Integrated systems for production

CLAMP Ø160

Manual / Automatic Clamp

Integrated systems for production

Issued date: 2018/06/27

FCS System Integrated systems for production
CLAMP Ø160

Round clamping devices for products and production equipments consist of an upper pallet system connectable to a lower manual or automatic clamp support.

MAIN FEATURES & STRENGTHS

Compact design Ø160 ideal for small rotary machine tables

Easy to be fixed on a machine table

Clamp available in manual or automatic version

Pallet interchangeable system, mono-oriented with gripper groove

MOUNTING PROCEDURE

Clamp Ø160 can be fixed directly on the machine table or on a FCS grid support (Base gauges, Cubes, etc.)

PALLET Ø160
Product range:
HT, M6, Flange

FIXING SCREW

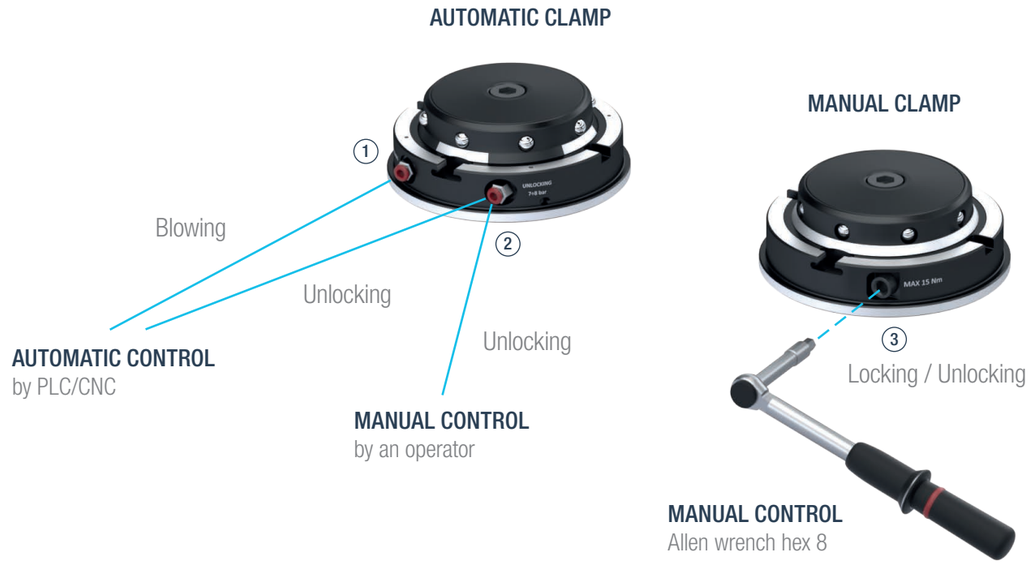
CLAMP Ø160
Product range:
Manual, Automatic

RING
Self-centering

CLAMPING SEAT
In case of mounting on FCS components, the seats are already present

For further technical details, see the corresponding data sheet

TYPES OF CLAMP



AUTOMATIC CLAMP

Two pneumatic lines to control the unlocking and the blowing systems:

1. Blowing: suppling air at the proper pressure the blowing central outflow is used:
   - for the swarf evacuation, 7÷8bar;
   - to verify if the Pallet is correctly locked/unlocked (using the pressure variation caused by the closing chamber coming from the contact between the Clamp with the Pallet), 2÷3bar.
2. Unlocking: without providing air, the Pallet is locked by the action of the spheres (normally closed). Suppling air at 7÷8bar, the spheres retract enabling the Pallet to be unlocked.

The air supply can be controlled manually by the operator or automatically by PLC or CNC.

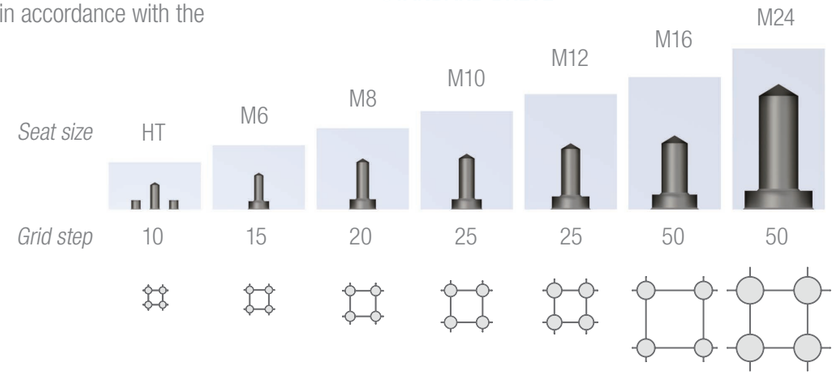
MANUAL CLAMP

3. Locking / Unlocking: by screwing, the pallet will be locked (the spheres go out). By unscrewing, the pallet will be unlocked (the spheres go back).

PALLET INTERCHANGEABLE SYSTEM ALONG THE WORKPIECE PRODUCTION PROCESS

The versatility of the system allows to clamp the workpiece in any production step and to easily handle the pallet replacement.
The clamping seats keep track of the workpiece positioning and are defined in accordance with the STANDARD BREYL.

STANDARD BREYL™



Finishing

PALLET HT Grid step 10
PALLET M6 Grid step 15

Mounting of the clamping components

Roughing and clamping seats execution

Pallet mono-oriented by a locating pin (Ring and screw)

Manual clamp

Automatic handling system

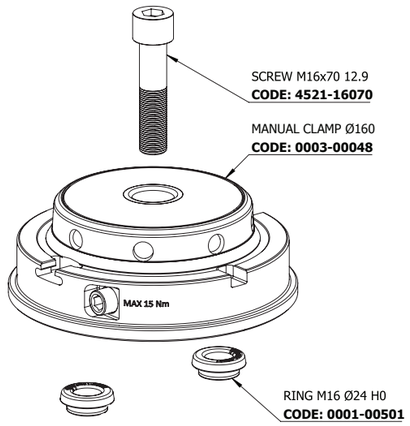
Pallet interchangeable system with gripper groove

Compact design Ø160 ideal for small rotary machine tables

Automatic clamp

MANUAL CLAMP Ø160 - DATA SHEET

SET CODE: 0004-00048



THE SET INCLUDES

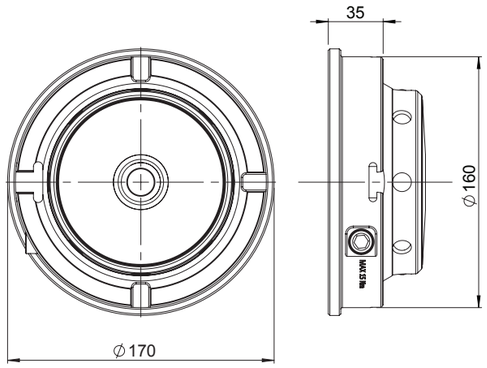
Nr.	1	MANUAL CLAMP Ø160	CODE 0003-00048
Nr.	1	SCREW M16x70 12.9	CODE 4521-16070
Nr.	2	RING M16 Ø24 H0	CODE 0001-00501

☐ Minimum seat length required

Tightening torques, clamping forces and accuracy: see the corresponding sections.

TECHNICAL DATA

OVERALL DIMENSIONS

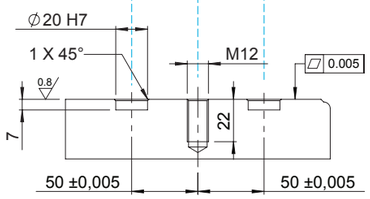


LOCKING/UNLOCKING SYSTEM	mechanical with mechanicl activation
WEIGHT	7.3 kg

CONNECTION INSTRUCTION TO THE M12 GRID

SPECIAL SCREW M12
CODE 4521-00005

Nr.2 RING
REDUCTION M16-M12
CODE 0001-00406



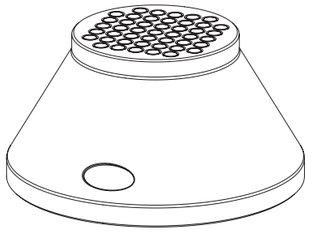
CLAMPING SEAT FOR CLAMP Ø160

General tolerance ISO 2768-mK

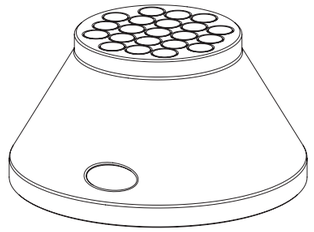
FCS System Integrated systems for production

