

2 TECHNICAL DATA

2.1 TRANSFER MACHINE

BUFFOLI machine # 352 is a transfer machine type 2D/TR8/5.

This machine is able to produce machined parts starting from brass bars.

The machine consists of a horizontal axis indexing table with eight (8) work stations, each one equipped with a clamping device (chuck). There are five (5) working units in the machine frame, for drilling and threading, 2 of them with ball screw feed and 3 of them with hydraulic feed.

The machine is conformable to the provisions of the CEE law 89/392/CEE and further amendments 91/368/CEE, 93/44/CEE, 93/68/CEE and the norms: EN292, EN294, EN349, EN418, EN60204-1.

2.1.1 DIMENSIONS AND WEIGHTS

Machine dimensions are reported in dwgs. n. 728P94-A and 728P94-B, together with the minimum space required for the surroundings. On drawing n. 714P94-B also the noise measurements in the machine surroundings are reported. The maximum noise level in the operator area at a height of 1.5 m is 78 dB(A) in open field (see DIN 456635).

The weights of the machine single machine components are:

Machine Component	Weight (daN)
machine central body	7160
bar loader	1800
chips evacuator	810
coolant tank	650
electrical cabinet	780
hydraulic power unit	200

2.1.2 ELECTRICAL SUPPLY

The user must provide for the electrical supply to the place where the machine will be installed. The following characteristics are required:

Installed power	55 kW
Recommended cable section	25 mm ²
Supply voltage	480 V \pm 5% a.c.
Supply frequency	60 Hz

2.1.3 PNEUMATIC SUPPLY

The user must provide for the pneumatic supply to the place where the machine will be installed. Compressed air must be condensate free and dust free. The pneumatic plant must have the following characteristics:

Air flow rate	6 Nm ³ /h
Air pressure	5÷7 bar
Supply pipe internal diameter	ϕ 8 mm

2.1.4 REQUIREMENTS FOR THE INSTALLATION PLACE

Machine dimensions are reported in dwgs. n. 728P94-A and 728P94-B, together with the minimum space required for the surroundings.

The **temperature** of the place where the machine is installed must be in the range +15 °C ÷ +35 °C. Special cautions must be taken if the temperature falls outside this range. For instance if the temperature exceeds 35 °C, a proper cooling system for the electrical cabinet should be adopted.



The air **humidity** must be in the range 20 ÷ 80 %.

The place where the machine is installed must be free from any vibrations and electrical interference (high frequency). Moreover, make sure that no grind dust is present in this place.

2.2 WORKING UNITS

NOTE: In the unit description take care that the attributes 'Right' and 'Left' refer to a view of the machine from the front or loading side (see machine lay-out dwg. 728P94-B)



• UNIT 2L

Drawing n. 1011W0643, 1011Z0644

Unit type: Drilling unit 45/75 F.

Position: this unit is placed at position 2 Left, and it is fixed at the jaws centre.

Feed: mechanical feed through ball screw and brushless axis motor type CONTROL TECHNIQUES DutymAX 95DSC06300 and electronic driver type CONTROL TECHNIQUES DIGITAX DB 220.

Centering set up: through Buffoli standard wedges.

Spindle motor: a.c. induction motor type BAUKNECHT 112 - B5 with 5.5 Hp power and 4 poles, 380 V, 50 Hz.

Motor pulley: dwg n. 1353S1692.

Spindle pulley: dwg n. 1353S1691.

Transmission belt: V belt 3V 450 HC (dwg. 1352S1370)

Speed ratio: 1:1.

Spindle Speed: 1700 rpm.

Spindle bearings: 3 angular contact ball bearings SNFA EX 45 7CE3 - 7CE1 - TDM (ϕ 45/75 x 16) on the front side and 2 angular contact ball bearings SNFA EX 35 7CE1 DDM (ϕ 35/62 x 14) at the back side.

Lubrication of the spindle bearings: lubricating perpetual grease.

