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MEHRFACHDRAHTZIEHMASCHINE M 85 f 11 - A / MC 5692

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18. Mai 1988

M 85 f 11 - A / MC 5692
Carlo Colombo
Mailand / Italien

1. GENERAL

The NIEHOFF-Multiple Wire Drawing Machine Model M 85 is a universal, robust, highly efficient wire drawing machine: with which copper or aluminum wires can be drawn at high speeds. Due to its design, special requirement, such as number of drafts, type of reduction, vertical or horizontal wire pay off, can be considered and incorporated. These variations are included in the following description when they do not differ too much. Special instructions are available for the addition of instruments, heat exchanger, special pumps, additional gears, etc.

1.1 Further inquiries -

If there are any questions concerning this machine, we would require that the following information to be supplied by the customer:

a) Model of the machine.

b) Our number of order, according to data plates, MC number, serial numbers, etc.

c) Date of construction.

2. INSTALLATION OF THE MACHINE

The machine has to be installed according to our installation instructions or foundation drawings. It would be desirable to have the machine installed by our fitters, one mechanical and one electrical engineer.

3. DESCRIPTION OF THE MACHINE

3.1 Machine bases

The bases of the machine consists of single cast iron units (pos. 1, pict. 1) which are sealed and bolted together. The number of these units depends on the number of drafts. 1 cast iron unit is necessary for 2 shafts and 2 drafts. The bases of the machine also serve as a reservoir for the drawing lubricant. It will hold the total amount of lubricant required for the lubricant bays. The single cast iron bay of the machine bases are connected by drain holes. (hole dia. - 120 mm).

3.2 Gears

a) Main gears

The main gear train consists of single gear boxes, each having two drawing shafts.

The gears transmission can be seen from the enclosed drive scheme 4-M85-B-8/MC5600.

The gear units are composed of:

1. One starting block according to the enclosed Drawing 1-M85. Z02-27.
2. One or several blocks according to Drawing 1-M85. Z02-28, which are placed between.
3. One finishing block according to Drawing 1-M85. Z02-29.

b) Switch gear (Speed Change)

The speed changing switch gear is housed in an extra gear box. The drive shaft (pict. 2, pos. 1) takes up two sliding gear blocks. A further sliding gear block is on the intermediate shaft. The three sliding gear blocks can be placed into the desired position acc. to Drawing 1-M85. Z03-7 by the switching levers (pos. 2, pict. 2). Consequently, 6 different drawing speeds can be set up. The drive shaft (pos. 3, pict. 3) is provided as drive shaft for the final capstan after the last draft and can also be used to supply the drive for an annealer which can be placed behind the drawing machine at the same or at a later date.

Designs of the switch gear: (for speed changing)

1. Without drive for the annealer acc. to Drawing O-M85. Z03-15
2. With drive for the annealer acc. to Drawing O-M85. Z03-16.

The assembling and sealing of these single gear boxes is shown in the enclosed drawings.

3.3 Drawing Bays

The drawing bays contain the drawing lubricant during the drawing procedure. The drawing capstans and die-holders operate while completely submerged in the drawing lubricant.

The drawing lubricant bays are designed without partitions so that the lubricant fills all bays at the same time. Several Drain-cocks (pos. 2, pict. 1) are provided for a quick draining of the bay. An overflow plate (pos. 1, pict. 3) is provided in the first drawing bay (wire-inlet-side). This plate can be removed or shortened, if it proves desirable not to completely submerge the drawing capstans. An additional overflow is provided in the last bay (wire-outlet-side).

The shafts are sealed by means of shaft-seal-rings. Beside each drawing capstan (pict. 4, pos. 1), an additional drawing lubricant connection has been provided, so that the drawing machine can also be operated as a spray type machine.

3.4 Drawing Capstans and Die-holder

The drawing capstans (pict. 1, pos. 3) consist of the primary base of GG and of the actual drawing ring of special hardened steel (HRc 65 + 2) (pict. 1, pos. 4).

The diameter of the drawing rings is 450 MM.

