EP-Combi-Fixtures

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Design patent N° 20 2005 004 591.8

The EP-Combi-Fixtures are valuable working elements consisting of cylindrical pins and wedge-type pins. They serve especially for the fixing of wear and/ or sliding ledges as well as protective coverings on machinery. In the standard execution the cylindrical pins are made of Polyamide 6 being the wedge-type pins made of steel.

The EP-Combi-Fixture is fitted in a thread by a tight, frictional connection, in a pocket-type drilled hole or in holes inside thin-walled section. The fitting is performed by hammer strokes, in fact it is easier than driving-in a nail and can be done by an unskilled person.

The EP- Combi-Fixtures allow the wear-out of a ledge – contrary to conventional ways of fixing – down to a minor residual thickness of the ledge or protective covering.

The EP- Combi-Fixtures of series A and B are designed for the most usual thread bores and take care in the pertaining holes in protective coverings of the possibility of relative movements between the covering and the machine component within the 2 mm range. The blocking pin is corresponding to the bore hole in the covering and is painted in black and located in the centre of the ledge. The designed relative movement possibility is fully available on a 2m ledge length.

The EP- Combi-Fixtures considering an actual overall cost calculation is the most economic type of fixture for wear ledges, sliding ledges and coverings.

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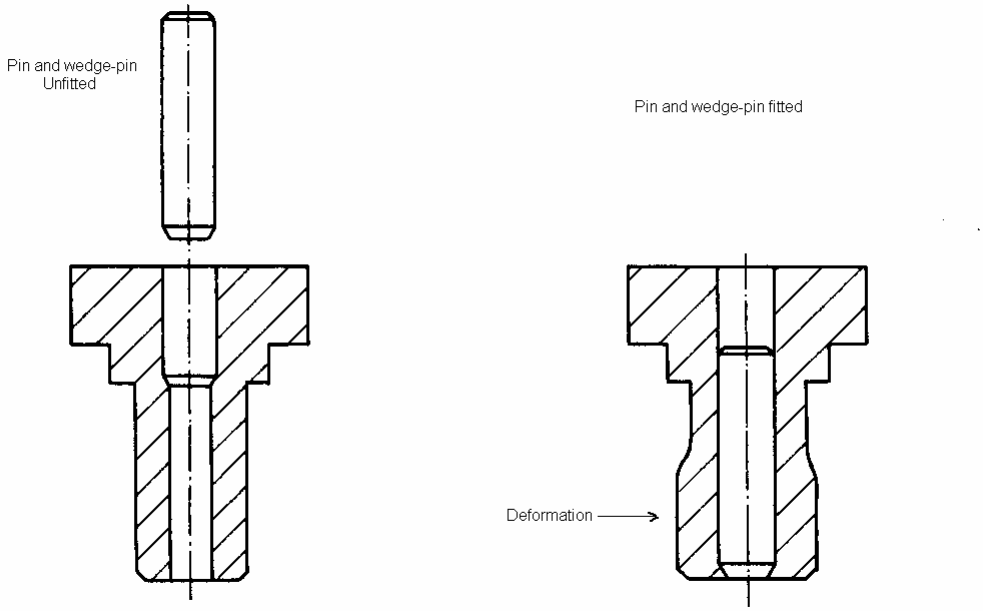
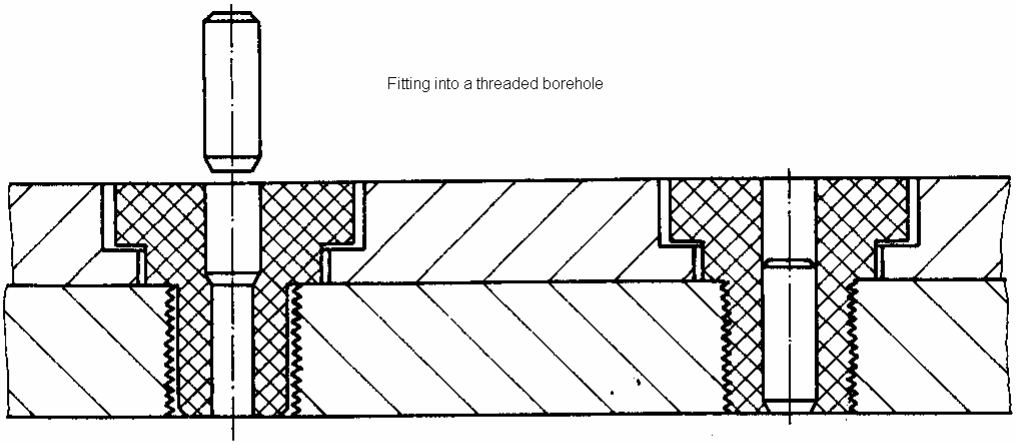
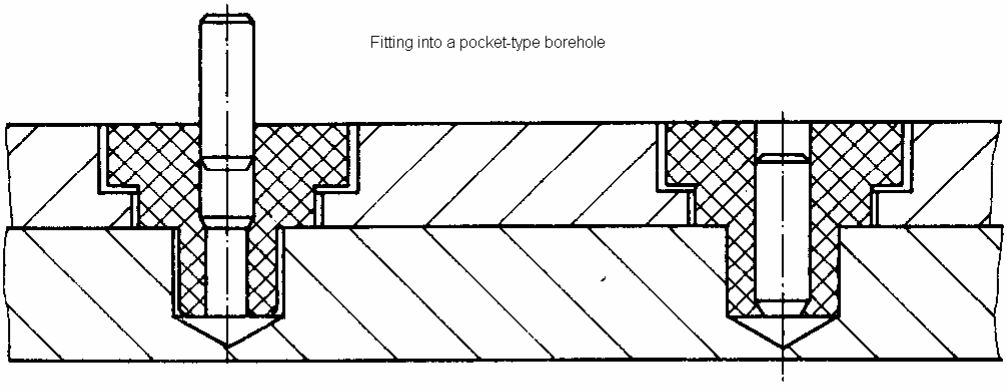
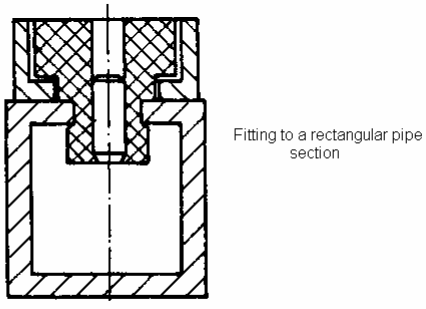
Normpage M 516	**EP-Combi-Fixtures** Examples of Fitting types A &B	EUROPLAST-NYCAST GmbH