MANUAL CLAMP Ø160 - DATA SHEET

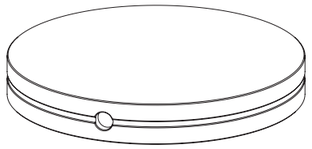
PALLET Ø160 PYRAMID HT
CODE 0006-00014

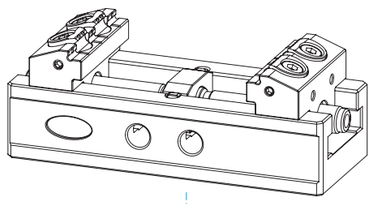


PALLET Ø160 PYRAMID M6
CODE 0006-00013



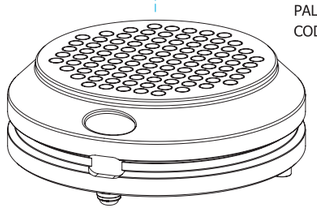
PALLET Ø160 WORKABLE
CODE 0023-00008



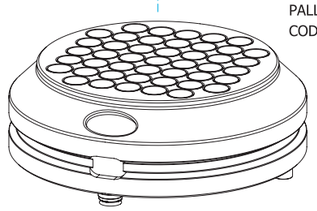


MODULAR VISE HT-M6-M8-M10-M12
SELF CENTERING 200x80 H71
CODE 2309-00100

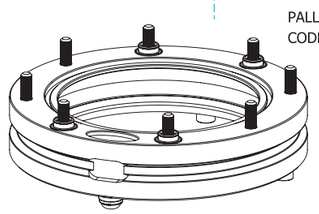
PALLET Ø160 HT
CODE 0006-00010

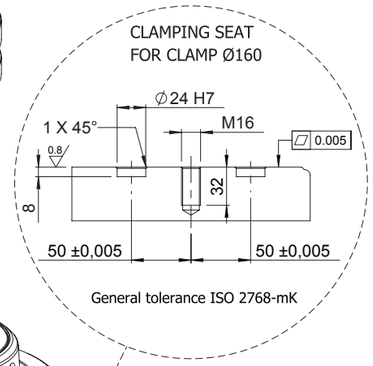


PALLET Ø160 M6
CODE 0006-00011

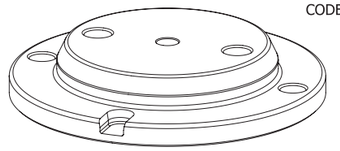


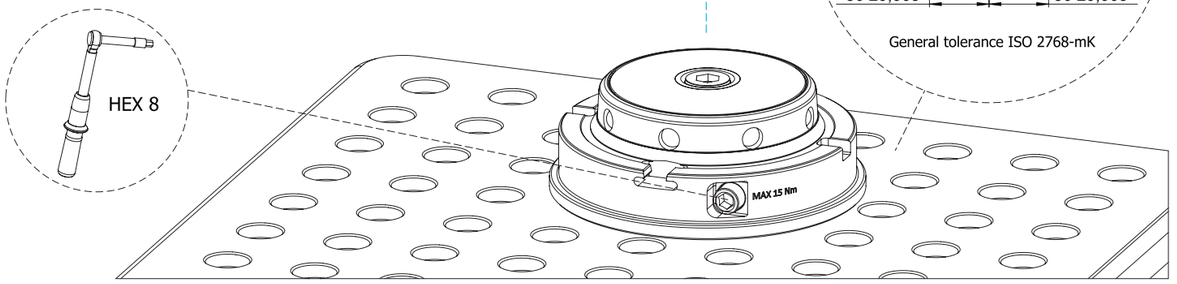
PALLET Ø160 FLANGE
CODE 0006-00009





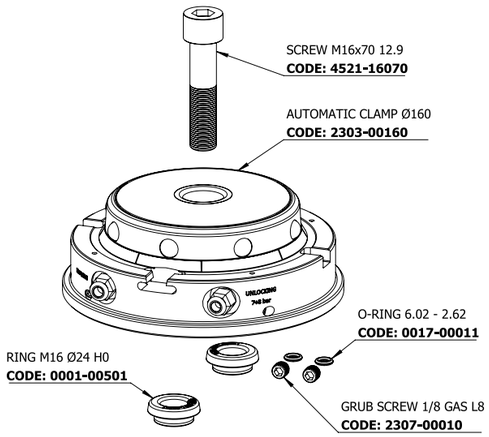
PALLET SUPPORT
CODE 2307-00083





AUTOMATIC CLAMP Ø160 - DATA SHEET

SET CODE: 2303-00161

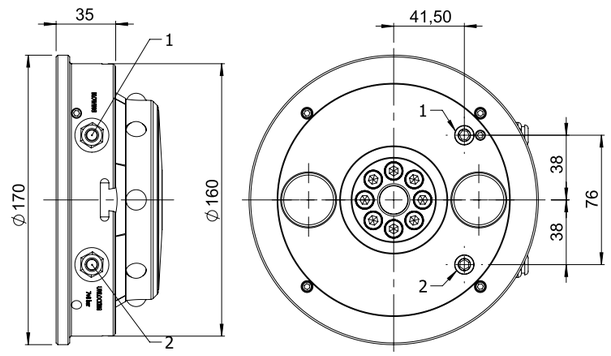


THE SET INCLUDES

Nr.	1	AUTOMATIC CLAMP Ø160	CODE 2303-00160
Nr.	1	SCREW M16x70 12.9	CODE 4521-16070
Nr.	2	RING M16 Ø24 H0	CODE 0001-00501
Nr.	2	GRUB SCREW 1/8 GAS L8	CODE 2307-00010
Nr.	2	O-RING 6.02 - 2.62	CODE 0017-00011

TECHNICAL DATA

OVERALL DIMENSIONS



1 - BLOWING
2 - UNLOCKING

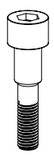
LOCKING/UNLOCKING SYSTEM	mechanical with pneumatic activation (7÷8 bar)
BLOWING SYSTEM	air outflow from the coupling surface
WEIGHT	6.8 kg

☐ Minimum seat length required

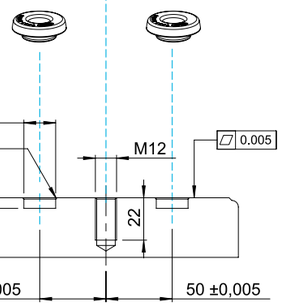
Tightening torques, clamping forces and accuracy: see the corresponding sections.

CONNECTION INSTRUCTION TO THE M12 GRID

SPECIAL SCREW M12
CODE 4521-00005



Nr.2 RING
REDUCTION M16-M12
CODE 0001-00406



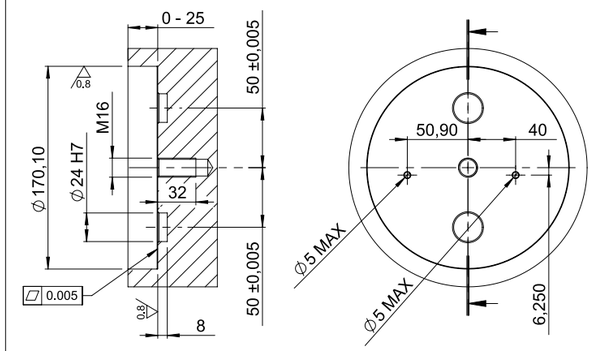
CLAMPING SEAT FOR CLAMP Ø160

General tolerance ISO 2768-mK

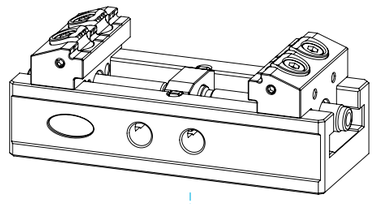
FCS System Integrated systems for production

