EUROMAP 11

Machinery for processing plastics and rubber

Automatic mould changing on injection moulding machines

March 1993

This **recommendation** was prepared by the Technical Committee of EUROMAP.
Dimensions in mm.

General tolerances ISO 2768-m.

EUROMAP 11 Part 1

Machinery for processing plastics and rubber

Automatic mould changing on injection moulding machines

Mechanical interfaces for automatic mould clamping

March 1993

1 FIELD OF APPLICATION

In this part the connecting dimensions and other essential dimensions for automatic clamping of injection moulds are listed.

2 TERMINOLOGY

2.1 Adaptive clamping

Adaptive clamping means that the mould clamping elements are located on the platens of the injection machine (Type A).

2.2 Integrated clamping

Integrated clamping means that the clamping elements are incorporated in the platens of the injection moulding machine (Type B).

2.3 Overall size

The overall size used in this part is a description of the size of the clamping unit of injection moulding machines which is in accordance with other standards laid down by the European Committee of Machinery Manufacturers for the Plastics and Rubber Industries (EUROMAP). The overall size is defined by the clear space between columns (see EUROMAP recommendation 2/3 "Dimensioning of the clamping unit and mould mounting and connecting dimensions of injection moulding machines", 1983 edition. The publication is obtainable from the Rubber and Plastics Machinery Division within VDMA; P.O. Box 71 08 64, D-6000 Frankfurt am Main; after June 1993: D-60525 Frankfurt am Main).

3 MECHANICAL INTERFACE

3.1 Adaptive clamping (Type A)

Mould mounting - vertical

Mould mounting - horizontal

Section A-B

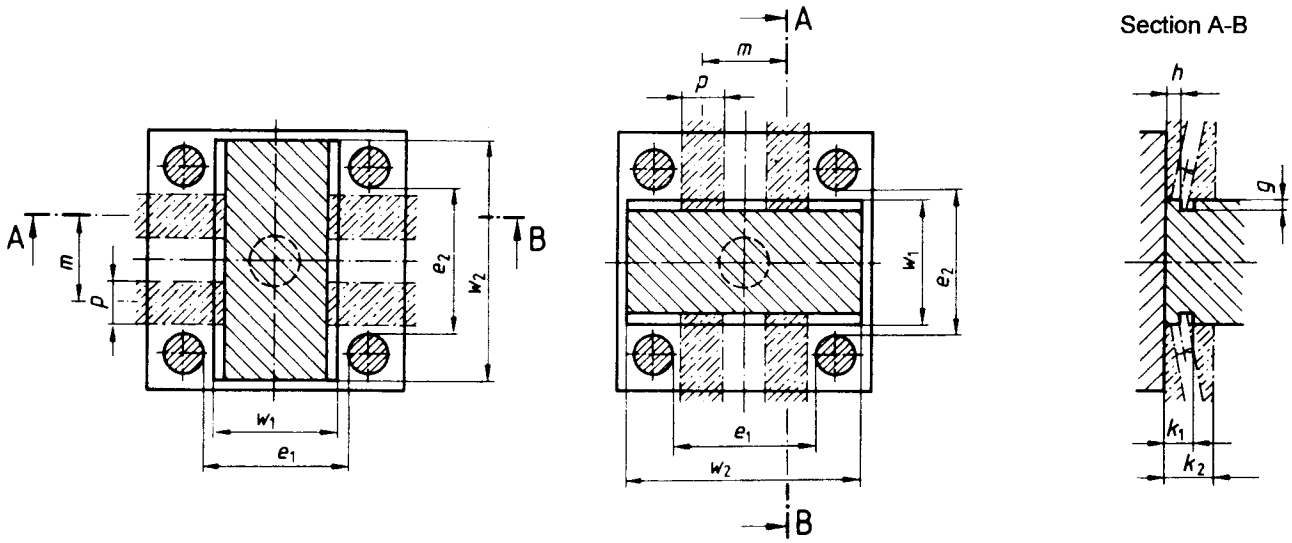


Figure 1

Table 1

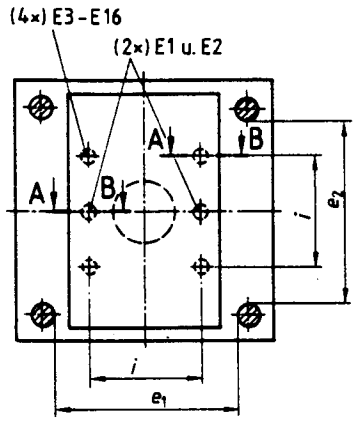
Overall size [1]	$e_1;e_2$ [1]	d_2 [1]	$f_1;f_2$ [1] (min)	w_1 e9	w_2 h9	h h9	g (min)	Clear clamping space			
								k_1 (min)	k_2 (max)	m	p (max)
E 1	200	80	10	196	$w2 = w1$ or $w1$ of the following overall sizes	20	20	45	90	0	200
E 2	224	80	10	220		20	20	45	90	0	224
E 3	250	100	10	244		20	20	45	90	0	250
E 4	280	100	10	274		20	20	45	90	0	280
E 5	315	125	10	308		25	25	55	110	140	100
E 6	355	125	10	348		25	25	55	110	210	100
E 7	400	125	10	392		25 [2]	25	55	110	280	120
E 8	450	125	10	440		25 [2]	25	55	110	280	120
E 9	500	160	10	490		40	40	90	180	350	120
E 10	560	160	10	548		40	40	90	180	350	140
E 11	630	160	10	618		40	40	90	180	490	140
E 12	710	160	10	696		40	40	90	180	490	200
E 13	800	200	10	784		50	50	115	230	560	240
E 14	900	200	10	882		50	50	115	230	560	300
E 15	1000	250	20	980		50	50	115	230	700	300
E 16	1120	250	20	1098		50	50	115	230	700	400

[1] See EUROMAP 2/3
d_2 = mould location recess diameter, f_1; f_2 = mould location recess depth

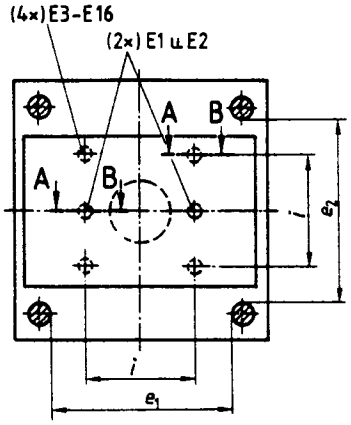
[2] If a mould is to be suitable for clamping by either method, a mould base plate 32 mm thick is required.

3.2 Integrated clamping (Type B)

Mould mounting - vertical



Mould mounting - horizontal



Section A-B

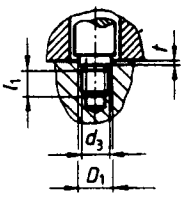


Figure 2

Table 2

Overall size [1]	e_1;e_2 [1]	i	D_1 H7	d_3	l_1 min	t
E 1	200	165	22	M16 x 1	15	3
E 2	224	165	22	M16x1	15	3
E 3	250	175	22	M16x1	15	3
E 4	280	175	22	M16x1	15	3
E 5	315	245	28	M20x1,5	18	3
E 6	355	245	28	M20x1,5	18	3
E 7	400	300	34	M24x2	22	4
E 8	450	300	34	M24x2	22	4
E 9	500	350	40	M30x2	28	4
E 10	560	350	40	M30x2	28	4
E 11	630	490	50	M36x2	32	4
E 12	710	490	50	M36x2	32	4
E 13	800	560	50	M36x2	32	4
E 14	900	650	50	M36x2	32	4
E 15	1000	650	50	M36x2	32	4
E 16	1120	760	50	M36x2	32	4

[1] See EUROMAP 2/3

4 DESIGNATION

The type of clamping and the overall size of the injection moulding machine should be specified to designate the mechanical interface for automatic mould clamping on injection moulding machines.

Example of designation of the mechanical interface using adaptive clamping on an injection moulding machine of an overall size E 12:

Mechanical interface EUROMAP 11, Part 1 A - E 12.

Note:

This part is in agreement with recommendation 11, part 1, July 1988 edition.

EUROMAP 11 Part 2

Machinery for processing plastics and rubber

Automatic mould changing on injection moulding machines

Hole pattern for the platen side faces for mounting consoles for energy coupling plates

March 1993

1 FIELD OF APPLICATION

The hole pattern for mounting the consoles for the energy coupling plates are specified in this part. The hole patterns apply to all four side faces both of the mobile and fixed platens of the injection moulding machine. On injection moulding machines with horizontal clamping unit the holes on the lower side face of the platens can be dispensed with.

2 TERMINOLOGY

2.1 Overall size

see part 1, 2.3

3 DIMENSIONS, DESIGNATION

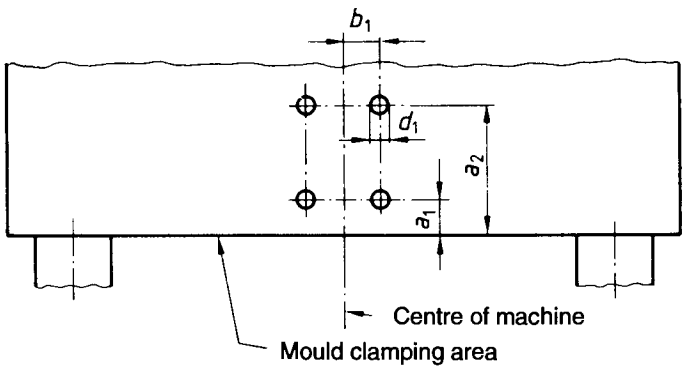


Fig. 1

The horizontal dimension for $e_1;e_2$ is determinative for assignment of the hole pattern to the EUROMAP overall size with vertical attachment of the energy coupling plates; the vertical dimension for $e_1;e_2$ is determinative with horizontal attachment.

The overall size of the injection moulding machine should be specified for designation of the hole pattern on the side faces of the platens of injection moulding machines.

Example of designation of the hole pattern on the side faces of the platens of an injection moulding machine of overall size E 12:

Hole pattern EUROMAP 11 Part 2 - E 12

Table 1

Overall size [1]	e_1; e_2 [1]	d_1 [2]	a_1	a_2	b_1
E 5	315	M 12	17.5	52.5	105
E 6	355	M 12	17.5	52.5	105
E 7	400	M 16	35	105	105
E 8	450	M 16	35	105	105
E 9	500	M 16	35	105	105
E 10	560	M 20	35	175	105
E 11	630	M 20	35	175	175
E 12	710	M 20	35	175	175
E 13	800	M 20	35	175	175
E 14	900	M 20	35	175	175
E 15	1000	M 24	70	315	175
E 16	1120	M 24	70	315	175

1) Cf. EUROMAP 2/3
2) Thread depth: $2d_1$

4 SUPPORTING AREA

The supporting area must be sufficiently flat. It should be continuously machined and at least raised in an area of concentric circles around the fixing holes with the diameter of $2d_1$ or countersunk according to this diameter. Washers should be provided in the case of countersinking.

EUROMAP 11 Part 3

Machinery for processing plastics and rubber

Automatic mould changing on injection moulding machines

Energy connections

March 1993

1 FIELD OF APPLICATION

The number, position and arrangement of energy connections for the automatic changing of injection moulds are specified in this part for injection moulding machines with horizontal clamping units of overall sizes E 5 to E 16. In addition essential requirements on the coupling elements are specified.

2 TERMINOLOGY

2.1 Overall size

see part 1, 2.3

In the case of injection moulding machines with rectangular clamping platens the horizontal dimension e_1 or e_2 is determinative for assignment to the EUROMAP overall size in this part.

