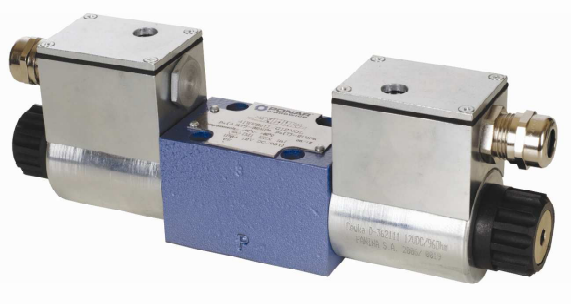
PONAR wadowice	Explosion proof directional control valve type IWE6			WK 499 775
	NS6	up to 31,5 MPa	up to 20dm³/min	04.2010

DATA SHEET - SERVICE MANUAL

APPLICATION

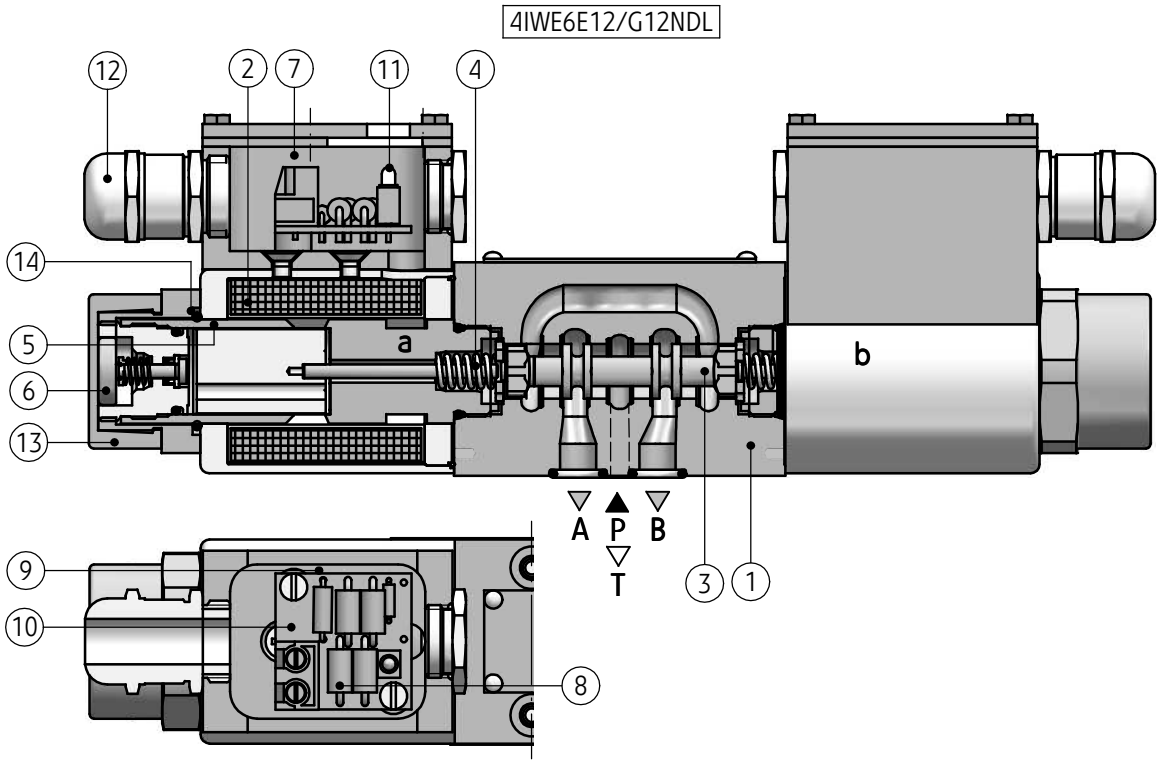
The 4-way directional control valves type **IWE6...** are designed as direct operated components for subplate mounting. These valves are mainly used in hazardous areas especially in mining industry.
It is certified with ⟨Ex⟩ **I M1 Ex ia I**, and can work with outlet explosion proof circuit "**ia**" or "**ib**" of the power pack permitted for group 1 gas explosion at maximum parameter **Ui = 15V**, **Ii = 1,6A**.



