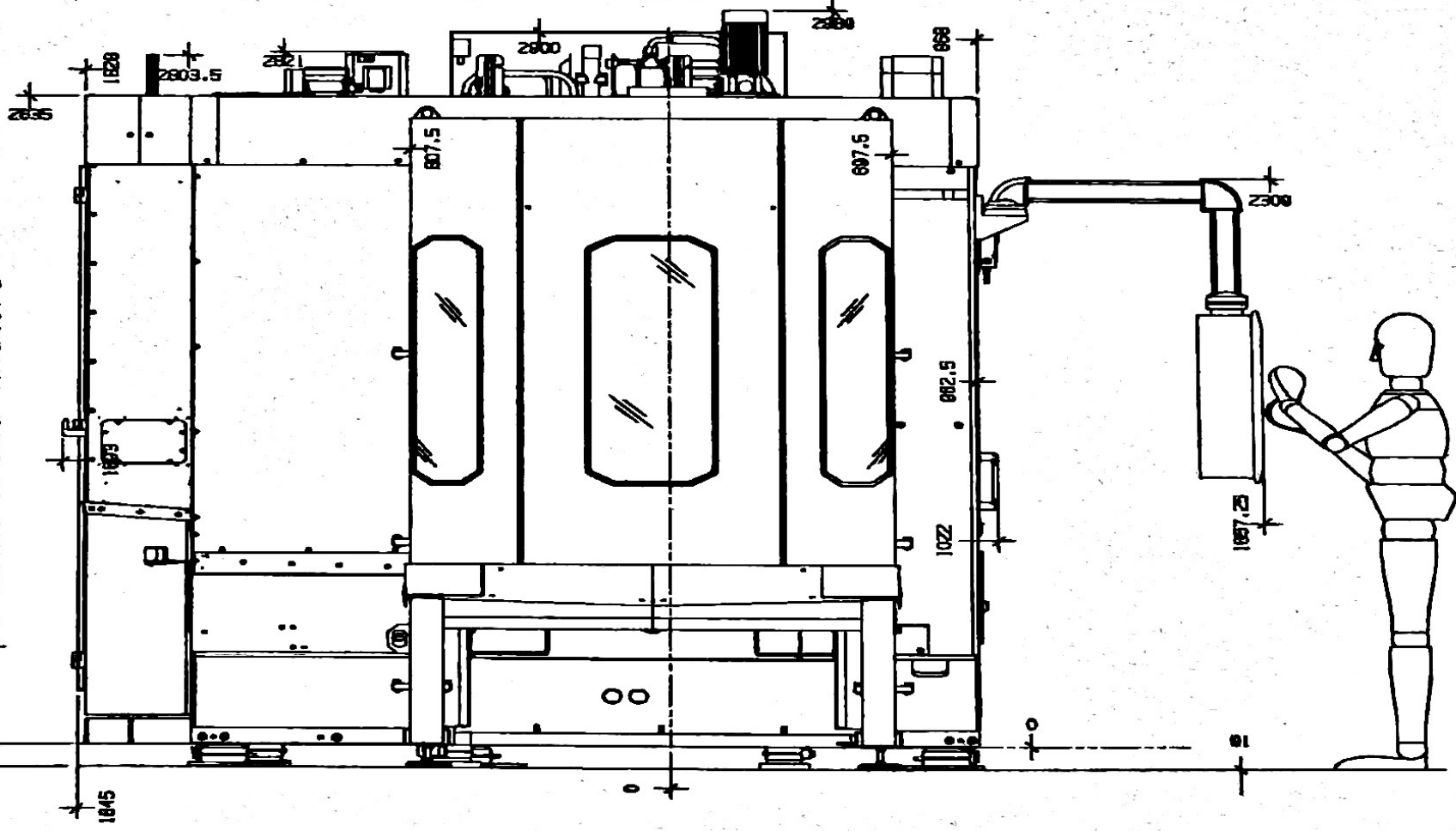
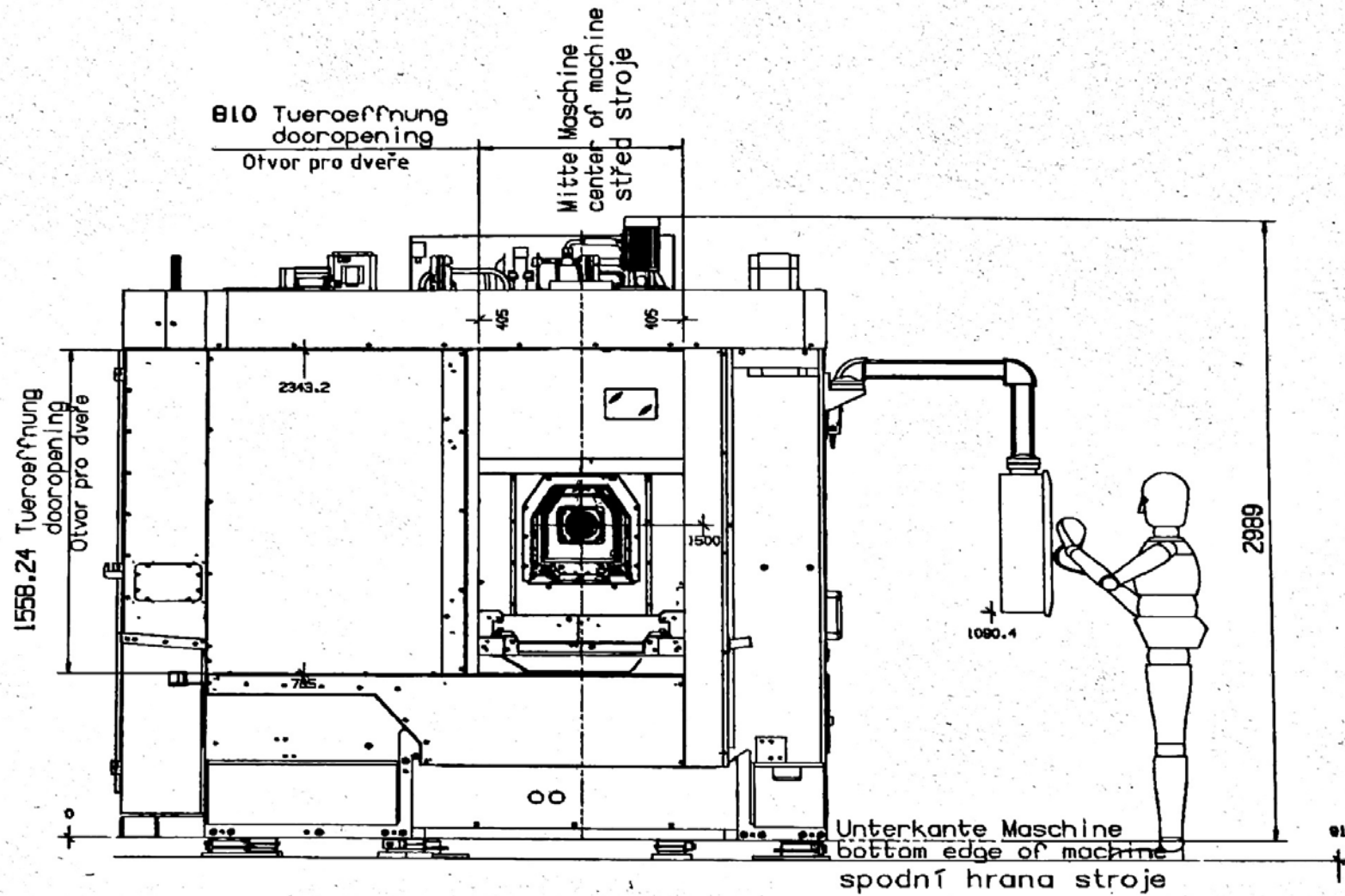