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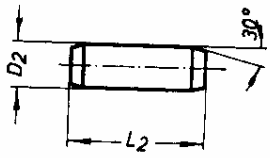
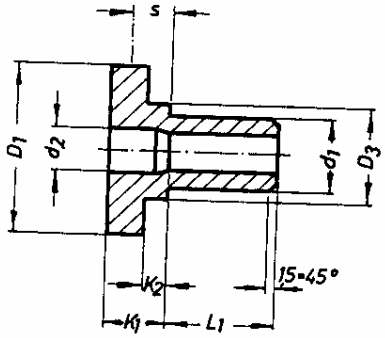
EP-Combi-Fixtures
Short Introduction





Series Type A

Hole ø	8,2	9,9	11,5	13,5	15	17	19	20,5	23,5	25,8	28,8	31
Thread	M10	M12	M14	M16	M18	M20	M22	M24	M27	M30	M33	M36
Type	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
d1	8,15	9,85	11,45	13,45	14,9	16,9	18,9	20,4	23,4	25,7	28,7	30,9
D1	21	23	25	27	29	32	34	36	40	43	46	50
d2	5,1	6,1	6,1	7,1	7,1	8,1	9,1	10,2	12,2	14,2	18,2	20,2
D2	5	6	6	7	7	8	9	10	12	14	18	20
D3	11	13	15	17	19	22	24	26	30	33	36	40
L1	12	14,5	17	19	21,5	24	26,5	29	32,5	36	40	43
K1	8	8	8	9	10	12	13	13	14	15	16	16
K2	3	3	3	3,5	4	4,5	5	5	5,5	6	6,5	6,5
L2	16	18,5	21	23,5	26,5	30	33	35,5	39,5	43,5	48	51
s*	5	5	5	5,5	6	7	7,5	7,5	8	8,5	9	9

Series Type B

Hole ø	7,9	10,3	16,3	21,8	27,5	33	44
Thread	⅜“	½“	¾"	1“	1¼“	1 ½“	2“
Type	B-1	B-2	B-3	B-4	B-5	B-6	B-7
d1	7,85	10,25	16,2	21,7	27,4	32,9	43,9
D1	21	23	29,5	35	40,5	46	57
d2	5,1	6,1	7,1	11,1	16,1	22,1	32,1
D2	5	6	7	11	16	22	32
D3	11	13	19,5	25	30,5	36	47
L1	11,5	15,5	23	31	40	45	60
K1	8	8	12	14	16	17	18
K2	3	3	4,5	5,5	6,5	7	8
L2	15,5	19,5	28,5	37,5	47,5	53	59
s*	5	5	7	8	9	9,5	10,5

s*: non usable residual thickness of the coverings materials:
For pins: polyamide 6
For wedges: steel
Boreholes in the coverings to be excused as per Norm page M 518
Fitting to be done by a wedge driver – to be seen on Norm page M 519

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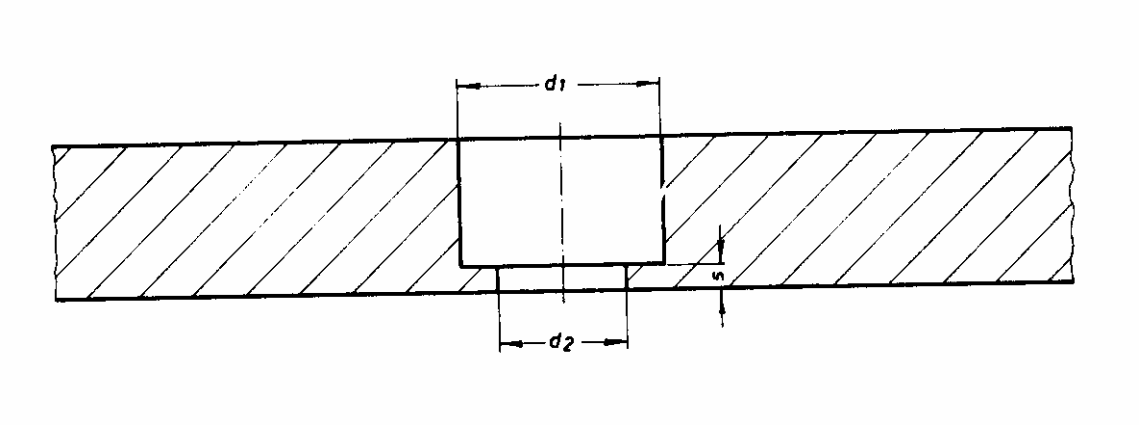
Normpage M 518	**EP-Combi-Fixtures** Boreholes into coverings	EUROPLAST-NYCAST GmbH



Type series A

Type	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
d1	25	27	29	31	33	36	38	40	44	47	50	54
d2	15	17	19	21	23	26	28	30	34	37	40	44
s	3	3	3	3,5	4	4,5	5	5	5,5	6	6,5	6,5

Type series B

Type	B-1	B-2	B-3	B-4	B-5	B-6	B-7					
d1	25	27	33,5	39	44,5	50	61					
d2	15	17	23,5	29	34,5	40	51					
s	3	3	4,5	5,5	6,5	7	8					

The boreholes into the coverings when using the EP-Combi-fixtures as explained on Norm page M 517 allow for dilatability as well as a shrink ability of 2mm per running meter (measured from center point of fixed pin, i.e. for an effective length of 2000 mm).
The fixed pins are painted in black. They are equal to the dimension of the corresponding boreholes and center the covering. The boreholes destinated for the receiving the fixed pin are marked by the factorty.