3 NUMBER, SIZE AND TECHNICAL DATA OF THE ENERGY CONNECTIONS

Table 1: Number, size and technical data of the connections for fluids

EUROMAP overall size	Liquids							Compressed air		
	Heating/cooling				Hydraulics					
	Number of connection points per platen	Nom. width	Max. pressure (bar)	max. Temp. °C	Number of connection points per platen	Nom. width	Max. pressure (bar)	Number of connection points per platen	Nom. width	Max. pressure (bar)
E 5	4	8	10	Water: 90	4	8	210	2	8	10
E 6	4	8			4	8		2	8	
E 7	4	8			4	8		2	8	
E 8	4	8			4	8		2	8	
E 9	8	8			4	8		2	8	
E 10	8	8			4	8		2	8	
E 11	12	12		Oil: 200	4	12		2	12	
E 12	12	12			4	12		2	12	
E 13	12	12			4	12		2	12	
E 14	12	12			4	12		2	12	
E 15	12	12			4	12		2	12	
E 16	12	12			4	12		2	12	

Table 2: Number and size of electrical plug-in connections *)

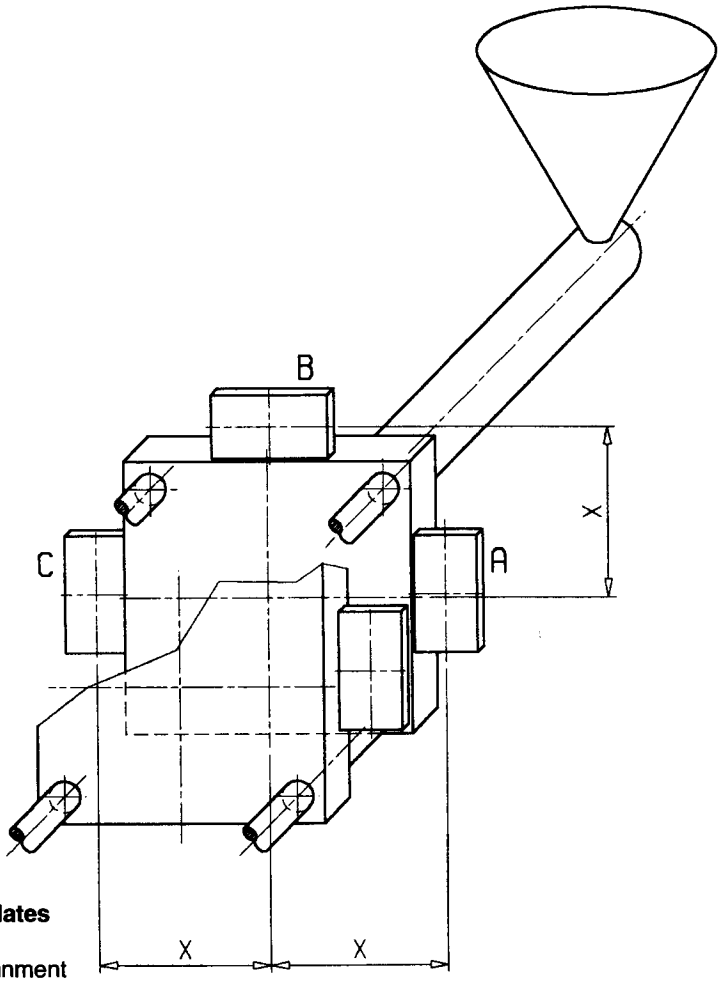
EUROMAP overall size	Fixed platen		Mobile platen	
	Plug size	Number	Plug size	Number
E 5 bis E 10 E 11 bis E 16	II III	3 3	II III	1 + 2[1)] 1 + 2[1)]
[1)] Spare				

Table 3: Technical data of electrical plug-in connections

Plug size	Number of poles	Conductor cross-section [mm^2] max.	Load capacity2) [A/V]
II III	15 + PE 36 + PE	1,5 2,5	15,5/250 21/250
[2)] EN 60 204-1 Table B II			

4 POSITION OF ENERGY CONNECTIONS

The energy connections are mounted on coupling plates, the position of which is shown in Fig. 1.



A= operating side
B = top
C = non-operating side

Fig. 1. Position of coupling plates

*) See Part 4 for contact assignment

Dimension x is specified as a function of the overall size in Table 4.

Table 4: Distance x: Centre of machine to centre of coupling plate

Overall size	e_1; e_2	x
E 5	315	332,5
E 6	355	367,5
E 7	400	402,5
E 8	450	437,5
E 9	500	507,5
E 10	560	542,5
E 11	630	612,5
E 12	710	682,5
E 13	800	752,5
E 14	900	822,5
E 15	1000	910,0
E 16	1120	997,5

The arrangement of the individual connections, the mounting of the coupling plates on the consoles, the centering of the coupling plates in relation to each other and the connection dimensions for mounting the coupling elements on the coupling plates are shown in Figs. 2 to 4.

Legend:

F	=guide
B	=fixing hole
S	=pin hole to DIN 1481
⊕	=reference point
X..	=electric power
P..	=air
A H	=hydraulics in **)
B H	=hydraulics out **)
ein T.	=heating/cooling in **)
aus T.	=heating/cooling out **)
[..]	=designation of moving platen

A special drive for movement of the coupling plates is generally required in arrangement II.

**) Refers to the mould.

4.1 For overall sizes E 5, E 6, E 7, E 8

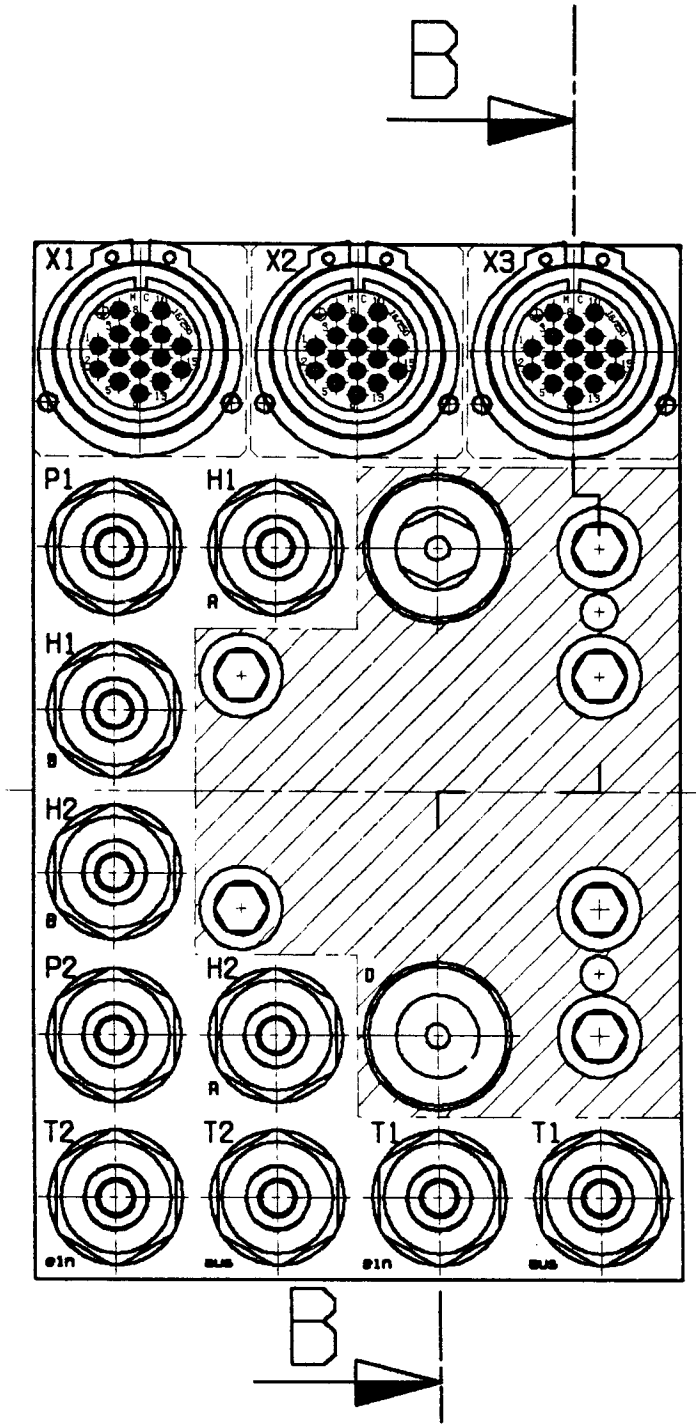


Fig. 2a. View of a fixed machine side; view of coupling side (opposite the connecting side). Position C according to Fig. 1 is shown.