91 bis unterkante Fixator
to bottom edge of fixator
po dolní hranu fixátora

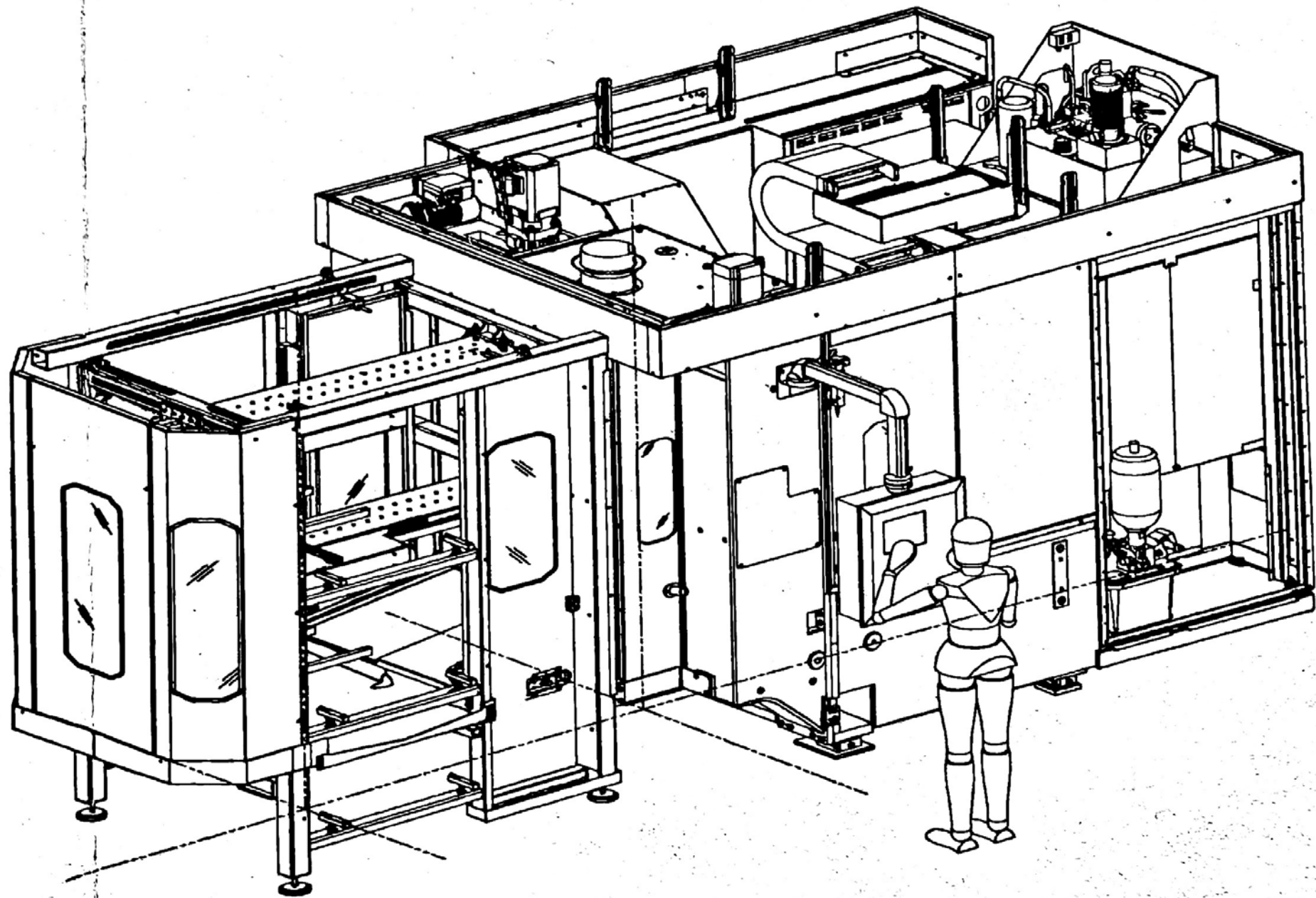


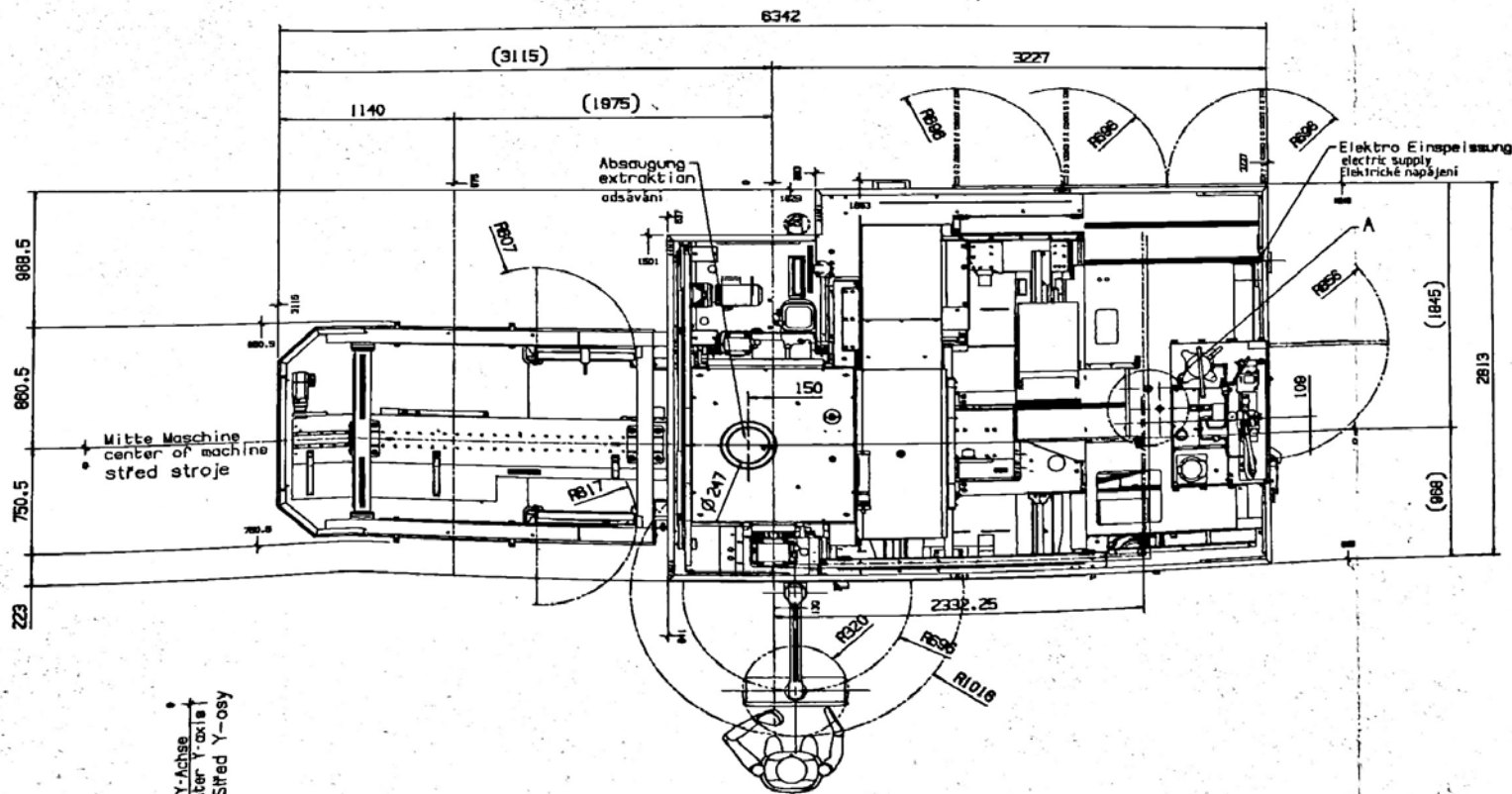
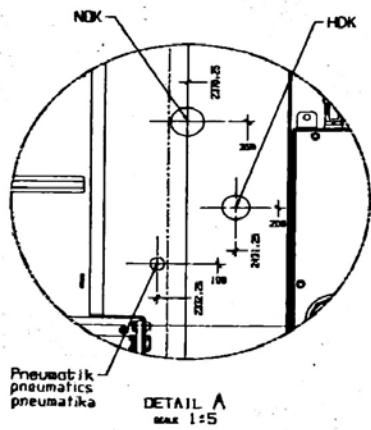
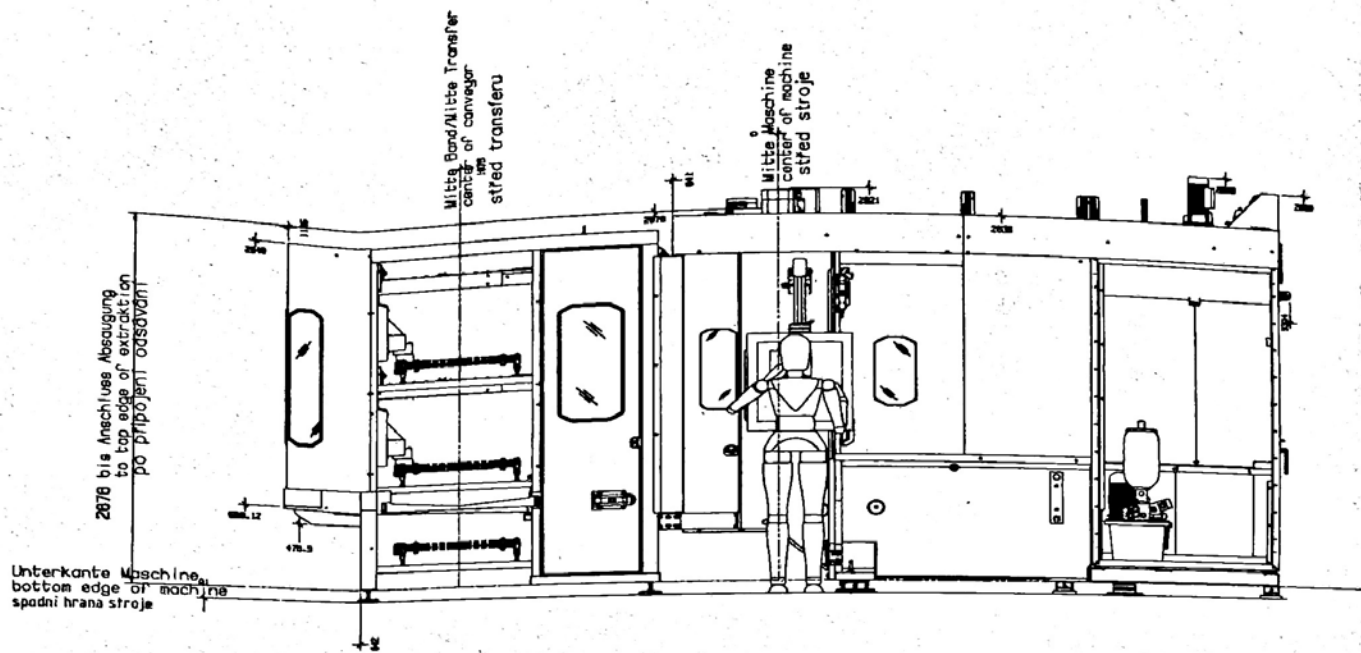
ine