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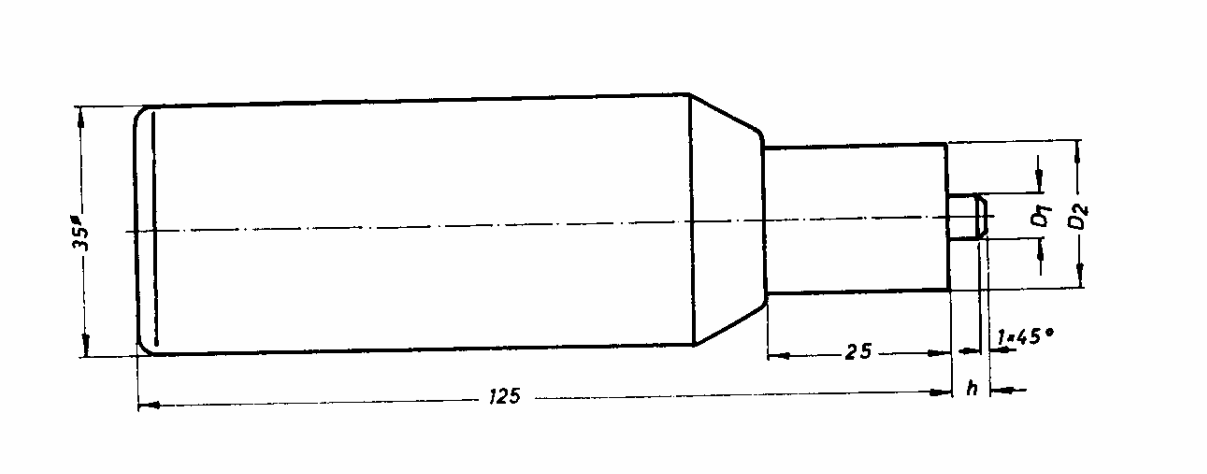

Type series A

Type	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
D1	5	6	6	7	7	8	9	10	12	14	18	20
D2	20	20	20	20	20	21	21	22	23	25	27	30
h	5	5	5	5	5	6	6,5	6,5	7	7,5	8	8

Type series B

Type	B-1	B-2	B-3	B-4	B-5	B-6	B-7					
D1	5	6	7	11	16	22	32					
D2	20	20	20	22	26	30	40					
h	5	5,5	6,5	7,5	8,5	9	9					

The wedge drivers are available out of running production.
The fitting done by wedge driver assures the correct location of the wedges into the pins.
In case of manufacture of the wedge drivers by the customers themselves the present sheet should help to do this correctly. The wedge drivers manufactured as per series are made of hardened steel and have a handle made of EP 4500.

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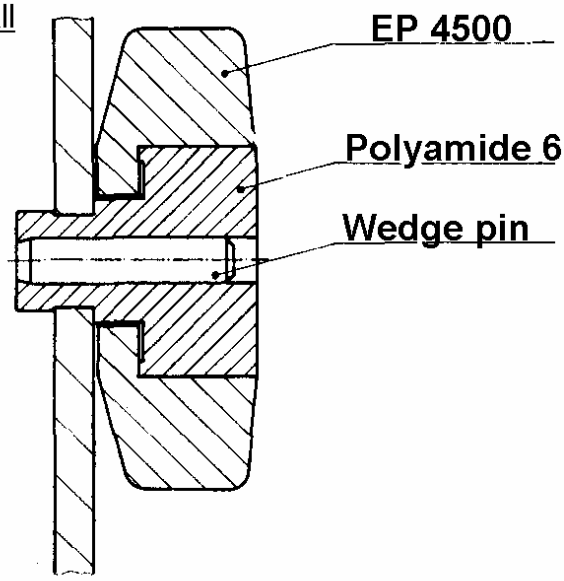
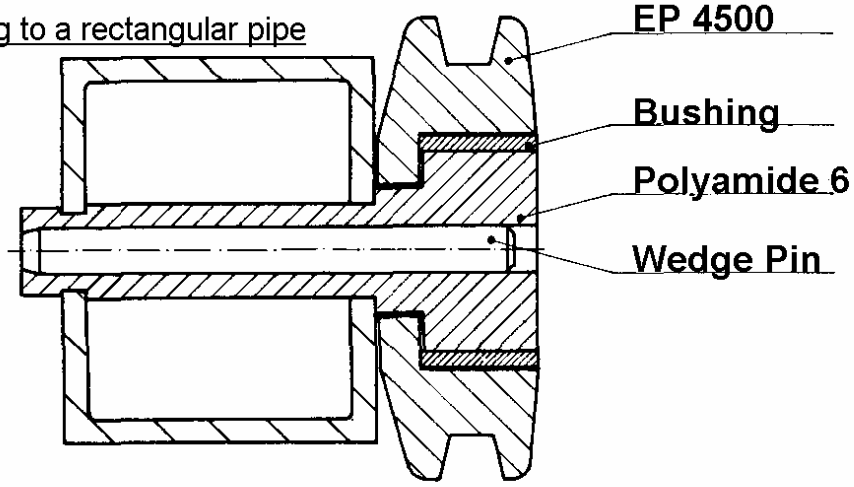
EP-Combi-Fixtures
Fixing a guide roller