Section B-B

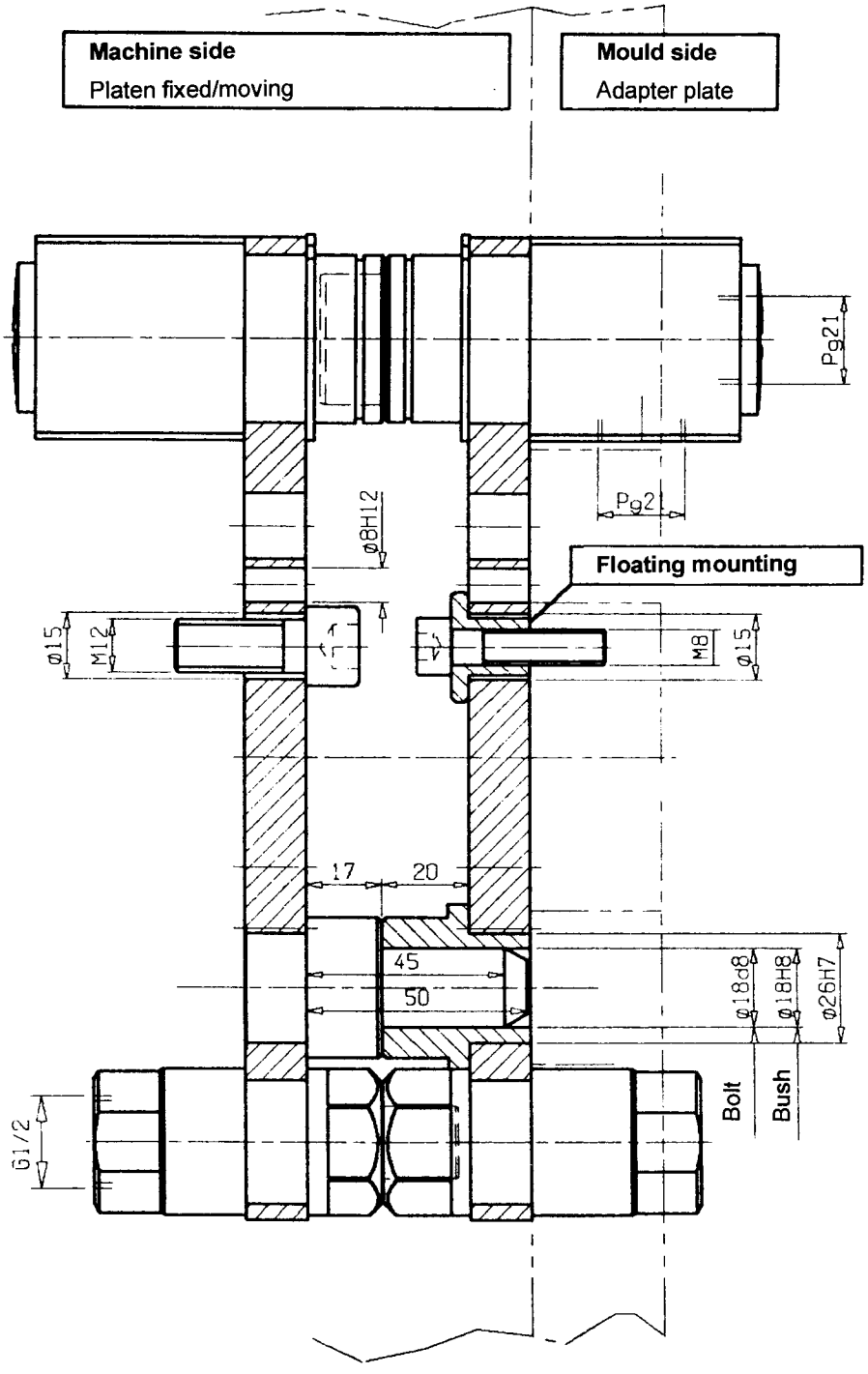


Fig. 2b. Arrangement I, coupled is shown

Section A-A

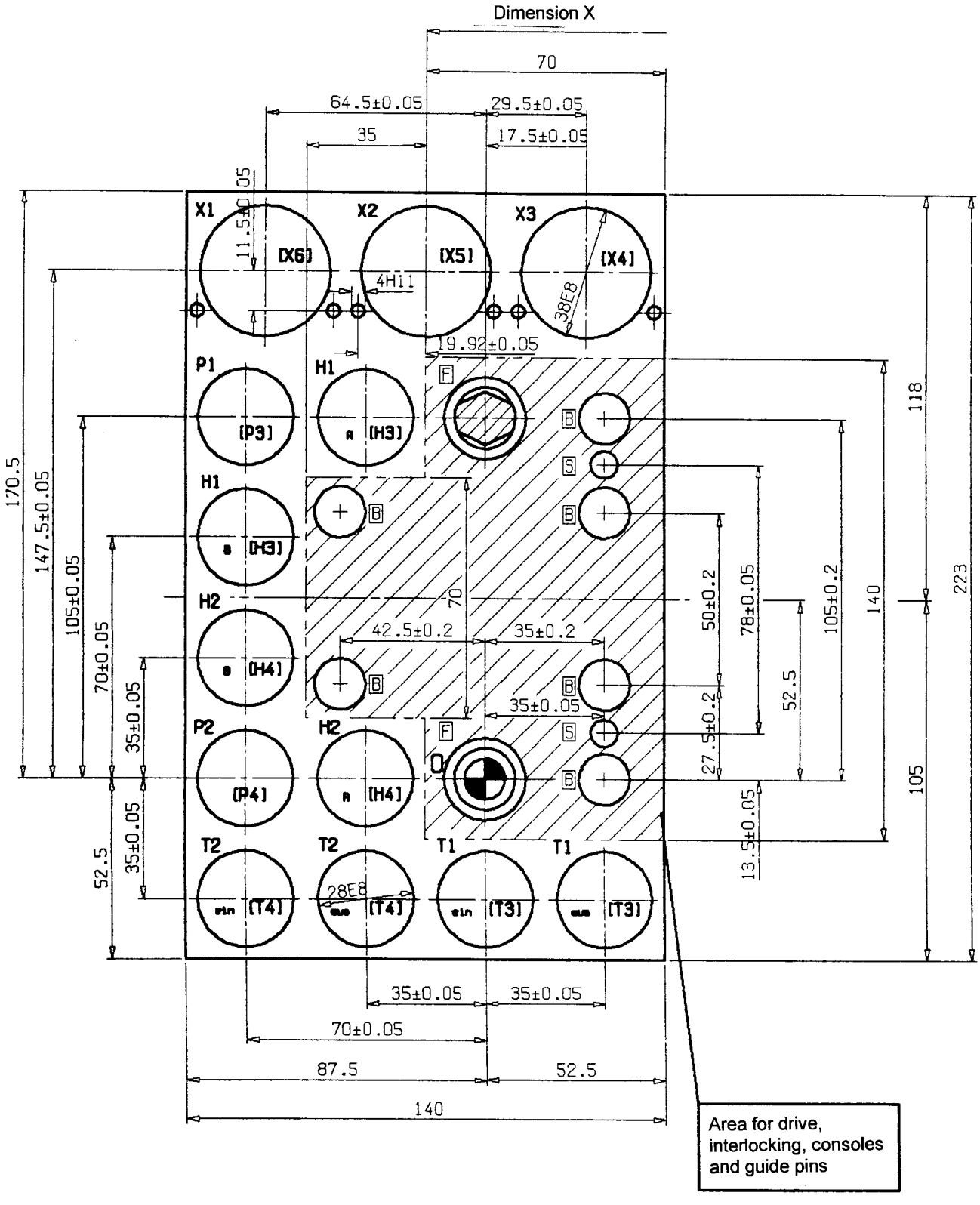


Fig. 2c. (not equipped)

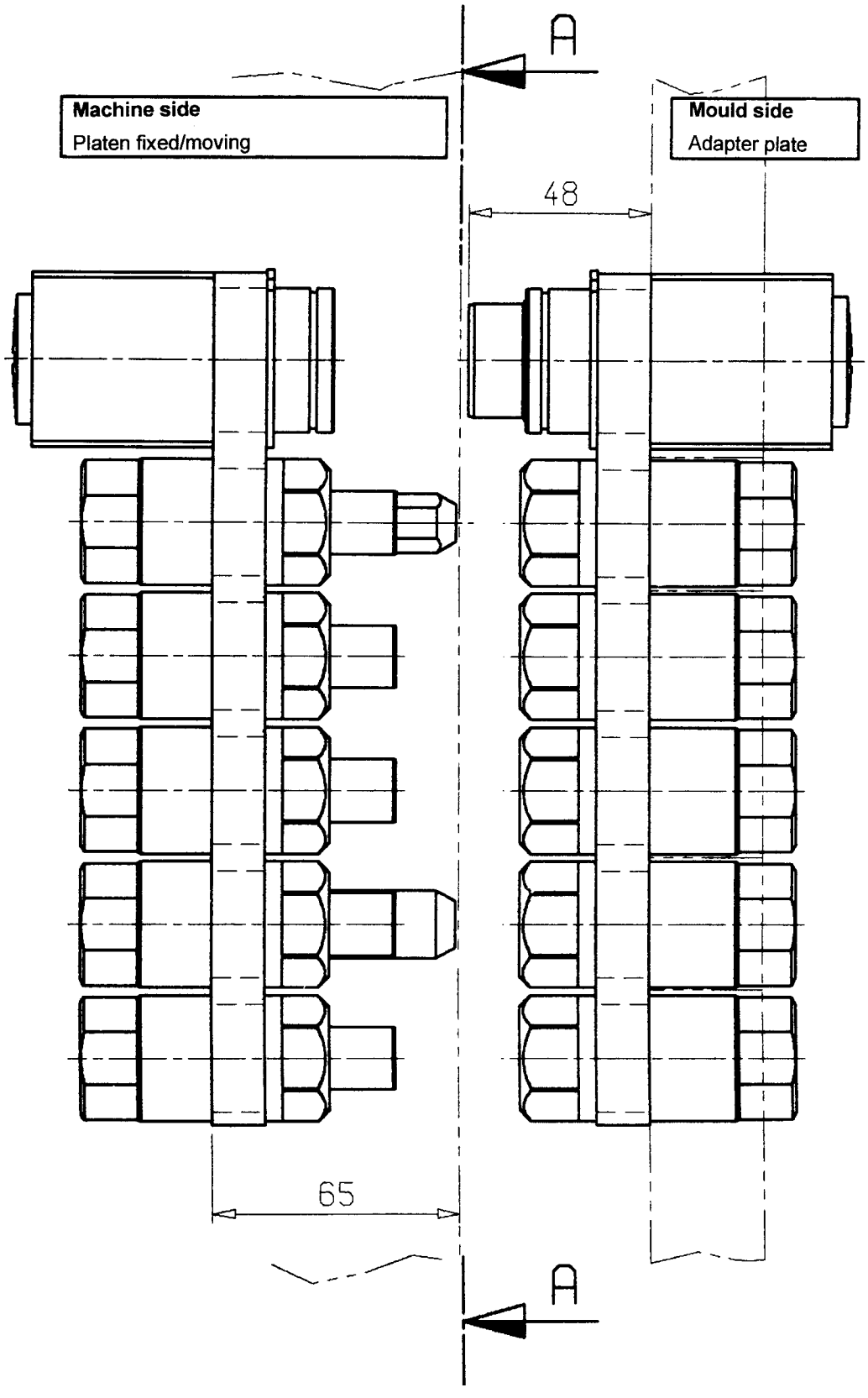


Fig. 2d. Arrangement I, uncoupled is shown

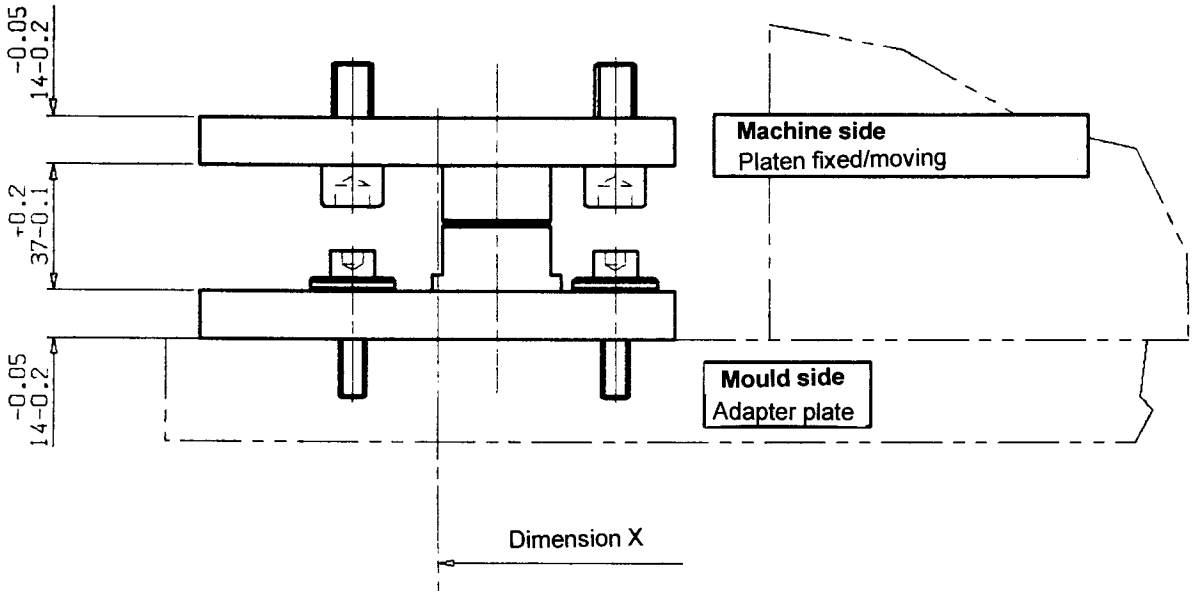


Fig. 2e. Arrangement I

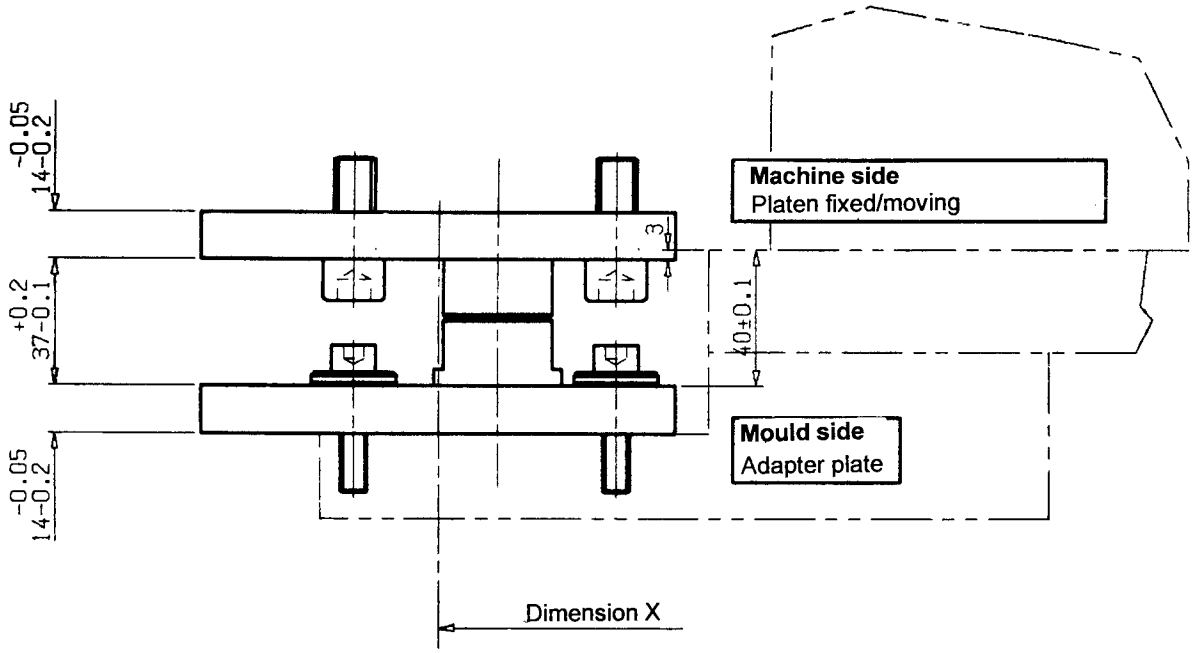


Fig. 2f. Arrangement II

4.2 For overall sizes E 9, E 10

Arrangement I or II, see Fig. 2e or 2f.