AUTOMATIC CLAMP Ø160 - DATA SHEET

MACHINE TABLE SEAT

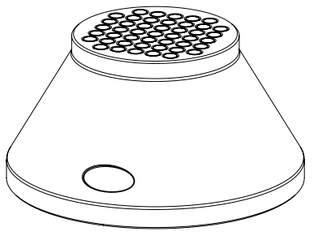


General tolerance ISO 2768-mK

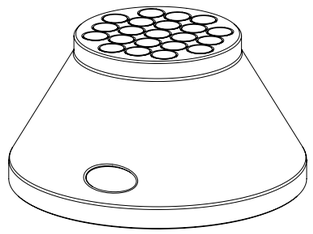


MODULAR VISE HT-M6-M8-M10-M12
SELF-CENTERING 200x80 H71
CODE 2309-00100

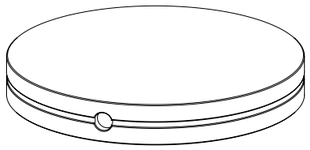
PALLET Ø160 PYRAMID HT
CODE 0006-00014



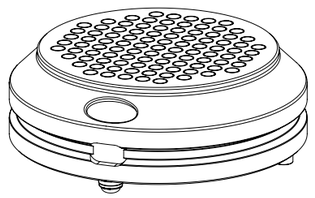
PALLET Ø160 PYRAMID M6
CODE 0006-00013



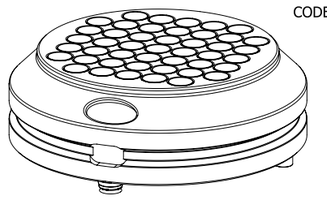
PALLET Ø160 WORKABLE
CODE 0023-00008



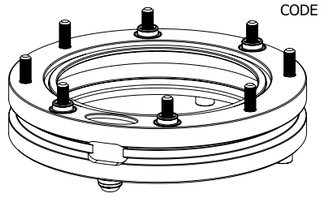
PALLET Ø160 HT
CODE 0006-00010



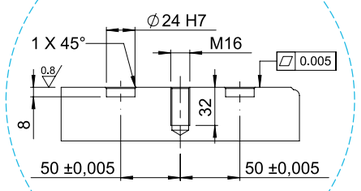
PALLET Ø160 M6
CODE 0006-00011



PALLET Ø160 FLANGE
CODE 0006-00009

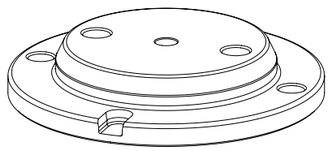


CLAMPING SEAT
FOR CLAMP Ø160

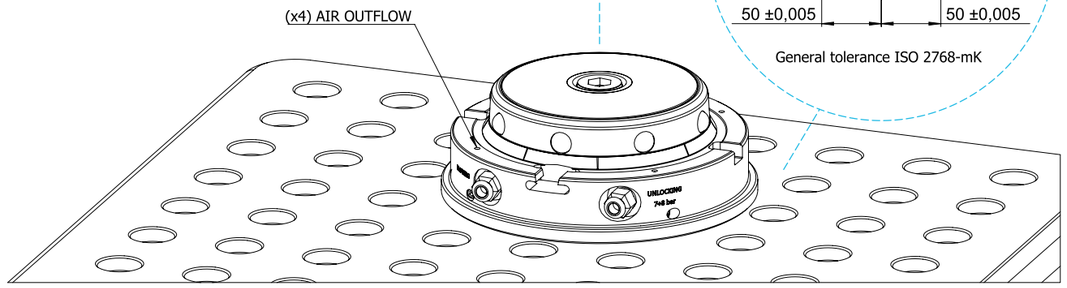


General tolerance ISO 2768-mK

PALLET SUPPORT
CODE 2307-00083

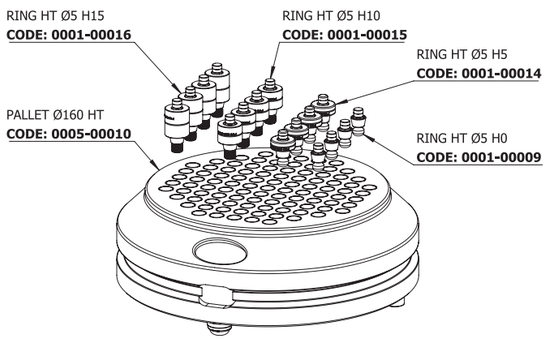


(x4) AIR OUTFLOW



PALLET Ø160 HT - DATA SHEET

SET CODE: 0006-00010

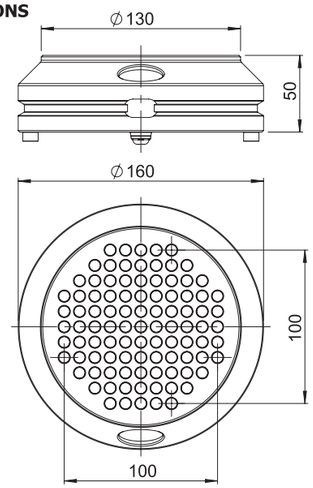


THE SET INCLUDES

Nr.	1	PALLET Ø160 HIGH TECH	CODE 0005-00010
Nr.	4	RING HIGH TECH Ø5 H0	CODE 0001-00009
Nr.	4	RING HIGH TECH Ø5 H5	CODE 0001-00014
Nr.	4	RING HIGH TECH Ø5 H10	CODE 0001-00015
Nr.	4	RING HIGH TECH Ø5 H15	CODE 0001-00016

TECHNICAL DATA

OVERALL DIMENSIONS

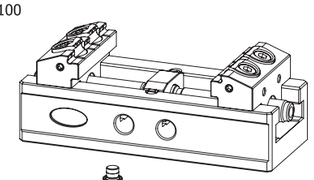


WEIGHT	3.80 Kg

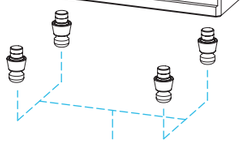
☐ Minimum seat length required

Tightening torques, clamping forces and accuracy: see the corresponding sections.

MODULAR VISE HT-M6-M8-M10-M12 SELF CENTERING 200x80 H71
CODE 2309-00100

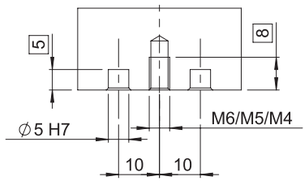


Nr. 4 RING HT Ø5 H0
CODE 0005-00009

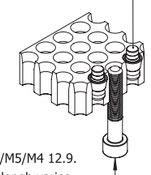


Nr. 4 SCREW M6x25 12.9

CLAMPING SEAT HIGH TECH



RING HT Ø5 H0/5/10/15



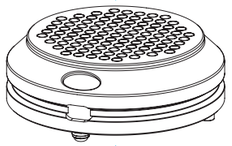
Screws M6/M5/M4 12.9.
The screw lengh varies depending on the Ring height.
(not included in the set)

RING HT Ø5 H0
CODE 0001-00009

RING HT Ø5 H5
CODE 0001-00014

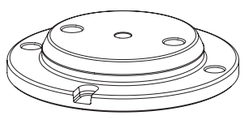
RING HT Ø5 H10
CODE 0001-00015

RING HT Ø5 H15
CODE 0001-00016

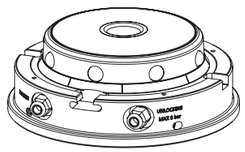


PALLET Ø160 HT
CODE 0006-00010

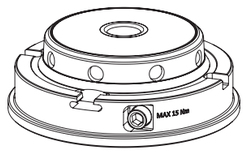
PALLET SUPPORT
CODE 2307-00083



AUTOMATIC CLAMP Ø160
CODE 2303-00161

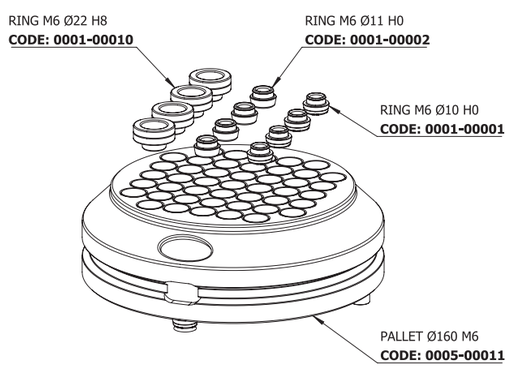


MANUAL CLAMP Ø160
CODE 0004-00048



PALLET Ø160 M6 - DATA SHEET

SET CODE: 0006-00011

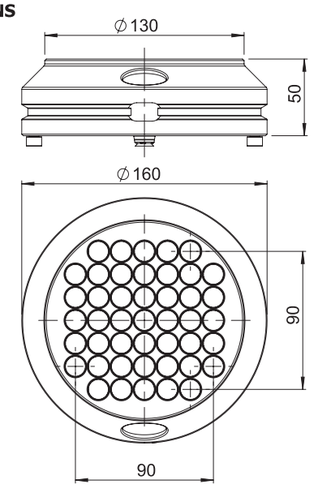


THE SET INCLUDES

Nr.	1	PALLET Ø160 M6	CODE 0005-00011
Nr.	4	RING M6 Ø10 H0	CODE 0001-00001
Nr.	4	RING M6 Ø11 H0	CODE 0001-00002
Nr.	4	RING H M6 Ø22 H8	CODE 0001-00010

TECHNICAL DATA

OVERALL DIMENSIONS

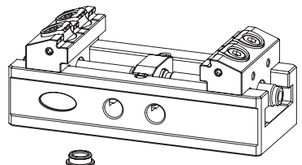


WEIGHT	4.10 Kg

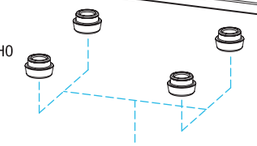
☐ Minimum seat length required

Tightening torques, clamping forces and accuracy: see the corresponding sections.

MODULAR VISE HT-M6-M8-M10-M12 SELF-CENTERING 200x80 H71
CODE 2309-00100

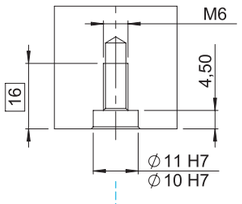


Nr.4 RING M6 Ø11 H0
CODE 0001-00002

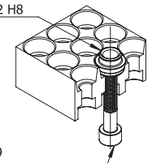


Nr. 4 SCREW M6x25 12.9

CLAMPING SEAT M6
General tolerance ISO 2768-mK



RING M6 Ø10/11 H0
RING M16 Ø22 H8

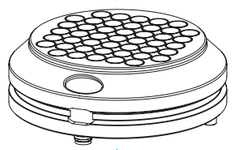


SCREW M6 12.9
The screw length varies depending on the Ring height.
(not included in the set)

