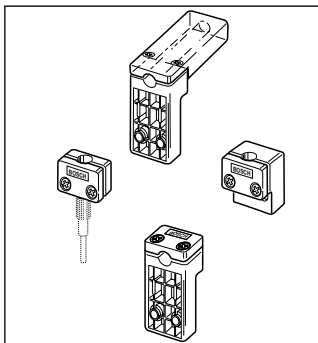


Proximity Switches, Brackets, and Coding Systems

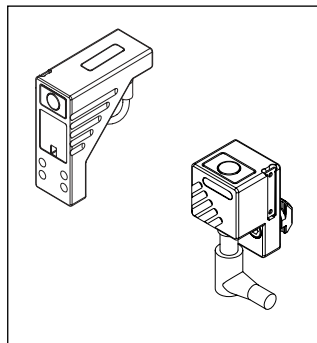
Section 17 – Proximity Switches, Brackets, and Coding Systems

Eight types of proximity switch mounting brackets are available. They all use proximity switches with a diameter of 12 mm. Proximity switches must have an 8 mm sensing range to ensure proper operation.

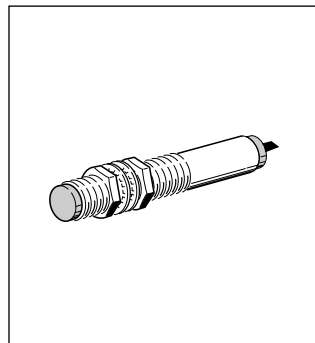
The ID10 Coding system is a mechanical set, electrical read information transfer system. The system consists of work-piece pallet mounted code memory blocks and conveyor mounted code setters and readers.



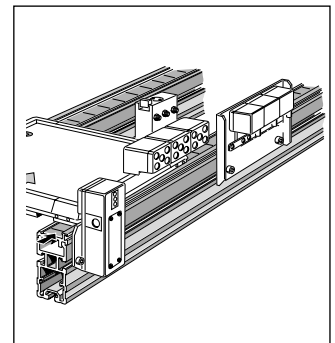
Proximity Switch Brackets
17-2 to 17-4



Heavy Duty Proximity Switch
Brackets
17-5



Proximity Switches
17-6



ID10 Coding Systems
17-7 to 17-13

Proximity Switches, Brackets, and Coding Systems

Proximity Switch Brackets

Models SH2/U, SH2/UV, SH2/S, SH2/ST, SH2/SF, SH2/EP

Stop gate proximity mounting kits are used to position proximity switches at a stop gate. Usually the switch provides a *pallet present at stop signal* and optionally may provide a *pallet exit* signal.

Six basic proximity switch brackets are available for use with TSplus conveyors. They include:

Model SH2/U - For sensing pallet position from below.

Model SH2/UV - For sensing pallet position from below when attached to a stop gate.

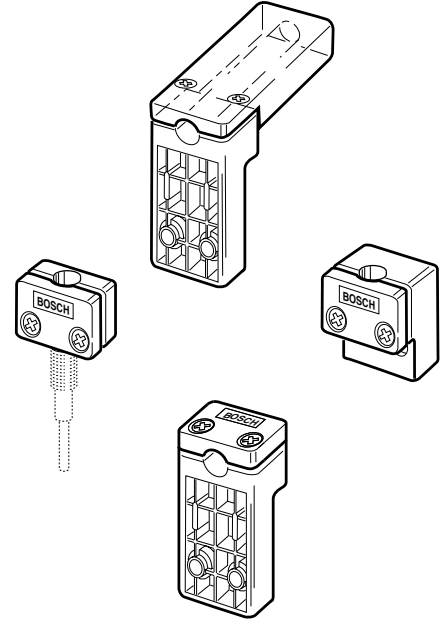
Model SH2/S - For sensing pallet position from the side.

Model SH2/ST - For sensing pallet position from the side, with a protective transparent switch cover.

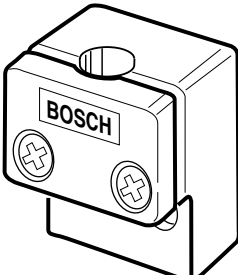
Model SH2/SF - For sensing the pallet position from the side, using a low profile flat proximity switch.

Model SH2/EP - For sensing pallet position parallel to line flow. This bracket can be mounted either on the inside or outside of the belt section, and will not allow pallets to pass through.

All switch brackets are constructed of polyamide and include connection hardware.

