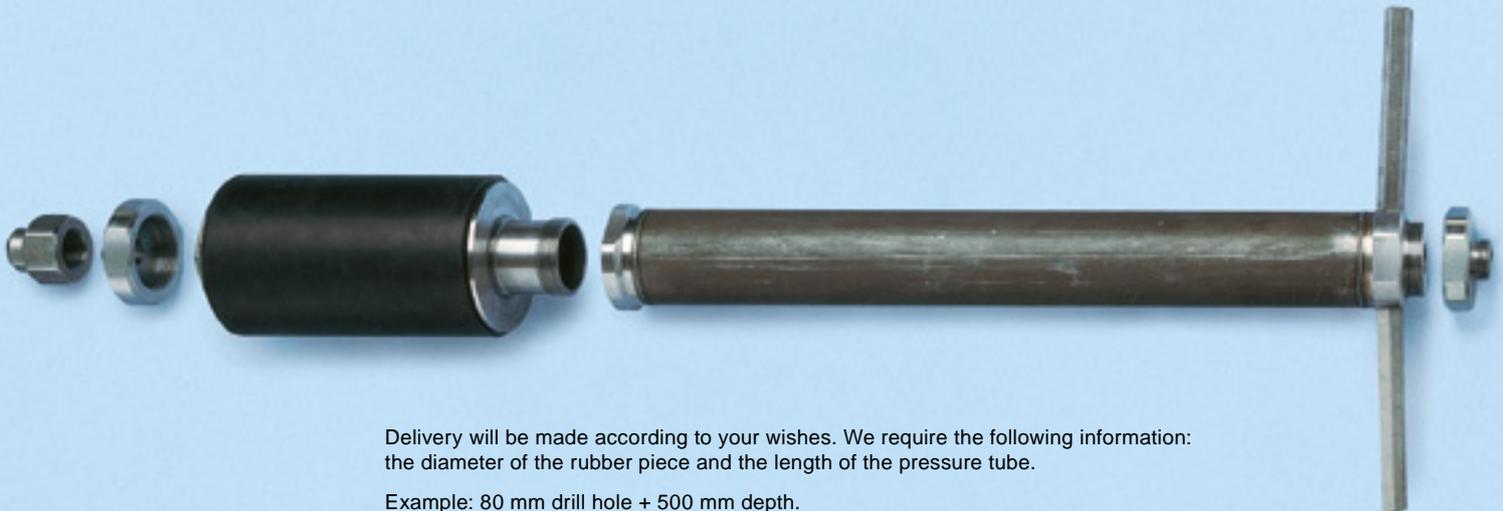
The rubber packing part "G1" is available with diameters ranging from 50 to 88 mm.

The rubber packing part "G2" is available with diameters ranging from 88 to 127 mm.

Pressure tubes are available in any length desired for "G1" or "G2". The standardized length we manufacture the pressure elements in 500, 1000 or 1500 mm. The end of the pressure element tube is provided with 75 mm square, clamp handle, and "G1" or "G2" external thread connection.



The surfaces of the steel parts are not treated and will be delivered lightly oiled.