RING M6 Ø11 H0
CODE 0001-00002

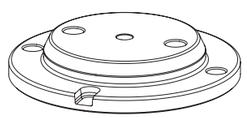
RING M6 Ø10 H0
CODE 0001-00001

RING H M6 Ø22 H8
CODE 0001-00010

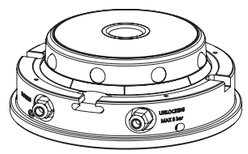


PALLET Ø160 M6
CODE 0006-00011

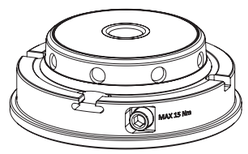
PALLET SUPPORT
CODE 2307-00083



AUTOMATIC CLAMP Ø160
CODE 2303-00161

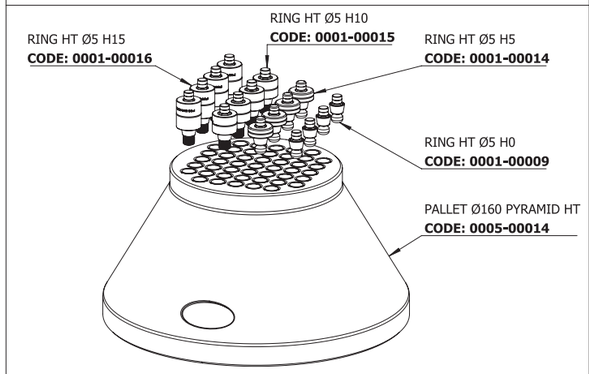


MANUAL CLAMP Ø160
CODE 0004-00048



PALLET Ø160 PYRAMID HT - DATA SHEET

SET CODE: 0006-00014

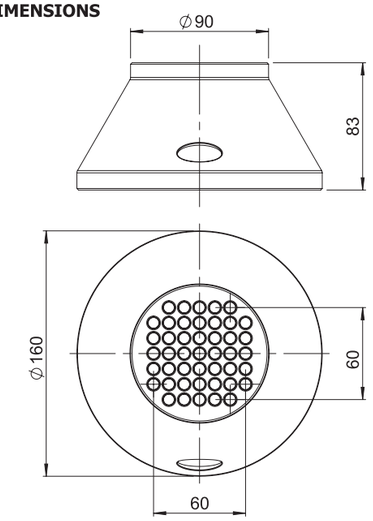


THE SET INCLUDES

Nr.	1	PALLET Ø160 PYRAMID HIGH TECH	CODE 0005-00014
Nr.	4	RING HT Ø5 H0	CODE 0001-00009
Nr.	4	RING HT Ø5 H5	CODE 0001-00014
Nr.	4	RING HT Ø5 H10	CODE 0001-00015
Nr.	4	RING HT Ø5 H15	CODE 0001-00016

TECHNICAL DATA

OVERALL DIMENSIONS

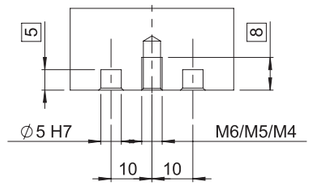


WEIGHT	3.50 Kg

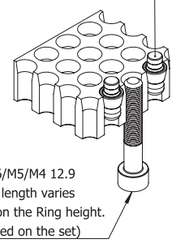
☐ Minimum seat length required

Tightening torques,clamping forces and accuracy:see the corresponding sections.

CLAMPING SEAT HIGH TECH



RING HT Ø5 H0/5/10/15



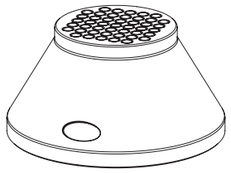
SCREW M6/M5/M4 12.9
The screw length varies depeding on the Ring height.
(not included on the set)

RING HT Ø5 H0
CODE 0001-00009

RING HT Ø5 H5
CODE 0001-00014

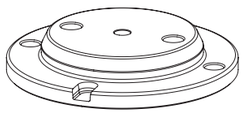
RING HT Ø5 H10
CODE 0001-00015

RING HT Ø5 H15
CODE 0001-00016

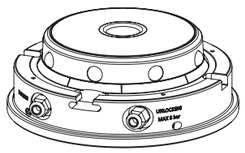


PALLET Ø160 PYRAMID HT
CODE 0006-00014

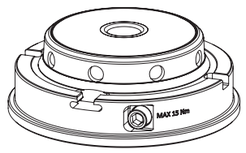
PALLET SUPPORT
CODE 2307-00083



AUTOMATIC CLAMP Ø160
CODE 2303-00161

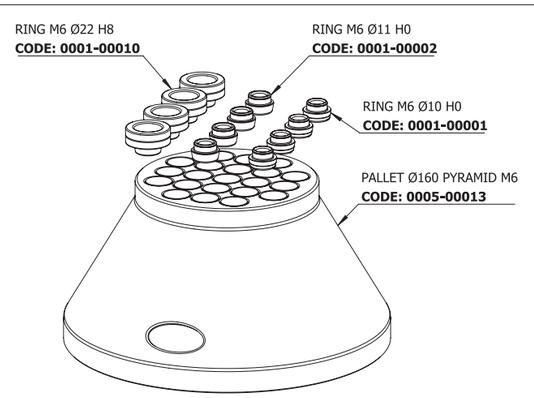


MANUAL CLAMP Ø160
CODE 0004-00048



PALLET Ø160 PYRAMID M6 - DATA SHEET

SET CODE: 0006-00013

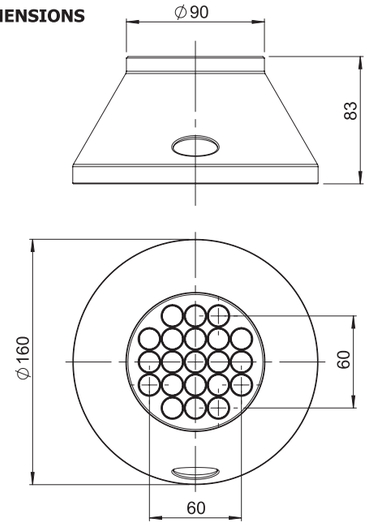


THE SET INCLUDES

Nr.	1	PALLET Ø160 PYRAMID M6	CODE 0005-00013
Nr.	4	RING M6 Ø10 H0	CODE 0001-00001
Nr.	4	RING M6 Ø11 H0	CODE 0001-00002
Nr.	4	RING M6 Ø22 H8	CODE 0001-00010

TECHNICAL DATA

OVERALL DIMENSIONS

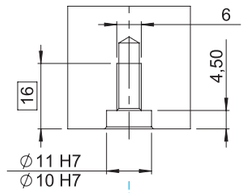


WEIGHT	3.50 Kg

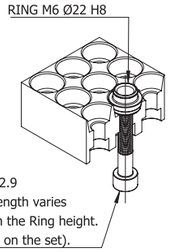
☐ Minimum seat length required

Tightening torques, clamping forces and accuracy: see the corresponding sections.

CLAMPING SEAT M6
General tolerance ISO 2768-mK



RING M6 Ø10/11 H0
RING M6 Ø22 H8

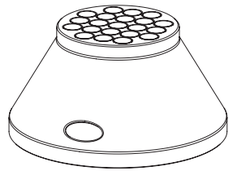


SCREW M6 12.9
The screws length varies depending on the Ring height.
(not included on the set).

RING M6 Ø11 H0
CODE 0001-00002

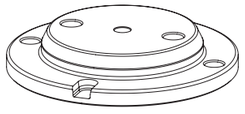
RING M6 Ø10 H0
CODE 0001-00001

RING H M6 Ø22 H8
CODE 0001-00010

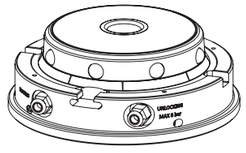


PALLET Ø160 PYRAMID M6
CODE 0006-00013

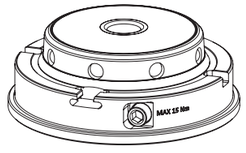
PALLET SUPPORT
CODE 2307-00083



AUTOMATIC CLAMP Ø160
CODE 2303-00161

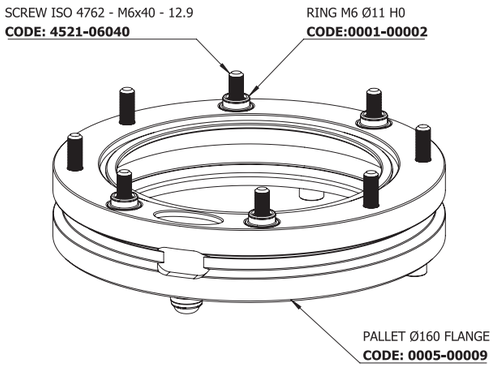


MANUAL CLAMP Ø160
CODE 0004-00048



PALLET Ø160 FLANGE - DATA SHEET

SET CODE: 0006-00009

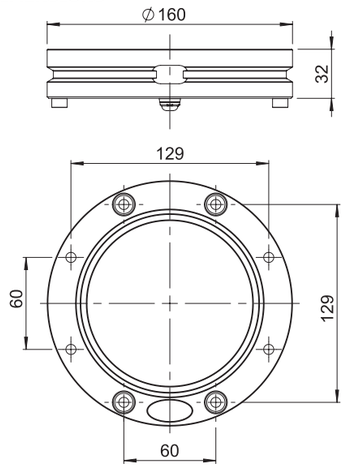


THE SET INCLUDES

Nr.	1	PALLET Ø160 FLANGE	CODE 0005-00009
Nr.	4	RING M6 Ø11 H0	CODE 0001-00002
Nr.	8	SCREW ISO 4762 - M6x40 - 12.9	CODE 4521-06040

TECHNICAL DATA

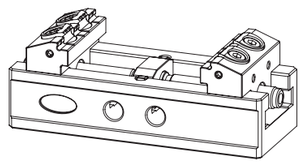
OVERALL DIMENSIONS



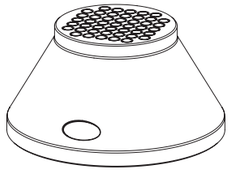
WEIGHT	1.90 Kg

Tightening torques, clamping forces and accuracy: see the corresponding sections.