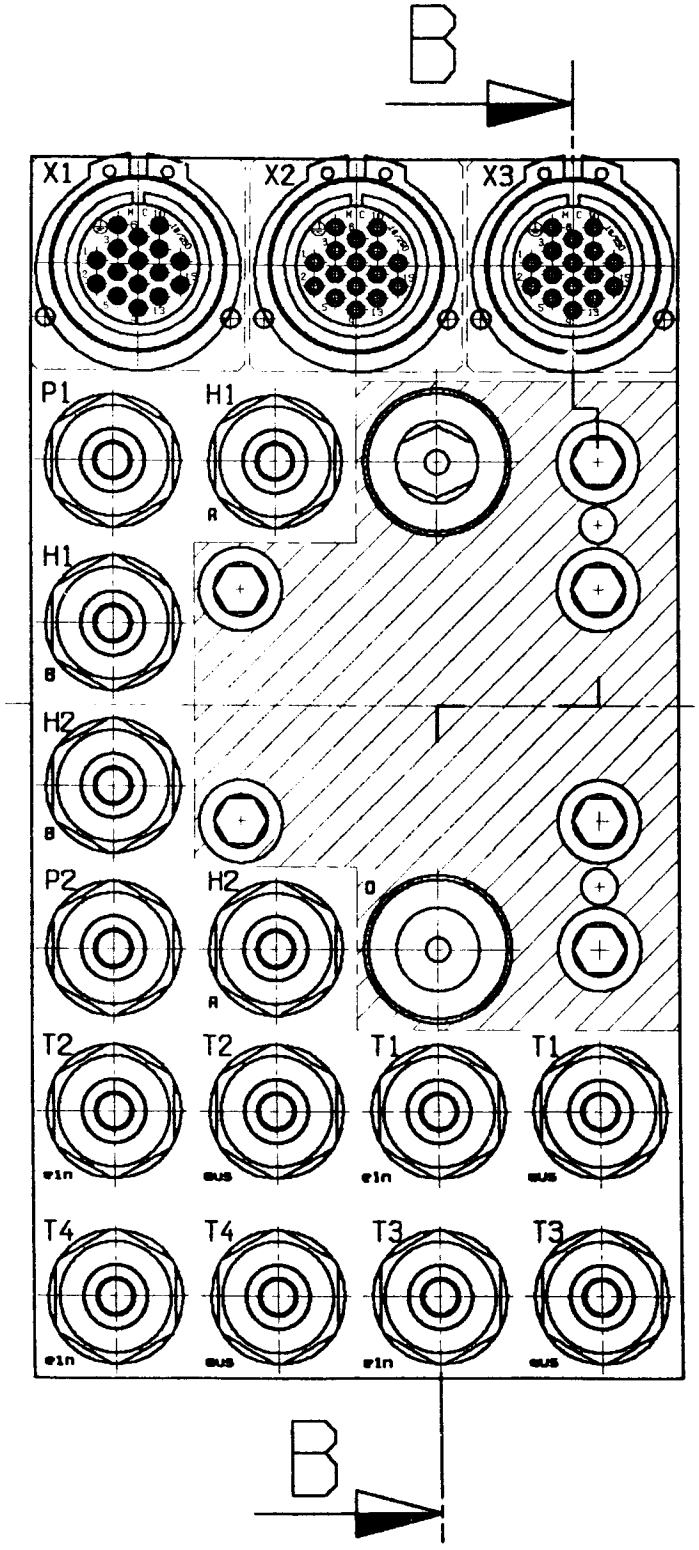


Fig. 3a. View of a fixed machine side; view of coupling side (opposite the connecting side). Position C according to Fig. 1 is shown.

Section B-B

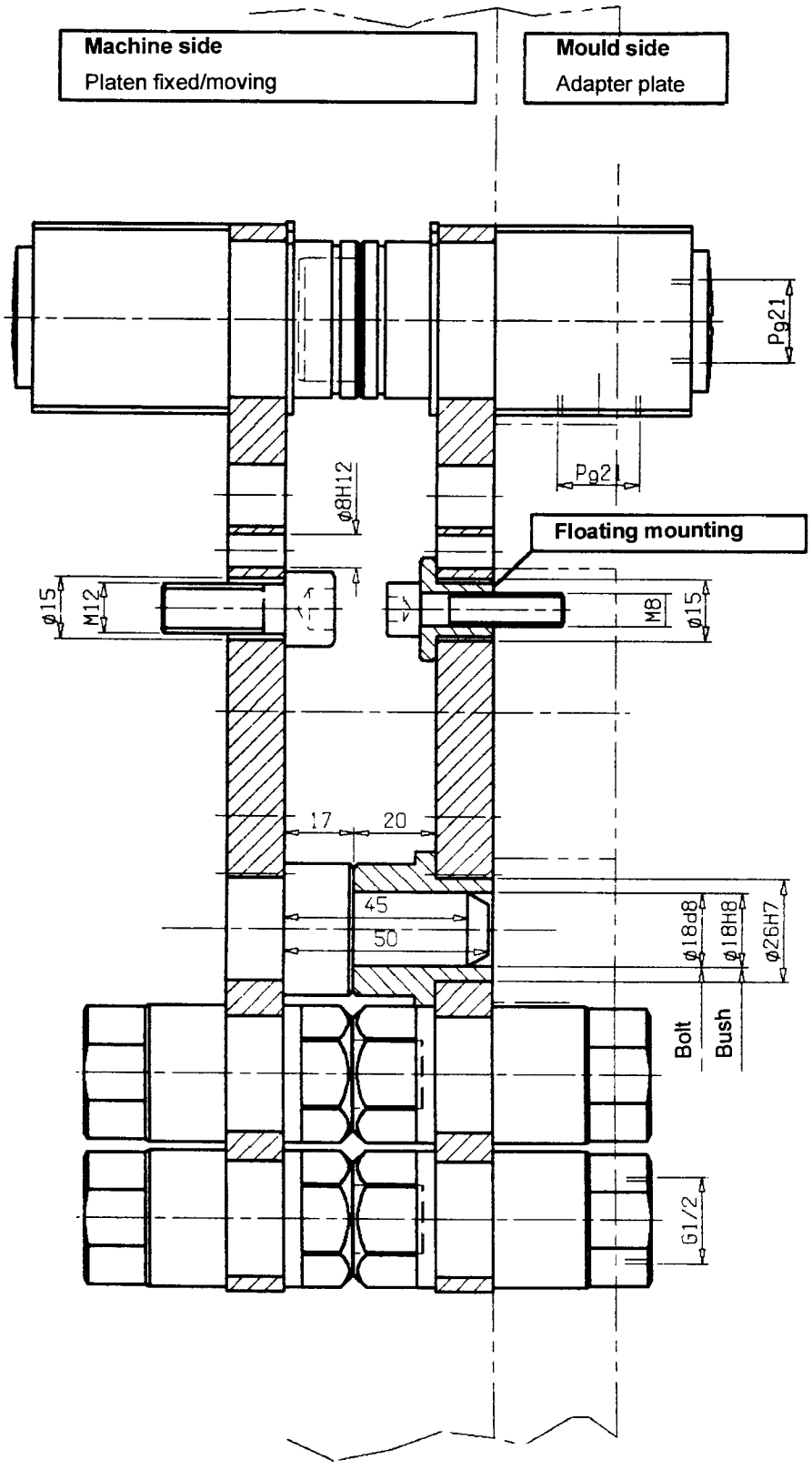


Fig. 3b. Arrangement I, coupled is shown

Section A-A

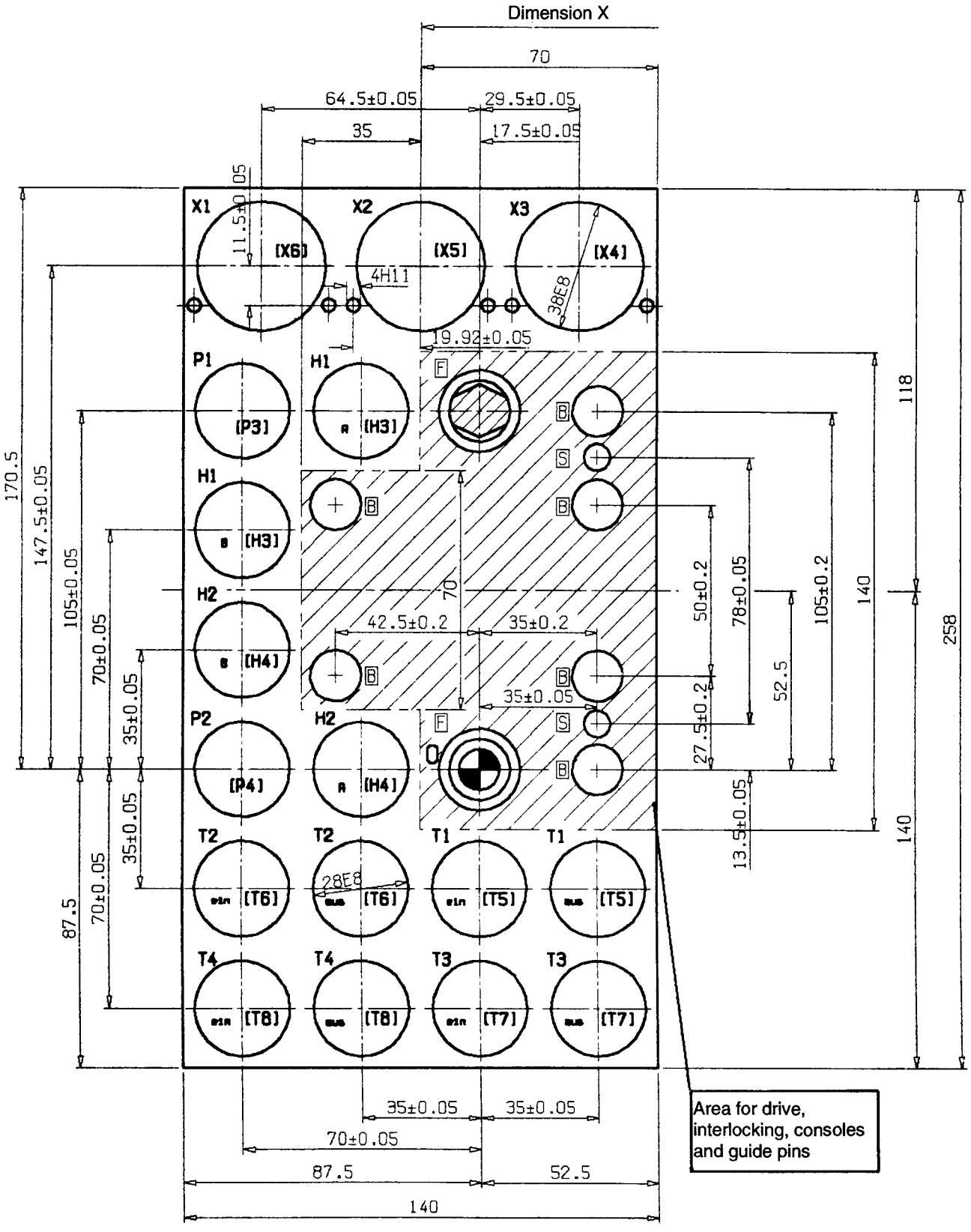


Fig. 3c. (not equipped)