EUROPLAST-NYCAST GmbH

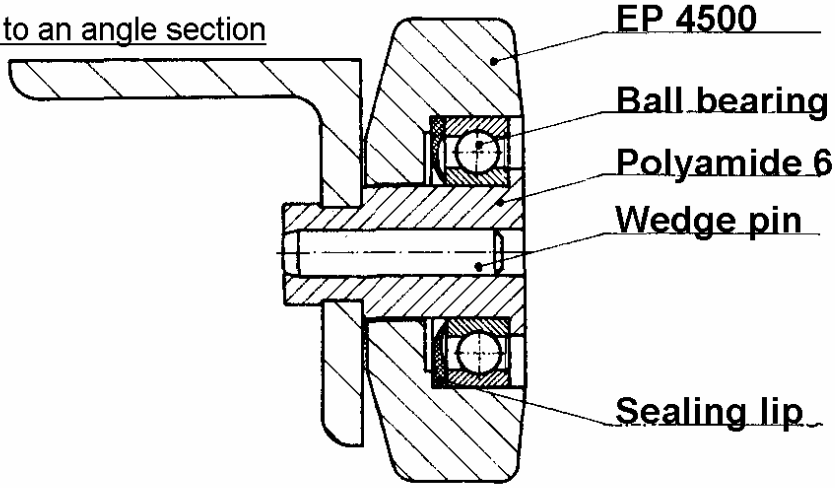
Fixing to a steel sheet wall



Fixing to a rectangular pipe



Fixing to an angle section



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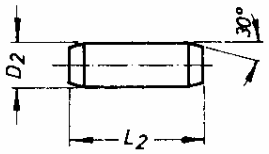
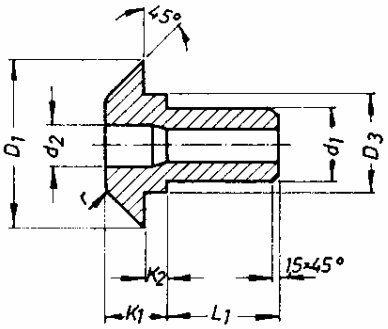
Normpage M 521a	**EP-Combi-Fixtures** for fixing linings only standard dimensions	EUROPLAST-NYCAST GmbH





Covering thickness 2mm

Hole ø	8,2	9,9	13,5	17	7,9	10,3	16,3
Thread	M10	M12	M16	M20	3/8“	1/2"	3/4"
Type	2-1	2-2	2-3	2-4	2-5	2-6	2-7
D1	26	28	31	35	26	28	34
D2	5	6	7	8	5	6	7
D3	12	14	17	21	12	14	20
d1	8,15	9,85	13,45	16,9	7,85	10,25	16,2
d2	5,1	6,1	7,1	8,1	5,1	6,1	7,1
K1	8	8	8	8	8	8	8
K2	2	2	2	2	2	2	2
L1	10	12	15	17	10	12	19
L2	18	20	23	25	18	20	27

Covering thickness 3mm

Hole ø	8,2	9,9	13,5	17	7,9	10,3	16,3
Thread	M10	M12	M16	M20	3/8“	1/2"	3/4"
Type	3-1	3-2	3-3	3-4	3-5	3-6	3-7
D1	26	28	31	35	26	28	34
D2	5	6	7	8	5	6	7
D3	12	14	17	21	12	14	20
d1	8,15	9,85	13,45	16,9	7,85	10,25	16,2
d2	5,1	6,1	7,1	8,1	5,1	6,1	7,1
K1	9	9	9	9	9	9	9
K2	3	3	3	3	3	3	3
L1	10	12	15	17	10	12	19
L2	19	21	24	26	19	21	28

Covering thickness 4mm

Holeø	8,2	9,9	13,5	17	7,9	10,3	16,3
Thread	M10	M12	M16	M20	3/8“	1/2"	¾"
Type	4-1	4-2	4-3	4-4	4-5	4-6	4-7
D1	26	28	31	35	26	28	34
D2	5	6	7	8	5	6	7
D3	12	14	17	21	12	14	20
d1	8,15	9,85	13,45	16,9	7,85	10,25	16,2
d2	5,1	6,1	7,1	8,1	5,1	6,1	7,1
K1	10	10	10	10	10	10	10
K2	4	4	4	4	4	4	4
L1	10	12	15	17	10	12	19
L2	20	22	25	27	20	22	29

Covering thickness 5mm

Holeø	8,2	9,9	13,5	17	7,9	10,3	16,3
Thread	M10	M12	M16	M20	3/8“	1/2"	3/4"
Type	5-1	5-2	5-3	5-4	5-5	5-6	5-7
D1	26	28	31	35	26	28	34
D2	5	6	7	8	5	6	7
D3	12	14	17	21	12	14	20
d1	8,15	9,85	13,45	16,9	7,85	10,25	16,2
d2	5,1	6,1	7,1	8,1	5,1	6,1	7,1
K1	11	11	11	11	11	11	11
K2	5	5	5	5	5	5	5
L1	10	12	15	17	10	12	19
L2	21	23	26	28	21	23	30

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Normpage M 521b	**EP-Combi-Fixtures** for linings-standard dimensions	EUROPLAST-NYCAST GmbH

Covering thickness 6mm

Hole ø	8,2	9,9	13,5	17	7,9	10,3	16,3
Thread	M10	M12	M16	M20	3/8“	1/2“	3/4“
Type	6-1	6-2	6-3	6-4	6-5	6-6	6-7
D1	26	28	31	35	26	28	34
D2	5	6	7	8	5	6	7
D3	12	14	17	21	12	14	20
d1	8,15	9,85	13,45	16,9	7,85		16,2
d2	5,1	6,1	7,1	8,1	5,1	6,1	7,1
K1	12	12	12	12	12	12	12
K2	6	6	6	6	6	6	6
L1	10	12	15	17	10	12	19
L2	22	24	27	29	22	24	31