	X-osa	Y-osa	Z-osa
zdvih	X-Achse x-axis	Y-Achse y-axis	Z-Achse z-axis
Hub stroke	800	840	865

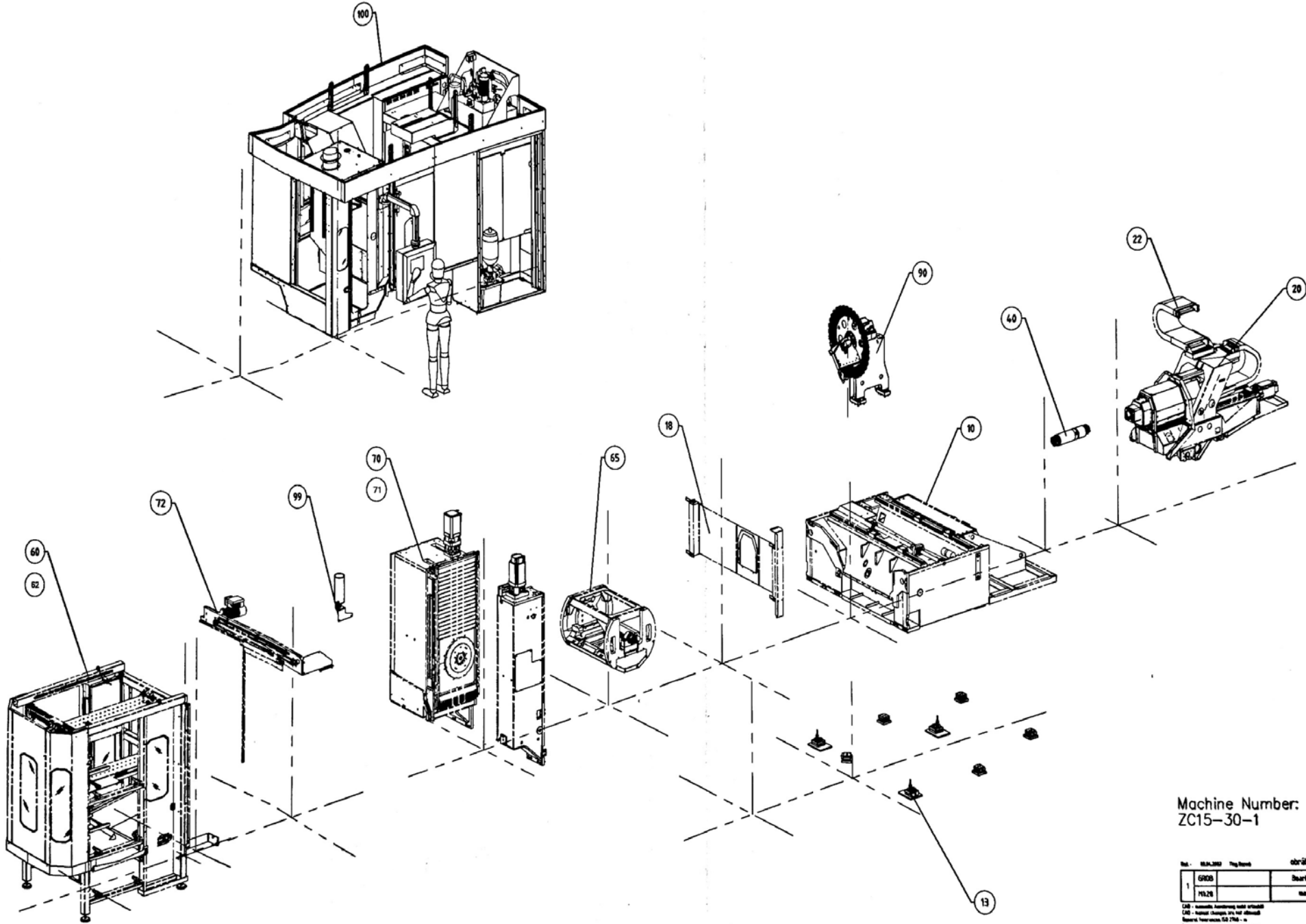
Machine Number:
ZC15-30-1





Mitte Y-Achse
machine/center Y-axis
stroje/ stred Y-osy

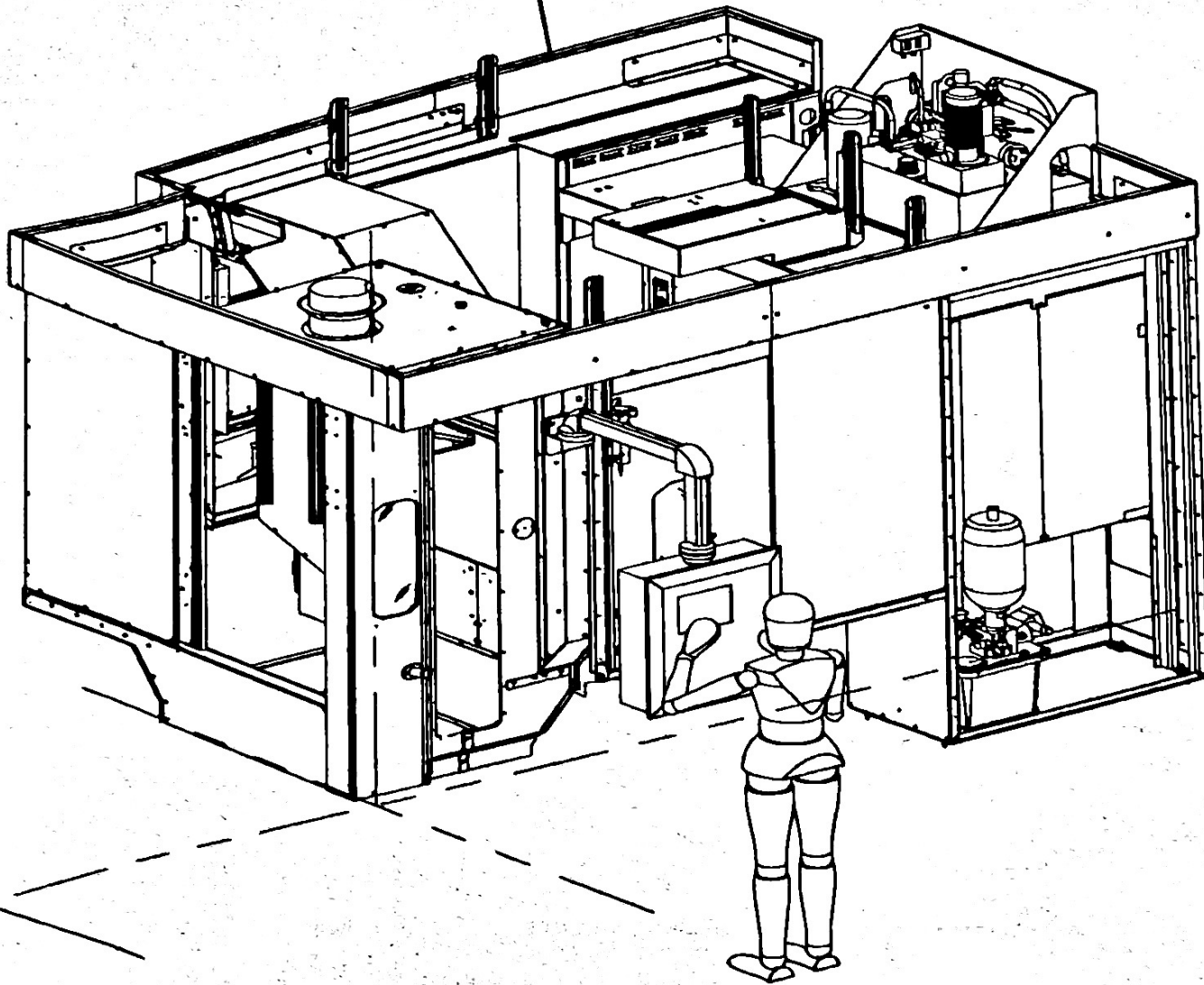
sketch

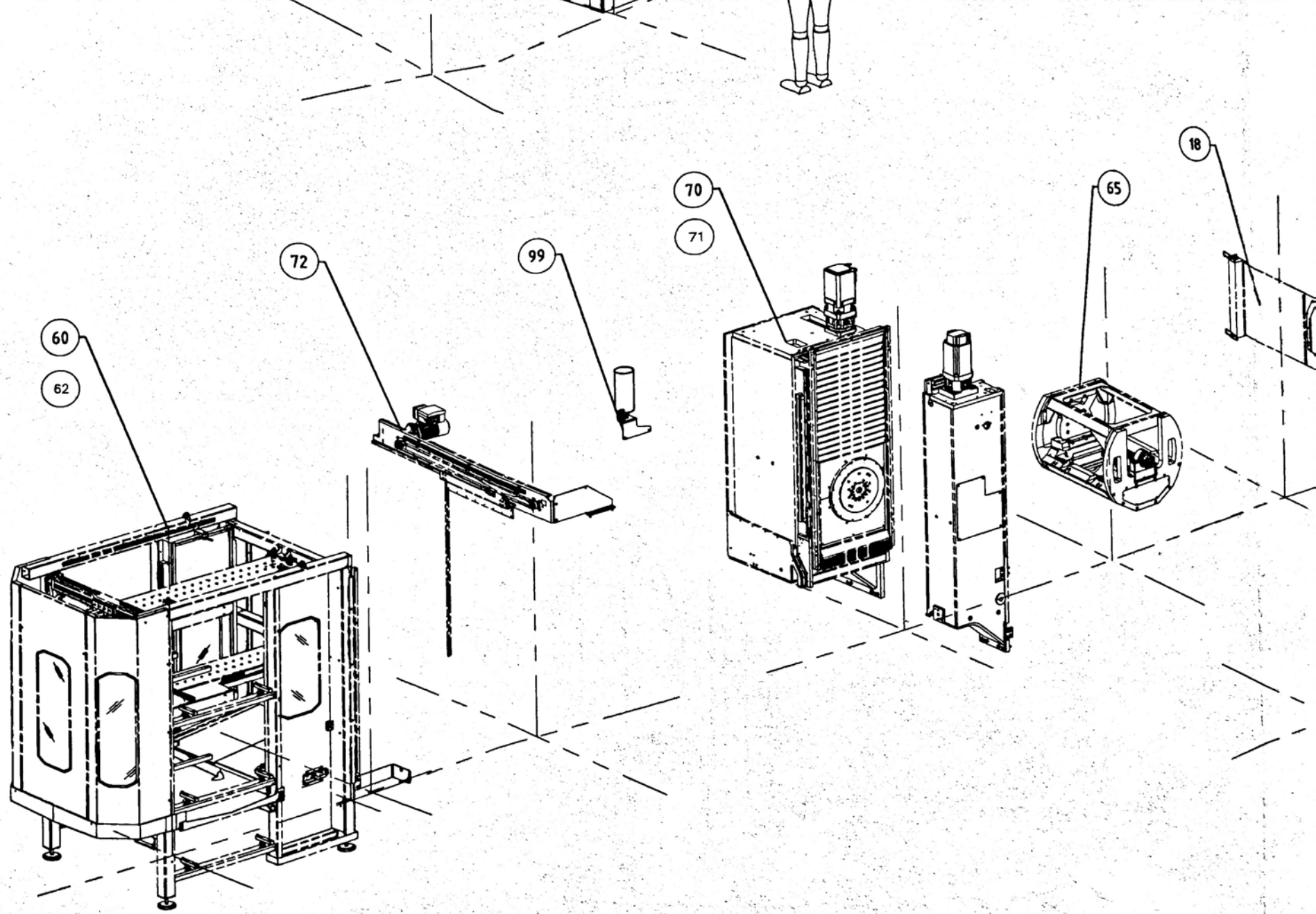


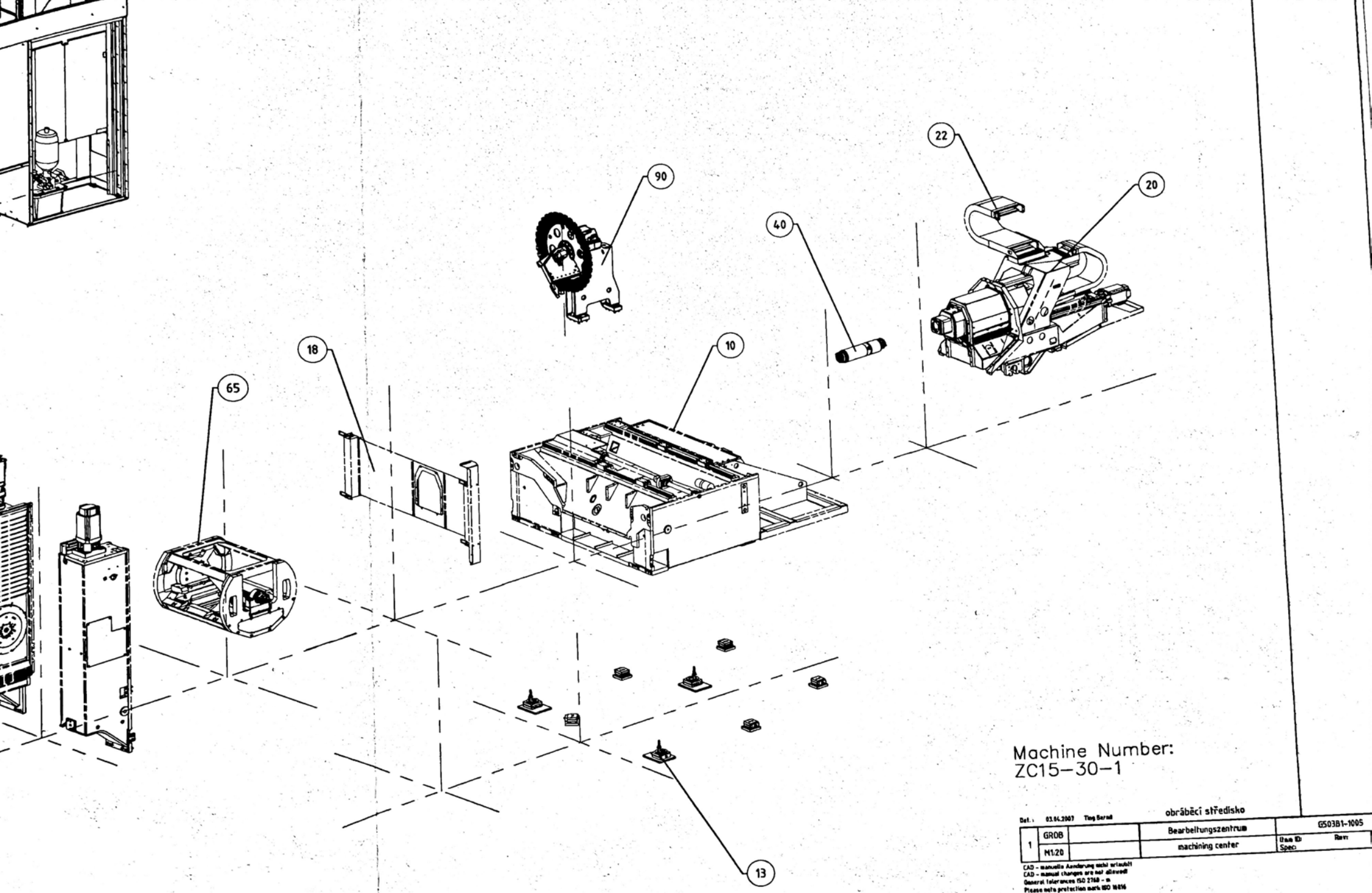
Machine Number:
ZC15-30-1

No. 1		BRN.200	Fig. Rev. 1	obráběcí středisko	G52051-1025	
1	GR02	Bearbeitungszentrum		Steel	Rev.	BL2 v. 3
	PL26	machining center		Steel		
<small> CAD - automatic drawing with 3D model CAD - automatic drawing with 3D model Original - see page 102 2704 - 10 Please refer to the original with 3D model. </small>						