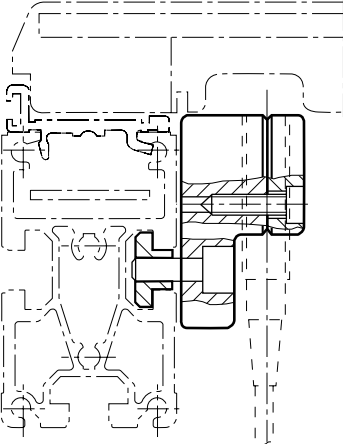


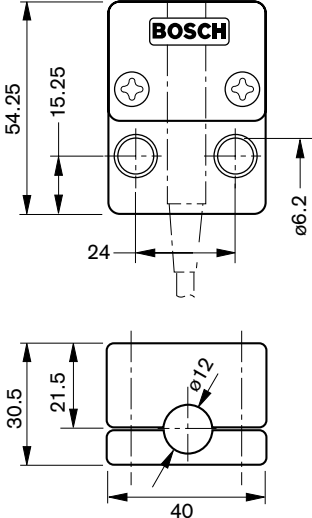
Ordering Information for Proximity Switch Bracket SH2/U



Part Number SH2/U

3842 168 820





Proximity Switches, Brackets, and Coding Systems

Ordering Information for Proximity Switch Bracket SH2/UV

Technical drawing of Proximity Switch Bracket SH2/UV. The perspective view shows a rectangular bracket with two circular terminals on the front face, labeled 'BOSCH'. The cross-section shows the bracket's profile and mounting points. The orthographic views include a top view with dimensions 40 (width), 28 (inner width), and 30 (height), and a side view with dimensions 18 (height), 9 (width), and $\phi 12$ (hole diameter).

Part Number SH2/UV
3842 168 600

Ordering Information for Proximity Switch Bracket SH2/S

Technical drawing of Proximity Switch Bracket SH2/S. The perspective view shows a rectangular bracket with a grid of terminals on the front face, labeled 'BOSCH'. The cross-section shows the bracket's profile and mounting points. The orthographic views include a top view with dimensions 40 (width), $\phi 12$ (hole diameter), 55.3 (height), 65.3 (total height), and 79.9 (total height), and a side view with dimensions 24 (width), 30 (height), and 'BOSCH' branding.

Part Number SH2/S
3842 168 830

Ordering Information for Proximity Switch Bracket SH2/ST

Technical drawing of Proximity Switch Bracket SH2/ST. The perspective view shows a rectangular bracket with a grid of terminals on the front face. The cross-section shows the bracket's profile and mounting points. The orthographic views include a top view with dimensions 90 (width), 30 (inner width), 18 (height), and 30 (total height), and a side view with dimensions 40 (width), 55 (height), 79 (total height), 15 (height), 24 (width), and $\phi 6.6$ (hole diameter).

Part Number SH2/ST
3842 168 850

Proximity Switches, Brackets, and Coding Systems

Ordering Information for Proximity Switch Bracket SH2/SF

Part Number SH2/SF
3842 168 840

Uses proximity switch 3842 168 698

Dimensions: 53, 14, 2, 40, 25, 50, 82, 14, 24, 10, 15, $\phi 6.6$

Ordering Information for Proximity Switch Bracket SH2/EP

Part Number SH2/EP
8981 022 903

Dimensions: $\phi 12$, 19.05, 12.4, 24, 40.4, 52, 60, 4x M5 thru, 80, 15, 9.8, 28.3, 38.1, 9.5 x 15.5 slot, 45, 25, 5, 4.83

Proximity Switches, Brackets, and Coding Systems

Heavy Duty Switch Brackets

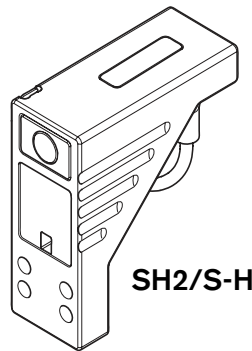
Model SH2/S-H
SH2/U-H

Heavy duty proximity switch brackets are available in two styles. The SH2/S-H is used to detect workpiece pallet presence from the side, while the SH2/U-H bracket is used to detect workpiece pallet presence from below the pallet.

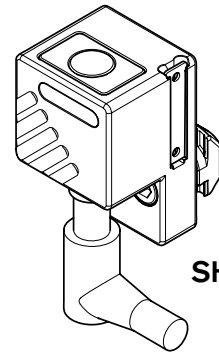
The die-cast aluminum brackets are especially sturdy and shock-proof up to 100 kg. Integrated centering lugs make it easy to position and install the bracket in the T-slots on the conveyor side rail. The brackets also feature an integrated stop for 12 mm proximity switches and integrated cable duct.

NOTE: both heavy duty proximity switch brackets can only be used with proximity sensors that have a 7 to 8 mm sensing range. Reference Quick Disconnect Prox. R980 024 978 on pg. 17-6.

All required Mounting hardware is included with the switch bracket. Order 12 mm proximity switches separately.