Coupler bush bearings: 2 radial ball bearings SKF 6011 - 2RS1 (ϕ 55/80 x 18).

Lubrication of the coupler bush bearings: lubricating perpetual grease.

Ball screw bearings: roller bearing INA RNA 4904 2RS (ϕ 25/37 x 17) on the front side and FAFNIR BSBU 25D80 bush on the rear side.

Lubrication of the ball screw bearings: lubricating perpetual grease.

Limit switches: EUCHNER type NB01D556 for the forward and the backward stop and proximity OMRON type M12x1 for the zero setting.

See also ch. 3.7 for further details.

• UNIT 4L

Drawing n. 831512, 1011Z0645.

Unit type: Recessing unit 45/75 F.

Position: this unit is placed at position 4 Left, and it is fixed at the jaws.

Feed: hydraulic feed through proportional solenoid valve type REXROTH 4WRS6-E16-2X/24Z8/M, with valve electronic driver type REXROTH VT 11080-2X.

Centering set up: through Buffoli standard wedges.

Spindle motor: a.c. induction motor type BAUKNECHT 112 - B5 with 5.5 Hp power and 4 poles, 380 V, 50 Hz.

Motor pulley: dwg n. 1353S1692.

Spindle pulley: dwg n. 1353S1691.

Transmission belt: V belt 3V 475 HC, 1205 mm length (dwg. 1352S1370).

Speed ratio: 1:1.

Spindle Speed: 1700 rpm.

Spindle bearings: 3 angular contact ball bearings SNFA EX 45 7CE3 - 7CE1 - TDM (ϕ 45/75 x 16) on the front side and 2 angular contact ball bearings SKF 7007C/P4-DBB at the back side.

Lubrication of the spindle bearings: lubricating perpetual grease.

Coupler bush bearings: 2 radial ball oil-proof bearings RHP 6011 TB.

Lubrication of the coupler bush bearings: lubricating perpetual grease.

Step motor: MAE type HY 200-3437.

Position linear transducer: GEFTRAN type PC-M-100.

Proximity switches: OMRON type M 12X1.

See also ch. 3.6 for further details.

• UNIT 5L

Drawing n. 831512, 1011Z0645.

Unit type: Drilling unit 45/75 F.

Position: this unit is placed at position 5 Left, and it is fixed at the jaws.

Feed: hydraulic feed through proportional solenoid valve type REXROTH 4WRS6-E16-2X/24Z8/M, with valve electronic driver type REXROTH VT 11080-2X.

Centering set up: through Buffoli standard wedges.

Spindle motor: a.c. induction motor type BAUKNECHT 112 - B5 with 5.5 Hp power and 4 poles, 380 V, 50 Hz.

Motor pulley: dwg n. 1353S1692.

Spindle pulley: dwg n. 1353S1691.

Transmission belt: V belt 3V 475 HC, 1205 mm length (dwg. 1352S1370).

Speed ratio: 1:1.

Spindle Speed: 1700 rpm.

Spindle bearings: 3 angular contact ball bearings SNFA EX 45 7CE3 - 7CE1 - TDM (ϕ 45/75 x 16) on the front side and 2 angular contact ball bearings SKF 7007C/P4-DBB at the back side.

Lubrication of the spindle bearings: lubricating perpetual grease.

Coupler bush bearings: 2 radial ball oil-proof bearings RHP 6011 TB.

Lubrication of the coupler bush bearings: lubricating perpetual grease.

Step motor: MAE type HY 200-3437.

Position linear transducer: GEFTRAN type PC-M-100.

Proximity switches: OMRON type M 12X1.

See also ch. 3.6 for further details.

- **UNIT 6L**

Drawing n. 1011W0643, 1011Z0644

Unit type: Threading unit 45/75 M.

Position: this unit is placed at position 6 Left, and it is fixed at the jaws centre.

Feed: mechanical feed through ball screw and brushless axis motor type CONTROL TECHNIQUES DutymAX 95DSC06300 and electronic driver type CONTROL TECHNIQUES DIGITAX DB 220.