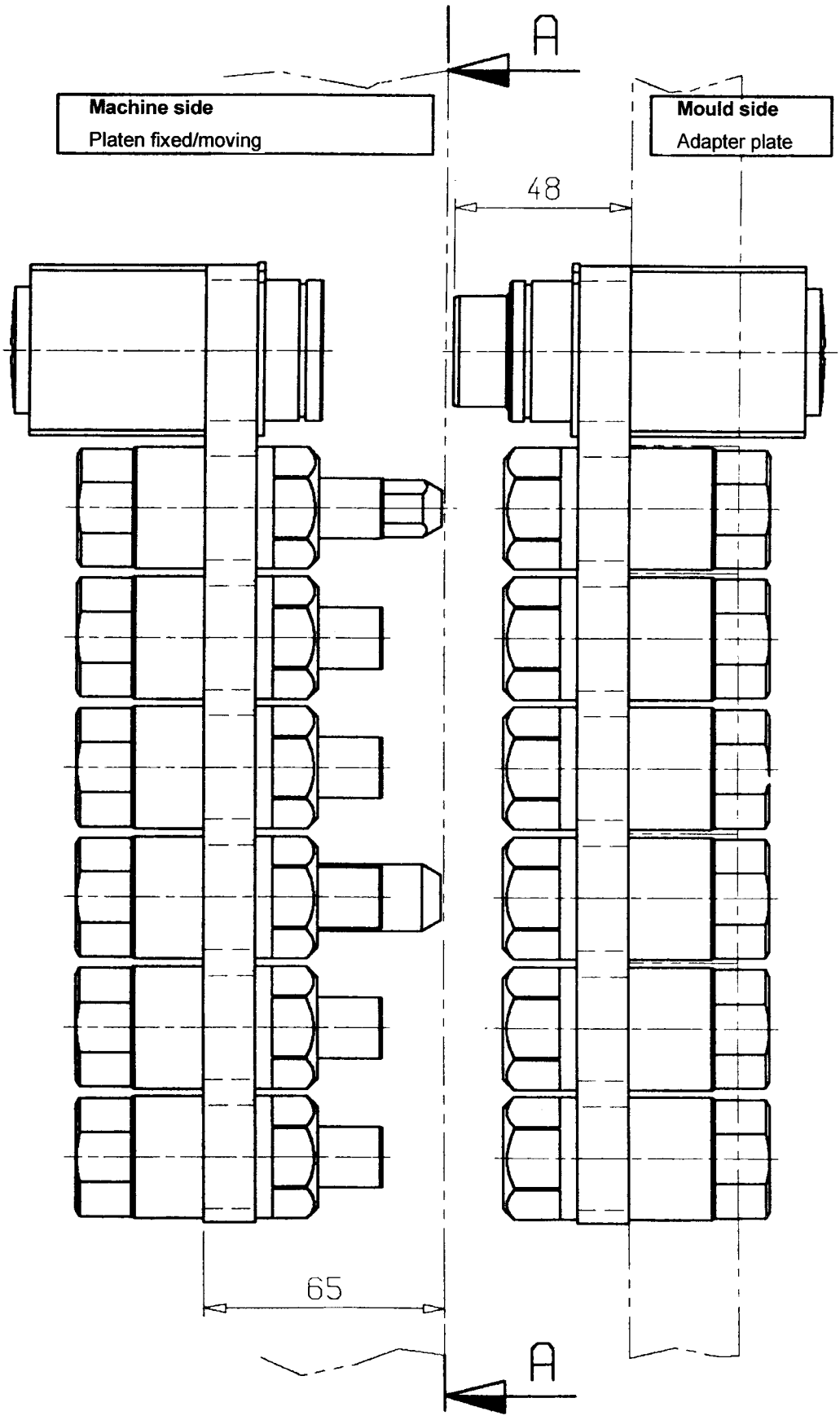


Fig. 3d. Arrangement I, uncoupled is shown

4.3 For overall sizes E 11, E 12, E 13, E 14, E 15, E 16

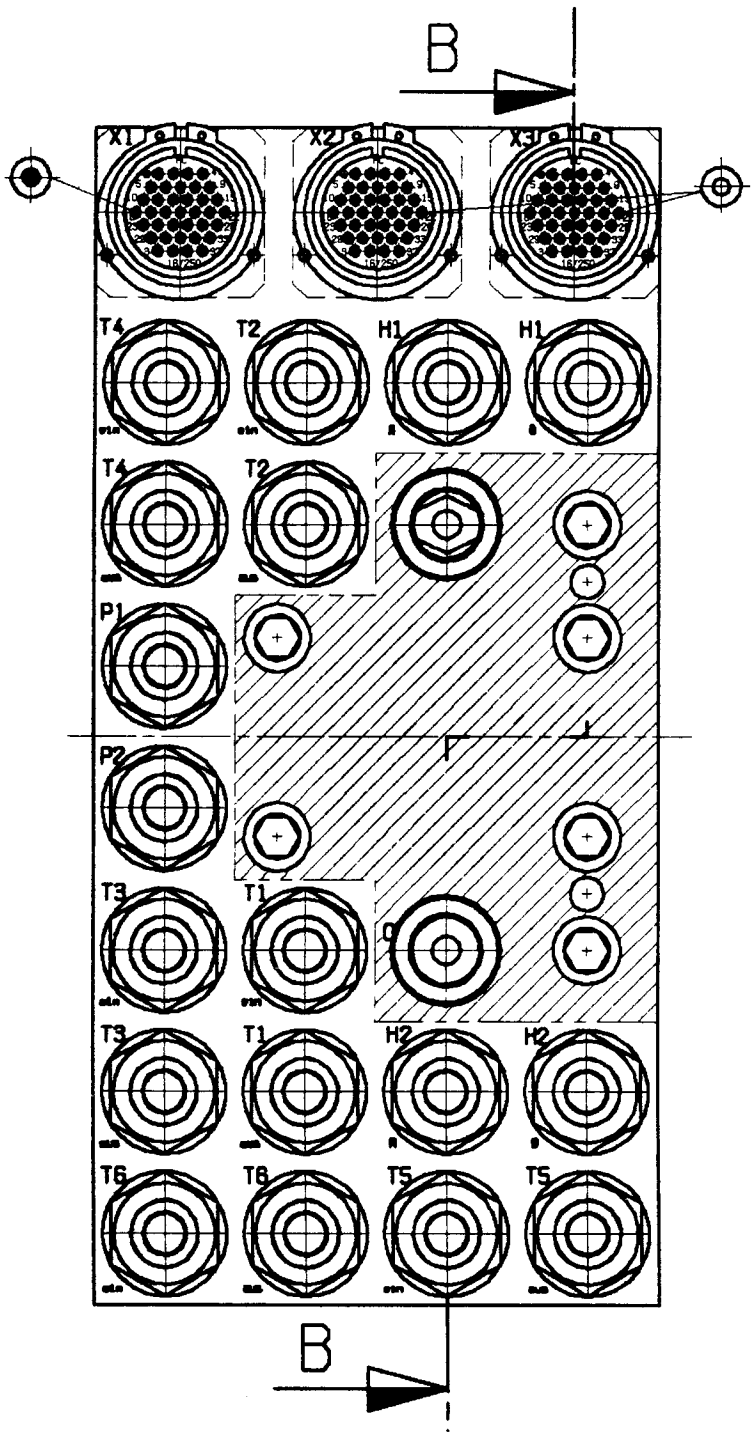


Fig. 4a. View of a fixed machine side; view of coupling side (opposite the connecting side). Position C according to Fig. 1 is shown.

Section B-B

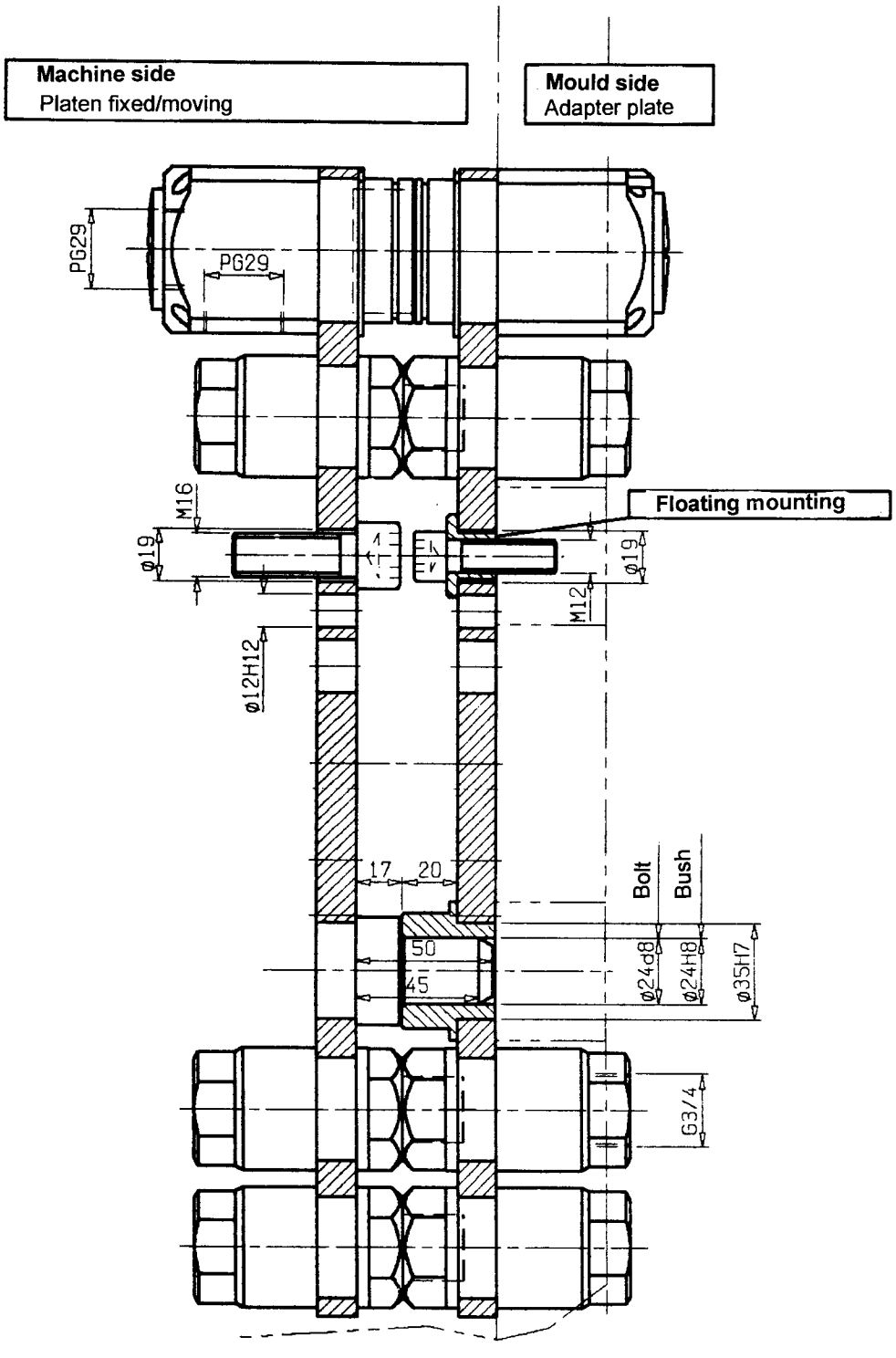


Fig. 4b. Arrangement I, coupled is shown

Section A-A

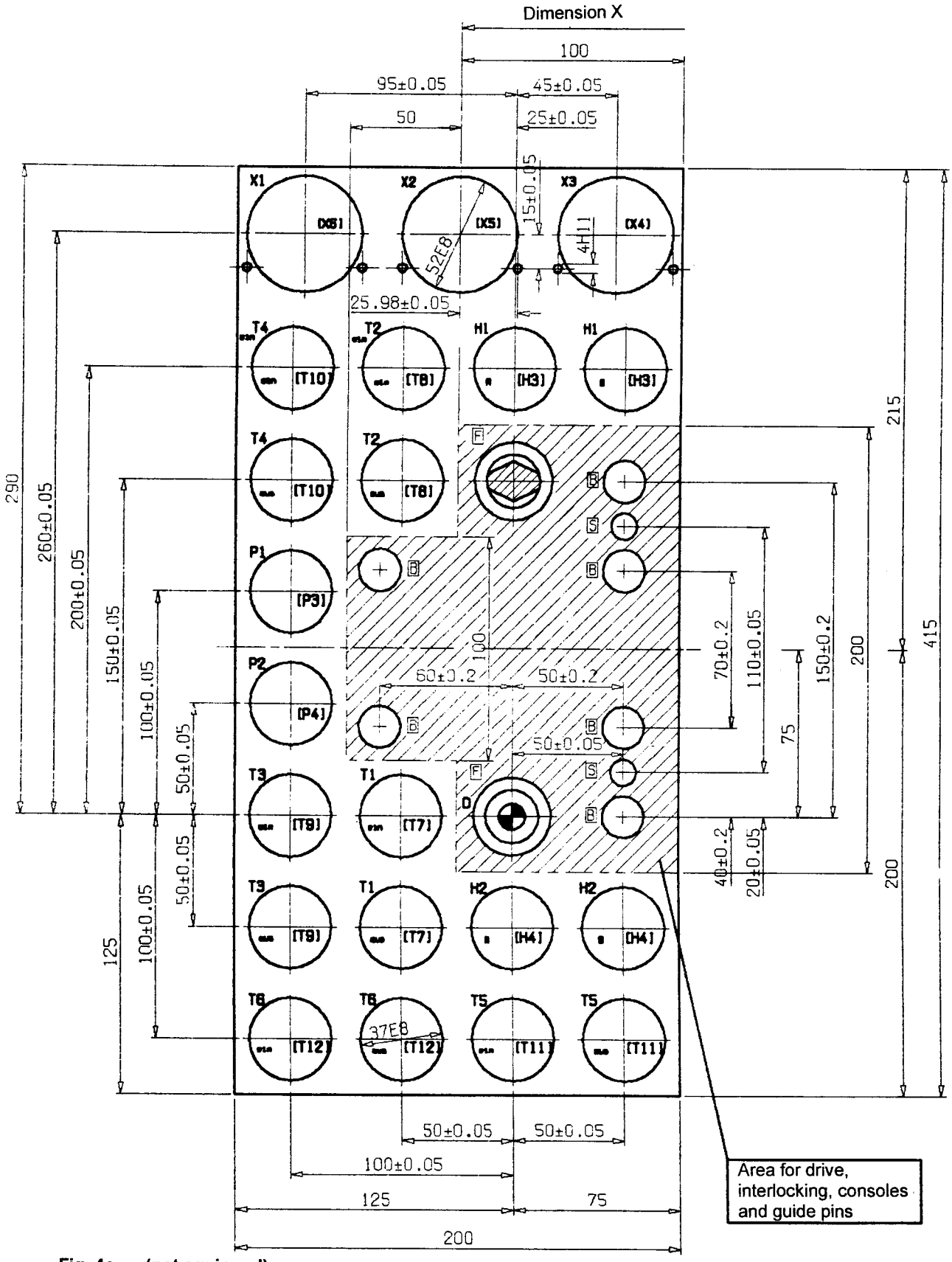


Fig. 4c. (not equipped)