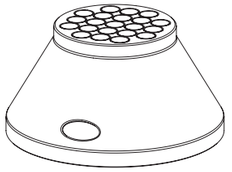
MODULAR VISE HT-M6-M8-M10-M12
SELF-CENTERING 200x80 H71
CODE 2309-00100



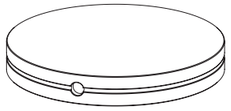
PALLET Ø160 PYRAMID HT
CODE 0006-00014



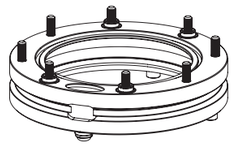
PALLET Ø160 PYRAMID M6
CODE 0006-00013



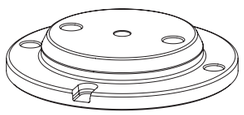
PALLET Ø160 WORKABLE
CODE 0023-00008



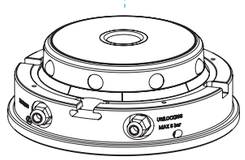
PALLET Ø160 FLANGE
CODE 0006-00009



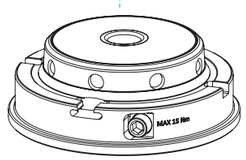
PALLET SUPPORT
CODE 2307-00083



AUTOMATIC CLAMP Ø160
CODE 2303-00161

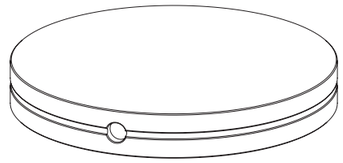


MANUAL CLAMP Ø160
CODE 0004-00048



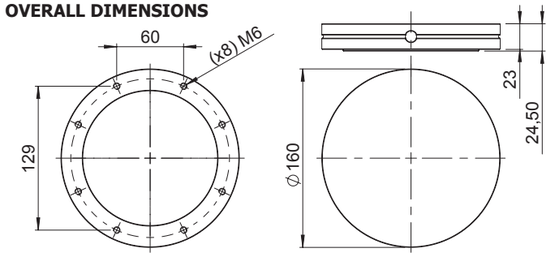
PALLET Ø160 WORKABLE - DATA SHEET

CODE: 0023-00008



TECHNICAL DATA

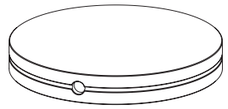
OVERALL DIMENSIONS



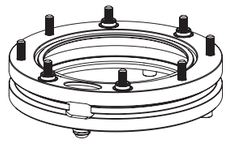
WEIGHT	3.7 Kg

Tightening torques, clamping forces and accuracy: see the corresponding sections.

PALLET Ø160 WORKABLE
CODE 0023-00008

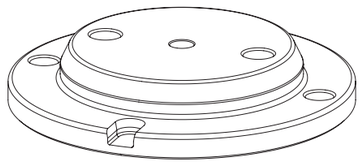


PALLET Ø160 FLANGE
CODE 0006-00009



PALLET Ø160 SUPPORT - DATA SHEET

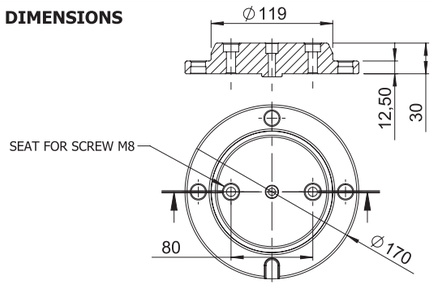
CODE: 2307-00083



External pallet storage for automatic handling system.

TECHNICAL DATA

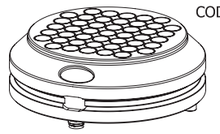
OVERALL DIMENSIONS



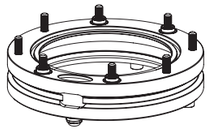
WEIGHT	3.7 Kg

PALLET Ø160 HT
CODE 0005-00010

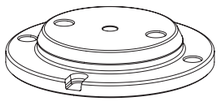
PALLET Ø160 M6
CODE 0005-00011



PALLET Ø160 FLANGE
CODE 0006-00009

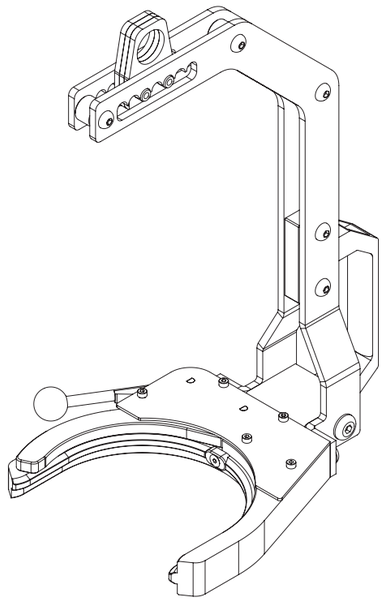


PALLET SUPPORT
CODE 2307-00083



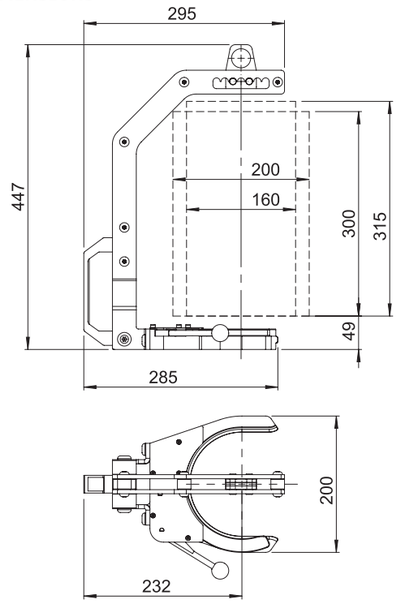
MANUAL PALLET GRIPPER - DATA SHEET

CODE: 8504-00031

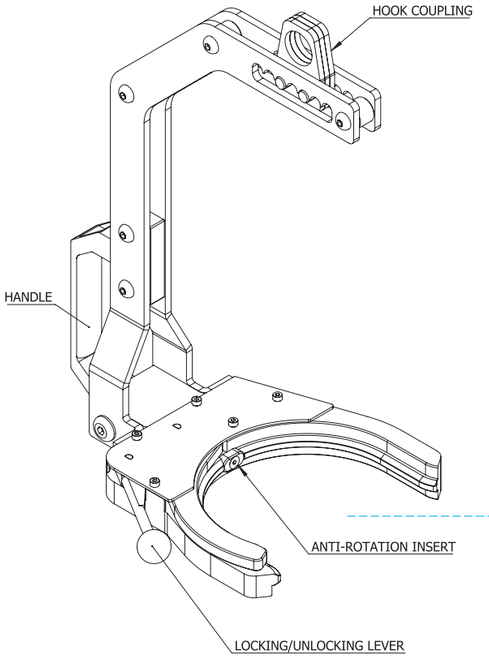


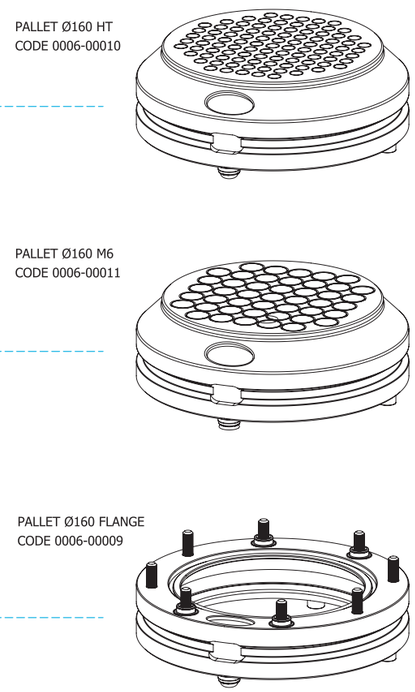
TECHNICAL DATA

OVERALL DIMENSIONS



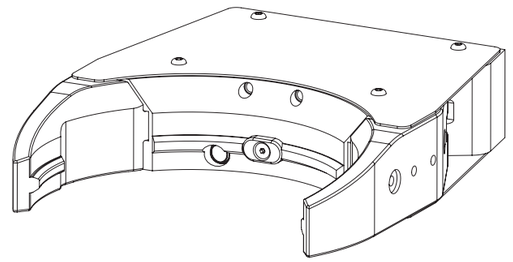
LOCKING/UNLOCKING	manual
LOADING CAPACITY	200 kg
WEIGHT	4.5 kg