Centering set up: through Buffoli standard wedges.

Spindle motor: brushless motor type CONTROL TECHNIQUES DutymAX 142DSC220200 and electronic driver type CONTROL TECHNIQUES DIGITAX DB 420.

Motor pulley: dwg n. 1352S1261.

Spindle pulley: dwg n. 1352S1262.

Transmission belt: toothed belt HTD 1040-8M-50 (dwg. 1352A1260).

Speed ratio: 1:2.

Spindle Speed: max 1000 rpm.

Spindle bearings: 3 angular contact ball bearings SNFA EX 45 7CE3 - 7CE1 - TDM (ϕ 45/75 x 16) on the front side and 2 angular contact ball bearings SNFA EX 35 7CE1 DDM (ϕ 35/62 x 14) at the back side.

Lubrication of the spindle bearings: lubricating perpetual grease.

Coupler bush bearings: 2 radial ball bearings SKF 6011 - 2RS1 (ϕ 55/80 x 18).

Lubrication of the coupler bush bearings: lubricating perpetual grease.

Ball screw bearings: roller bearing INA RNA 4904 2RS (ϕ 25/37 x 17). on the front side and FAFNIR BSBU 25D80 bush on the rear side.

Lubrication of the ball screw bearings: lubricating perpetual grease.

Limit switches: EUCHNER type NB01D556 for the forward and the backward stop and proximity OMRON type M12x1 for the zero setting.

See also ch. 3.8 for further details.

- **UNIT 7L**

Drawing n. 831512, 1011Z0645.

Unit type: Drilling unit 45/75 F.

Position: this unit is placed at position 7 Left, and it is fixed at the jaws.

Feed: hydraulic feed through proportional solenoid valve type REXROTH 4WRS6-E16-2X/24Z8/M, with valve electronic driver type REXROTH VT 11080-2X.

Centering set up: through Buffoli standard wedges.

Spindle motor: a.c. induction motor type BAUKNECHT 112 - B5 with 5.5 Hp power and 4 poles, 380 V, 50 Hz.

Motor pulley: dwg n. 1353S1692.

Spindle pulley: dwg n. 1353S1681.

Transmission belt: V belt 3V 450 HC, 1145 mm length (dwg. 1352S1380).

Speed ratio: 1:1.4.

Spindle Speed: 1200 rpm.

Spindle bearings: 3 angular contact ball bearings SNFA EX 45 7CE3 - 7CE1 - TDM (ϕ 45/75 x 16) on the front side and 2 angular contact ball bearings SKF 7007C/P4-DBB at the back side.

Lubrication of the spindle bearings: lubricating perpetual grease.

Coupler bush bearings: 2 radial ball oil-proof bearings RHP 6011 TB.

Lubrication of the coupler bush bearings: lubricating perpetual grease.

Step motor: MAE type HY 200-3437.

Position linear transducer: GEFTRAN type PC-M-100.

Proximity switches: OMRON type M 12X1.

See also ch. 3.6 for further details.

2.3 PIECE TRAVERSE DEVICE

- **POSITION 3R**

Drawing n. 1352A1120.

Position: this device is placed at position 3 Right, for the contrast to the piece traverse.

Feed: this device is hydraulically controlled by a solenoid valve type REXROTH 4WE6D-5.X/0F/A/G24NK4.

Stroke: 50 mm.

- **POSITION 3L**

Drawing n. 1352T1070.

Position: this device is placed at position 3 Left.

Feed: this device is controlled through a pneumatic cylinder type FESTO DNU-32-50-PPV-A.

Stroke: 50 mm.

2.4 PIECE UNLOADING DEVICE

- POSITION 8R

Drawing n. 1352T1050.

Position: this device is placed at position 8 Right.

Feed: this device is controlled through a pneumatic cylinder type FESTO DNU-40-175-PPV-A.

Stroke: 175 mm.

- POSITION 8L

Drawing n. 1352T1060.