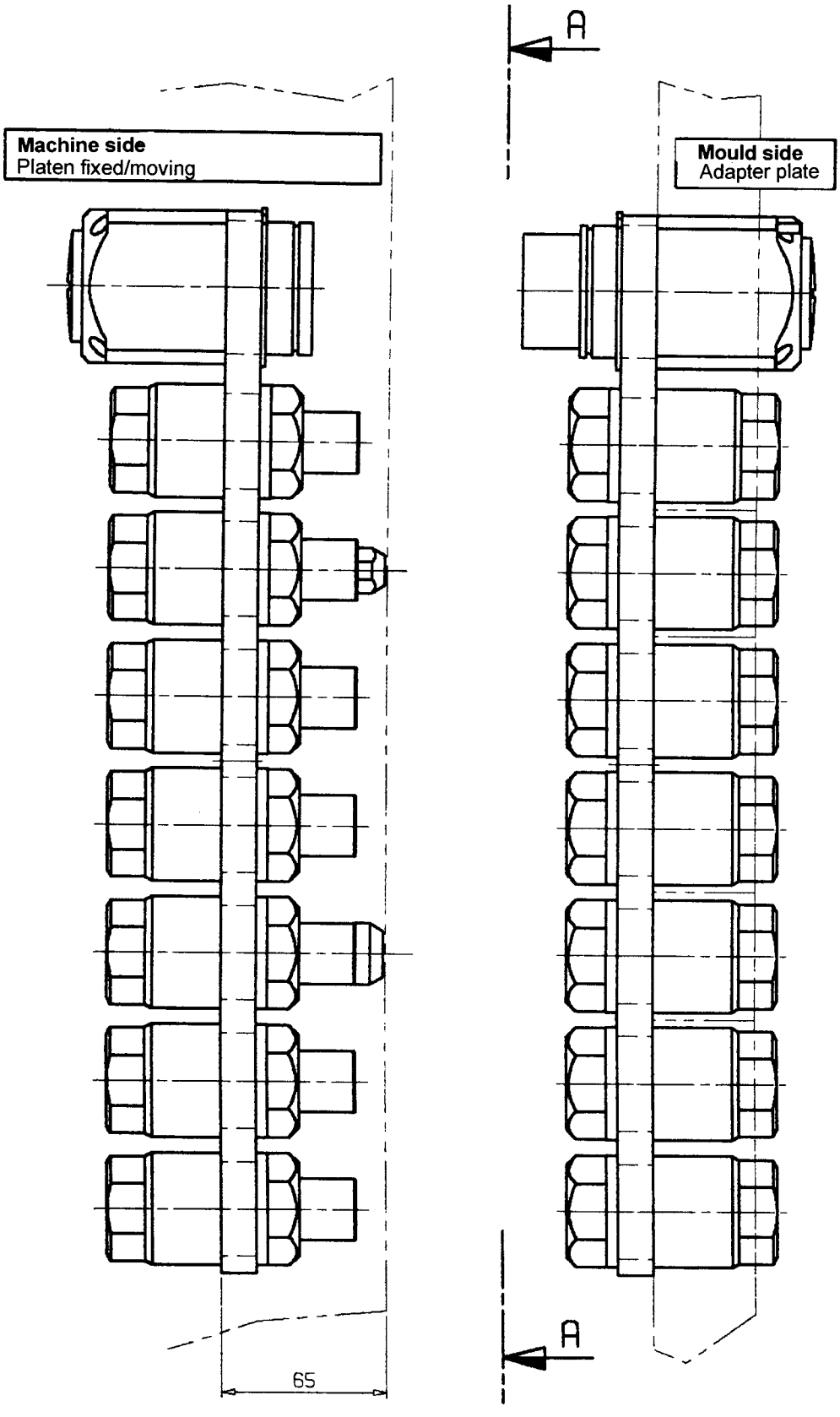


Fig. 4d. Arrangement I, uncoupled is shown

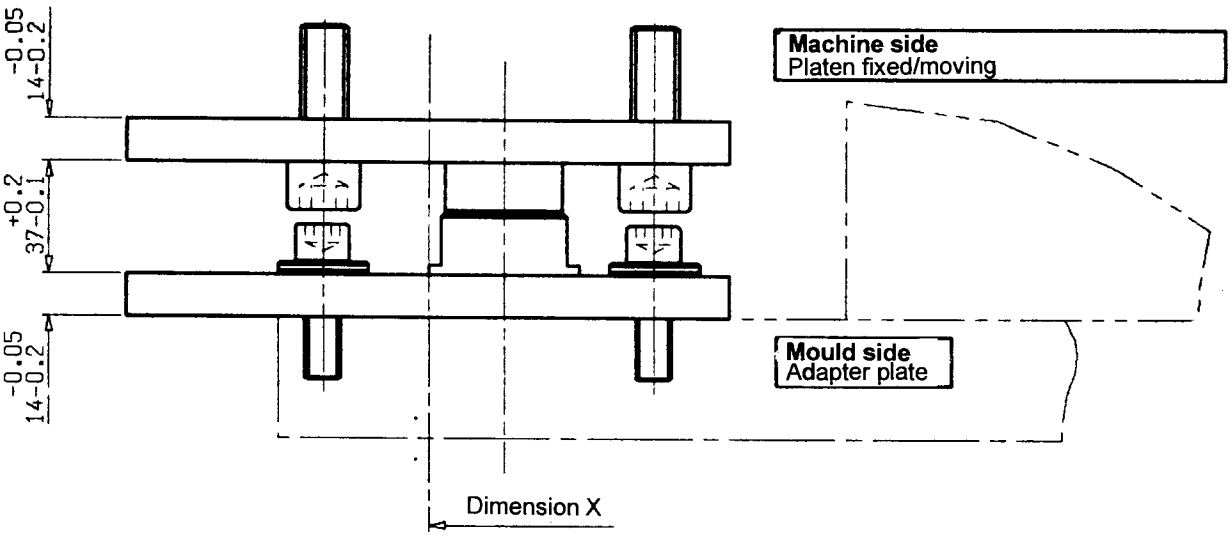


Fig. 4e. Arrangement I

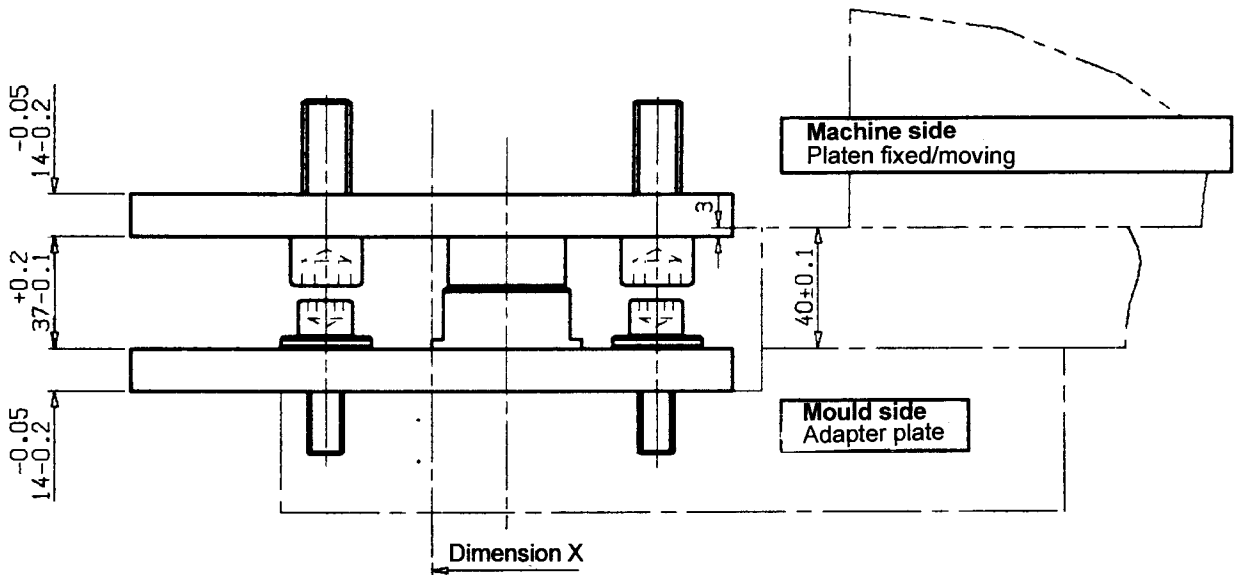


Fig. 4f. Arrangement II

5 DESIGNATION

The overall size, type of arrangement according to Figs. 2e or 2f and 4e or 4f and the position according to Fig. 1 should be specified for designation of the energy connections for the automatic changing of injection moulds.

Example of designation of the energy connections for an injection moulding machine of overall size E 12 arrangement I, position C:

Power connections EUROMAP 11 Part 3 I C - E 12

Quoted standards and other documentation

EN 60 204 Electrical equipment of machines; Part 1: general requirements

EUROMAP 11 Part 4

Machinery for processing plastics and rubber

Automatic mould changing on injection moulding machines

Contact assignment of the electrical plug-in connections

March 1993

1 FIELD OF APPLICATION

This part specifies the electrical plug-in connections between injection moulding machine and injection mould.

2 POSITION AND DESIGNATION

see part 3

3 CONTACT ASSIGNMENT

The socket or pin inserts on the injection moulding machine side viewed towards the plug-in side (opposite the connection side) are shown.

● pin

○ socket

3.1 EUROMAP overall size E 5 to E 10

3.1.1 Plug-in connection X1

Use for 7 thermocouples

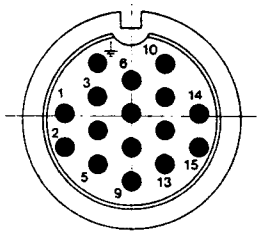


Fig. 1

Plug contact No.	Description
1, 2	Thermocouple No. 1; positive pole to plug contact No. 1
3, 4	Thermocouple No. 2; positive pole to plug contact No. 3
5, 6	Thermocouple No. 3; positive pole to plug contact No. 5
7, 8	Thermocouple No. 4; positive pole to plug contact No. 7
9, 10	Thermocouple No. 5; positive pole to plug contact No. 9
11, 12	Thermocouple No. 6; positive pole to plug contact No. 11
13, 14	Thermocouple No. 7; positive pole to plug contact No. 13
15	Not specified

3.1.2 Plug-in connection X2

Use for 2 core pullers

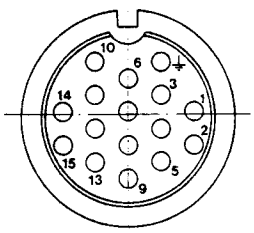


Fig. 2

Plug contact No.	Description
1 - 4	Power supply; positive voltages
5 - 8	Reference potential; GND
9	The signal is present at the plug contact, if core 1 is withdrawn
10	The signal is present at the plug contact, if core 1 is in the mould
11	The signal is present at the plug contact, if core 2 is withdrawn
12	The signal is present at the plug contact, if core 2 is in the mould
13	The signal is present at the plug contact, if ejector is withdrawn
14 - 15	Not specifed

Power supply: 24 V DC
Signal voltages: + 24 V ± 20 % DC
All signals are continuous signals; minimum signal current: 10 mA

3.1.3 Plug -in connection X3

Use for 7 heating resistors

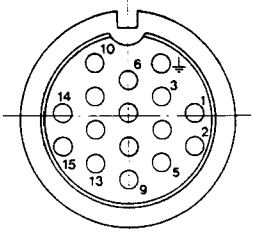


Fig. 3

Plug contact No.	Description
1, 2	Heating resistor No. 1; neutral conductor on plug contact No. 2
3, 4	Heating resistor No. 2; neutral conductor on plug contact No. 4
5, 6	Heating resistor No. 3; neutral conductor on plug contact No. 6
7, 9	Heating resistor No. 4; neutral conductor on plug contact No.7
8, 10	Heating resistor No. 5; neutral conductor on plug contact No. 8
11, 12	Heating resistor No. 6; neutral conductor on plug contact No. 12
13, 14	Heating resistor No. 7; neutral conductor on plug contact No. 14
15	Not specified

If the three phases of a three-phase AC system are used, the following connections should be made:

Outer conductor 1 to plug contacts 1 and 3
Outer conductor 2 to plug contacts 10 and 11
Outer conductor 3 to plug contacts 5, 9 and 13

3.1.4 Plug-in connection X4

- Spare -

Should be used for mould coding and mould protection (the socket insert should be arranged on the injection moulding machine side).