SH2/S-H

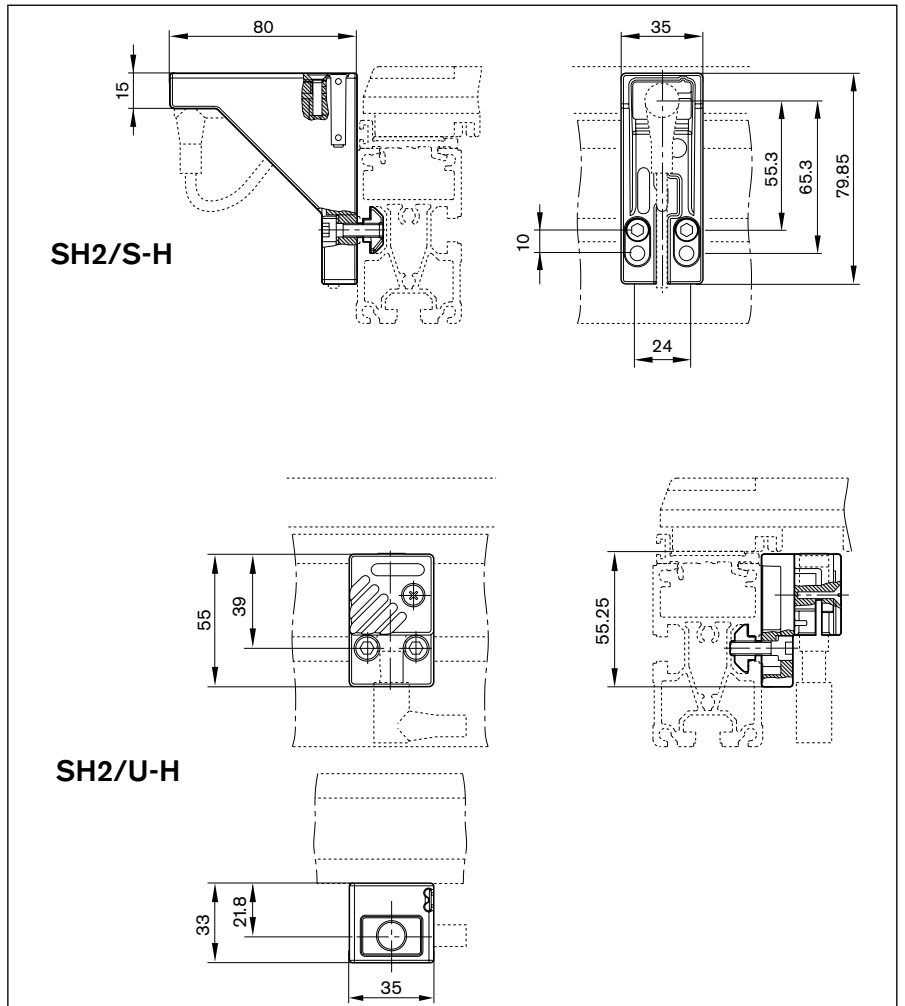


SH2/U-H

Ordering Information for SH2/S-H, SH2/U-H Switch Bracket

Description	Part number
SH 2/S-H Switch Bracket	3842 537 280
SH 2/U-H Switch Bracket	3842 537 289

Dimensional data for SH2/S-H, SH2/U-H



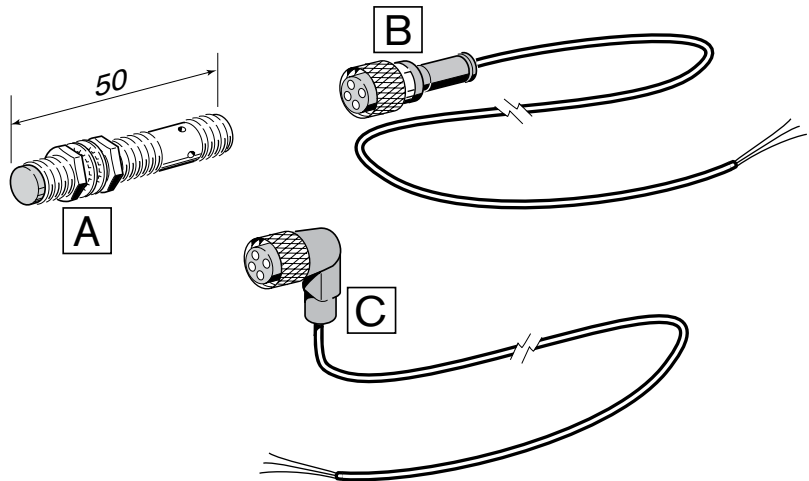
Proximity Switches, Brackets, and Coding Systems

Proximity Switches

A proximity switch indicates workpiece pallet presence by detecting the exciter plates on the sides and bottom of workpiece pallets. This normally open, 24 VDC, short circuit protected switch is PNP (sourcing) and has a 12 mm threaded body. This proximity switch operates at an 8mm sensing range (unshielded) and has an LED indicator.

This proximity switch is compatible with all TSplus proximity switch holders (plastic body and die-cast aluminum body).

NOTE: The HP2/K Lift-Position Unit requires a shielded proximity switch. Please refer to page 13-10 when ordering proximity switches for this module.



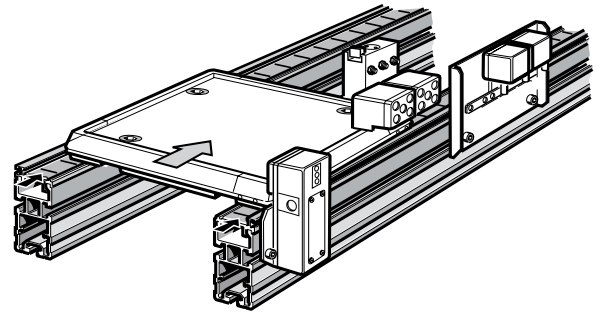
Ordering Information for Proximity Switches

	Description	Part Number
A	Quick disconnect proximity switch, 12mm 24VDC PNP 8mm	R980 024 978
B	Quick disconnect plug with 5 m of 3-conductor cable	8981 008 498
C	90 degree quick disconnect plug with 5 m of 3-conductor cable	8981 013 317

Proximity Switches, Brackets, and Coding Systems

ID10 Coding System

The ID10 coding system is a mechanical set, electrical read information transfer system. The system consists of code memory blocks mounted on the work-piece pallets, pneumatic code setters and electric readers—all of which can be ordered on the following pages. Pins in the code memory block are programmed so that each of the two vertically coupled pairs is set to hold one bit of data.