Covering thickness 8mm

Hole ø	8,2	9,9	13,5	17	7,9	10,3	16,3
Thread	M10	M12	M16	M20	3/8“	1/2“	3/4“
Type	8-1	8-2	8-3	8-4	8-5	8-6	8-7
D1	26	28	31	35	26	28	34
D2	5	6	7	8	5	6	7
D3	12	14	17	21	12	14	20
d1	8,15	9,85	13,45	16,9	7,85	10,25	16,2
d2	5,1	6,1	7,1	8,1	5,1	6,1	7,1
K1	14	14	14	14	14	14	14
K2	8	8	8	8	8	8	8
L1	10	12	15	17	10	12	19
L2	24	26	29	31	24	26	33

Covering thickness 10mm

Hole ø	8,2	9,9	13,5	17	7,9	10,3	16,3
Thread	M10	M12	M16	M20	3/8“	1/2“	3/4“
Type	10-1	10-2	10-3	10-4	10-5	10-6	10-7
D1	26	28	31	35	26	28	34
D2	5	6	7	8	5	6	7
D3	12	14	17	21	12	14	20
d1	8,15	9,85	13,45	16,9	7,85	10,25	16,2
d2	5,1	6,1	7,1	8,1	5,1	6,1	7,1
K1	16	16	16	16	16	16	16
K2	10	10	10	10	10	10	10
L1	10	12	15	17	10	12	19
L2	26	28	31	33	26	28	35

Covering thickness 12mm

Hole ø	8,2	9,9	13,5	17	7,9	10,3	16,3
Thread	M10	M12	M16	M20	3/8“	1/2“	3/4“
Type	12-1	12-2	12-3	12-4	12-5	12-6	12-7
D1	26	28	31	35	26	28	34
D2	5	6	7	8	5	6	7
D3	12	14	17	21	12	14	20
d1	8,15	9,85	13,45	16,9	7,85	10,25	16,2
d2	5,1	6,1	7,1	8,1	5,1	6,1	7,1
K1	18	18	18	18	18	18	18
K2	12	12	12	12	12	12	12
L1	10	12	15	17	10	12	19
L2	28	30	33	35	28	30	37

Covering thickness 15mm

Hole ø	8,2	9,9	13,5	17	7,9	10,3	16,3
Thread	M10	M12	M16	M20	3/8“	1/2“	3/4“
Type	15-1	15-2	15-3	15-4	15-5	15-6	15-7
D1	26	28	31	35	26	28	34
D2	5	6	7	8	5	6	7
D3	12	14	17	21	12	14	20
d1	8,15	9,85	13,45	16,9	7,85	10,25	16,2
d2	5,1	6,1	7,1	8,1	5,1	6,1	7,1
K1	21	21	21	21	21	21	21
K2	15	15	15	15	15	15	15
L1	10	12	15	17	10	12	19
L2	31	33	36	38	31	33	40

Boreholes in covering= D3+2mm
Materials:
For the pins: Polyamide 6, Polyethylene, and Polypropylene
For wedge: steel
Fitting by hammer stoke. Check hole diameter. In case of deviations the actual value must be indicated in case of ordering.

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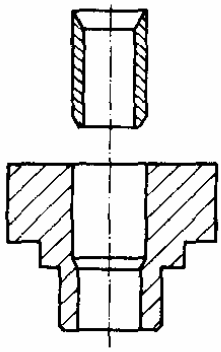
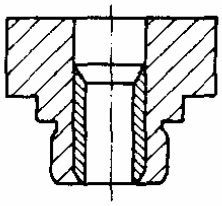
EP-Combi-Fixtures
Examples of executions