DESCRIPTION OF OPERATION

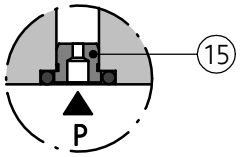
The directional valve is switched by changing position of the spool (3) which moving along its axis separates or connects ports **A**, **B**, **P**, **T** in the housing (1). The move of the spool is secured by the putting voltage on coil (2) through the terminal strip (10) The return of the spool is realized by the spring (4). An optional emergency button (6) permits movement of the spool without solenoid. The valve is equipped with explosion proof solenoid type EMSGI – 45. Solenoid is assembled with sleeve (5) and emergency button (6).

There is a coil (2) on the sleeve (6). Outside of coil mounted is cable box (7). Inside the cable box (7) are diodes as well as safety device (9) preventing excessive current increase. Electrical connection for is realized by using terminal strip (10) and for type with light signaling applied diode LED (11). The diode is mounted inside cable box (7). Power lead must be sealed and immobilized using gland (12). Sealing rings (14) protect the coil against external impacts and prevent from turn of coil after tightening up the nut (13).



DESCRIPTION OF OPERATION

Directional valve type **IWE6...** can be equipped by throttle insert (15) mounting in port **P -** version ...IWE6...12/G12...**B**....



TECHNICAL DATA

Hydraulic fluid	mineral oil	
Required filtration	**up to16 µm**	
Recommended filtration	up to10 µm	
Nominal fluid viscosity	37 mm^2/s at temperature 55°C	
Viscosity range	2,8 up to 328 mm^2/s	
Ambient temperature range	-20 up to 40 °C	
Fluid temperature range	-20 up to 60 °C	
Optimum fluid temperature range	40 up to 55 °C	
Relative humidity of air	to 95 %	
Protective coating	housing	epoxy chemically resistant enamel
	solenoid	hot galvanizing
Maximum operating pressure	**port P, A, B - 31,5 MPa**	
	port T - 21 MPa	
Maximum flow	**20 dm^3/min**	
Weight	1,6 kg	
Supply voltage U_n	**12 V DC**	
Supply current I_n	110 mA	
Scope of insulation	**IP 65**	