The drawing rings are built symetrically, and therefore can reverse for use on both sides, if the wear becomes too great on one side. The drawing ring of the last drawing capstan (pict. 2, pos. 4) is designed to be 1,5 degree conical. The big diameter is on the machine-side, this ring can not be used on both sides.

The die-holders are sub-divided, such as: inlet-die-holder, drawing die-holder and final die-holder.

The inlet-die-holder (pict. 3, pos. 2) has a grease box and a spray-connection (pict. 3, pos. 3) for the liquid lubricant, so that several lubricants can be used if desired. If liquid lubricant is used, it can be adjusted by means of the stop cock (pict. 3, pos. 4).

The die-holders in the machine (pict. 4, pos. 2) are built into the bays. They are completely submerged when the drawing bay is full. In addition, lubricant under pressure is sprayed into the front of the die in each die-holder.

The die-holders can be adjusted in the height. They can be adjusted by being moved upwards in an arc of a circle, the center of which coincides with the corresponding capstan. If desired, dividing-units (pict. 4, pos. 3) can be mounted on to the die-holders.

Lock pins (pict. 4, pos. 4) prevent the dies from coming out of the die-holder.

DIE HOLDER

The die-holders are provided for die-dimensions of 55 MM maximum outside-diameter. Also smaller dies can be used on this machine by using bushings.

The final die-holder (pict. 2, pos. 5) is built into the end of the last lubricant bay. It rotates at about 200 rpm., therefore, constant die-wear and a good wire surface can best be obtained.

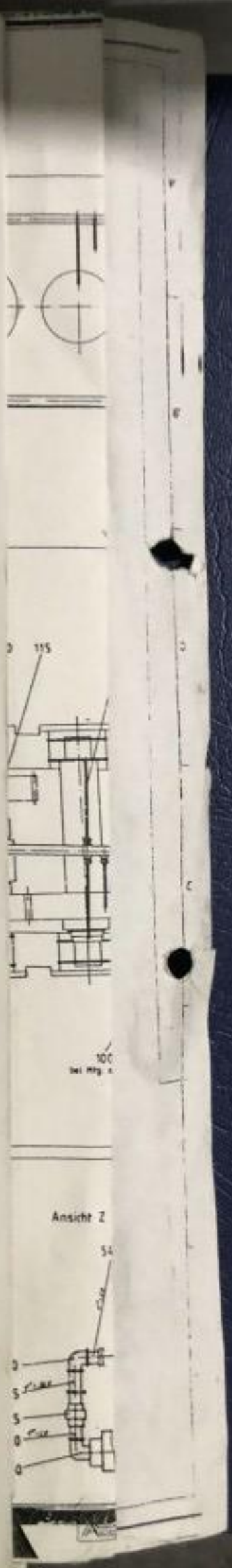
The die is held by a clamp (pict. 2, pos. 6). This clamp can be exchanged, if other die-dimensions are to be used. A sealing case is provided between the die and the surface of the clamp. The sealing case prevents leaking of the drawing lubricant past the die.

A felt lined oscillation damper is provided between the final die and the capstan, in order to prevent vibration of the wire. After threading-up the wire, the oscillating damper is placed over the wire, (pict. 2, pos. 7).

3.5 Drive

The drawing machines are driven either with AC- or DC- motors as desired. The efficiency of the motor depends on the material, drawing-speed, inlet-diameter and number of dies to be used.

The rotation of the motor must be checked before putting-on the v-belts to determine if the direction of rotation is correct. The wrong direction, of rotation, in the machine would cause damage to the built in "Anti-back lash" mechanism which is a safety device built into the final gear box to prevent damage to the main gear train in case of "back lash". The dimensions of the v-belts and the v-belt-pulleys can be seen from the drive scheme.