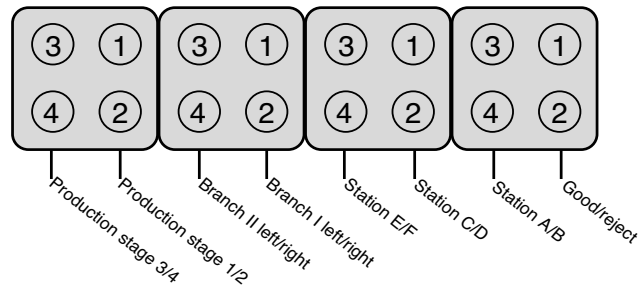
Data accumulated and read typically includes:

- Accept or Reject
- Model A or Model B
- Operation Performed or Not Performed
- Straight Ahead or Cross Transfer
- Discrete Pallet numbering

The ID10 coding system has a maximum capacity of 4 bits. Alternatively each pin may be combined to represent a binary coded decimal.

Example assignment of data storage

Example assignment of data storage



Storage capacity and space required on the workpiece pallet by the ID10 coding system

Number of code memory blocks	Storage capacity (bits)	Number of possible codings	Space required on pallet in mm (l x w)
1	2	$2^2 = 4$	32 x 27
2	4	$2^4 = 16$	64 x 27

Proximity Switches, Brackets, and Coding Systems

Code Setter

Model ID10/S

The code setter “writes” information to the code memory block. The pins in the code memory block are set by write pistons which are actuated by single-acting pneumatic cylinders with spring returns.

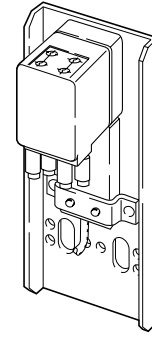
If multiple code blocks are to be set within the same station, the same number of code setters and code memory blocks must be used on each pallet.

To “write” information into the code memory block, the workpiece pallet must be stopped directly in front of the code setter. Code setters are available with or without a proximity switch to sense pallet presence.

The code setter is automatically aligned when mounted to the conveyor section. A pallet guide (page 13-3) should be used in conjunction with the code setter to properly position the workpiece pallet.

The code setter includes a mounting plate and hardware. Pneumatic connections are made via included push-lock fittings that accept 4 mm OD plastic tubing.

NOTE: If two non-adjacent code memories are to be “set”, an ID10/S code setter must be ordered individually together with mounting hardware and a low-profile proximity switch. Rexroth part number for the appropriate low-profile proximity switch is: 3842 168 698.



Ordering Information for Individual Code Setters, ID10/S

Description	Part Number
Code Setter, module only	3842 168 610

Ordering Information for Code Setter Mounting Kits

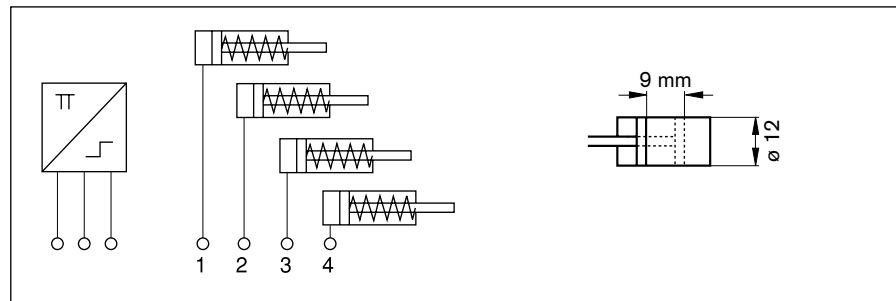
Description	Part Number
Mounting Kit * for use with 1 Code Setter	3842 525 241
Mounting Kit * for use with 2 Code Setters	3842 525 242

* Mounting kit includes mounting plate and hardware.

Ordering Information for Code Setters with Mounting Plates

Number of Code Setters	Part Number	
	ID10/SA, with proximity switch	ID10/SB, without proximity switch
1	3842 525 245	3842 525 249
2	3842 525 246	3842 525 250

