

2.2 TAKING UP THE WORKPIECE

We assume that workpiece positioning and clamping procedures are sufficiently understood as to make elaboration at this point superfluous. For this reason we will concentrate on those features peculiar to this high-performance CNC Turning Machine.

This machine is particularly well-built with respect to the range of application for which it is intended. The maximum workpiece weights specified in Chapter 0.1 should, therefore, be regarded as representing recommended values.

In order to avoid the danger of damage to the machine through overloading, we recommend that the weight of the workpiece which is to be processed should never exceed the specified maximum.

If machining work on an unbalanced workpiece is interrupted for a prolonged period (i.e. overnight), the workpiece must be rotated such that the center of gravity is located directly beneath the turning axis.

W A R N I N G !

There is a danger that the workpiece may shift from the position it was left in, if it is not rotated to the position described above.

2.2.1 CLAMPING DEVICES

This machine is equipped for the use of manual holding chucks, faceplates and other clamping devices. All clamping device bores must be compatible with size 15 short-nosed spindle head with bayonet clamp, in accordance with DIN 55027.

Bayonet plate # 120 is used for securing and locking clamping devices. Before mounting clamping devices, please clean and oil all mating and clamping surfaces of the spindle head and clamping device itself. Screw down collar nuts # 121 , so that they are flush with ends of the stud bolts. After loosening off the bayonet plate (refer to ill. 2.2.1.1), the clamping device can be carefully seated in place with the aid of a crane. Secure the bayonet plate first, then screw down the collar nuts firmly. Please use only the open-ended wrench supplied for this purpose.

If the clamping device is to be removed, this should be done by carefully taking up the weight with the help of a crane, and slackening off the collar nuts about half a turn, so that the bayonet plate can be removed. The clamping device supported by the crane should then be carefully extracted from the short-nose.

When carrying out either seating or extracting work, care should be taken to ensure that the bayonet plate is always turned to the fullest extent in the appropriate direction, since only then is it possible to carry out the task without encountering difficulties.

If machining operations are being done using a faceplate, it is imperative that the maximum allowable rpm stamped on the faceplate itself, or as given in table 2.2.0.2, are not exceeded.

MAXIMUM FACEPLATES SPEEDS

(where n = rpm)

Faceplates			Chuck
Dia-meter	cast iron GG 30 n max	cast steel GS 52 n max	steel ¹ St 52 n max
500	690	960	1300
630	540	760	1120
710	480	670	960
800	430	600	850
900	380	530	760
1000	340	480	680
1200	280	400	
1400	240	340	
1600	210	300	
1800	190	265	
2000	170	240	
2200	155	220	
2500	140	190	
Permissible circumference speeds for: - cast iron GG 30 = 18 m/s - cast steel GS 52 = 25 m/s - steel St 52 = 36 m/s			
¹ = only for balanced chucks !			

Illustration 2.2.0.2

2.2.1.1 PROTECTIVE HOOD ON THE CLAMPING DEVICE

In order to protect operating personnel against injury, the deep boring machine is fitted with a protective hood on the clamping device, in accordance with the regulations applicable to safety at work.

This protective hood is always to be kept positioned above the clamping device during machining operations.

The machine can only work on a continuous-duty basis when the protective hood is in it's proper position. Should the protective hood be pushed towards the headstock, the machine will brought to a halt automatically via an overtravel switch and an **"EMERGENCY SHUT-OFF"**.

2.2.3 ROLLER STEADY

The roller steady is fitted with strong roller supports to take up the weight of the heavy, rapidly-rotating workpiece.

The roller steady is traversed manually on the bed by means of a ratchet, which is inserted into square key #535 of the drive pinion #536.

A T T E N T I O N !

The position of the roller steady is not monitored by the machine's CNC control.

C O L L I S I O N H A Z A R D !

Once the roller steady is positioned, it must be clamped on the bed by means of screws #531, only then may the workpiece be brought into position.

The lower roller supports #530 and #532 can be adjusted simultaneously by means of square key #538, this will simplify centering of the workpiece. Adjustment can be made either from the front or rear side of the bed. The roller supports have been factory-adjusted in such a way that when they are closing, the workpiece will be centered-up with the axis of rotation. Should it prove necessary to carry out setting up of the roller supports, the following procedure should be observed:

Sequence:

- or setting-up, a suitable work-piece or measuring stud should be inserted into the clamping device;
 - move the roller steady as close to the clamping device as possible and clamp it in position;
 - * close up rear roller steady #532 to the workpiece or measuring stud;
 - slacken off locking nut #533;
 - close up front roller steady #530 to the workpiece by turning the threaded
-

collar #534;

- secure the threaded collar #534 in place by means of locking nut #533;
- * If it is not possible to close-up the rear roller steady with the workpiece first, by simultaneously moving the roller steadies via one spindle, the front roller steady is to be **"retracted"** by turning the threaded collar #534.

Clamping ranges of the roller steady

lower rollers	:	Diameter range
in socket	:	in inches
-----:		
1	:	22.047 ... 12.598
2	:	13.780 ... 9.055
3	:	09.449 ... 5.315
4	:	05.512 ... 2.480

If the clamping diameter range 5.512 inches to 2.480 inches is to be used, move the upper roller from groove 'A' to groove 'B'.

The roller steady is fitted with three measuring points on the inside of the housing for workpiece alignment.

A T T E N T I O N !

The measuring points are only valid when the roller steady is actually mounted on the machine which the measuring points were engraved on
(in this case Machine Number D4539).

The upper part of the roller steady can be swung aside for workpiece mounting. It should be noted that the locking device for the upper part is to be released prior to opening the upper part (eccentric shaft #539).