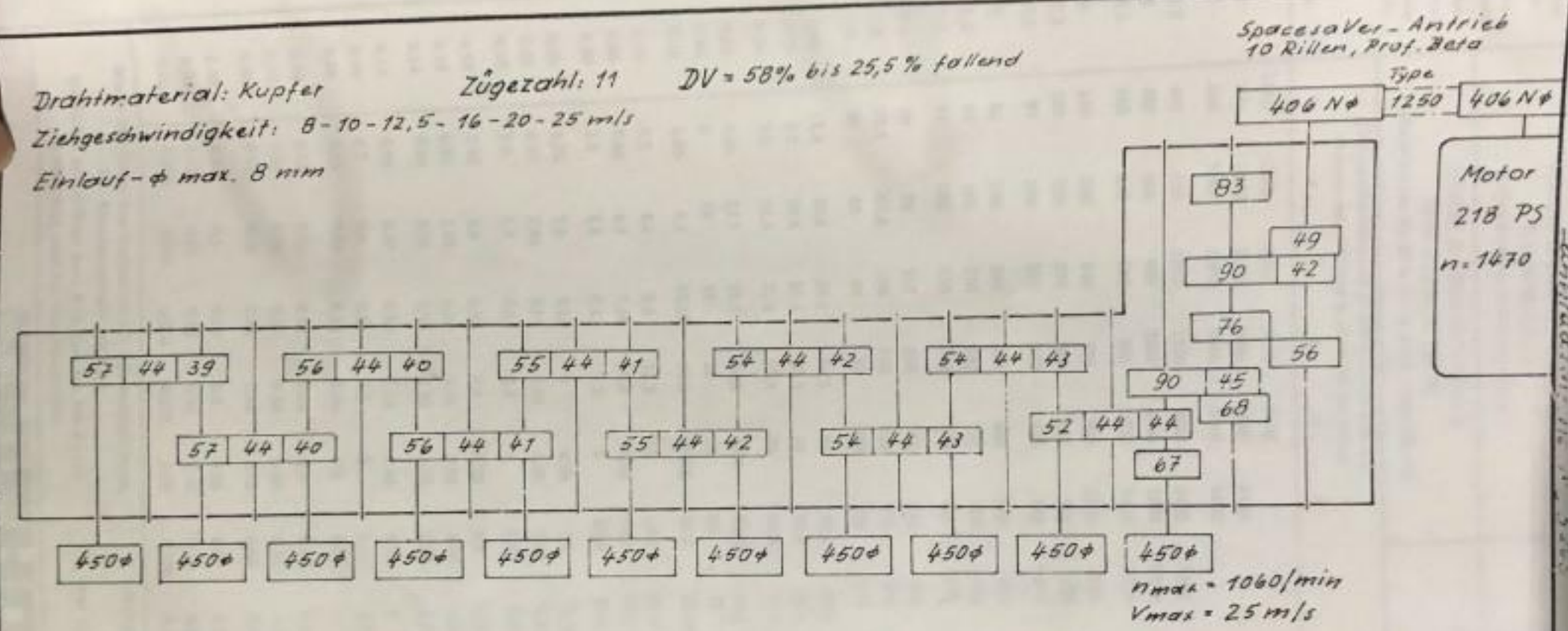


Wähle & Co., Roeheit 6122

Drahtmaterial: Kupfer Zügezahl: 11 DV = 58% bis 25,5 % fallend

Ziehgeschwindigkeit: 8 - 10 - 12,5 - 16 - 20 - 25 m/s

Einlauf-ϕ max. 8 mm



26.7.67	Antriebsschema M85 f 11-A	4-M85-B-1-MC 5692

Drahtdurchmesser / Finished wire sizes / Diametre à la sortie / Diametro del filo	PRODUKTIONSTABELLE IN KG/STD. FÜR KUPFERDRAHT (Maschinenausnützung 80 %) / TABLEAU DE PRODUKTION EN KG/H POUR LES FILS DE CUIVRE (Rendement de 80 % de la production idéale)						PRODUCTION SCHEME IN KG/H FOR COPPER WIRES (80 % of the possible max. output) / INDICE DE PRODUZIONE ORARIA IN KG PER FILO DI RAME (Macchina sfruttata all' 80 %)					
	Ziehgeschwindigkeit in Metern pro Sekunde / Vitesse de tréfilage à la sortie en m/sec						Drawing speeds in m/sec / Velocità di trafilatura in m/sec					
mm	1	2	3	4	5	6	7	8	9	10	20	30
8	1280	2560	3840	5112	6400							
6	720	1440	2160	2880	3600	4320						
5	500	1000	1500	2000	2500	3000						
4,5	405	810	1215	1620	2025	2430	2835	3240				
4	320	640	960	1280	1600	1920	2240	2560				
3,5	245	490	735	980	1225	1470	1710	1960	2200	2450		
3	180	360	540	720	900	1080	1260	1440	1620	1800		
2,5	125	250	375	500	625	750	875	1000	1125	1250		
2,2	97	194	291	388	485	582	680	776	873	970		
2	80	160	240	320	400	480	560	640	720	800		
1,8	65	130	195	260	325	390	455	520	585	650	1300	
1,6	51	102	153	204	255	306	357	408	459	510	1020	
1,4	39	78	117	156	195	234	273	312	351	390	780	