Pneumatic diagram, ID10/S

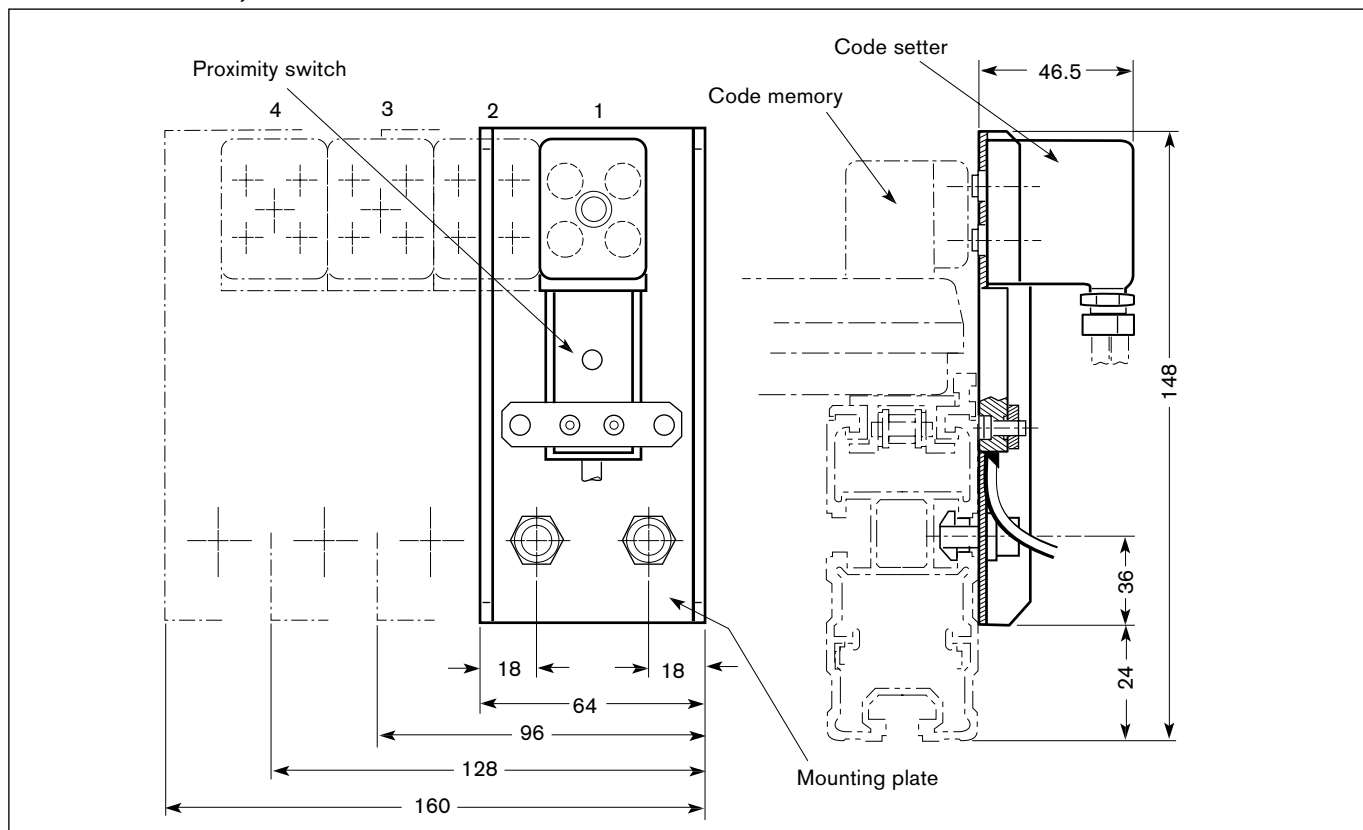


Proximity Switches, Brackets, and Coding Systems

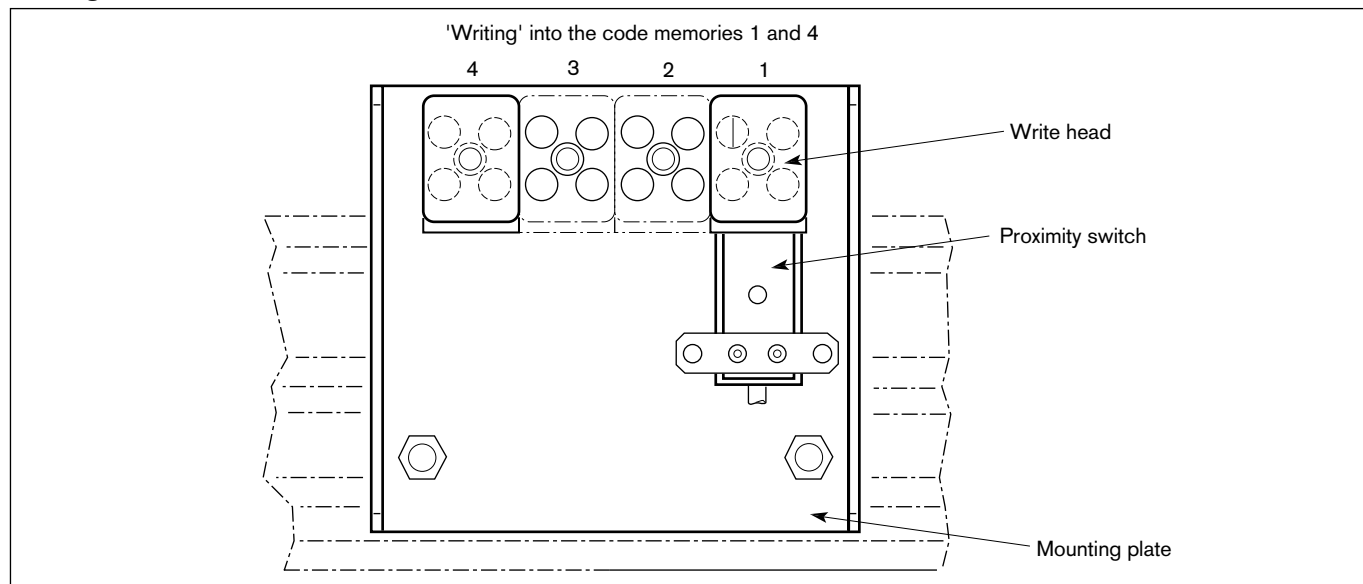
Technical data, ID10/S

Air pressure	= 4 bar max.
Cylinder diameter	= 12 mm
Cylinder stroke	= 9 mm
Air fittings	= 4 mm push-lock

Dimensional data, ID10/S



Writing into code memories, ID10/S



Proximity Switches, Brackets, and Coding Systems

Code Reader

Model ID10/L

The code reader has four proximity switches which sense the position of the pins in the code memory block. A workpiece pallet guide (page 13-3) must be used to ensure correct operating distance between the code readers and code memory blocks.

There are two types of code readers. Type A is used when only one code reader is needed or as the first in line when more than one is used. This code reader has two additional proximity switches in series for sensing workpiece pallet presence. It also acts as the power supply for up to three subsequent Type B code readers (which can't sense pallet presence). Non adjacent Type A and Type B units are connected via a cable plug.

LED indicators on the back of the code reader housing indicate correct pallet positioning and if a read operation is taking place.

Code readers can be ordered separately or with mounting hardware.

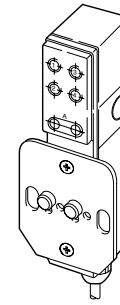
Operating modes

1. Read information

Each proximity switch in the code reader head can be connected through an output (1 to 4) to the control system. Type A read heads contain a proximity switch which indicates that the workpiece pallet is in the correct position for a read operation (output 6). This switch indicates when information is available for evaluation.

2. Compare information