100







Machine Number:
ZC15-30-1

Det.:	03.04.2007	Typ Serial	obráběcí středisko	
1	GROB		Bearbeitungszentrum	G503B1-1005
	M1.20		machining center	Rev.:
				Spec:

CAD - manuella Änderung nicht erlaubt
 CAD - manual changes are not allowed
 General tolerances ISO 2768 - m
 Please note protection mark ISO 18016

Machine Number:
ZC15-30-1

Det.: 03.04.2007 Ting Bernd

obráběcí středisko

1	GROB		Bearbeitungszentrum	G503B1-1005		
	M1:20		machining center	Item ID: Spec:	Rev:	Bl.2 v. 3

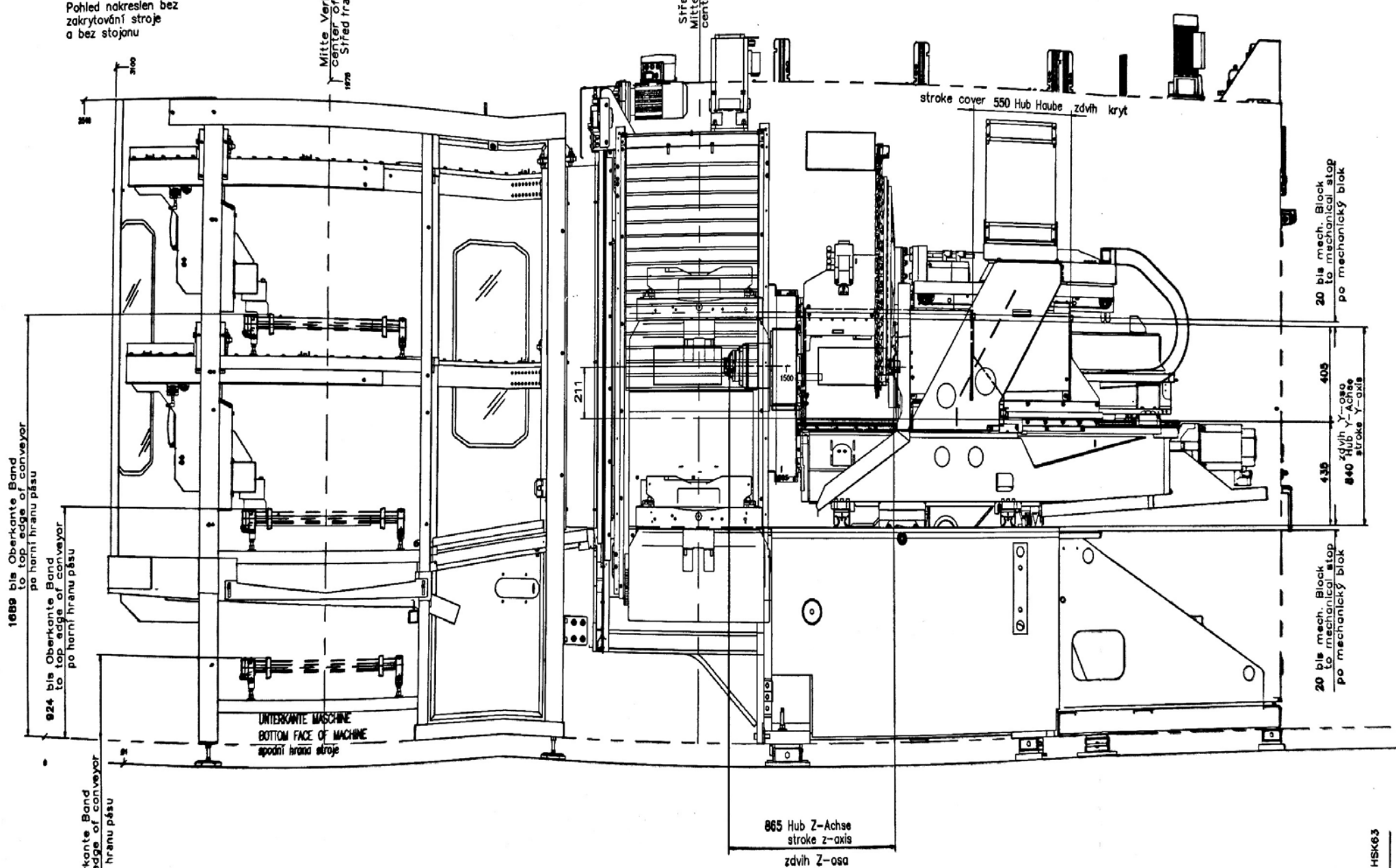
CAD - manuelle Änderung nicht erlaubt!
CAD - manual changes are not allowed!
General tolerances ISO 2768 - m
Please note protection mark ISO 16016

Ansicht ohne: -Maschinenverkleidung
 -einem Stoender
 veiv without: -enclosure
 -one column

Pohled nakreslen bez
 zakrytování stroje
 a bez stojanu

Mitte Verkettung
 center of conveyor
 Sifed transportu

Sifed A-asy
 Mitte Y-Achse
 center of Y-axis



1680 bis Oberkante Band
 to top edge of conveyor
 po horní hranu pásu

924 bis Oberkante Band
 to top edge of conveyor
 po horní hranu pásu

339 bis Oberkante Band
 to top edge of conveyor
 po horní hranu pásu

UNTERKANTE MASCHINE
 BOTTOM FACE OF MACHINE
 spodní hrana stroje

stroke cover 550 Hub Hoube ,zdvih kryt

211

865 Hub Z-Achse
 stroke z-axis
 zdvih Z-osa

20 bis mech. Block
 to mechanical stop
 po mechanický blok

435
 840 Hub Y-Achse
 stroke Y-axis

20 bis mech. Block
 to mechanical stop
 po mechanický blok

Verfahrwegdarstellung X/Z-Achse M1:5
 length of travel / Z-axis
 Zobrazení manipulační dráhy /Z-osa