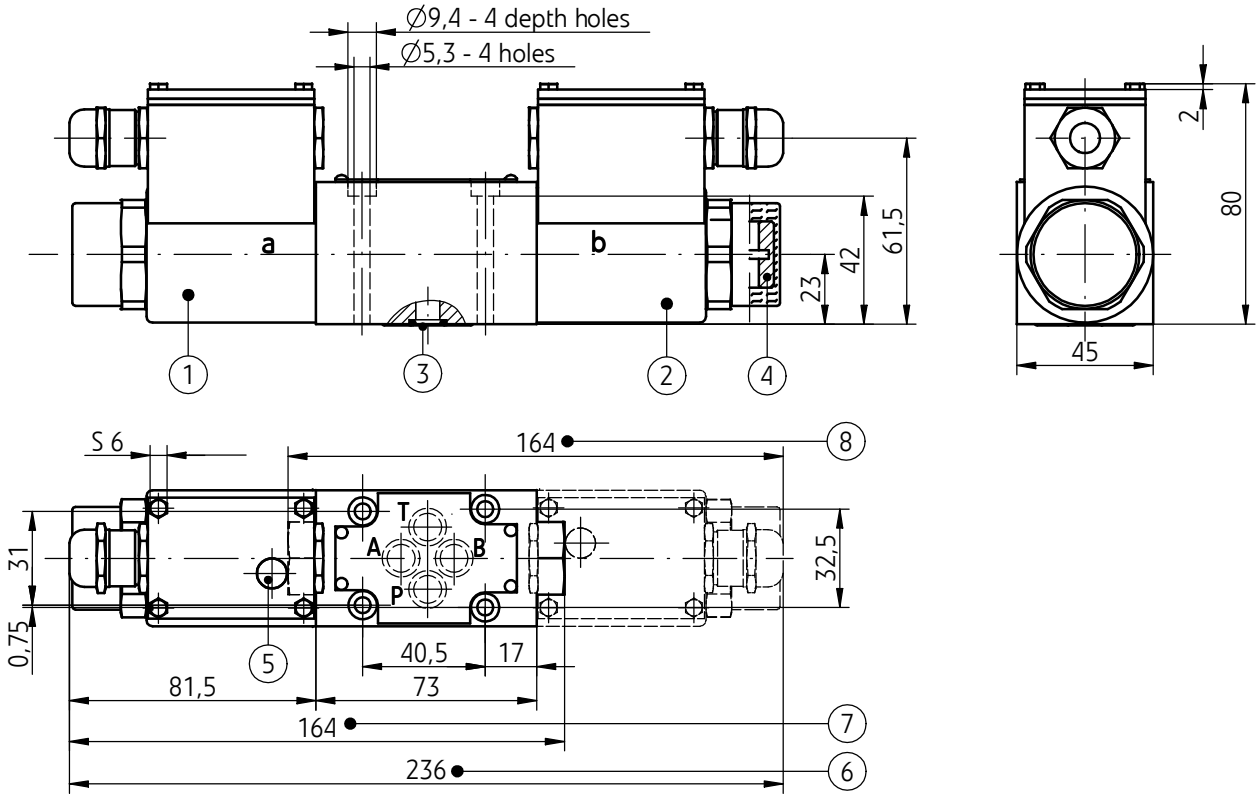
ACCORDING TO DIRECTIVE 94/9/WE

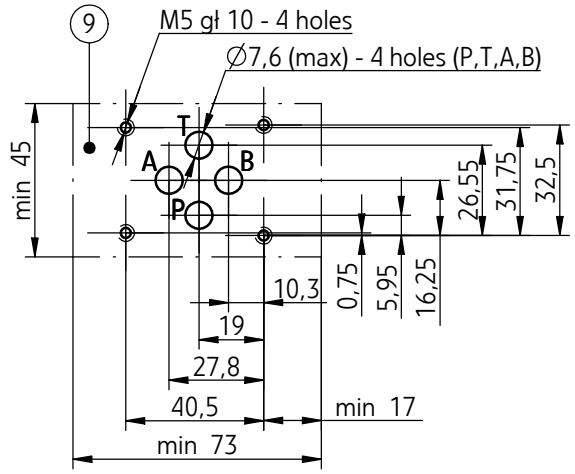
Quality certificate	**CE 1026 FTZU**	**No. FTZU 05 ATEX Q 013**
Inspection certificate	**1456 KOMAG/06/ ATEX/201**	
Type of protection	**Ex I M 1 Ex ia I**	

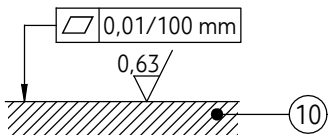
ASSEMBLY AND OPERATION REQUIREMENTS

1. Electric connection of the valve must be made according to electric scheme on page 5.
2. Conductors of valve must be meet requirements applied in the mining machinery.
3. Only skilled workers can direct connect valve to an electrical system.
4. The plug must be supported by retains screw.
5. During the period of operation must be kept the fluid viscosity and filtration according to requirements defined in Service Manual
6. In order to ensure the failure free and safe operation must be check:
   - condition of the electrical connection,
   - the verity proper working of the valve,
   - cleanness of the hydraulic fluid.
7. Any valve repair in the mine condition is forbidden. A damaged valve must be supplied to the producer in order to repair. The address of service is shown on the last page of this Data sheet – Service Manual
8. A person that operates the valve has to acquaint with Service Manual.

OVERALL AND CONNECTION DIMENSIONS





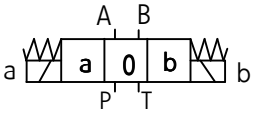


1 – Solenoid **a**
2 – Solenoid **b**
3 – Sealing ring – **O-ring 9,2 x 1,8** – 4 pcs/kit
4 – Emergency button
5 – Diode LED – light signaling
(only version IWE6…1X/…D**L**…)
6 – Valve dimension:
3 - position directional valve with return springs
(solenoids **a** and **b**, spools symbol: **E**, **H**, **J**, **L**, **M**, **U** according to page 4)
2 - position directional valve without return springs
(solenoids **a** and **b** spools symbol: **A**, **C**, **D** according to page 4)
7 – Valve dimension:
2 - position directional valve with return spring
(solenoid **a**, spools symbol: **A**, **C**, **D**, **EA**, **HA**, **JA**,**LA**,**MA**,**UA** according to page 4)
8 – Valve dimension:
2 - position directional valve with return spring
(solenoid **b**, spools symbol: **B**, **Y**, **EB**, **HB**, **JB**, **LB**, **MB**,**UB** according to page 4)
9 – Porting pattern for directional spool valve configuration of connection holes in accordance with the following standards:
• **CETOP RP 121H** - identified by CETOP 4.2-4-03-320 (nominal size **CETOP 03**)
• **ISO 4401** - identified by ISO 4401-03-02-0-94
mounting bolts **M5 x 50 - 10.9** in accordance with **PN -EN ISO 4762** - 4 pcs/kit,
tightening torque **Md = 9 Nm**
10 – Subplate surface required