The code reader has an internal DIP switch which can be used to set up one of two operation modes. This allows you to read only certain data from the code memory block. In effect, you will get an output only if certain pins are set on the code memory block.



Ordering Information for Individual Code Readers ID10/L

Code Readers	Part Number
Type A, module only	3842 174 350
Type B, module only	3842 174 360

Ordering Information for Code Reader Kits

Number of Code Readers		Part Number
Type A	Type B	
1	N/A	3842 525 253
1	1	3842 525 254

Ordering Information for Code Reader Mounting Kits

Description	Part Number
Mounting Kit * for use with 1 Code Reader	3842 525 261
Mounting Kit * for use with 2 Code Reader	3842 525 262

* Mounting kit includes mounting plate and hardware.

** If two non-adjacent code memory blocks are to be read, two single code readers and a cable plug to connect them must be used (see Reading into code memories, ID10/L page 17-11).

Total current consumption for Type A and Type B code readers

	Read operating mode		Compare information operating mode	
	Type A	Type B	Type A	Type B
Own consumption	50 mA	50 mA	50 mA	50 mA
Output 1 to 4	400 mA	400 mA	N/A	N/A
Output 5 max.	N/A	N/A	200 mA	N/A
Output 6 max.	200 mA	N/A	200 mA	N/A
Total consumption max.	650 mA	450 mA	450 mA	50 mA

NOTE: N/A = Not applicable.

In mode II, determined through DIP switch settings and based on specific input, you can use the code reader to control a junction in the TSplus system. In mode I, the code reader reads all of the

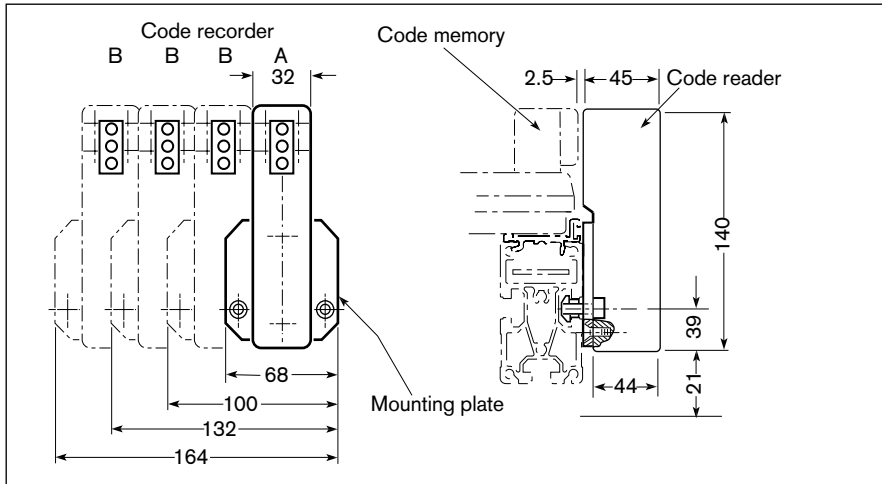
information from a code memory block. This information is then supplied to the system control which determines what to do with a workpiece pallet.