TE MASCHINE
 CENTER OF MACHINE
 střed stroje

Max. Werkzeuggewicht Bkg
 max. toolweight
 max- hmotnost nástroje

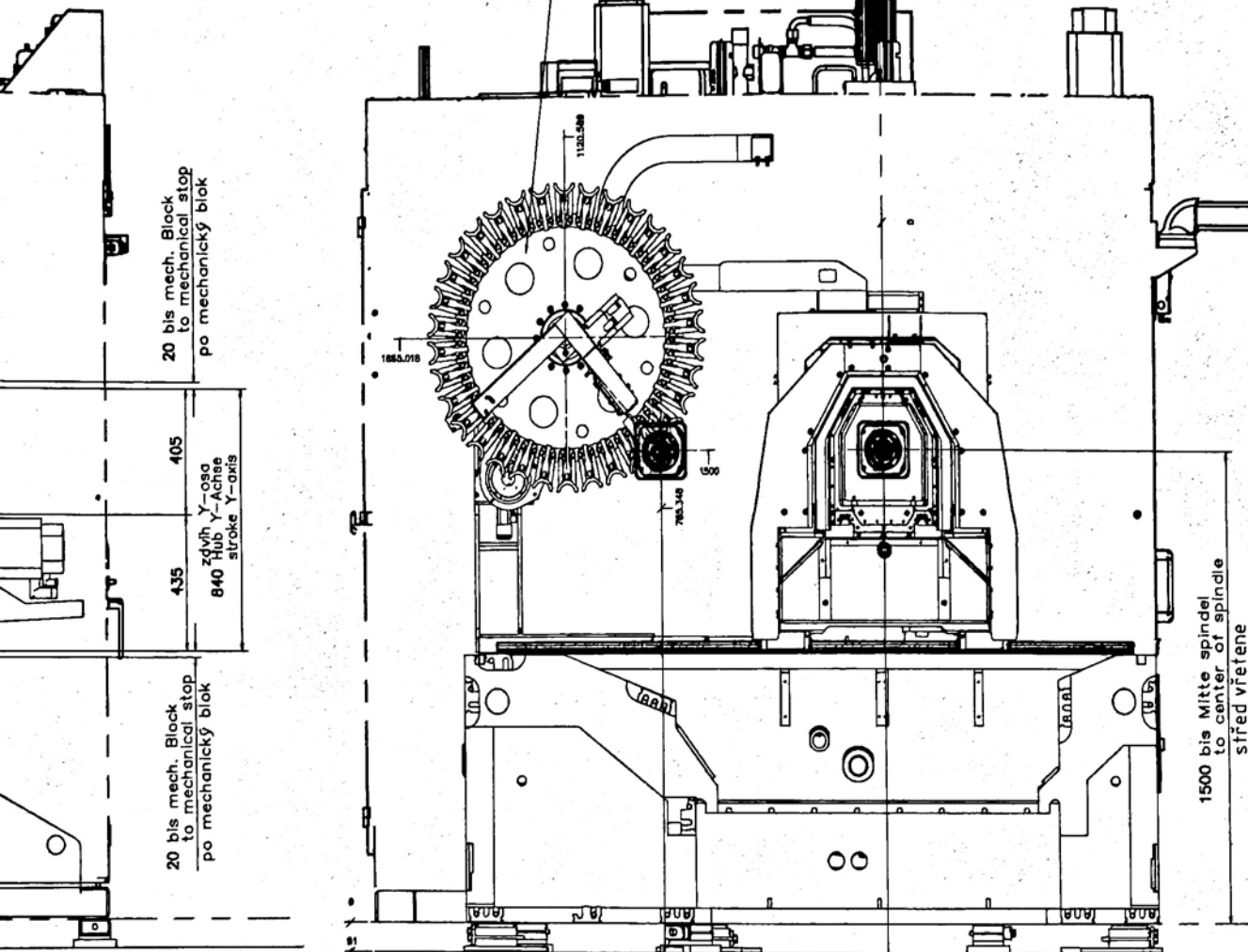
Werkzeugaufnahme HSK63
 toolholder
 nástroj držák

3-5
17
53
98

Änderungen
changes zešna

① Mas spec (part 2.439)
07.05.2007 Ting

Záobník obrábku v 34 místy na nástroje
Werkzeugmagazin mit 34 Werkzeugplätzen
tool magazine with 34 tool pockets



20 bis mech. Block
to mechanical stop
po mechanický blok

435 405
zvých Y-osa
840 Hub Y-Achse
stroke Y-axis

20 bis mech. Block
to mechanical stop
po mechanický blok

1500 bis Mitte spindel
to center of spindle
střed vřetene

785,348 bis Werkzeugwechelpunkt
to toolchange point
po bod výměny nástrojů

Ansicht ohne: -Maschinenverkleidung Pos.100
-Ständer Pos.70
-Bridge Pos.65

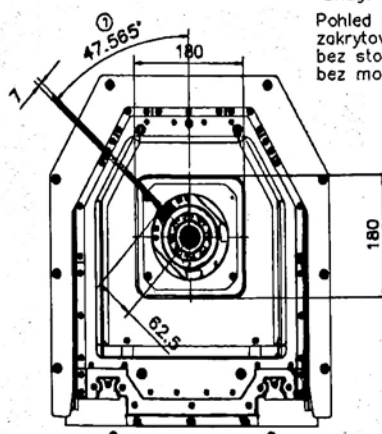
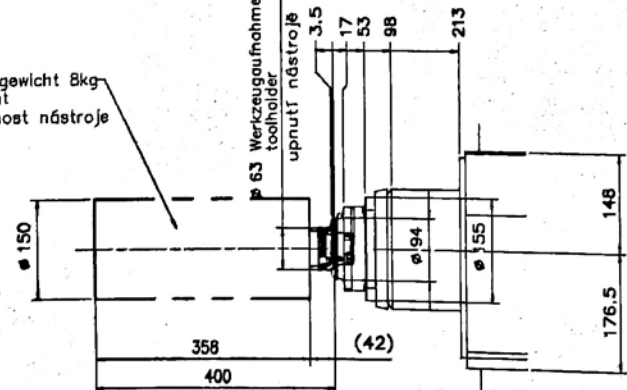
veiw without: -enclosure Pos.100
-column Pos.70
-Bridge Pos.65

Pohled nakreslen bez
zakrytování stroje poz. 100
bez stojanu poz. 70
bez mosta poz. 65

geggewicht Bkg
eight
otnost nástroje

63 Werkzeugaufnahme HSK63
toolholder

upnutí nástrojů



Darstellung der Motorspindel M 1:5
view of Motorspindel motorized spindle M 1:5
Zobrazení motorového vřetene M 1:5

Machine Number:
ZC15-30-1

Det.: 03.04.2007 Ting Bernd

obráběcí středisko

1	GROB	Bearbeitungszentrum	G503B1-1005	
	M1:10	machining center	Item ID: Spec:	Rev: BL.3 v 3

CAD - manualis Änderung nicht erlaubt!
CAD - manual changes are not allowed!
General tolerances ISO 2768 - m
Please note protection mark ISO 14146

339 bis Oberkante Band
to top edge of conveyor
po horní hranu pásu

Verfahrwegdarstellung X/Z-Achse M1:5
length of travel / Z-axis
Zobrazení manipulační dráhy /Z-osa

MITTE MASCHINE
CENTER OF MACHINE
střed stroje

• 900 Stoerkreis
radius of action
okruh s rušivým vlivem

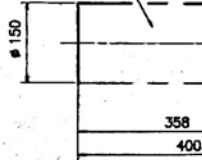
865 Hub Z-Achse
stroke z-axis
zdvih Z-osa

Mitte Y-Achse
center of Y-axis
Střed Y-osy

po přední hranu vřetene
.160 bis Vorderkante Spindel
to front edge of spindle

20 bis mech. Block
to mechanical stop
po mechanický blok

Max. Werkzeuggewicht Bkg
max. toolweight
max- hmotnost nástroje



63 Werkzeugaufnahme HSK63
toolholder
upnutí nástroje

20 bis mech. Block
to mechanical stop

800 Hub X-Achse
stroke X-axis
zdvih X-osa

385.348 bis Werkzeugwechelpunkt
to toolchange point
po bod výměny nástroj

98.652 bis mech. Block po
to mechanical stop mechanický blok

po bod výměny nástroj
65 bis Werkzeugwechelpunkt
to toolchange point

865 Hub Z-Achse
stroke Z-axis
zdvih Z-osa

20 bis mech. Block
to mechanical stop
po mechanický blok

1 Machine specifications

Machine type: Machining center G503

Project No.: GM4183 // GM4184

Machine No.:

GM4183/02-01	G503A1-1001	ZC10-20-1
GM4183/02-02	G503A1-1002	ZC10-20-2
GM4184/02-01	G503A1-1003	ZC15-20-1
GM4184/02-02	G503A1-1004	ZC15-20-2
GM4184/02-03	G503A1-1005	ZC15-20-3
GM4183/03-01	G503B1-1003	ZC10-30-1
GM4183/03-02	G503B1-1004	ZC10-30-2
GM4183/03-03	G503B1-1001	ZC10-30-3
GM4183/03-04	G503B1-1002	ZC10-30-4
GM4184/03-01	G503B1-1005	ZC15-30-1
GM4184/03-01	G503B1-1006	ZC15-30-2
GM4184/03-01	G503B1-1007	ZC15-30-3

Date of manufacture: 2007

Manufacturer: GROB-WERKE GmbH & Co. KG.
Industriestraße 4
D-87719 Mindelheim
Tel.: +49 (0)8261 / 996-0
Fax: +49 (0)8261 / 996-268
E-Mail: info@de.grobgroup.com
Internet: www.grobgroup.com