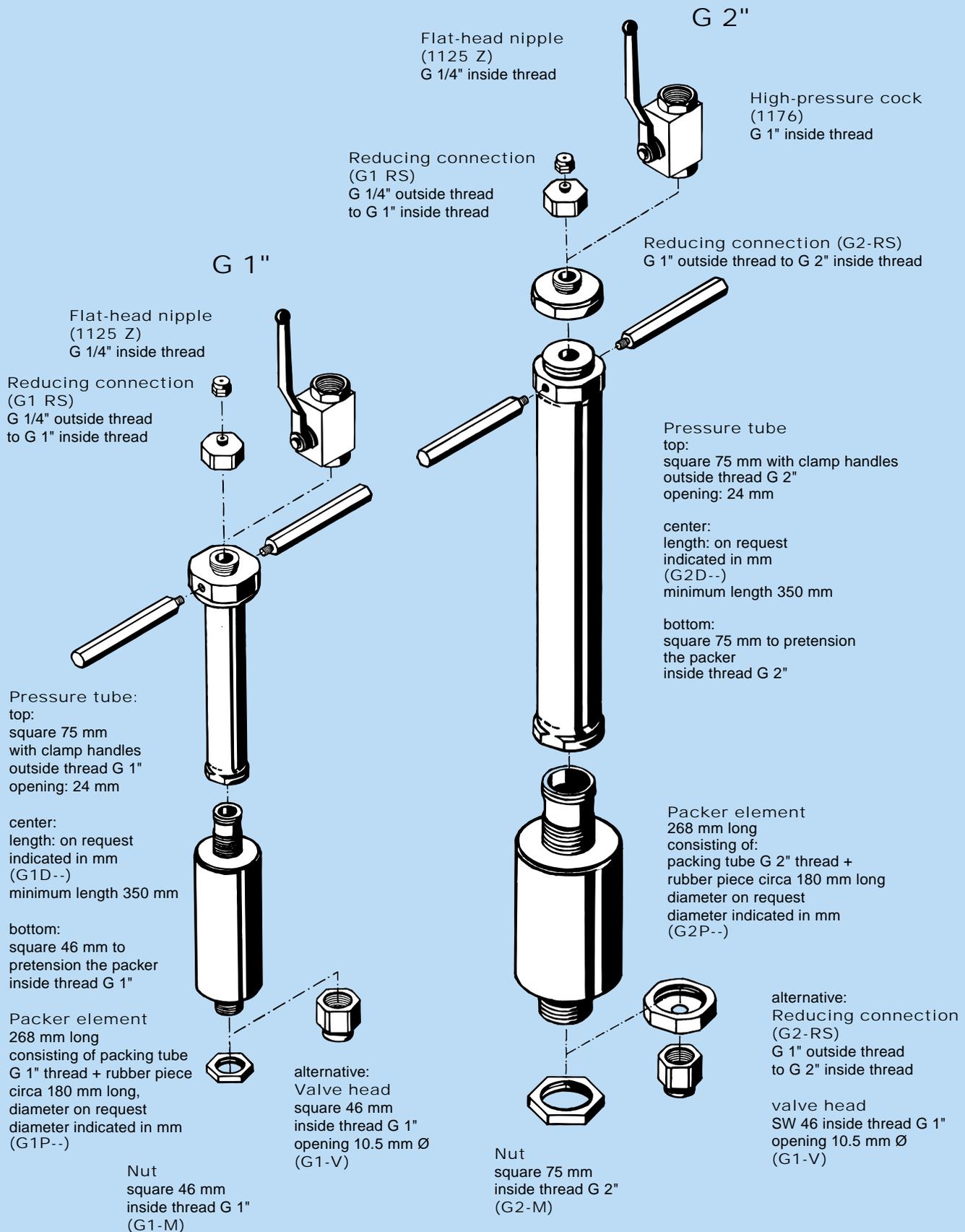


Delivery will be made according to your wishes. We require the following information: the diameter of the rubber piece and the length of the pressure tube.

Example: 80 mm drill hole + 500 mm depth.

Delivery: packing part G1 = 78 mm diameter + pressure tube G1 = 500 mm
order no.: (G1 P078) (G1 D500)

Mounting and Assembly of the Packing-System "G"