SCHEMES

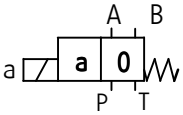
Graphic symbols for 3-position directional spool valves

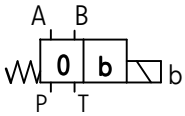
...IWE6...1X/**...**



Graphic symbols for 2-position directional spool valves

...IWE6...1X/**...**

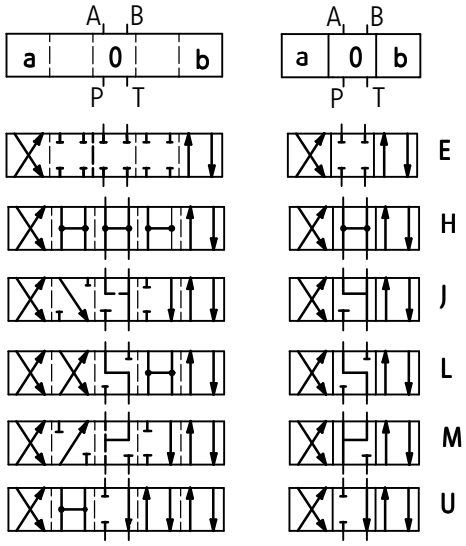




Graphic symbols for spools

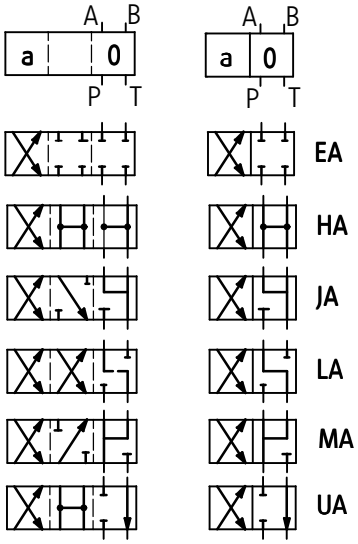
working and indirect positions

working positions



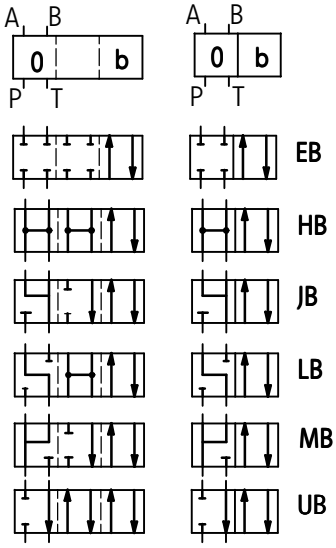
working and indirect positions

working positions

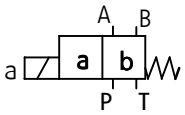


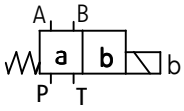
working and indirect positions

working positions

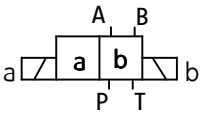


...IWE6...1X/**...**





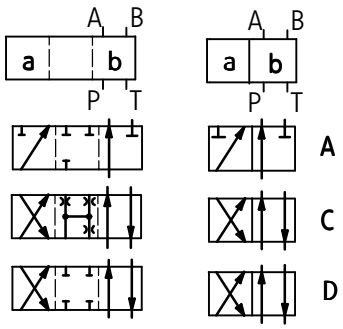