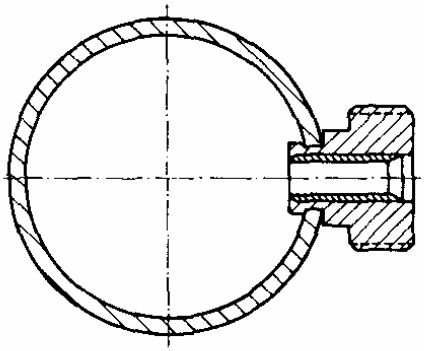
Pin with the wedge-type tube unfitted



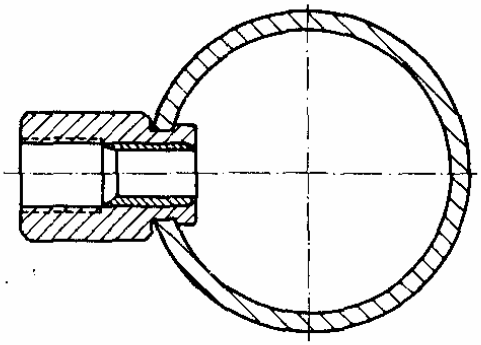
Pin with the wedge-type tube fitted



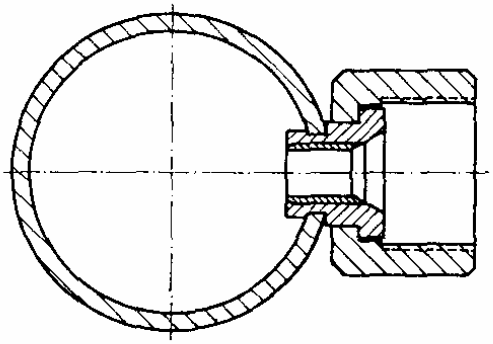
Pin with external thread



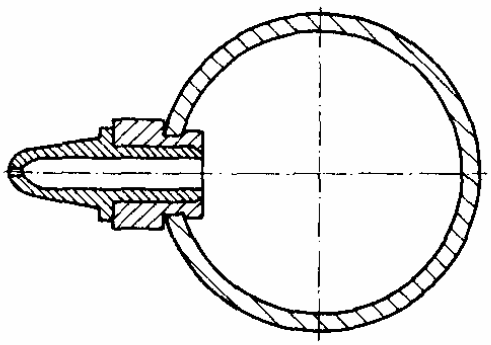
Pin with internal thread



Pin with spigot nut



Pin with wedge-type pipe converted into nozzle pipe



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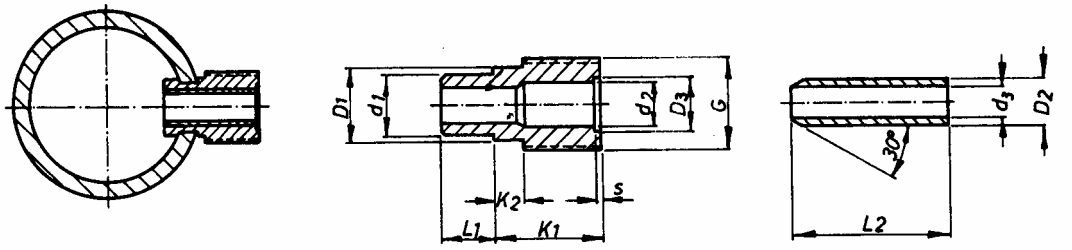
Normpage M 523	**EP-Combi-Fixtures** Form AG type series M & W	EUROPLAST-NYCAST GmbH



Type series M (as per DIN 13)

Hole ø	8	9	11	14	16	19	21	24	26
Thread	M12	M14	M16	M20	M24	M27	M30	M33	M36
Type	M-1	M-2	M-3	M-4	M-5	M-6	M-7	M-8	M-9
D1	9,5	11	13	16,5	20	23	25	28	30,5
D2	6	6	8	12	14	16	18	20	22
D3	7	10	12	15	18	20	22	25	27
d1	7,9	8,9	10,9	13,9	15,9	18,9	20,9	23,9	25,9
d2	6,1	6,1	8,1	12,1	14,1	16,1	18,1	20,1	22,1
d3	4	4	5	9	11	12	15	16	18
K1	14	16	20	23	26	28	32	36	40
K2	4	4	5	5	6	6	7	8	10
L1	7	8	9	10	10	12	12	14	16
L2	21	24	29	33	36	40	44	50	56
G	12x1,75	14x2	16x2	20x2,5	24x3	27x3	30x3,5	33x3,5	34x4
s	1	1	1	1	1	1,5	1,5	1,5	1,5

Type series W (as per DIN 259 Page1)

Hole ø	8	11	16	19	24	32
Thread	R1/4“	R3/8“	R1/2“	R3/4“	R1“	R1 1/2“
Type	W-1	W-2	W-3	W-4	W-5	W-6
D1	9,5	13	20	23	28	36,5
D2	6	8	14	16	20	28
D3	7	12	18	20	25	33
d1	7,9	10,9	15,9	18,9	23,9	31,9
d2	6,1	8,1	14,1	16,1	20,1	28,1
d3	4	5	11	12	16	24
K1	14	20	26	28	36	46
K2	4	5	6	6	8	12
L1	14	20	26	28	36	46
L2	4	5	6	6	8	12
s	1	1	1	1,5	1,5	1,5

s= depth of keyway for sealing 2xs
Materials:
Pin= Polyamide 6, Polyethylene
Wedge tube= inox steel
Sealing=rubber and JT
The fitting is done by wedge driver as per Norm page M 526 shape A-G

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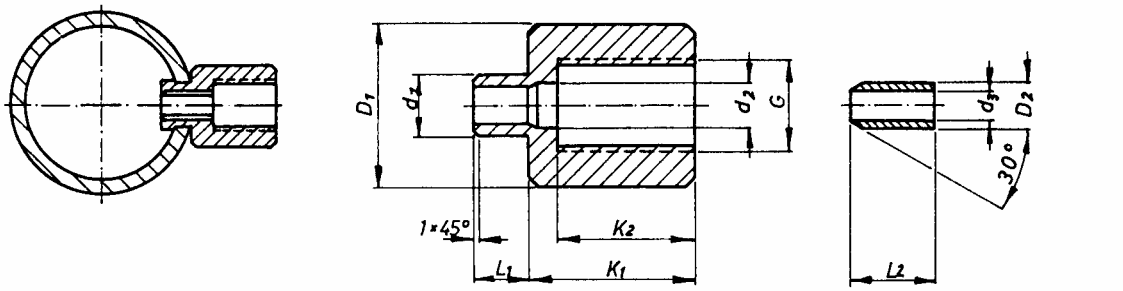
Normpage M 524	**EP-Combi-Fixtures** Form JG series types M & W	EUROPLAST-NYCAST GmbH



Type series M (as per DIN 13)

Hole ø	8	9	11	14	16	19	21	24	26
Thread	M12	M14	M16	M20	M24	M27	M30	M33	M36
Type	M-1	M-2	M-3	M-4	M-5	M-6	M-7	M-8	M-9
D1	22	24	28	34	38	43	46	49	53
D2	6	6	8	12	14	16	18	20	22
d1	7,9	8,9	10,9	13,9	15,9	18,9	20,9	23,9	25,9
d2	6,1	6,1	8,1	12,1	14,1	16,1	18,1	20,1	22,1
d3	4	4	5	9	11	12	15	16	18
K1	22	25	29	35	39	43	52	56	60
K2	18	21	24	30	34	37	46	49	52
L1	7	8	9	10	10	12	12	14	16
L2	11	12	14	15	15	18	18	21	24