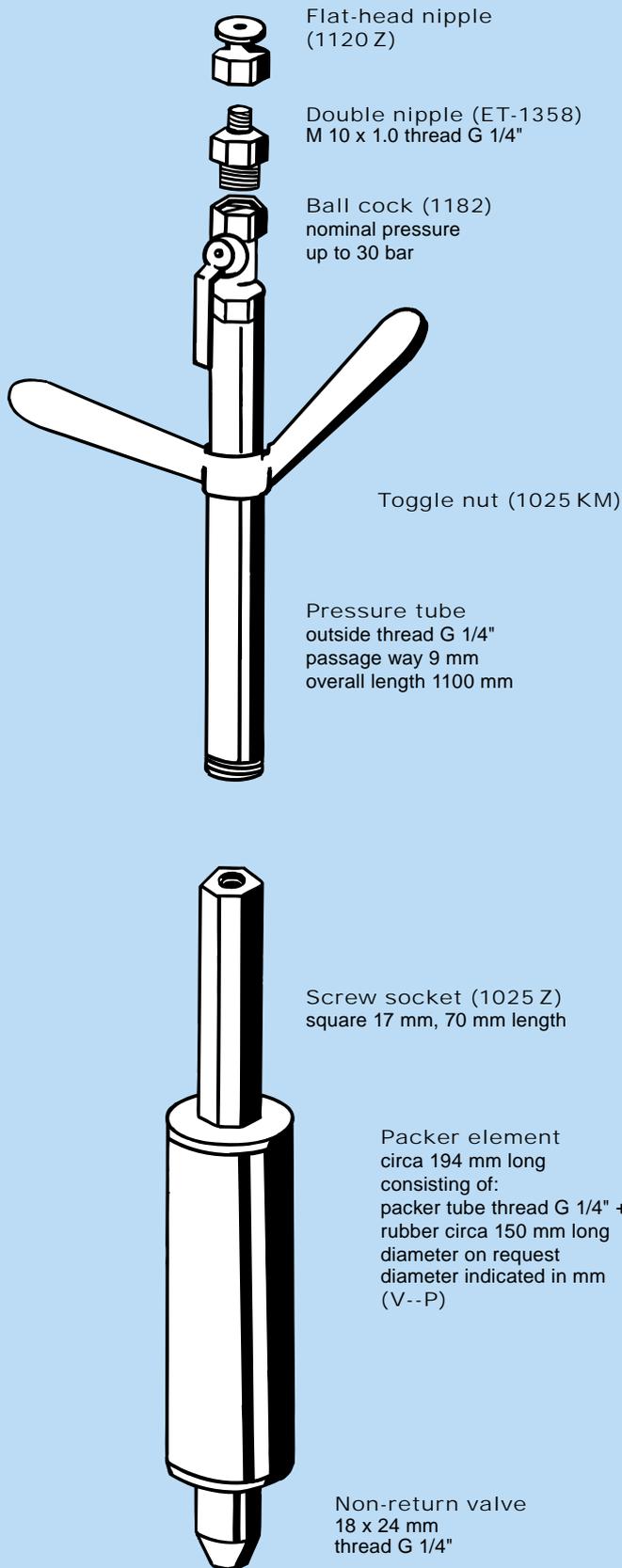
Packing System V

consisting of packing unit and pressure tube

We supply you with composite packers according to your wishes, with rubber diameters from 20-50 mm. The pressure tube of the composite packer is usable several times. The pressure tube will be delivered in the standardized length of 1100 mm, other lengths can be manufactured. The passage of the tube is 9 mm.

A low pressure ball cock (1182), a double nipple and a flat-head nipple (1120 Z) are connected to the pressure tube, so that the composite packer can easily be filled by a sliding coupling.

The packer element is circa 194 mm long and has a non-return valve with 5 mm opening.





I. Conclusion and subject of the contract

For our deliveries and other legal transactions, the terms detailed below apply exclusively. Any other arrangements, amendments, promises and collateral agreements shall be invalid unless confirmed by us in writing. Purchase and payment terms stipulated by the buyer are not accepted by us. The buyer shall accept our Terms of Sale and Delivery even if they deviate from his usual purchase and payment terms. Any objections raised to order confirmations must be submitted in writing without delay, at the latest within one week. The legal inefficacy of separate terms of the contract shall not render the entire contract invalid.

II. Offers

All offers made are without engagement and subject to change unless expressly indicated to the contrary. In the latter case they are binding for one month only, calculated from the date of the offer, unless another period is specifically stated in the offer. Obvious errors, spelling mistakes and miscalculations are without commitment on our part. All declarations, such as dimensions, weights, illustrations, descriptions, assembly drawings and illustrations, price lists are approximate only but determined as closely as possible, and are not binding on our part.

III. Prices

All prices are quoted ex works excluding value-added tax. Confirmed prices apply only if the confirmed quantities are bought. In the event of price increases occurring between the date of the order confirmation and the supply of the goods, we are entitled to adjust the prices accordingly.

IV. Delivery

Delivery is on account and risk of the buyer, even if carriage-free delivery has been agreed. If free delivery has been agreed, the risk passes to the buyer as soon as the vehicle arrives at ground level of the delivery address, or at the point nearest to this address that can be reasonably reached by the vehicle. We reserve the right to select the transport route and means of transport. Partial deliveries are admissible and shall be considered as independent deliveries. If the buyer does not accept the goods in time, or if he fails to observe the call dates, we are entitled to carry out the due delivery on the buyer's account and risk, either complete or partial, or to put the goods into storage and invoice them as delivered, to withdraw from the contract, either completely or partially, or finally to demand compensation on the grounds of nonfulfillment. Disruptions caused by fire, strikes, lockouts, shut-downs, official measures, lacking

supplies and force majeure which may prevent or impair the deliveries, entitle us, at our option, to rescind, either completely or partially or to postpone the deliveries accordingly without being liable for compensation. Non-observance of delivery times does not release the buyer from the obligation to accept the goods. For any damage caused by delay our liability is limited to 5% of the value of goods. The goods travel packaged as customary in this trade. Packaging is charged at cost price. Returned packaging material will be accepted and refunded only if specifically agreed upon. Insurance covering damage in transit, loss in transit and breakage will only be effected if expressly requested by the buyer and shall be charged to him.