1,2	28,7	57,4	86	115	143	172	201	230	258	287	574	
1,0	20	40	60	80	100	120	140	160	180	200	400	
0,80	12,8	25,6	38,4	51,2	64	76,8	89,6	102,4	115,2	128	256	
0,70	9,8	19,6	28,4	39,2	49	58,8	68,6	78,4	88,2	98	196	
0,60	7,2	14,4	21,6	28,8	36	43,2	50,4	57,6	64,8	72	144	
0,55	6,04	12,1	18,1	24,2	30,2	36,3	42,3	48,3	54,4	60,4	121	
0,50	5	10	15	20	25	30	35	40	45	50	100	150
0,45	4,05	8,1	12,15	16,2	20,25	24,3	28,35	32,4	36,45	40,5	81	121
0,40	3,2	6,4	9,6	12,8	16	19,2	22,4	25,6	28,8	32	64	96
0,35	2,45	4,9	7,35	9,8	12,25	14,7	17,1	19,6	22	24,5	49	73,5
0,30	1,8	3,6	5,4	7,2	9	10,8	12,6	14,4	16,2	18	36	54
0,25	1,25	2,5	3,75	5	6,25	7,5	8,75	10	11,25	12,5	25	37,5
0,22	0,97	1,94	2,91	3,88	4,85	5,82	6,8	7,76	8,73	9,7	19,4	29,1
0,20	0,8	1,6	2,4	3,2	4	4,8	5,6	6,4	7,2	8	16	24
0,18	0,65	1,3	1,95	2,6	3,25	3,9	4,55	5,2	5,85	6,5	13	19,5
0,16	0,51	1,02	1,53	2,04	2,55	3,06	3,57	4,08	4,59	5,1	10,2	15,3
0,14	0,39	0,78	1,17	1,56	1,95	2,34	2,73	3,12	3,51	3,9	7,8	11,7
0,12	0,29	0,57	0,86	1,14	1,45	1,72	2	2,29	2,58	2,87	5,74	8,61
0,10	0,2	0,4	0,6	0,8	1	1,2	1,4	1,6	1,8	2	4	6
0,09	0,16	0,32	0,48	0,64	0,8	0,96	1,12	1,28	1,44	1,62	3,24	4,86
0,08	0,12	0,24	0,36	0,48	0,6	0,72	0,84	0,96	1,08	1,2	2,4	3,6
0,07	0,09	0,18	0,27	0,36	0,45	0,54	0,63	0,72	0,81	0,9	1,8	2,7
0,06	0,07	0,14	0,21	0,28	0,35	0,42	0,49	0,56	0,63	0,7	1,4	2,1
0,05	0,05	0,1	0,15	0,2	0,25	0,3	0,35	0,4	0,45	0,5	1	
0,04	0,03	0,06	0,09	0,12	0,15	0,18	0,21	0,24	0,27	0,3	0,6	
0,03	0,018	0,036	0,054	0,072	0,09	0,108	0,126	0,144	0,162	0,18	0,36	