Type series W (as per DIN 259 sheet 1)

Hole ø	8	11	16	19	24	32
Thread	R ¼“	R ⅜“	R ½“	R ¾“	R 1“	R 1¼“
Type	W-1	W-2	W-3	W-4	W-5	W-6
D1	22	28	38	43	49	59
D2	6	8	14	16	20	28
d1	7,9	10,9	15,9	18,9	23,9	31,9
d2	6,1	8,1	14,1	16,1	20,1	28,1
d3	4	5	11	12	16	24
K1	22	29	39	43	56	60
K1	18	24	34	37	49	52
L1	7	9	10	12	14	22
L2	11	14	15	18	21	24

Materials for:
Pins=Polyamide 6
Polyethylene
Wedge-type= inox steel
Seamless type
The fitting is done by a wedge driver, see Norm page M 526, form J-G.

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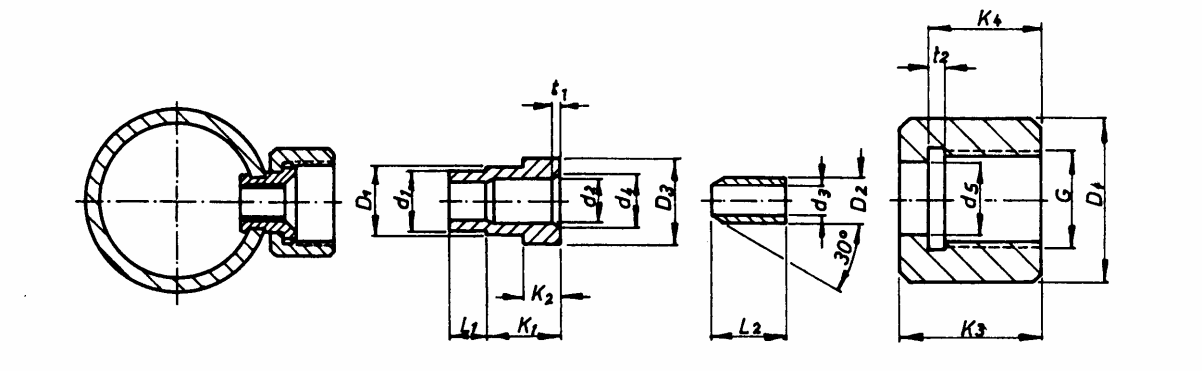
Normpage M 525	**EP-Combi-Fixtures** Form UW type series W	EUROPLAST-NYCAST GmbH



(Thread as per DIN 259 sheet 1)

Hole ø	8	11	16	19	24	32
Thread	R1/4“	R3/8“	R1/2“	R3/4“	R1“	R1 1/4“
Type	W-1	W-2	W-3	W-4	W-5	W-6
D1	9	12	17	20	25	33
D2	6	8	14	15	20	28
D3	11,4	14,9	18,6	24,1	30,2	38,9
D4	SW22	SW26	SW30	SW36	SW42	SW52
d1	7,9	10,9	15,9	18,9	23,9	31,9
d2	6,1	8,1	14,1	16,1	20,1	28,1
d3	4	5	11	12	16	24
d4	7	9	15	18	22	30
d5	11,5	15	18,7	24,2	30,3	39
K1	10	10	12	12	14	14
K2	5	5	6	6	7	7
K3	21	25	32	38	47	57
K4	17	21	27	33	41	51
L1	7	9	10	12	14	22
L2	12	14	16	18	21	29
t1	1	1	1	2	2	2
t2	2	2	3	4	5	5
s	1	1	2	2	2	2

Materials:
For pins: Polyamide 6, Polyethylene
For wedge pipe: seamless stainless pipe
For spigot nut: EP4500, Polyamide or acetates resins
For sealing: perbunan, dimensions of sealing:
D3xd4xs (s= thickness of sealing)

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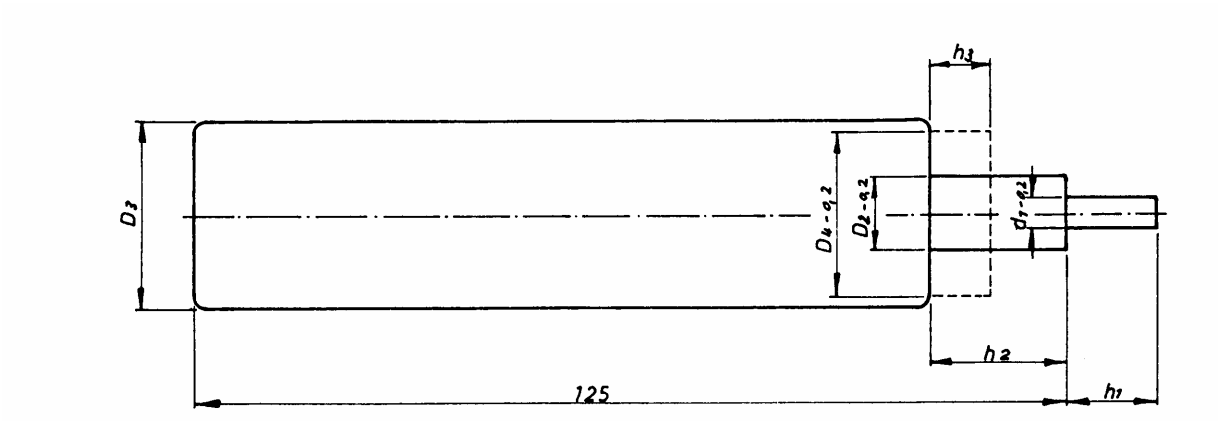
Normpage M 526	**EP-Combi-Fixtures** Drivers for the wedge-type Tube M 523-M525	EUROPLAST-NYCAST GmbH