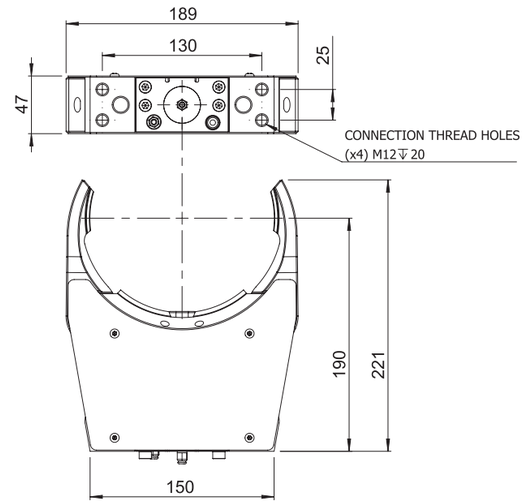
AUTOMATIC PALLET GRIPPER - DATA SHEET

CODE: 7800-00004

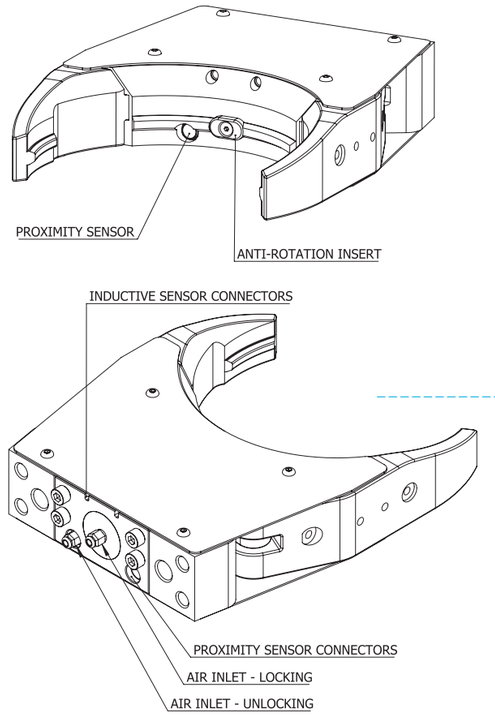


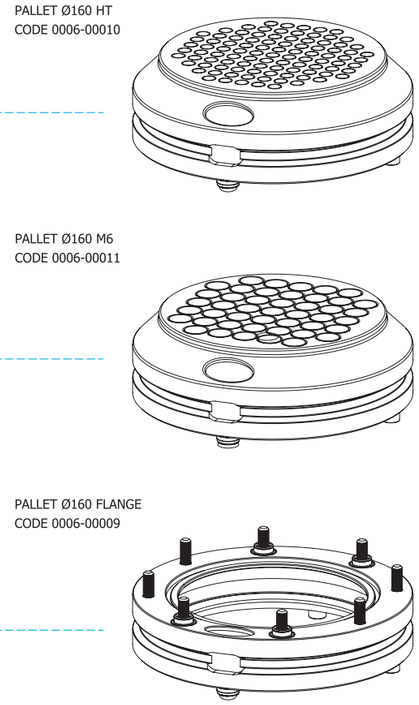
TECHNICAL DATA

OVERALL DIMENSIONS

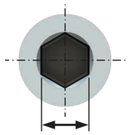


CONTROL	automatic (PLC / CNC)
LOCKING	hybrid system (mechanical normally closed by spring + pneumatic 6÷8 bar)
UNLOCKING	pneumatic activation (6÷8 bar)
LOADING CAPACITY	200 kg
WEIGHT	6.9 kg

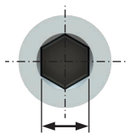




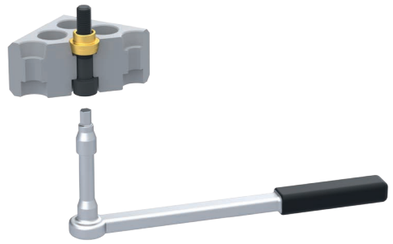
CLAMP Ø160 - TIGHTENING TORQUES

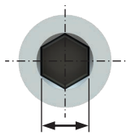


SCREWS	HEX (mm)	TORQUE (Nm)*
M12 12.9 SPECIAL	12	60
M16 12.9	14	60



SCREWS	HEX (mm)	TORQUE (Nm)*
GRUB SCREW	8	15

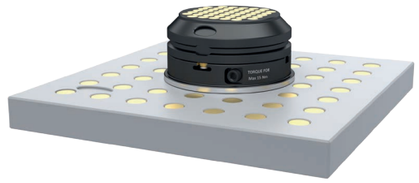




SCREWS	HEX (mm)	TORQUE (Nm)*
M4 12.9	3	5
M5 12.9	4	10
M6 12.9	5	15

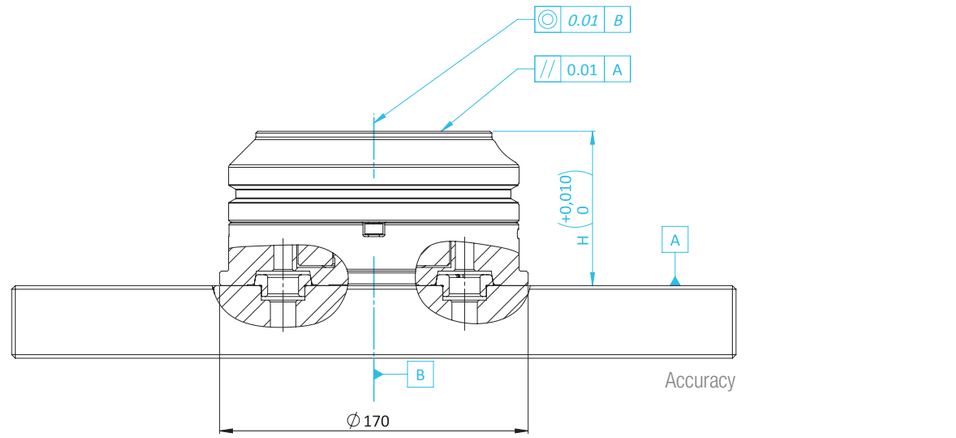
* Tightening torque: max reccomended values

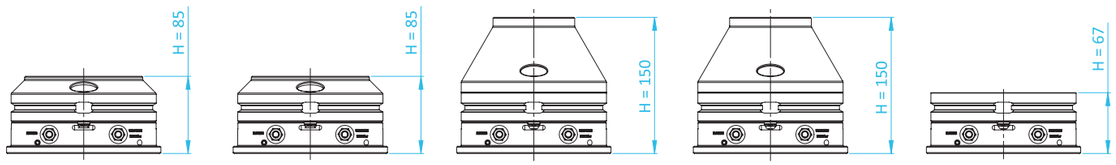
CLAMP Ø160 - CLAMPING FORCES AND ACCURACY



DESCRIPTION	DIMENSION	COMPRESSIVE FORCE (N)**	TENSILE FORCE (N)**	SHEAR FORCE (N)**
PALLET Ø160 HT COUPLED ON THE CLAMP	Ø170 H85	4000	2000	2500
PALLET Ø160 M6 COUPLED ON THE CLAMP	Ø170 H85	4000	2000	2500
PALLET Ø160 PYRAMID HT COUPLED ON THE CLAMP	Ø170 H150	4000	2000	2000
PALLET Ø160 PYRAMID M6 COUPLED ON THE CLAMP	Ø170 H150	4000	2000	2000
PALLET Ø160 FLANGE COUPLED ON THE CLAMP	Ø170 H67	4000	2000	2500

** Clamping force: guide values estimated considering n.4 screws M6 12.9 to fix the workpiece to the pallet



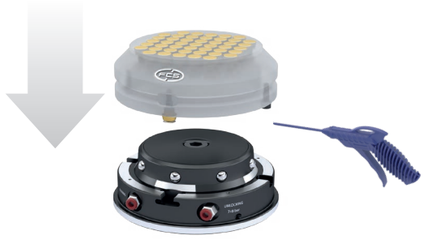


MANUAL CONTROL (BY AN OPERATOR) - **CLOSING** SEQUENCE

1 PALLET POSITIONING

-Place the pallet coaxially above the Automatic Clamp with respect to the orientation of the locating pin.

2 PALLET LIFTING DOWN



UNLOCKING CIRCUIT
-Supply and keep pressure activating the Unlocking valve.
-Wait a proper time (some seconds)*.
-Verify the Unlocking line by means of the pressure gauge that the pressure has increased.

CLEANING CIRCUIT
-Use the air compression gun to clean the coupling surfaces (making sure to blow away any swarf/metal powders)
- Lift down the pallet slowly until it comes in contact with the Automatic Clamp.

3 PALLET LOCKING

UNLOCKING CIRCUIT
-Release pressure deactivating the Unlocking valve.
-Wait a proper time (some seconds)*.
-Verify the Unlocking line by means of the pressure gauge that the pressure has decreased.

CHECKING CIRCUIT (OPTIONAL)
-Supply and keep pressure activating the checking valve to verify if the pallet is correctly locked (air leakages test by the output signal on the pressure gauge):
PALLET PROPERLY LOCKED (HELD DOWN)
pressure in the line > P1-1bar (set-point).
PALLET NOT PROPERLY LOCKED (HELD DOWN)
pressure in the line < P1-1,5bar (reset-point)
-Release pressure deactivating the Checking valve and proceed with the machine operations only if the pallet was previously properly locked.

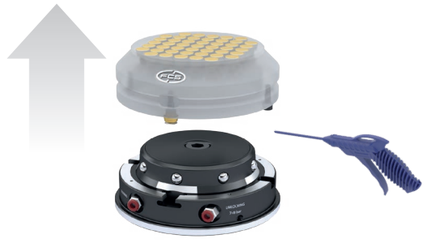
MANUAL CONTROL (BY AN OPERATOR) - **OPENING** SEQUENCE

4 PALLET UNLOCKING

UNLOCKING CIRCUIT
-Supply and keep pressure activating the Unlocking valve.
-Pay attention to not activate the checking valve.
-Wait a proper time (some seconds)*.
-Verify the Unlocking line by means of the pressure gauge that the pressure has increased.