Proximity Switches, Brackets, and Coding Systems

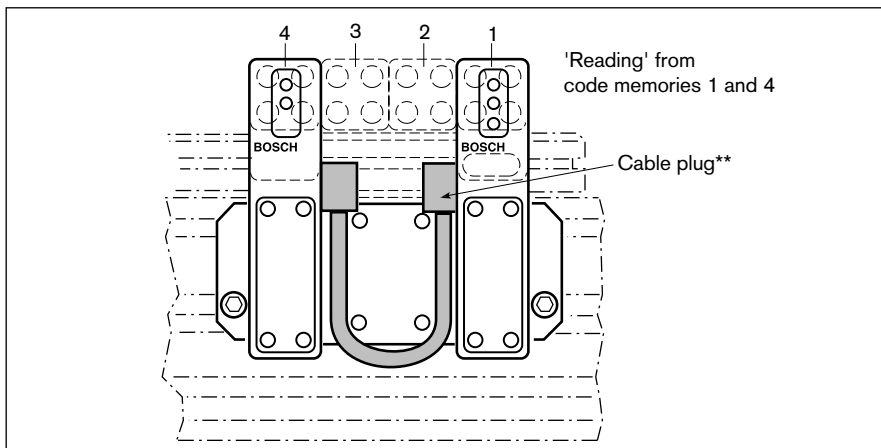
Technical Data, ID10/L

Supply voltage	= 24 VDC ± 20%
Residual ripple	= 5%
Degree of protection	= IP 54
Maximum operating frequency	= 1.5 kHz
Temperature range	
Operating	= -20°C to 70°C
Storage	= -25°C to 80°C

Dimensional Data, ID10/L

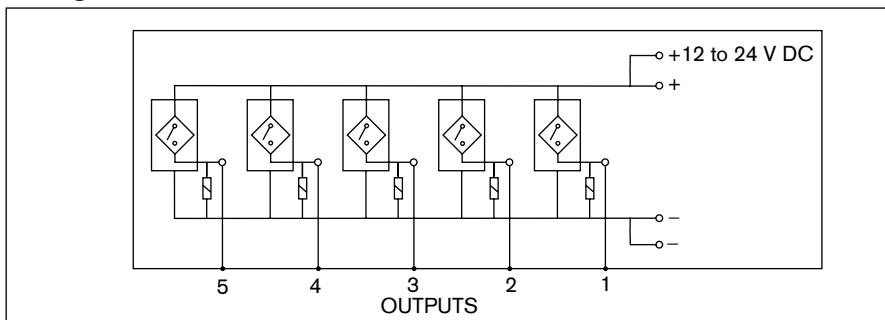


Reading into code memories, ID10/L



** If two non-adjacent code memory blocks are to be read, two single code readers and a cable plug must be used.

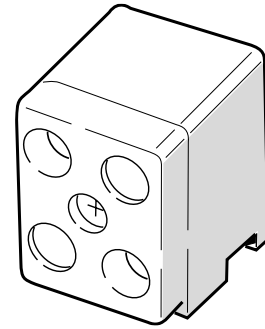
Wiring Schematic, ID10/L



Proximity Switches, Brackets, and Coding Systems

Code Memory Block

Model ID10/D



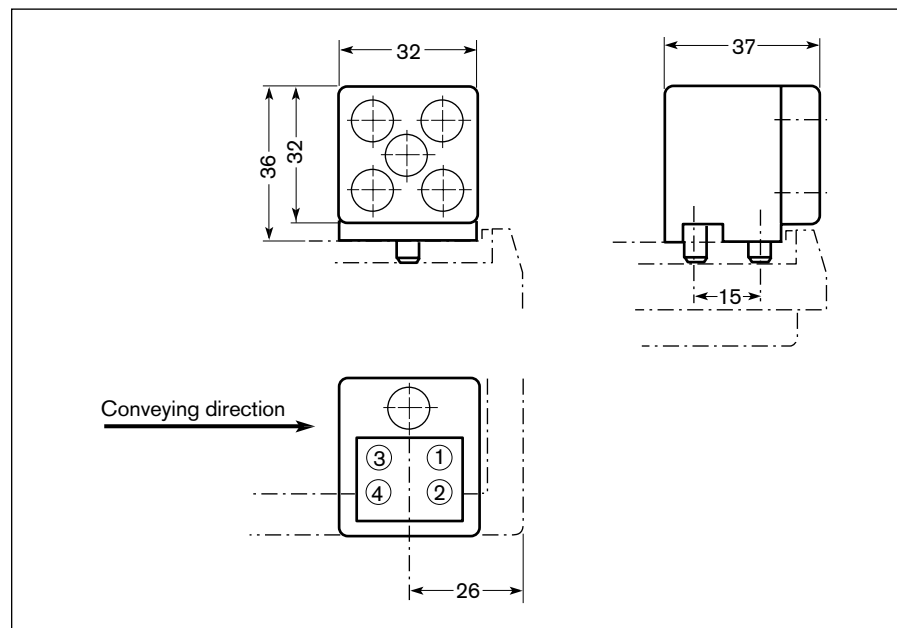
The ID10/D code memory block carries information about the workpiece, workpiece pallet, or process. It can carry information on the production sequence and processing status from station to station or through the complete system. Each code memory block has four coding pins connected in vertical pairs. When the top pin of a pair is pushed in, the bottom pin is pushed out. Read and write operations occur from the same side of the code memory block. A positive reading is always possible, since one pin is always extended.