For M 523 type series M & W shape AG

Type	M1 W1	M2	M3 W2	M4	M5 W3	M6 W4	M7	M8 W5	M9	W6
D1	3,9	3,9	4,9	8,9	10,9	11,9	14,9	15,9	17,9	23,9
D2	6,8	9,8	11,8	14,8	17,8	19,8	21,8	24,8	26,8	32,8
D3	25	25	25	25	28	28	28	35	35	40
h1	23	26	31	35	38	42	46	52	58	58
h2	10	10	10	10	10	10	10	10	10	10

For M 524 type series M & W shape JG

Type	M1 W1	M2	M3 W2	M4	M5 W3	M6 W4	M7	M8 W5	M9	W6
D1	3,9	3,9	4,9	8,9	10,9	11,9	14,9	15,9	17,9	23,9
D2	9,8	11,4	13,4	16,9	18,5	23,4	25,7	28,7	30,9	38,8
D3	25	25	25	25	28	32	32	35	40	48
h1	12	13	15	16	16	19	19	22	25	25
h2	18	21	24	30	34	37	46	49	52	52

For M 525 shape UW

Type	W1	W2	W3	W4	W5	W6
D1	3,9	4,9	10,9	11,9	15,9	23,9
D2	6	8	14	16	20	28
D3	25	25	28	32	35	48
D4	11,4	14,9	18,6	24,1	30,2	38,9
h1	7	9	10	12	14	22
h2	13	17	22	29	36	48
h3	12	16	21	27	34	46

The fitting by the wedge-type pipe drivers assures the correct locations of the wedge-type pipes. Drivers according to series are made of hardened steel and have a handle of EP 4500.

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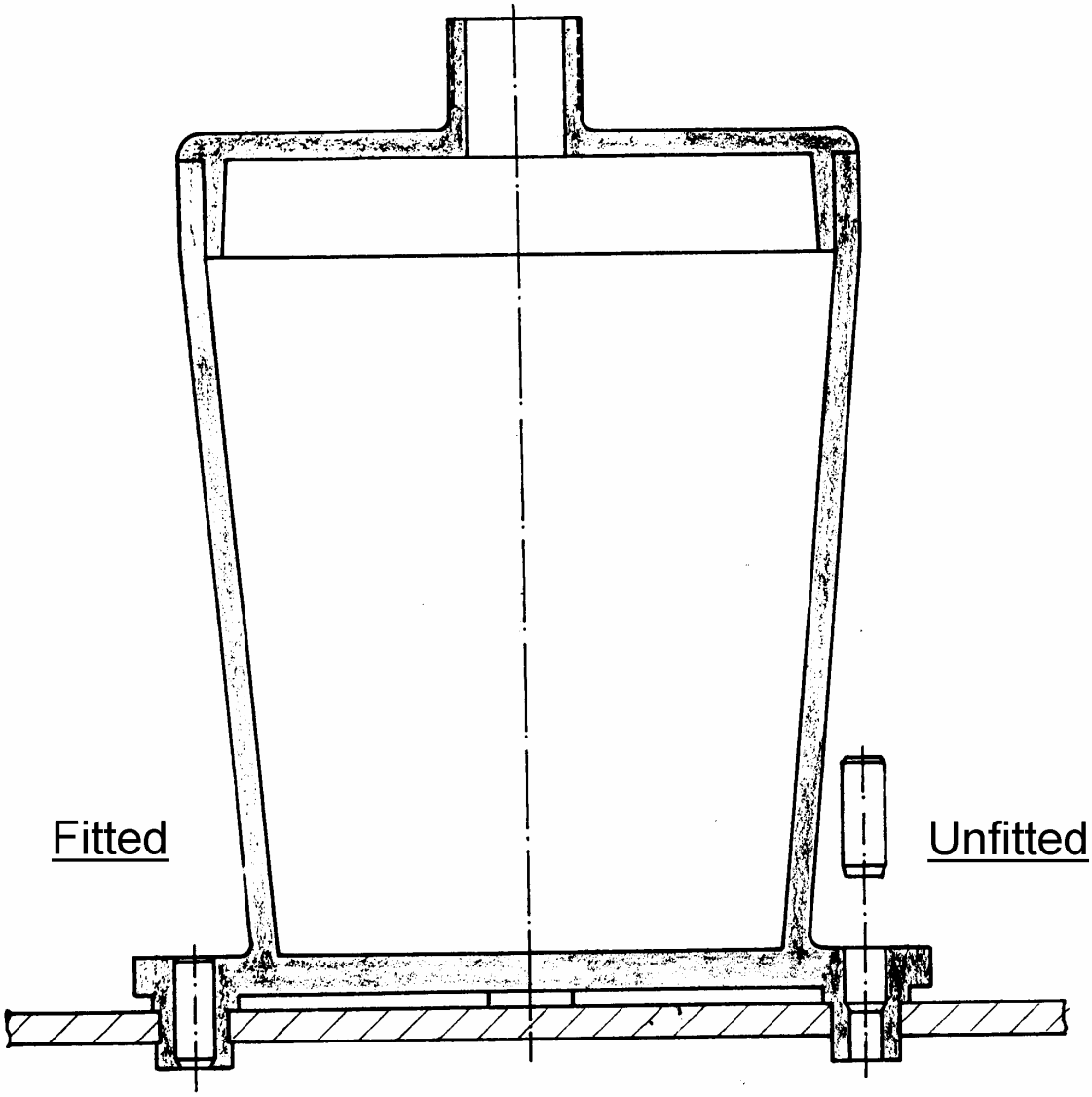
Normpage M 527	**EP-Combi-Fixtures**	EUROPLAST-NYCAST GmbH



Design patent N° 20 2005 004 591.8