Customer / Location: Hyundai Nošovice

Quotation No. / Contract No.: A 12159-02 / POPT072001

Machine installation layout: GM4183 // GM4184

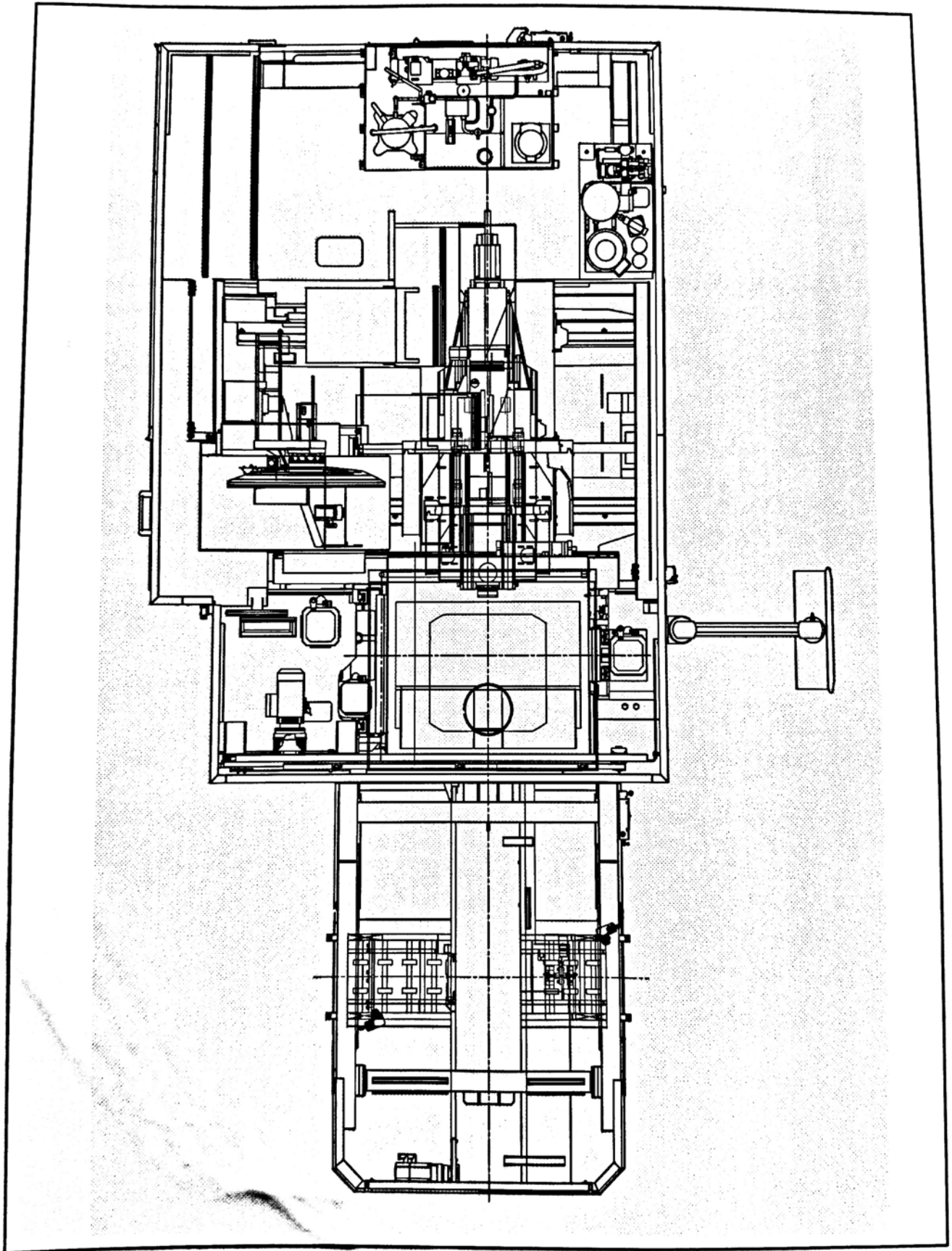
Part: Transmission case // Clutch case

2 Brief description**2.1 General description**

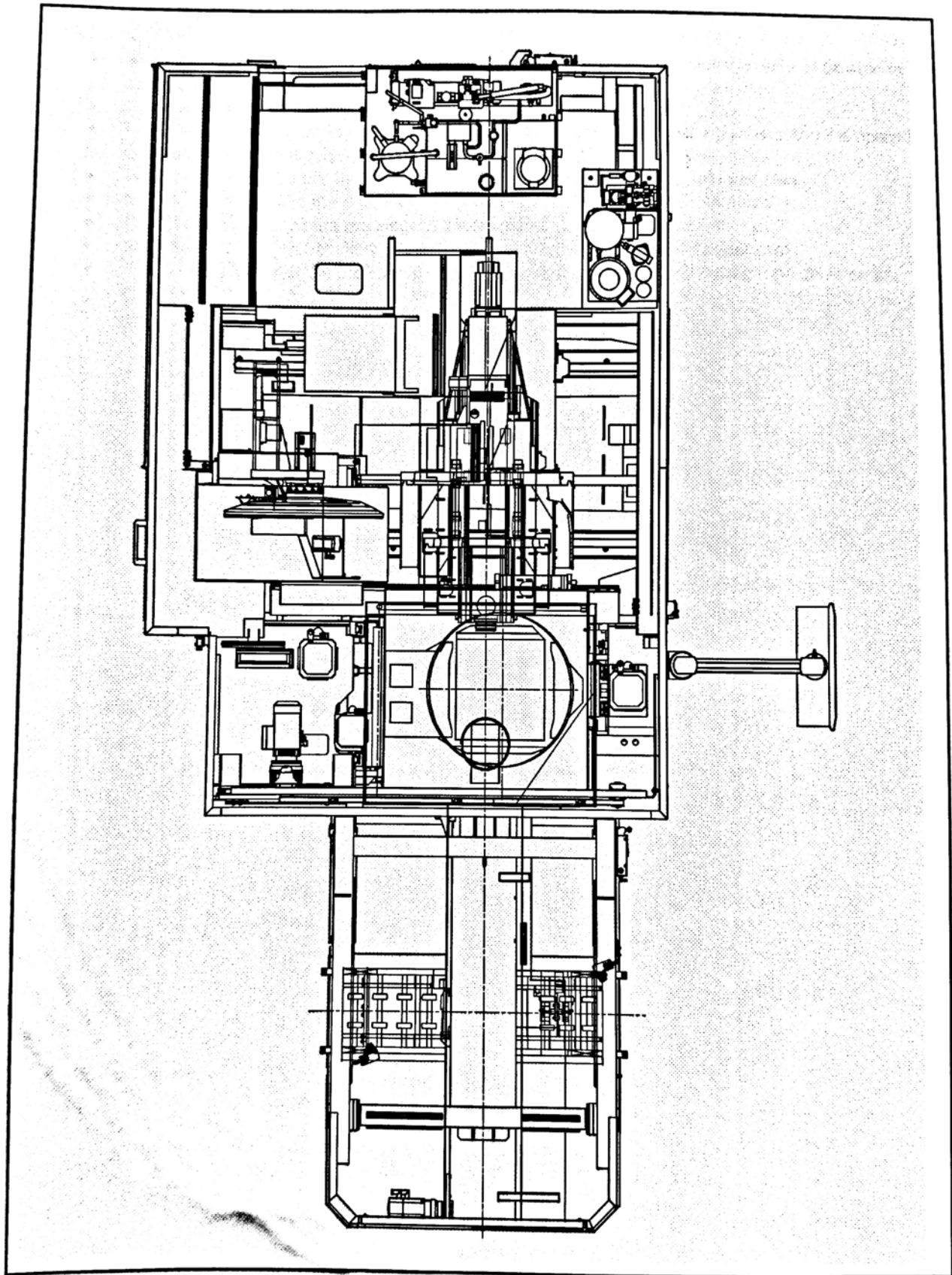
Machine type:	User-programmable automatic machining centers G503.
Loading and unloading of machining centers:	Via an automatic load/unload unit. The parts are transferred to or removed from the machining center
Workpiece clamping:	The workpieces are clamped in the machining center by means of an hydraulically actuated fixture.
Number of tool pockets:	G503..=1 x 34 tool pockets per machining center
Arrangement of the control panels:	The swivellable control panel on the machining center is located besides the work area.
Arrangement of the control boxes:	On machining centers, the electrical cabinet is integrated in the machine guarding.
Arrangement of the hydraulic power units:	At the back of each machining center on the side of the control panel.
Pneumatic supply:	At the back of each machining center.
Coolant supply:	Via customer's central supply system
High-pressure coolant supply:	Each machining center is equipped with a booster pump.
Swarf and coolant disposal:	Swarfs and coolant are evacuated from the machine via the rinsing channel.

The structure of the machining centers is described in the machine layouts and machine layout stocklists GM4183 and GM4184.