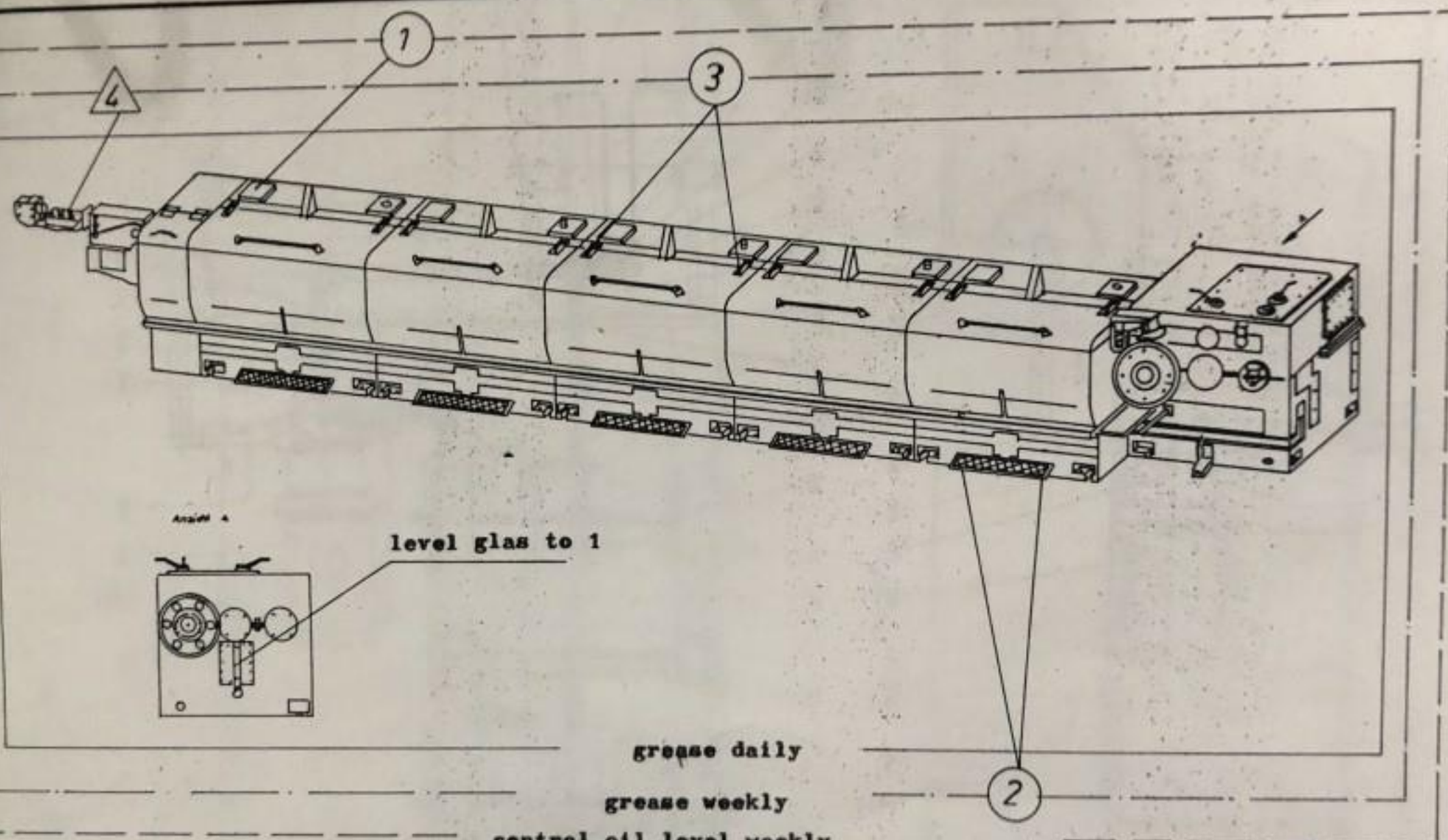
Werte bei Eisen- und Stahldraht mit 0,88 multiplizieren, bei Aluminiumdraht mit 0,29

Multiplier ces chiffres avec 0.88 pour les fils d'acier et avec 0.29 pour les fils d'aluminium