...IWE6..1X/**O...**



Graphic symbols for spools

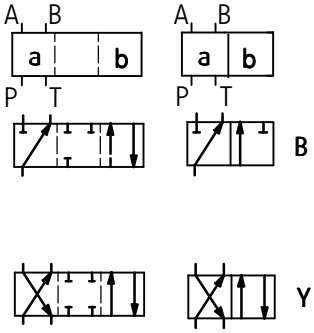
working and indirect positions

working positions



working and indirect positions

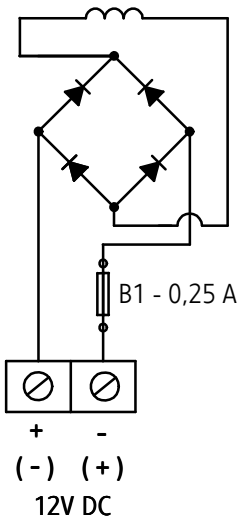
working positions



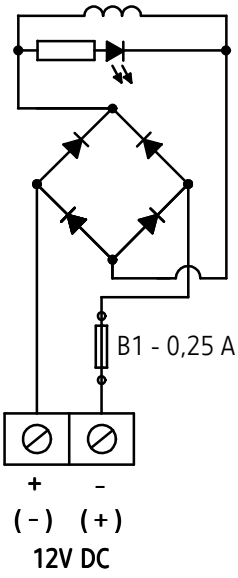
SCHEMES

Electrical scheme of directional control valve

version with cable box without LED
IWE6…1X/…**D**...

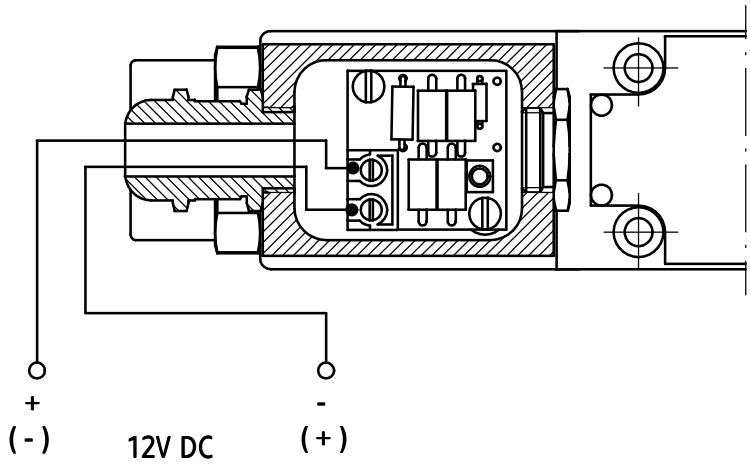


version with cable box and light signaling LED
IWE6…1X/…**DL**…



View of electrical connections

versions with cable box
IWE6…1X/…**D**…; IWE6…1X/…**DL**...

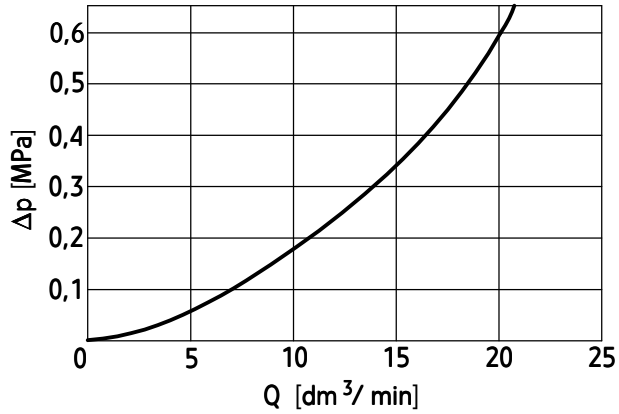


PERFOMANCE CURVES

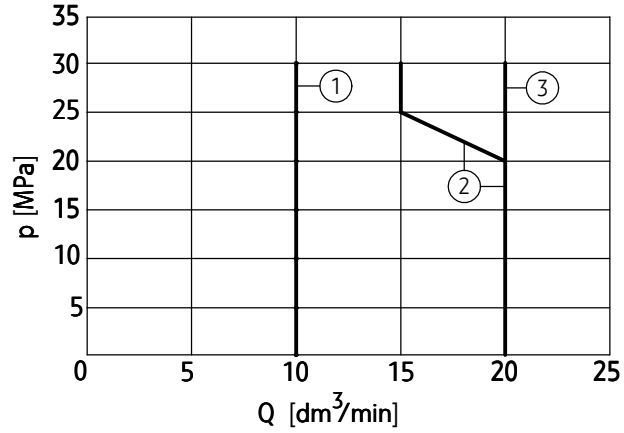
For fluid viscosity v = 41 mm^2/s and temperature t = 50°C