Position: this device is placed at position 8 Left, for the contrast to the piece unloading traverse from position 8R.

Feed: this device is controlled through a pneumatic cylinder type FESTO DNU-32-175-PPV-A.

Stroke: 175 mm.

2.5 CHUCKS

Drawing: n.827008

Stroke: (12.5 x 2) mm

Maximum chucking force: 12500 N

2.6 INDEXING TURRET AND TURRET COMMAND

Drawings n. 1352A1020, 1352A1150, 1352A1035.

N. of working stations: 8

Feed: hydraulic feed for the turret locking, unlocking, and indexing.

Locking device: HIRTH crown wheel ϕ 450 mm (curvic coupling, 144 teeth).

Turret unlocking time: 0.2 s.

Turret indexing time: 0.4 s.

Turret locking time: 0.2 s.

See the detailed turret working description reported in chapter 3.2.

2.7 BAR LOADER

Drawings n. 1352A1500, 1352A1450, 1353A1400, 1302A1450, 182-5300.

Brass bar section = ϕ 40.5 mm.

Brass bar length = 4880 mm (16 feet).

Max total bars mass: 2000 kg (4400 pounds).

See the detailed bar loader working description reported in chapter 3.3 and 3.4.

2.8 UNLOADING MECHANICAL HAND

Drawings n. 824025, 182-5000.

Rotation: 90° in y direction and 180° in z direction.

2 TECHNICAL DATA

2.1 TRANSFER MACHINE

BUFFOLI machine # 364 is a transfer machine type 2D/TR8/6.

This machine is able to produce machined parts starting from brass bars.

The machine consists of a horizontal axis indexing table with eight (8) work stations, each one equipped with a clamping device (chuck). There are six (6) working units in the machine frame, for drilling and threading, 2 of them with ball screw feed and 4 of them with hydraulic feed.

2.1.1 DIMENSIONS AND WEIGHTS

Machine dimensions are reported in dwg. no. 854P96, together with the minimum space required for the surroundings. The maximum noise level in the operator area at a height of 1.5 m is 78 dB in open field.

The weights of the single machine components are:

Machine Component	Weight (daN)	(lb)
machine central body	7500	16540
bar loader	1800	3970
chips evacuator	810	1790
coolant tank	650	1430
electrical cabinet	780	1720
hydraulic power unit	200	440

2.1.2 ELECTRICAL SUPPLY

The user must provide for the electrical supply to the place where the machine will be installed. The following characteristics are required:

Installed power	60 kW
Recommended cable section	25 mm ² (AWG3)
Supply voltage	480 V ±5% a.c.
Supply frequency	60 Hz

2.1.3 PNEUMATIC SUPPLY

The user must provide for the pneumatic supply to the place where the machine will be installed. Compressed air must be condensate free and dust free. The pneumatic plant must have the following characteristics:

Air flow rate	6 Nm ³ /h (212 Ncuft/h)
Air pressure	5÷7 bar (72÷101 psi)
Supply pipe internal diameter	φ 8 mm (0.3152 in)

2.1.4 REQUIREMENTS FOR THE INSTALLATION PLACE

Machine dimensions are reported in dwgs. n. 854P96, together with the minimum space required for the surroundings.

The **temperature** of the place where the machine is installed must be in the range +15 °C ÷ +35 °C. Special cautions must be taken if the temperature falls outside this range. For instance if the temperature exceeds 35 °C, a proper cooling system for the electrical cabinet should be adopted.



The air **humidity** must be in the range 20 ÷ 80 %.

The place where the machine is installed must be free from any vibrations and electrical interference (high frequency). Moreover, make sure that no grind dust is present in this place.

2.2 WORKING UNITS

NOTE: In the unit description take care that the attributes 'Right' and 'Left' refer to a view of the machine from the front or loading side (see machine lay-out dwg. 854P96).



• UNIT 2R

Drawing n. 1011W0643, 1011Z0644

Unit type: Drilling unit 45/75 F.