CHECKING CIRCUIT (OPTIONAL)
-Supply and keep pressure activating the checking valve to verify if the pallet is correctly unlocked (air leakages test by the output signal on the pressure gauge):
PALLET PROPERLY UNLOCKED (HELD DOWN)
pressure in the line < P1-1,5bar (reset-point).
PALLET NOT PROPERLY UNLOCKED (HELD DOWN)
pressure in the line > P1-1bar (set-point).

5 PALLET LIFTING UP



CHECKING CIRCUIT (OPTIONAL)
-Release pressure deactivating the Checking valve.
-Lift up the pallet slownly only if the pallet was previously properly unlocked.

UNLOCKING CIRCUIT
-Release pressure deactivating the Unlocking valve.

CLEANING CIRCUIT
- It is suggested to use the air compression gun to clean, blowing away swarf/metal from the coupling surfaces if any.

1 PALLET POSITIONING

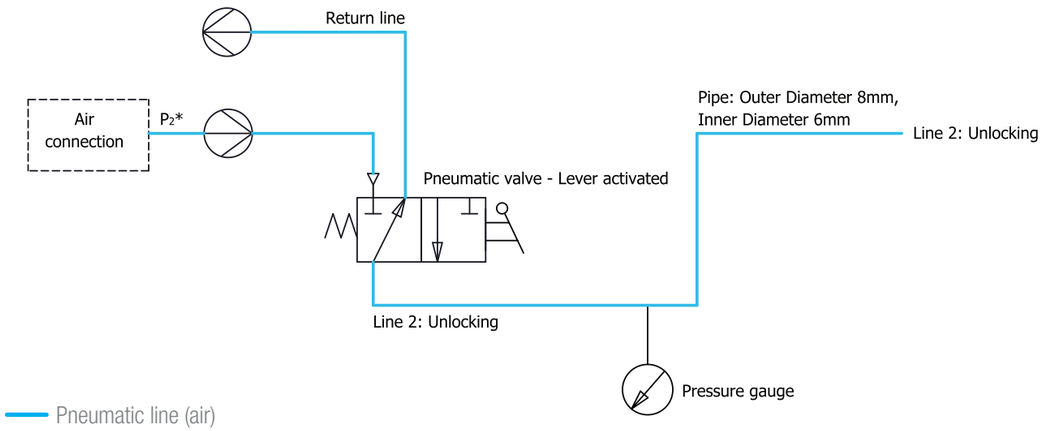
*The timing can vary depending on the inlet pressure value (pressure upstream set at the pressure regolator minus the pressure drop. The pressure drop can be reduced, minimizing the lenght of the pipe; place the valve as much closer as possible to the Automatic Clamp inlet). Refer to the corresponding circuit diagram for the further technical specifications.

FCS System Integrated systems for production

CLAMP Ø160 - MANUAL CONTROL - OPERATING CIRCUIT

CLAMP Ø160 - MANUAL CONTROL - CIRCUIT DIAGRAM

UNLOCKING CIRCUIT



Pneumatic line (air)

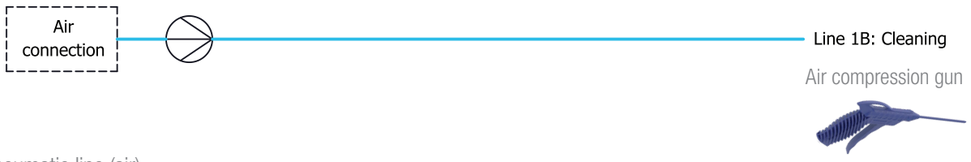
P2**: pneumatic pressure range: 7÷8bar.

The pressure gauge can be used to verify the value of the pressure (its use is not mandatory).

Unlocked: activating the valve, the spheres retract

Normally locked: deactivating the valve, the spheres go out.

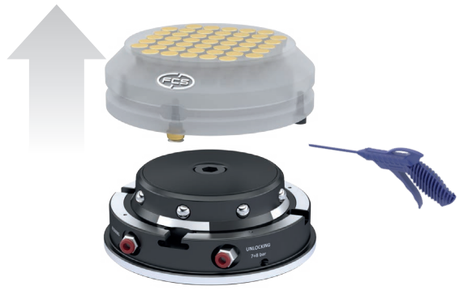
CLEANING CIRCUIT



Pneumatic line (air)

Refer to the corresponding operating procedure for the operating sequence description.

Before lifting down the pallet on the Automatic Clamp, it is highly recommended to clean the coupling surfaces.



After lifting up the pallet from the Automatic Clamp, it is recommended to clean the coupling surfaces.

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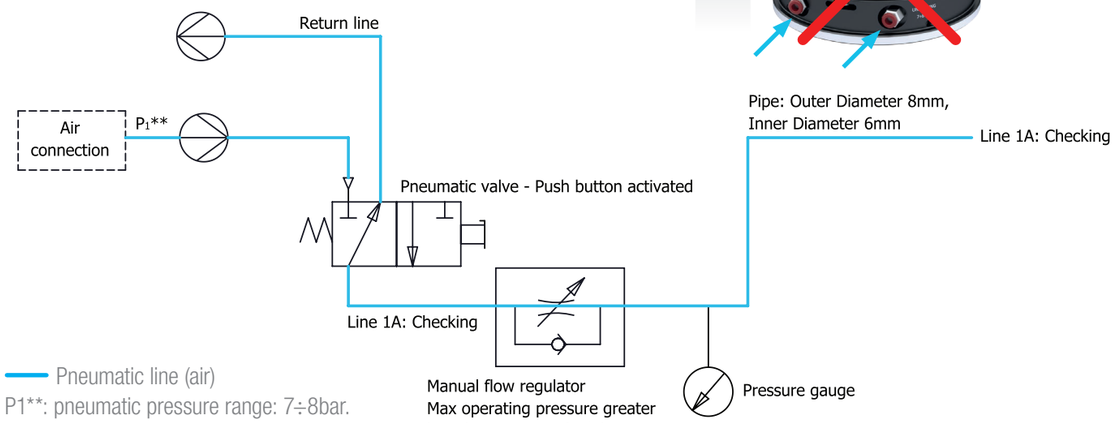
CLAMP Ø160 - MANUAL CONTROL - CIRCUIT DIAGRAM

CHECKING CIRCUIT (OPTIONAL)

Remark: pay attention to activate only the Unlocking valve line 2 to remove the pallet (do not activate the Checking valve line 1A when the pallet has to be removed from the Automatic Clamp).



Setting oparation:
remove the pallet from the Automatic Clamp, activate the Checking valve and set the regulator in order to get 2÷3 bar at the pressure gauge.

Pneumatic line (air)

P1**: pneumatic pressure range: 7÷8bar.

For this application (manual control) the Line 1A (Checking) corresponds to the Line 1 (Blowing), because the cleaning is carried-out by the air compression gun.

Coupled and locked (the valve at the line 2 is deactivated)

Supply and keep pressure activating the checking valve to verify if the pallet is correctly locked (air leakages test by the output signal on the pressure gauge):
PALLET PROPERLY LOCKED (HELD DOWN)
pressure in the line > P1 - 1 bar (set-point).
PALLET NOT PROPERLY LOCKED (HELD DOWN)
pressure in the line < P1 - 1,5 bar (reset-point).

Coupled and unlocked (the valve at the line 2 is activated)

Supply and keep pressure activating the checking valve to verify if the pallet is correctly unlocked (air leakages test by the output signal on the pressure gauge):
PALLET PROPERLY UNLOCKED (HELD DOWN)
pressure in the line < P1 - 1,5 bar (reset-point).
PALLET NOT PROPERLY UNLOCKED (HELD DOWN)
pressure in the line > P1 - 1 bar (set-point).

Refer to the corresponging operating procedure for the operating sequence description.

AUTOMATIC CONTROL (BY PLC/CNC) - **CLOSING** SEQUENCE

1 PALLET POSITIONING

-Place the pallet coaxially above the Automatic clamp respecting the orientation defined by the locating pin.

2 PALLET LIFTING DOWN

-Supply and keep pressure activating the Unlocking valve.
-Wait a proper time (some seconds)*.
-Verify the Unlocking line that the output signal on the pressure switch is at 1 (sensor ON): pressure in the line > P2-0,5bar (set-point).
-Supply and keep pressure activating the Cleaning and the Checking valves (both the valves have to be activated for the swarf evacuation).
-Lift down the pallet and stop to supply pressure deactivating both the Cleaning and Checking valves a little bit earlier* than the contact happens between Pallet and Automatic clamp (as reference, when the pallet is at about 20mm and not less from the Automatic Clamp).
-Lift down completely the pallet until it comes in contact with the Automatic clamp.

3 PALLET LOCKING

-Release pressure deactivating the Unlocking valve.
-Wait a proper time (some seconds)*.
-Verify the Unlocking line that the output signal on the pressure switch is at 0 (sensor OFF): pressure in the line < P2-3,5bar (reset-point).
-Supply and keep pressure activating the Checking valve; air leakages test by the output signal on the pressure switch applied on the Checking line:
PALLET PROPERLY LOCKED (HELD DOWN)
output signal at 1 (sensor ON); pressure in the line > P1-1bar (set-point).
PALLET NOT PROPERLY LOCKED (HELD DOWN)
output signal at 0 (sensor OFF); pressure in the line < P1-1,5bar (reset-point).
-Release pressure deactivating the Checking valve and proceed with the machine operations only if the pallet was previously properly locked (clamped).