V. Warranty

Any complaints on the scope, amount, weight, dimensions, stability and kind of the goods must be made immediately but no later than three days after arrival and prior to use of the goods. Complaints concerning partial deliveries do not entitle the buyer to refuse acceptance of the entire delivery. Notifications of defects must be made in detail and in writing and must be received by us within seven days of arrival of the goods. Reprimands concerning hidden defects must be made immediately on discovery of the defect, at the latest, however, within two months after receipt of goods. If defective goods have been delivered, we are entitled, at our option to reduce the price, correct the defect or supply faultless replacement. We are entitled to supply replacement even if this cannot be effected immediately. Any replacement shall be supplied at the earliest possible date. Any further claims by the buyer on whatever legal grounds, especially concerning the compensation for damages that did not occur on the delivery item (consequential damage), are excluded. We are under no obligations to acquire replacements from other sources. No warranty whatsoever applies if the processing or use of the goods has already begun, or if the buyer himself or any third party has carried out, or tried to carry out, repairs of our goods. The same applies to any goods which have been sold by the buyer either before or after a notification of defects has been made. In the case of manufacturing defects our warranty is limited to the warranty given by our suppliers. By negotiating a complaint, we are not waiving our objections to the existence of a defect, to the obligations for the supply of replacement, or to the time limit and sufficiency of the notification of defects.

VI. Return of goods

Goods delivered by us will only be taken back if an agreement of this effect has been made and shall be returned in immaculate condition, carriage paid. Credits for returned goods are subject to a 10% deduction for costs pro-rata. Returns of specially made goods, or goods procured at the specific request of the customer, are excluded. For returned goods with a net value less than EUR 50.00, no credit notes will be made.

VII. Payment

Unless agreed otherwise, our deliveries shall be paid for at once, at the latest 30 days after the date of the invoice. All payments shall be made exempt from charges for us. Payments effected within 10 days of receipt of the invoice are subject to a discount of 2 per cent, provided all payment obligations have been settled completely, including those for earlier deliveries. The discount is calculated based on the net invoice amount, after deduction of rebates, freight charges etc.. After the payment date, i.e. at the latest 30 days after the invoice date, interest will be charged at a rate of 8 per cent over the base rate of the European Central Bank (ECB). This does not affect further claims concerning damages caused by delay. The day of receipt of any payment is the day on which our account is credited with the respective amount. Cheques are only accepted under reserve of their being honoured. Payment obligation shall persist even if the buyer has submitted complaints especially notifications of defects. The warranty detailed under Paragraph V shall be given on the understanding that the buyer has effected the payments due. Offsetting and claiming any lien or right of retention shall be excluded.

VIII. Retention of title

All goods supplied by us under a delivery contract shall remain our property until payment in full has been made. In the case of a current account the retention of title shall be considered as security for our balance claim. The buyer is entitled to legally sell the goods supplied and the goods manufactured from these. He shall be obliged to impose our condition of retention of title on his customers. Without our written consent the buyer is not authorized to assign, pledge or transfer the goods by way of security. When selling the goods supplied by us, the buyer shall assign at that moment all claims against his customers, including ancillary rights and securities, until all payments to us have been made in full, and this assignment shall be accepted by us. If the goods are taken back on the basis of our retention of title or any other reason, the buyer shall be obliged to return the goods to us free of charge and shall be liable for any undervalue. We shall be entitled to collect the goods when enforcing our right of retention of title.

IX. Place of performance and place of jurisdiction

The place of performance for deliveries is the place of dispatch of the goods. The place of performance for all obligations on the buyer's part is the location of our firm. The place of jurisdiction is the court competent for the location of our firm. The law of the Federal Republic of Germany applies. The provisions of the Hague Convention of 1964 on purchases and purchase contracts are excluded.

X. Validity

If one instruction is or is going to be invalid, the validity of the other instructions will not be touched by this.

09/2014

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Hamburg - Germany

Subject to alterations

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