Multiply above figures by 0.88 for mild steel wires and by 0.29 for aluminium wires

Per filo di ferro e d' acciaio molteplicare con 0,88, per filo d'alluminio con 0.29

NIEHOFF
Machines · Systems · Know how



control oil level weekly
oilchange first times after 500 workinghours
after that all 2500 hours

FOR ONESHIFT OPERATION

see also enclosed lubricating chart
the greasing points are marked red

LUBRICATION + DIRECTIONS acc. DIN 8659
MULTIBLE WET WIRE DRAWING MACHINE M85

A 1

MASCHINENFABRIK NIEHOFF
KOMMANDIT-GESELLSCHAFT
SCHWABACH BEI NÜRNBERG

engl.

Inhaltsverzeichnis der Bedienungsunterlagen für
MEHRFACHDRAHTZIEHMASCHINE M 85 f 11 - A / MC 5692

1. AWF - Maschinenkarte
2. Bedienungsanleitung für M 85 / MC 5600
   Bilder für M 85 / MC 5600 Bl.1-5
3. Zusammenstellungszeichnungen zur Bedienungsanleitung:

   0-M85-Z03-15
   0-M85-Z03-16
   1-M85-Z02-28 000 278.5
   1-M85-Z02-29 000 279.5

4. Antriebsschema 4-M85-B-1-MC 5692
5. Produktionstabelle
6. Schmieranweisung M 85 nach DIN 8659
7. Schmierstofftabelle M 85
8. Anweisung zum Nachschleifen von Stahl-Ziehkonen
9. Wartungs- und Ersatzteilliste M 85 f 11 - A / MC 5692
10. Schaltpläne 4-M85-E-MC 5692 Bl.1-3
    Z.-Nr. 808 MC 5692 Bl.21
11. Platzbedarfs- und Fundamentplan 3-SON 66-65

28. Mai 1968

M 85 f 11 - A / MC 5692
Carlo Colombo
Mailand / Italien

8.2.1989

Verteiler: TB 1 TB 2 TBE TBR VK EK AV Mo Ew RN

ANNEALER

Auftragsbestätigung an Kunden-Datum:
Auftragsbestätigung für E-Ausrüstg.:

Die Zieheinheit umfaßt Typ /MC
Typ /MC
Typ /MC

VK-Nachtrag
Nr. Dat.

MC Nachtrag
Nr. Dat.

fertig im TB Januar 1969

MC-Blatt V

Typ VS 85
MC 10.6739
Kennwort Colombo
Empfänger Carlo Colombo
Arcate Brianza / Italien
Schilder Italienisch
Liefertermin Mai 1969

1) Antriebsschema

2) Abdeckungen

3) Zubehör
Hauptantriebsriemen
Motorscheibe

4) Ziehringe
Walzen

5)

~~E-Ventil~~
EK Lüfter 2 Stück VSR 7

6) Pumpe

7) Tacho
Zähler

8) E-Schaltplan

Antrieb durch, beim Kd. befindliche M85/MC 5692 18.11.68

9) Motor von Fa. Typ
B /P , für V
Klemmkasten links - rechts
Welle: d – l – t – u –
mit - ohne Spannschienen
EK SSW Schalt-Schrank-~~Platte~~ breit. tief. hoch
Anlaufart

0) Sonstiges und Ergänzungen
EK 01) Kompressor, 4 PS
EK 02) Dampferzeuger, 8,4 kW
EK 03) ~~Öl-Kühl- und Filteraggregat mit verstärkten Pumpenmotor~~
04) u. VT Nr.1 auf Gruppenleitbl.v. 20.5.69
EK vor der jeweiligen Zeile bedeutet
Bestellung durch Abt. Einkauf
lt. Bs. SSW 439 623 v. 4.2.69

a) Ziehgeschwindigkeit:
6,3 – 8,0 – 10,0 – 12,5 – 16,0 – 20,0 m/s
~~3,50~~ – 2,70 – 2,40 – 2,10 – 1,85 – 1,60 mm
b) Lackierung der Maschine: maschinengrau RAL 7031

c) Drahtmaterial: Kupfer .0535"
Fertig-Ø max. 3,50 mm, min 1,36 mm
Einlauf-Ø max. mm

d) Glühtemp.: max. 550°C
1. Vorwärmstrecke: 6,8 m
2. Vorwärmstrecke: 4,2 m
Hauptglühstrecke: 2,0 m
mit verlängerter Kühlstrecke
e) Kontaktscheiben: 435 mm Ø