3.1.5 Plug-in connection X5

Use for 2 core pullers

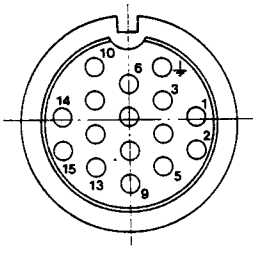


Fig. 4

Plug contact No.	Description
1 - 4	Power supply; Positive voltages
5 - 8	Reference potential; GND
9	The signal is present at the plug contact, if core 1 is withdrawn
10	The signal is present at the plug contact, if core 1 is in the mould
11	The signal is present at the plug contact, if core 2 is withdrawn
12	The signal is present at the plug contact, if core 2 is in the mould
13	The signal is present at the plug contact, if ejector is withdrawn
14 - 15	Not specified

Power supply: 24 V DC
Signal voltages : + 24 V ± 20 % DC
All signals are continuous signals; minimum signal current: 10 mA

3.1.6 Plug-in connection X6

- Spare -

Provided for pressure pick-up connection

3.2 EUROMAP overall sizes E 11 to E 16

3.2.1 Plug-in connection X1

Use for 8 thermocouples

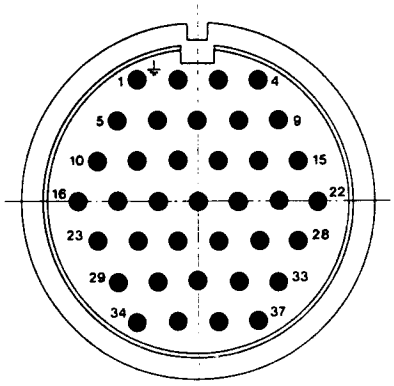


Fig. 5

Plug contact No.	Description
1	PE
2, 3	Thermocouple No. 1; positive pole to plug contact No. 2
4, 5	Thermocouple No. 2; positive pole to plug contact No. 4
6, 7	Thermocouple No. 3; positive pole to plug contact No. 6
8, 9	Thermocouple No. 4; positive pole to plug contact No. 8
10, 11	Thermocouple No. 5; positive pole to plug contact No. 10
12, 13	Thermocouple No. 6; positive pole to plug contact No. 12
14, 15	Thermocouple No. 7; positive pole to plug contact No. 14
16, 17	Thermocouple No. 8; positive pole to plug contact No. 16
18 - 37	Not specified

3.2.2 Plug-in connection X2

Use for 4 core pullers

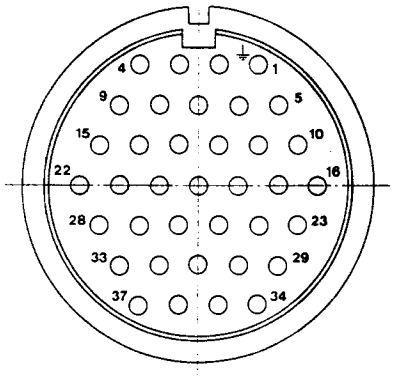


Fig. 6

Plug contact No.	Description
1	PE
2 - 9	Power supply; positive voltages
10 - 17	Reference potential; GND
18	The signal is present at the plug contact, if core 1 is withdrawn
19	The signal is present at the plug contact, if core 1 is in the mould
20	The signal is present at the plug contact, if core 2 is withdrawn
21	The signal is present at the plug contact, if core 2 is in the mould
22	The signal is present at the plug contact, if core 3 is withdrawn
23	The signal is present at the plug contact, if core 3 is in the mould
24	The signal is present at the plug contact, if core 4 is withdrawn
25	The signal is present at the plug contact, if core 4 is in the mould
26	The signal is present at the plug contact, if the ejector is withdrawn
27 - 37	Not specified

Power supply: 24 V DC
Signal voltages : + 24 V ± 20 % DC
All signals are continuous signals; minimum signal current: 10 mA

3.2.3 Plug-in connection X3

Use for 8 heating resistors

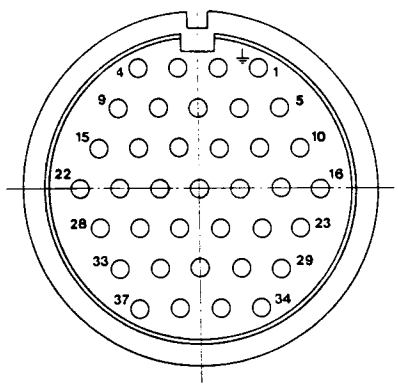


Fig. 7

Plug contact No.	Description
1	PE
3, 4	Heating resistor No. 1; neutral conductor on plug contact No. 4
10,11	Heating resistor No. 2; neutral conductor on plug contact No. 10
12,13	Heating resistor No. 3; neutral conductor on plug contact No. 13
14, 15	Heating resistor No. 4; neutral conductor on plug contact No. 15
23, 24	Heating resistor No. 5; neutral conductor on plug contact No. 24
25, 26	Heating resistor No. 6; neutral conductor on plug contact No. 26
27, 28	Heating resistor No. 7; neutral conductor on plug contact No. 28
35, 36	Heating resistor No. 8; neutral conductor on plug contact No. 36
2, 5 - 9, 16 - 22, 29 - 34, 37	Not specified

If the three phases of a three-phase AC system are used the following connections should be made:

Outer conductor 1 to plug contacts 3, 10
Outer conductor 2 to plug contacts 12, 14, 23
Outer conductor 3 to plug contacts 25, 27, 35

3.2.4 Plug-in connection X4

- Spare -

Should be used for mould coding and mould protection (the socket insert should be arranged on the injection moulding machine side).

3.2.5 Plug-in connection X5

Use for 4 core pullers

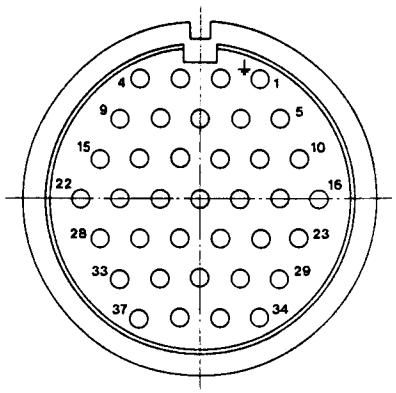


Fig. 8

Plug contact No.	Description
1	PE
2 - 9	Power supply; positive voltages
10 - 17	Reference potential; GND
18	The signal is present at the plug contact, if core 1 is withdrawn.
19	The signal is present at the plug contact, if core 1 is in the mould
20	The signal is present at the plug contact, if core 2 is withdrawn.
21	The signal is present at the plug contact, if core 2 is in the mould
22	The signal is present at the plug contact, if core 3 is withdrawn.
23	The signal is present at the plug contact, if core 3 is in the mould
24	The signal is present at the plug contact, if core 4 is withdrawn.
25	The signal is present at the plug contact, if core 4 is in the mould
26	The signal is present at the plug contact, if the ejector is withdrawn
27 - 37	Not specified

Power supply: 24 V DC
Signal voltages : + 24 V ± 20 % DC
All signals are continuous signals; minimum signal current: 10 mA

3.2.6 Plug-in connection X6

- Spare -

Provided for pressure pick-up connection

Suppliers:

Multi-Contact Deutschland GmbH
Postfach
D-7858 Weil am Rhein

Type ME2 - 15 + PE-S or B2/0.5 - 1.5 or ME3 - 36 + PE-S or B2/2.5

ODU-Kontakt Gmbh & Co.
Pregelstrasse 11
D-8260 Mühldorf

Type ODU-Dock II 15 + PE or ODU III 36 + PE

EUROMAP 11 Part 5

Machinery for processing plastics and rubber

Automatic mould changing on injection moulding machines

Coupling the ejector

March 1993

1 FIELD OF APPLICATION

This part lays down requirements and connection dimensions for coupling the ejector during automatic mould change on injection moulding machines. Its aim is to standardise the connection of the ejector of injection moulds.

2 TERMINOLOGY

2.1 Overall size

see part 1, 2.3

The larger clearance between columns (e_1) is determinative for assignment to the EUROMAP overall size in this part.

3 GENERAL REQUIREMENTS

3.1 Actuation

Pneumatic, hydraulic or electrical.

3.2 Life

$> 2 \cdot 10^6$ load changes when loaded by 50% of the minimum transmissible static ejector forces specified in Table 1.

3.3 Monitoring

The monitoring signals for the "coupled" and "uncoupled" functions must be processible by the machine control system.

3.4 Installation

The ejector coupling and coupling pin must be installed in such a way that the centre offset of these two parts in relation to each other is $\leq b$ (see Table 1).

The position of the connections as well as the coupling and coupling pin must be secured against rotation.

The installation instructions of the coupling manufacturers should be followed.

3.5 Operating principle

Frictional or positive.

3.6 Coupling geometry

Is left to the coupling manufacturer.

4 LOAD CAPACITY AND CONNECTION DIMENSIONS

Table 1:

EUROMAP Overall size	Transmissible ejector force1) static		Coupling path2)	Outside diameter3)	Overall length of coupling4)	Connection thread5)	Centering diameter5)	Centering recess5)	Centre offset
	forward	reverse							
	$F_{forward}$ (k N) min.	$F_{reverse}$ (k N) min.	$s_{erf\ max}$	d_{max}	l_{max}	d_1	d_2	t_1	b
E 5	32	16	20	80	80	M 16			
E 6	32	16	20	80	80	M 16	17		0,5
E 7	32	16	20	80	80	M 16		3	
E 8	80	40	30	100	110	M 20[6]			
E 9	80	40	30	100	110	M 20[6]	21		
E 10	80	40	30	100	110	M 20[6]			1
E 11	125	63	40	125	125	M 24			
E 12	125	63	40	125	125	M 24	25		
E 13	125	63	40	125	125	M 24		4	
E 14	250	125	40	160	140	M 36[6]			
E 15	250	125	40	160	140	M 36[6]	38		
E 16	250	125	40	160	140	M 36			

1) The machine ejector forces must not exceed these values.

2) The maximum ejector path s_4 according to EUROMAP recommendation 2/3 is reduced by the machine ejector path s_{erf} required for connection and interlocking of the ejector coupling (see Fig. 1).

3) d_{max} corresponds to the maximum outside diameter of a cylinder enclosing the coupling and also connection and monitoring elements when the coupling is installed.

4) Corresponds to the maximum overall length of the ejector coupling when coupled including all connections and monitoring elements (see Fig. 1).

5) The specified values apply both to the machine and mould side.

6) Deviates from EUROMAP recommendations 2/3, 1983.

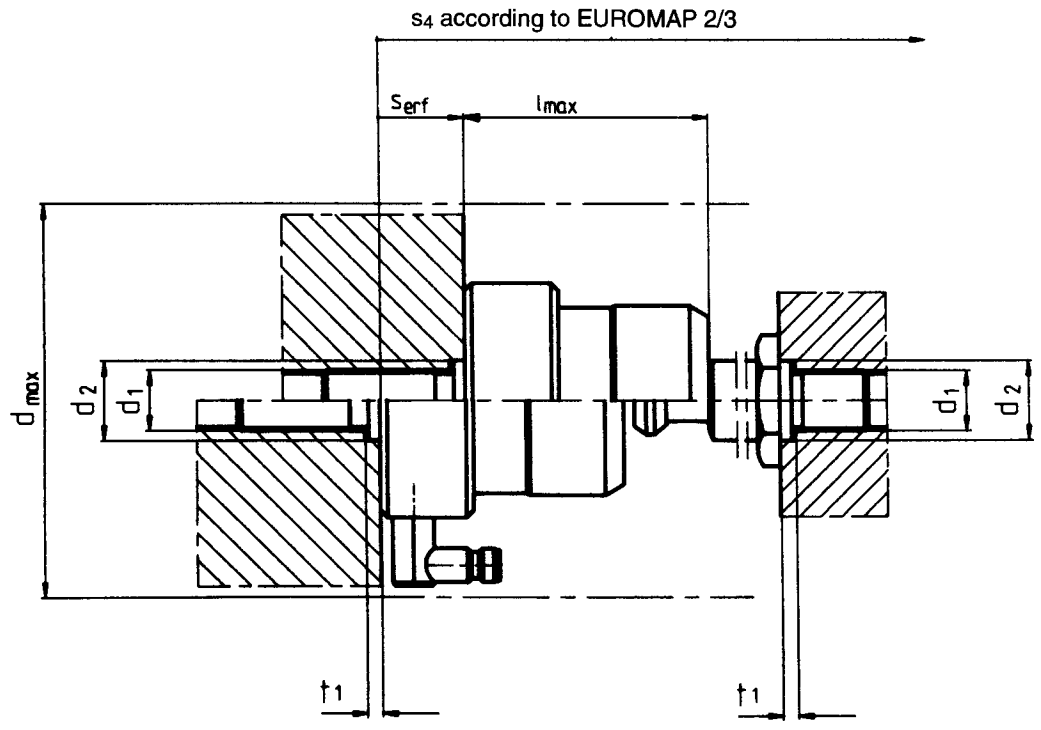


Fig. 1:Required machine ejector path s_{erf} for connection and interlocking of the ejector coupling

5 INSTALLATION

As shown in Figs. 2, 3 and 4 the ejctor coupling can be installed in different ways.