AUTOMATIC CONTROL (BY PLC/CNC) - **OPENING** SEQUENCE

4 PALLET UNLOCKING

-Supply and keep pressure activating the Unlocking valve.
-Wait a proper time (some seconds)*.
-Verify the Unlocking line that the output signal on the pressure switch is at 1 (sensor ON): pressure in the line > P2-0,5bar (set-point)
-Supply and keep pressure by the Checking valve.
-Air leakages test by the output signal on the pressure switch applied on the Checking line:
PALLET PROPERLY UNLOCKED (HELD DOWN)
output signal at 0 (sensor OFF); pressure in the line < P1-1,5bar (reset-point).
PALLET NOT PROPERLY UNLOCKED (HELD DOWN)
output signal at 1 (sensor ON); pressure in the line > P1-1bar (set-point).

5 PALLET LIFTING UP

-Release pressure deactivating the Checking valve.
-Lift up the pallet only if the pallet was previously properly un-locked.
-When the pallet is at about 20mm and not less from the Automatic Clamp, Release pressure deactivating the Unlocking valve.
-Verify the Unlocking line that the output signal on the pressure switch is at 0 (sensor OFF): pressure in the line < P2-3,5bar (reset-point).
-Supply and keep pressure activating both the Cleaning and Checking valves (both the valves have to be activated for the swarf evacuation) until the pallet is completely lifted-up.
-Deactivate both the Cleaning and the Checking valves.

1 PALLET POSITIONING

*The timing can vary depending on the inlet pressure value (pressure upstream set at the pressure regolator minus the pressure drop. The pressure drop can be reduced, minimizing the lenght of the pipe; place the valve as much closer as possible to the Automatic Clamp inlet). Refer to the corresponding circuit diagram for the further technical specifications.

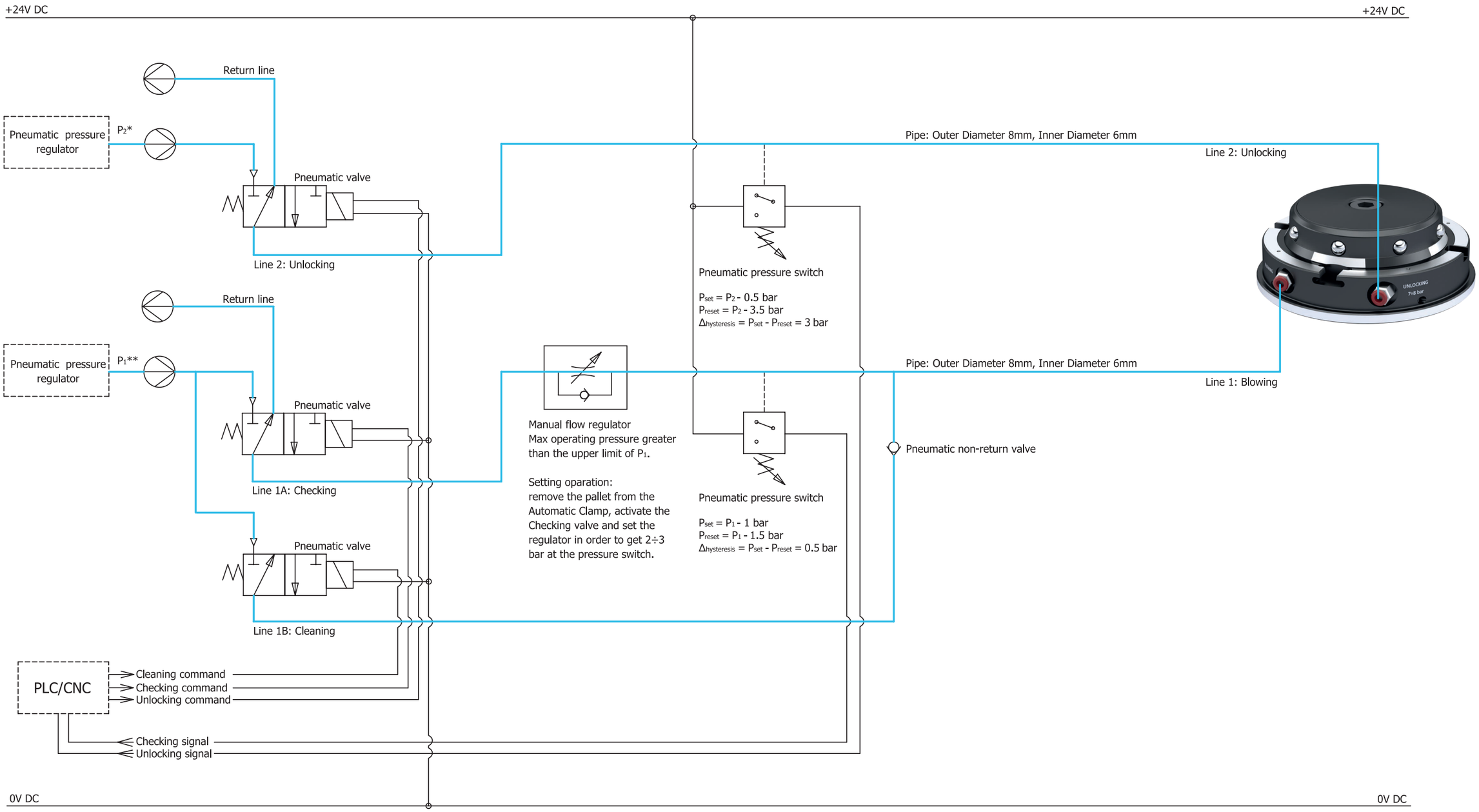
FCS System Integrated systems for production

CLAMP Ø160 - AUTOMATIC CONTROL - OPERATING CIRCUIT

CLAMP Ø160 - AUTOMATIC CONTROL - CIRCUIT DIAGRAM

FCS System Integrated systems for production

CLAMP Ø160 - AUTOMATIC CONTROL - CIRCUIT DIAGRAM



Pneumatic line (air)

P2*: pneumatic pressure range: 7÷8bar.

P1**: pneumatic pressure range: 7÷8bar.

Refer to the corresponding operating procedure for the operating sequence description.

Usually it is provided also the possibility to control this circuit manually by the operator, by means of the control panel (of the PLC/CNC).

CLAMP Ø160 - INDEX

CLAMP

Items	Description	Dimension	Code	SET Code
	MANUAL CLAMP Ø160	Ø170 H60	0003-00048	0004-00048
	AUTOMATIC CLAMP Ø160	Ø170 H60	2303-00160	2303-00161

PALLET

Items	Description	Dimension	Code	SET Code
	PALLET Ø160 HT	Ø160 H50	0005-00010	0006-00010
	PALLET Ø160 M6	Ø160 H50	0005-00011	0006-00011
	PALLET Ø160 PYRAMID HT	Ø160 H83	0005-00014	0006-00014
	PALLET Ø160 PYRAMID M6	Ø160 H83	0005-00013	0006-00013
	PALLET Ø160 FLANGE	Ø160 H32	0005-00009	0006-00009
	PALLET Ø160 WORKABLE	Ø160 H23	0023-00008	-

FCS System Integrated systems for production

CLAMP Ø160 - INDEX

RING HT

Items	Description	Dimension	Code	SET Code
	RING H0 Ø5	Ø0 H5	0001-00009	-
	RING H5 Ø5	Ø5 H5	0001-00014	-
	RING H10 Ø5	Ø5 H10	0001-00015	-
	RING H15 Ø5	Ø5 H15	0001-00016	-

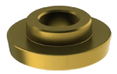
RING

Items	Description	Dimension	Code	SET Code
	RING M6	Ø10	0001-00001	-
		Ø11	0001-00002	-
	RING M16	Ø24	0001-00501	-

RING H

Items	Description	Dimension	Code	SET Code
	M6	Ø22 H8	0001-00010	-

RING REDUCTION

Items	Description	Dimension	Code	SET Code
	RING M16-M12	Ø20	0001-00406	-

CLAMP Ø160 - INDEX

GRIPPER

Items	Description	Dimension	Code	SET Code
	MANUAL PALLET GRIPPER	200x295x447	8504-00031	-
	AUTOMATIC PALLET GRIPPER	189x221x47	7800-00004	-

FCS System Integrated systems for production

CLAMP Ø160 - INDEX

ACCESSORIES

Items	Description	Dimension	Code	SET Code
	SPECIAL SCREW M12X70	-	4521-00005	-
	SCREW 6x40 12.9	-	4521-06040	-
	SCREW M16x70 12.9	-	4521-16070	-
	GRUB SCREW 1/8 GAS L8	-	2307-00010	-
	O-RING 6.02 – 2.62	-	0017-00011	-
	(LOCATING PIN) RING M6	Ø10	0001-00001	-
	(LOCATING PIN) SCREW M6X20	-	5518-06020	-
	PALLET SUPPORT	Ø170 H30	2307-00083	-
	PLUG BASE	Ø20	0015-04501	-
		Ø24	0015-04500	-
	PULLER PLUG	-	0015-04800	-
	PULLER RING	-	0014-04600	-
	ADAPTERS	SYSTEM HT	0014-04670	-
	ADAPTERS	SYSTEM M6	0014-04640	-
		SYSTEM M12	0014-04640	-

NOTE

FCS System Integrated systems for production

NOTE

Integrated systems for production

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full access to FCS
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