3 Machine layout G503A



4 Machine layout G503B



1 Technical data of machining center

Dimensions and weights		
Space requirements		
Length G503	4 000	[mm]
Length G503 with load unit	6 500	[mm]
Width G503	3 000	[mm]
Width G503 with control panel	4 000	[mm]
Machine height G503	3 000	[mm]
Machine weight G503	15 500	[kg]
Filling capacities		
Hydraulic power unit on machining center	40	[l]
Lubricant reservoir	refer to lubrication diagram	
Electrical connected load		
Line voltage	400	[VAC]
Installed power machining center G503	47	[KVA]
Frequency	50	[Hz]
Media		
Type of lubricant	Emulsion	
System pressure (pneumatics)	5	[bar]
Important note: The length, size and liter specifications are approximate values		

Based on the following standard specifications: DIN EN ISO 3746, DIN 45635 and ISO 230 - 5

1. General information on the aligned machine:

Maschine type:	G-Module	Construction year:	2007
Machine dimensions in m:		Type of workplace:	transmission case
- Length:	37	Incl. part machining:	yes
- Width:	7	Measuring points:	8 (see layout sheet 2)
- Height:	3,5	Measuring cycles:	1
		Measured time per cycle:	176 sec. (cycle time)

2. Remarks regarding measuring conditions:

> _____
> _____
> _____

3. 1 m - measuring faces - sound pressure level:

Energy equivalent A - weighted sound pressure level (L_{pAeq}) at the individual measuring points (i)				
Meas. points (i)	Measured sound pressure level $L'_{pAeq(i)}$ [dB]	Measured extraneous noise level $L''_{pAeq(i)}$ [dB]	Extraneous noise level correction $K_{1A(i)}$ [dB]	Sound pressure level corrected! $L_{pAeq(i)}$ [dB]
			$L'_{pAeq(i)} - L''_{pAeq(i)} \geq 3$ dB	
1	76,7	67,3	0,5	76,2
2	75,7	67,3	0,7	75,0
3	79,1	67,3	0,3	78,8
4	76,3	67,3	0,6	75,7
5	76,2	67,3	0,6	75,6
6	75,9	67,3	0,6	75,3
7	76,9	67,3	0,5	76,4
8	77,1	67,3	0,5	76,6
9				
10				
11				
12				
13				
14				
15				

3.1 Environmental correction K_2 (≤ 7 dB):

$K_2 =$

3.2 Sound pressure level requested according to machine purchase order

L_{pAeq}^- soll =

3.3 Calculation of the corrected sound pressure level at the individual measuring points (i)

$$L_{pAeq(i)} = L'_{pAeq(i)} - K_{1A(i)} - K_2$$

3.4 Calculation of the corrected sound pressure level of the machine

$L_{pAeq}^- =$

$$L_{pAeq}^- = 10 \cdot \log \left(\left(10^{0,1 \cdot L_{Aeq1}} + 10^{0,1 \cdot L_{Aeq2}} + \dots + 10^{0,1 \cdot L_{Aeqn}} \right) / n \right)$$

3.5 Does the sound pressure level comply with the value stipulated in the contract?

4. A - weighted sound power level:

4.1 Measured faces content

$S =$

4.2 Calculation of the A - weighted sound power level

$$L_{WA} = L_{pAeq}^- + 10 \log(S / S_0)$$

$L_{WA} =$

Maschine No.	Customer	Sheet 1 of 2
GM 4183/01 - 03	Hyundai Nosovice	Signature: _____

Map of measurement locations and sound emission values

Machine: GM4183

Sound pressure level
 energy-equivalent continuous
 sound pressure level measured
 integrating during the time. $t = 176$ sec.
 frequency weighting curve "A"
 dynamic characteristic "F"

Distance of measuring

$d = 1$ m

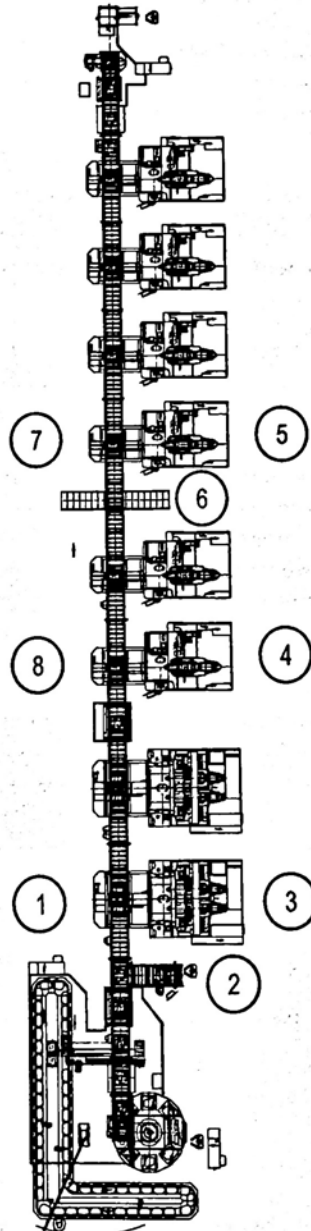
Distance from bottom

$h = 1,4$ m

Measuring instrument

B&K 2236D

accuracy class 1



Values: see page 1

Based on the following standard specifications: DIN EN ISO 3746, DIN 45635 and ISO 230 - 5

1. General information on the aligned machine:

Maschine type:	G-Module	Construction year:	2007
Machine dimensions in m:		Type of workpiece:	clutch housing
- Length:	37	Incl. part machining:	yes
- Width:	7	Measuring points:	6 (see layout sheet 2)
- Height:	3,5	Measuring cycles:	1
		Measured time per cycle:	88 sec. (cycle time)

2. Remarks regarding measuring conditions:

> _____
 > _____
 > _____

3. 1 m - measuring faces - sound pressure level:

Energy equivalent A - weighted sound pressure level (L_{pAeq}) at the individual measuring points (i)				
Meas. points (i)	Measured sound pressure level $L'_{pAeq(i)}$ [dB]	Measured extraneous noise level $L''_{pAeq(i)}$ [dB]	Extraneous noise level correction $K_{1A(i)}$ [dB]	Sound pressure level corrected! $L_{pAeq(i)}$ [dB]
			$L'_{pAeq(i)} - L''_{pAeq(i)} \geq 3 \text{ dB}$	
1.	74,2	67,5	1,0	73,2
2.	73,0	67,5	1,4	71,6
3.	71,9	67,5	2,0	69,9
4.	71,2	67,5	2,4	68,8
5.	73,4	67,5	1,3	72,1
6.	74,5	67,5	1,0	73,5
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				

3.1 Environmental correction K_2 ($\leq 7 \text{ dB}$): $K_2 =$

3.2 Sound pressure level requested according to machine purchase order $L_{pAeq \text{ soll}} =$

3.3 Calculation of the corrected sound pressure level at the individual measuring points (i)
 $L_{pAeq(i)} = L'_{pAeq(i)} - K_{1A(i)} - K_2$

3.4 Calculation of the corrected sound pressure level of the machine
 $L_{pAeq}^- = 10 \cdot \log((10^{0,1 \cdot L_{Aeq1}} + 10^{0,1 \cdot L_{Aeq2}} + \dots + 10^{0,1 \cdot L_{Aeqn}}) / n)$ $L_{pAeq}^- =$

3.5 Does the sound pressure level comply with the value stipulated in the contract?

4. A - weighted sound power level:

4.1 Measured faces content $S =$

4.2 Calculation of the A - weighted sound power level
 $L_{WA} = L_{pAeq}^- + 10 \log(S / S_0)$ $L_{WA} =$

Maschine No.	Customer	Signature:	Sheet 1 of 2
GM 4184/01 - 03	Hyundai Nosovice		

Map of measurement locations and sound emission values**Machine: GM4184**

Sound pressure level
energy-equivalent continuous
sound pressure level measured
integrating during the time. $t = 88$ sec.
frequency weighting curve "A"
dynamic characteristic "F"

Distance of measuring

$d = 1$ m

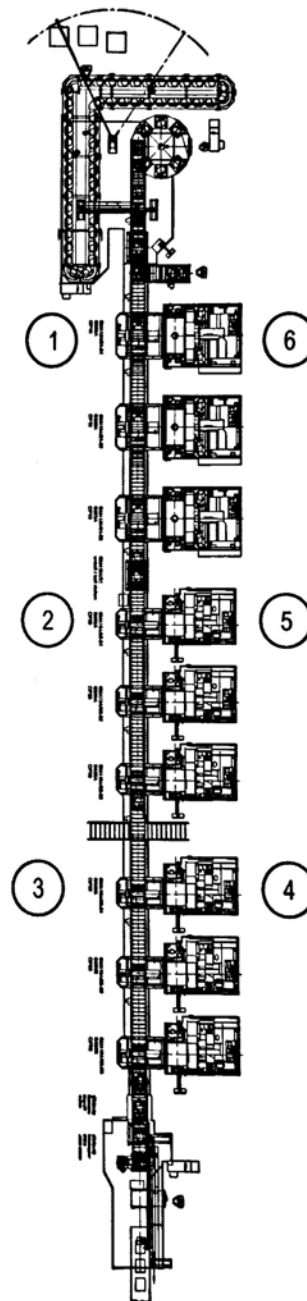
Distance from bottom

$h = 1,4$ m

Measuring instrument

B&K 2236D

accuracy class 1



Values: see page 1