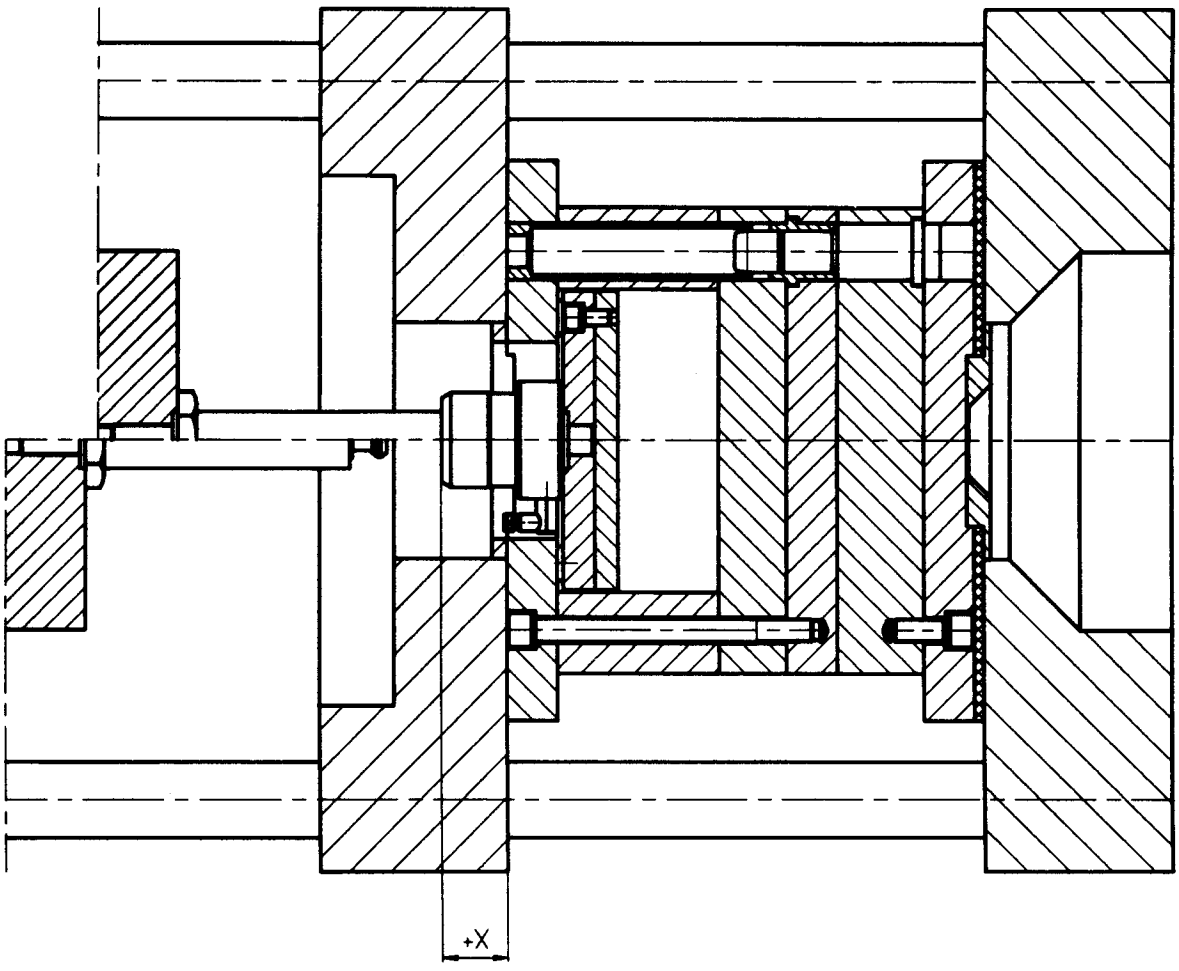


Fig. 2 **Type of installation A**

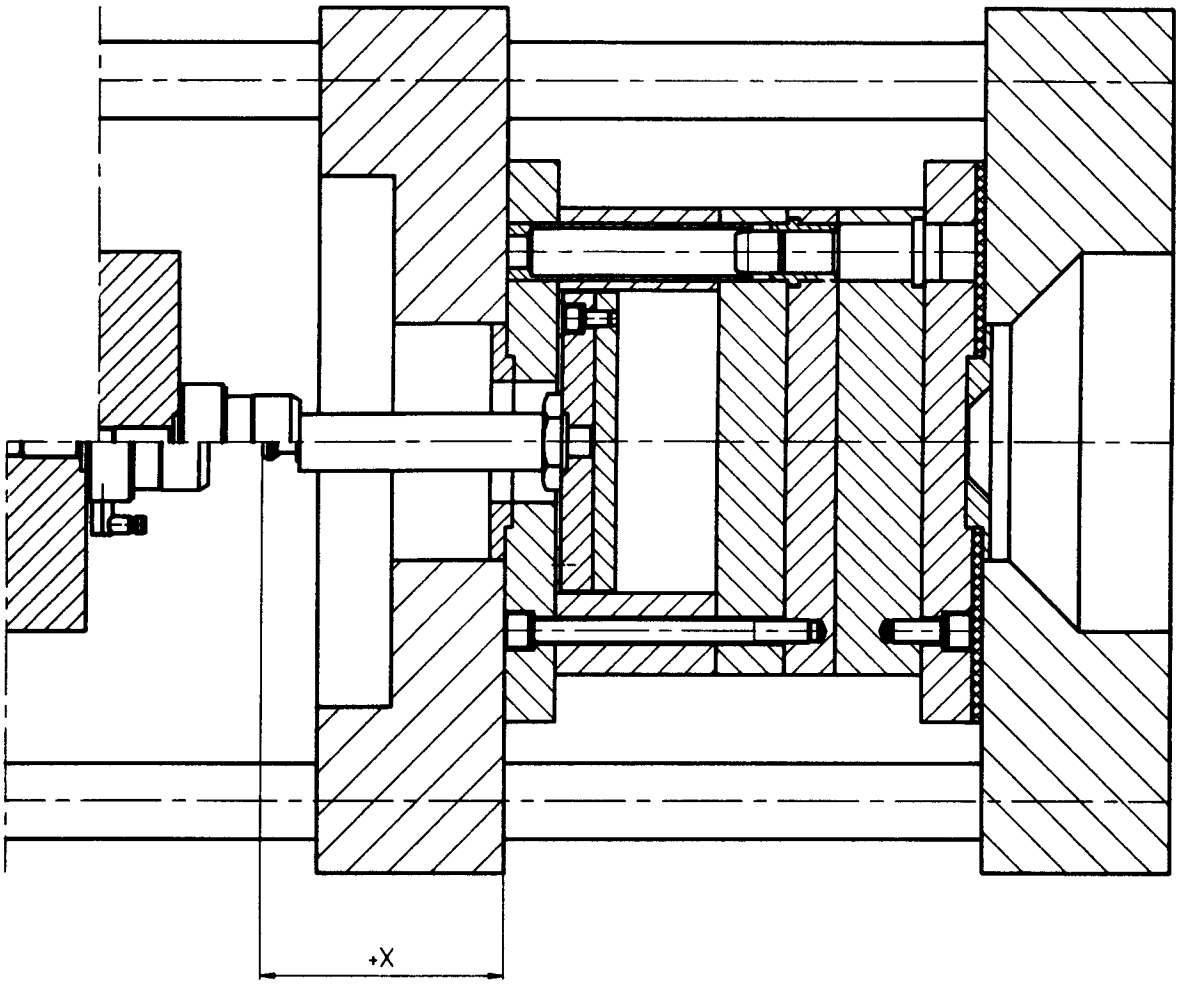


Fig. 3 Type of installation B (mounting on the mould)

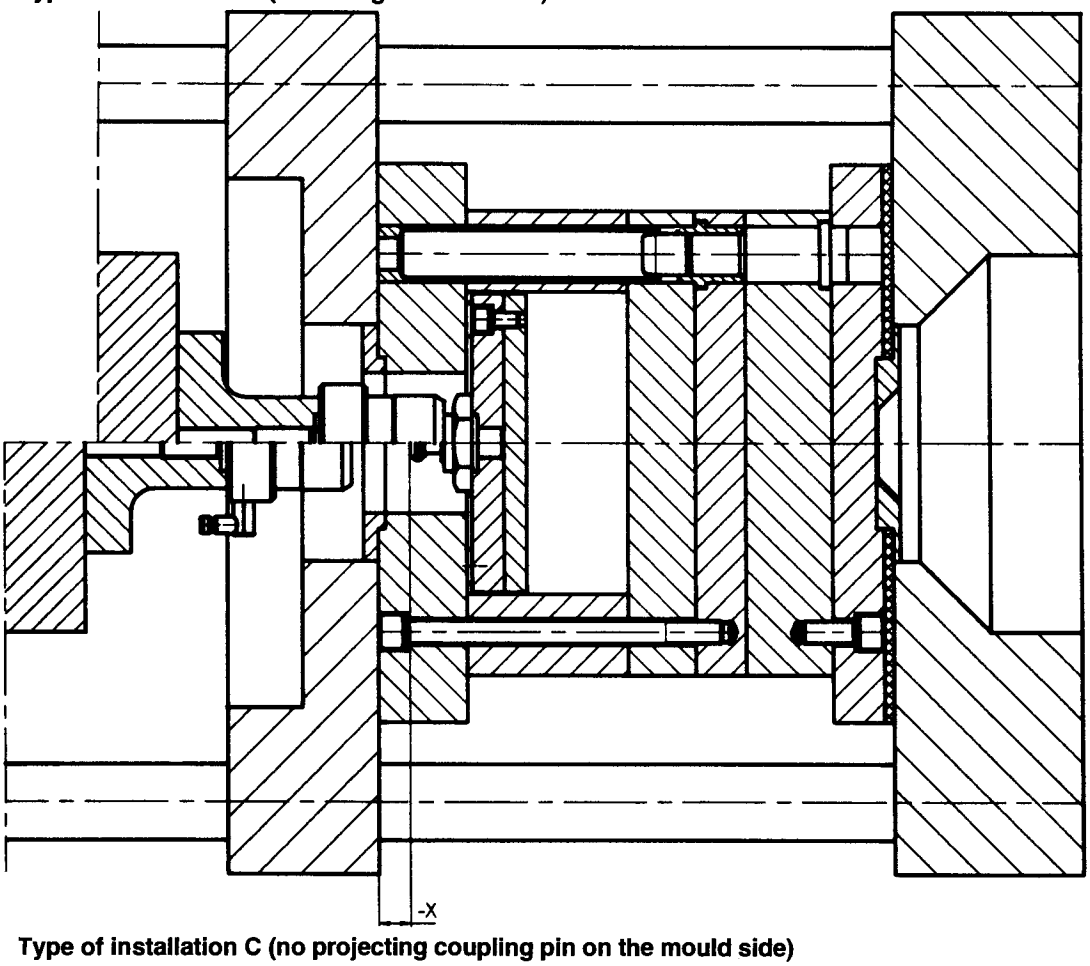


Fig. 4 Type of installation C (no projecting coupling pin on the mould side)

6 DESIGNATION

The EUROMAP overall size, type of installation and dimension x between the clamping area of the mould and end of the coupling (type of installation B, Fig. 3) or coupling pin (type of installation A and C, Figs. 2 and 4) should be specified for designation of an ejector coupling according to this part of the EUROMAP recommendation.

Positive values of x mean that the coupling pin projects beyond the mould clamping area.

Designation examples:

EUROMAP 11 Part 5 - E 13 A + 200
EUROMAP 11 Part 5 - E 10 C + 0
EUROMAP 11 Part 5 - E 16 C - 10

EUROMAP

Europäisches Komitee der Hersteller von Kunststoff- und Gummimaschinen

European Committee of Machinery Manufacturers for the Plastics and Rubber Industries

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