Position: this unit is placed at position 2 Right, and it is fixed at the jaws centre.

Feed: mechanical feed through ball screw and brushless axis motor type CONTROL TECHNIQUES DutymAX 95DSC06300 and electronic driver type CONTROL TECHNIQUES DIGITAX DB 220.

Centering set up: through Buffoli standard wedges.

Spindle motor: a.c. induction motor type BAUKNECHT 112 - B5 with 5.5 Hp power and 2 poles, 460 V, 60 Hz.

Motor pulley: dwg n. 1352S1681.

Spindle pulley: dwg n. 1352S1391.

Transmission belt: V belt 3V 450 HC

Speed ratio: 1:1.

Spindle Speed: 2400 rpm.

Spindle bearings: 3 angular contact ball bearings SNFA EX 45 7CE3 - 7CE1 - TDM (ϕ 45/75 x 16) on the front side and 2 angular contact ball bearings SNFA EX 35 7CE1 DDM (ϕ 35/62 x 14) at the back side.

Lubrication of the spindle bearings: lubricating perpetual grease.

Coupler bush bearings: 2 radial ball bearings SKF 6011 - 2RS1 (ϕ 55/80 x 18).

Lubrication of the coupler bush bearings: lubricating perpetual grease.

Ball screw bearings: roller bearing INA RNA 4904 2RS (ϕ 25/37 x 17) on the front side and FAFNIR BSBU 25D80 bush on the rear side.

Lubrication of the ball screw bearings: lubricating perpetual grease.

Limit switches: EUCHNER type NB01D556 for the forward and the backward stop and proximity OMRON type M12x1 for the zero setting.

See also ch. 3.7 for further details.

• UNIT 4L

Drawing n. 831512, 1011Z0645.

Unit type: Recessing unit 45/75 F.

Position: this unit is placed at position 4 Left, and it is fixed at the jaws.

Feed: hydraulic feed through proportional solenoid valve type REXROTH 4WRS6-E16-2X/24Z8/M, with valve electronic driver type REXROTH VT 11080-2X.

Centering set up: through Buffoli standard wedges.
Spindle motor: a.c. induction motor type BAUKNECHT 112 - B5 with 5.5 Hp power and 4 poles, 460 V, 60 Hz.
Motor pulley: dwg n. 1353S1692.
Spindle pulley: dwg n. 1353S1691.
Transmission belt: V belt 3V 475 HC, 1205 mm length.
Speed ratio: 1:1.
Spindle Speed: 1700 rpm.
Spindle bearings: 3 angular contact ball bearings SNFA EX 45 7CE3 - 7CE1 - TDM (ϕ 45/75 x 16) on the front side and 2 angular contact ball bearings SKF 7007C/P4-DBB at the back side.
Lubrication of the spindle bearings: lubricating perpetual grease.
Coupler bush bearings: 2 radial ball oil-proof bearings RHP 6011 TB.
Lubrication of the coupler bush bearings: lubricating perpetual grease.
Step motor: MAE type HY 200-3437.
Position linear transducer: GEFTRAN type PC-M-100.
Proximity switches: OMRON type M 12X1.
See also ch. 3.6 for further details.

• **UNIT 5L**

Drawing n. 831512, 1011Z0645.
Unit type: Drilling unit 45/75 F.
Position: this unit is placed at position 5 Left, and it is fixed at the jaws.
Feed: hydraulic feed through proportional solenoid valve type REXROTH 4WRS6-E16-2X/24Z8/M, with valve electronic driver type REXROTH VT 11080-2X.
Centering set up: through Buffoli standard wedges.
Spindle motor: a.c. induction motor type BAUKNECHT 112 - B5 with 5.5 Hp power and 4 poles, 460 V, 60 Hz.
Motor pulley: dwg n. 1353S1692.
Spindle pulley: dwg n. 1353S1691.
Transmission belt: V belt 3V 475 HC, 1205 mm length.
Speed ratio: 1:1.
Spindle Speed: 1700 rpm.
Spindle bearings: 3 angular contact ball bearings SNFA EX 45 7CE3 - 7CE1 - TDM (ϕ 45/75 x 16) on the front side and 2 angular contact ball bearings SKF 7007C/P4-DBB at the back side.
Lubrication of the spindle bearings: lubricating perpetual grease.
Coupler bush bearings: 2 radial ball oil-proof bearings RHP 6011 TB.
Lubrication of the coupler bush bearings: lubricating perpetual grease.
Step motor: MAE type HY 200-3437.
Position linear transducer: GEFTRAN type PC-M-100.
Proximity switches: OMRON type M 12X1.