Flow resistance

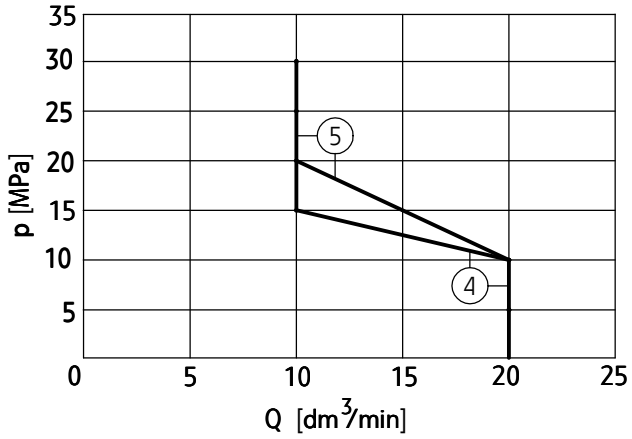
flow direction: **P** → **A**; **P** → **B**; **A** → **B**; **A** → **T**



Flow limits



Spool type schemes according to page 4	Performance diagram number
E, A, B	1
A/O	2
H, M, C/O, D/O	3
C, D, J, Y	4
L, U	5



NOTES:

The flow limits refer to typical application of 4-way directional control valve i.e. with using 2 lines e.q. **P** to **A** and **B** to **T** at the same time. In case of using 4-way directional valve with line e.q. **P** to **A** (**B** plugged) or **A** to **T** (**B** plugged) actual flow limits are considerably lower.

HOW TO ORDER

	IWE	6		12 /			N			★

Number of service ports
3-way - for spools A, B = **3**
4*-way - for the other spools** = ***4

Nominal size (NS)
NS6 = **6**

Spool type
spools symbol – according to **page *4***

Series number **=** 1X
(10-19) - installation and connection dimensions unchanged = **12**

Spool positioning
spring centering **= no designation**
without spring return = O

Voltage for solenoids
DC voltage 12V DC = **G12**

Manual override
solenoids with emergency button = **N**

Electrical connections (schemes according to page 5)
cable box without LED = **D**
cable box with LED = DL

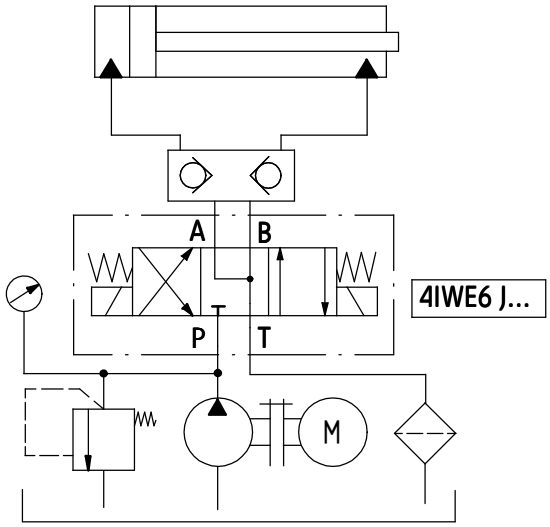
Throttle insert
Without throttle insert = **no designation**
Throttle insert Ø 0.8 mm = B 08
Throttle insert Ø 1.0 mm = B 10
Throttle insert Ø 1.2 mm = B 12

Sealing
NBR (for fluids on mineral oil base) = **no designation**
FPM (for fluids on phosphate ester base) = V

NOTES:

Orders coded in the way showed above should be forwarded to the manufacture.
Shorter terms of delivery for valves with parameters in bold are possible.
Coding example: 4IWE6 E 12/G12 N DL

EXAMPLE OF APPLICATION IN HYDRAULIC SYSTEM



SUBPLATES AND MOUNTING BOLTS

Subplates must be ordered according to the data sheet **WK 496 480**. Subplates:
G 341/01 - threaded connection **G 1/4**
G 342/01 - threaded connection **G 3/8**
G 341/02 - threaded connection **M14 x1,5**
G 342/02 - threaded connection **M16 x1,5**

Subplates and bolts fixing directional valve **M5 x 50 - 10,9** in accordance with **PN - EN ISO 4762** - 4 pcs/kit must be ordered separately.

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