If four code memory blocks are to be mounted on a workpiece pallet having a width of 160 mm, the fourth code memory block must be mounted on a special bridge because it is positioned above the positioning bushing of the workpiece pallet.

Ordering Information for Code Memory Block ID10/D

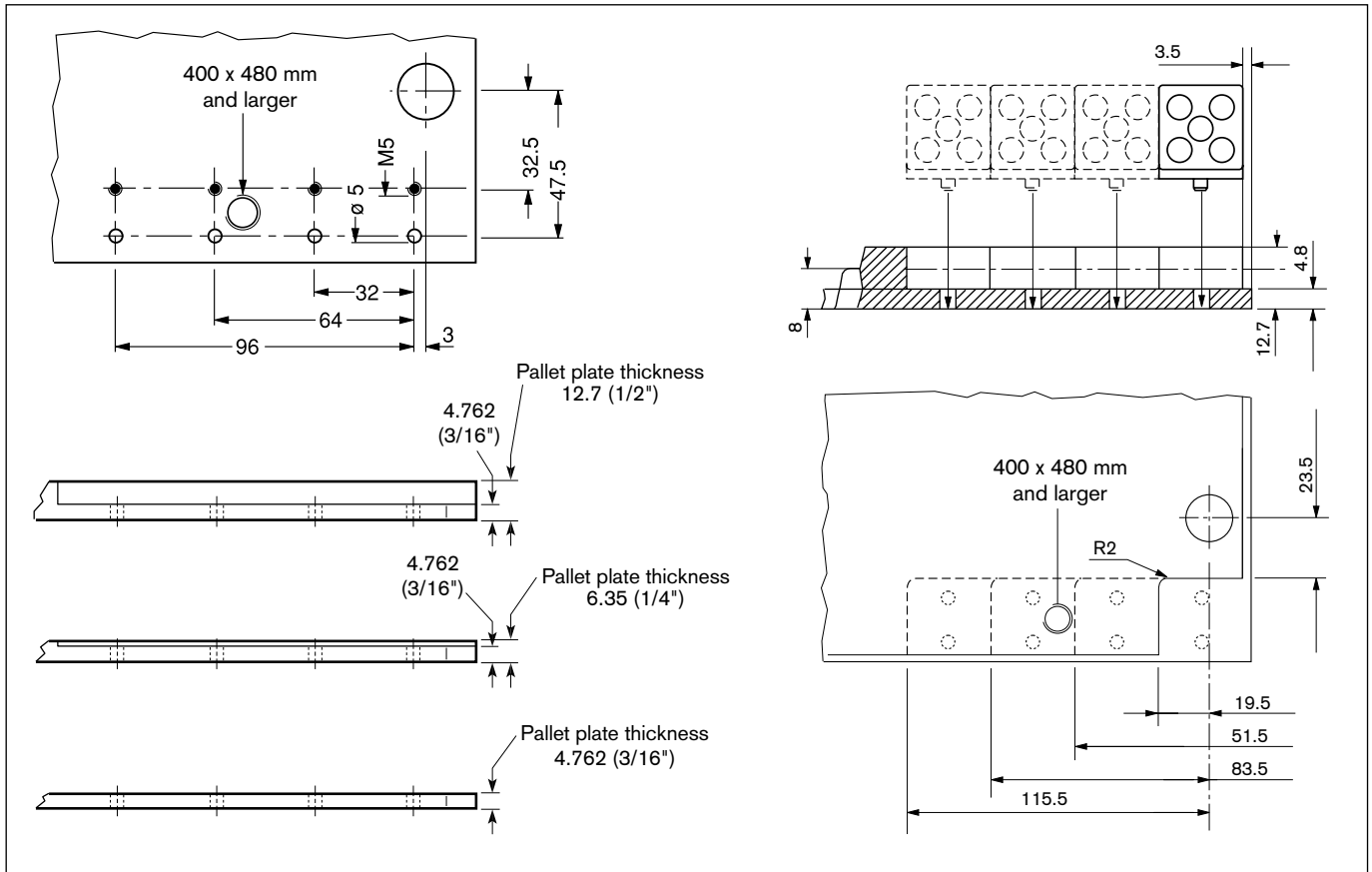
Description	Part Number
Code Memory Block	3842 508 038
Bridge	3842 168 577

Dimensional data, ID10/D



Proximity Switches, Brackets, and Coding Systems

Code memory block mounting hole location



NOTE: Dimensions are for reference only. Contact Bosch Rexroth for a detailed machining drawing.

Fixed Code Pins

Fixed code pins are available for the code memory blocks. You may want to use this type of pin for applications involving workpiece pallet numbering. Fixed coding pins increase possible pin combinations on a single code block to 16. Steel pins (to be read) and plastic pins (not to be read) can be ordered individually.

Ordering Information for Fixed Code Pins

Description	Part Number
Steel Pin, Qty 1	8981 011 495
Plastic Pin, Qty 1	8981 011 496