See also ch. 3.6 for further details.

• **UNIT 6L**

Drawing n. 1011W0643, 1011Z0644

Unit type: Threading unit 45/75 M.

Position: this unit is placed at position 6 Left, and it is fixed at the jaws centre.

Feed: mechanical feed through ball screw and brushless axis motor type CONTROL TECHNIQUES DutymAX 95DSC06300 and electronic driver type CONTROL TECHNIQUES DIGITAX DB 220.

Centering set up: through Buffoli standard wedges.

Spindle motor: brushless motor type CONTROL TECHNIQUES DutymAX 142DSC220200 and electronic driver type CONTROL TECHNIQUES DIGITAX DB 420.

Motor pulley: dwg n. 1352S1262.

Spindle pulley: dwg n. 1352S1261.

Transmission belt: toothed belt HTD 1040-8M-50.

Speed ratio: 1:2.

Spindle Speed: max 1200 rpm.

Spindle bearings: 3 angular contact ball bearings SNFA EX 45 7CE3 - 7CE1 - TDM (ϕ 45/75 x 16) on the front side and 2 angular contact ball bearings SNFA EX 35 7CE1 DDM (ϕ 35/62 x 14) at the back side.

Lubrication of the spindle bearings: lubricating perpetual grease.

Coupler bush bearings: 2 radial ball bearings SKF 6011 - 2RS1 (ϕ 55/80 x 18).

Lubrication of the coupler bush bearings: lubricating perpetual grease.

Ball screw bearings: roller bearing INA RNA 4904 2RS (ϕ 25/37 x 17) on the front side and FAFNIR BSBU 25D80 bush on the rear side.

Lubrication of the ball screw bearings: lubricating perpetual grease.

Limit switches: EUCHNER type NB01D556 for the forward and the backward stop and proximity OMRON type M12x1 for the zero setting.

See also ch. 3.8 for further details.

• **UNIT 6R**

Drawing n. 831512, 1011Z0645.

Unit type: Recessing unit 45/75 F.

Position: this unit is placed at position 6 Right, and it is fixed at the jaws.

Feed: hydraulic feed through proportional solenoid valve type REXROTH 4WRS6-E16-2X/24Z8/M, with valve electronic driver type REXROTH VT 11080-2X.

Centering set up: through Buffoli standard wedges.

Spindle motor: a.c. induction motor type BAUKNECHT 112 - B5 with 5.5 Hp power and 4 poles, 460 V, 60 Hz.

Motor pulley: dwg n. 1353S1692.

Spindle pulley: dwg n. 1353S1691.

Transmission belt: V belt 3V 475 HC, 1205 mm length.

Speed ratio: 1:1.

Spindle Speed: 1700 rpm.

Spindle bearings: 3 angular contact ball bearings SNFA EX 45 7CE3 - 7CE1 - TDM (ϕ 45/75 x 16) on the front side and 2 angular contact ball bearings SKF 7007C/P4-DBB at the back side.

Lubrication of the spindle bearings: lubricating perpetual grease.

Coupler bush bearings: 2 radial ball oil-proof bearings RHP 6011 TB.

Lubrication of the coupler bush bearings: lubricating perpetual grease.

Step motor: MAE type HY 200-3437.

Position linear transducer: GEFTRAN type PC-M-100.

Proximity switches: OMRON type M 12X1.

See also ch. 3.6 for further details.

• UNIT 7L

Drawing n. 831512, 1011Z0645.

Unit type: Drilling unit 45/75 F.

Position: this unit is placed at position 7 Left, and it is fixed at the jaws.

Feed: hydraulic feed through proportional solenoid valve type REXROTH 4WRS6-E16-2X/24Z8/M, with valve electronic driver type REXROTH VT 11080-2X.

Centering set up: through Buffoli standard wedges.

Spindle motor: a.c. induction motor type BAUKNECHT 112 - B5 with 5.5 Hp power and 4 poles, 460 V, 60 Hz.

Motor pulley: dwg n. 1353S1692.

Spindle pulley: dwg n. 1353S1681.

Transmission belt: V belt 3V 450 HC, 1145 mm length.

Speed ratio: 1:1.4.

Spindle Speed: 1700 rpm.

Spindle bearings: 3 angular contact ball bearings SNFA EX 45 7CE3 - 7CE1 - TDM (ϕ 45/75 x 16) on the front side and 2 angular contact ball bearings SKF 7007C/P4-DBB at the back side.

Lubrication of the spindle bearings: lubricating perpetual grease.

Coupler bush bearings: 2 radial ball oil-proof bearings RHP 6011 TB.

Lubrication of the coupler bush bearings: lubricating perpetual grease.

Step motor: MAE type HY 200-3437.

Position linear transducer: GEFTRAN type PC-M-100.

Proximity switches: OMRON type M 12X1.

See also ch. 3.6 for further details.

2.3 PIECE TRAVERSE DEVICE

- POSITION 3R

Drawing n. 1352A1120.

Position: this device is placed at position 3 Right, for the contrast to the piece traverse.

Feed: this device is hydraulically controlled by a solenoid valve type REXROTH 4WE6D-5.X/0F/A/G24NK4.

Stroke: 50 mm (1.97 in).

- POSITION 3L

Drawing n. 1352T1070.

Position: this device is placed at position 3 Left.

Feed: this device is controlled through a pneumatic cylinder type FESTO DNU-32-50-PPV-A.

Stroke: 50 mm (1.97 in).

2.4 PIECE UNLOADING DEVICE

- POSITION 8R

Drawing n. 1352T1050.

Position: this device is placed at position 8 Right.

Feed: this device is controlled through a pneumatic cylinder type FESTO DNU-40-175-PPV-A.

Stroke: 175 mm (6.895 in).

- POSITION 8L

Drawing n. 1352T1060.

Position: this device is placed at position 8 Left, for the contrast to the piece unloading traverse from position 8R.

Feed: this device is controlled through a pneumatic cylinder type FESTO DNU-32-175-PPV-A.

Stroke: 175 mm (6.895 in).

2.5 CHUCKS

Drawing: n.827008

Stroke: (12.5 x 2) mm

Maximum chucking force: 12500 N (27500 lb).

2.6 INDEXING TURRET AND TURRET COMMAND

Drawings n. 1352A1020, 1352A1150, 1352A1035.

N. of working stations: 8

Feed: hydraulic feed for the turret locking, unlocking, and indexing.

Locking device: HIRTH crown wheel ϕ 450 mm (curvic coupling, 144 teeth).

Turret unlocking time: 0.2 s.

Turret indexing time: 0.4 s.

Turret locking time: 0.2 s.

See the detailed turret working description reported in chapter 3.2.

2.7 BAR LOADER

Drawings n. 1352A1500, 1352A1450, 1353A1400, 1302A1450, 182-5300.

Brass bar section = ϕ 40.5 mm (1.59 in).

Brass bar length = 4880 mm (16 feet).

Max total bars mass: 2000 kg (4400 pounds).

See the detailed bar loader working description reported in chapter 3.3 and 3.4.

2.8 UNLOADING MECHANICAL HAND

Drawings n. 824025, 182-5000.

Rotation: 90° in y direction and 180° in z direction.