Glühe-Fund.-Plan 1-VG85-A-26

f)

g) Tachometer
Hub - Meter Zähler
automat. Abschaltung bei - Drahtbruch - volle Spule
Verwirren am Einlauf - Not

h) Vorhandene Spannung zwischen den Phasen 380 V
(falls belastbar: gegen Nullleiter ./. V)
~~Gleich- Wechsel~~ - Drehstrom 50 Hz

i) Motor - durch NIEHOFF - vom - beim - Kunden
Kurzschl. L., Polumschaltb., Schleifringl., Spez.-Motor
n – / / U/min.
N – / / KW
– / / PS
Schaltschrank durch NIEHOFF - ~~vom beim Kunden~~
mit - ohne - Abbremsung des Motors beim Abschalten

k) Besondere Zusatzwünsche des Kunden
k1) mit Vorderer Abdeckung gegen Spritzwasser
k2) mit Riemenscheibe und Riemen zum Antrieb der Glühe
k3) Antrieb von M 85/MC 5692 vorsehen

Antriebsscheibe Kd. S-SON 66-45

Verpackung: LKW-Abholung
Nicht zutreffendes bitte streichen

22.11.68

K 010 - 6802

BONGARD MASCHINEN GMBH

KUNDE/CUSTOMER	:	BONGARD MASCHINEN GMBH 5758 FRÖNDENBERG/LANGSCHEDE
ANLAGE/PROJECT	:	STEUERSCHRANK ANNEALER CONTROLPANEL
BETREFF/SUBJECT	:	STROMLAUFPLAN WIRING DIAGRAM
KUNDEN NO./SPEC. NO.	:	9203-1054 PHELPS DODGE / USA
AUFTRAGS NO./ORDER NO.	:	92-164A
DATUM/DATE	:	15.12.1992
NAME	:	Höller

Diese Pläne sind auf einem CAE-System erstellt worden.
Änderungen dürfen nur von uns vorgenommen weden.

THESE PLANS HAVE BEEB MADE OUT BY CAD-SYSTEM.
ANY MODIFICATIONS CAN ONLY BE MADE BY OURSELVES

Rev	date	made by	ART DER ÄNDERUNG / kind of rev.	pages
3				
2				
1				
			GESAMMT /general	all
2			GESAMMT /general	all
1			ERSTELLUNG/first edition	all
0	15.12.92	Höller		

ANLAGE / plant: ANNEALER

BETREFF / subject: STROMLAUFPLAN/WIRING DIAGRAM

BENENNUNG / discrip.: Deckblatt

STAND / print: 15.12.92

BONGARD MASCHINEN GMBH
OHLWEG 7
5758 FRÖNDENBERG-LANGSCHEDE

BONGARD MASCHINEN GmbH

"-USA-"

AUFTRAG-NR./order-no.: 92-164A

ZEICHNUNGS-NR./drawing-no.: 92031054 PHELPS DODGE

BLATT / page: 1

92031054 PHELPS DODGE

7·13

PHELPS-DODGE
SKET
ANNEALER
DRAW STAND
DRIVE
WALCO JOB #
CS6666

F L E M M I N G

AUTOMATIONSTECHNIK GMBH

D-5253 Lindlar-Klause
Schmiedeweg 6

Phone 49-2266-8447/8033
Fax 49-2266-2616

KUNDE/CUSTOMER	:	BONGARD MASCHINEN GMBH 5758 FRÖNDENBERG/LANGSCHEDE
ANLAGE/PROJECT	:	STEUERSCHRANK WICKLER KW 800 CONTROLPANEL COILER KW 800
BETREFF/SUBJECT	:	STROMLAUFPLAN WIRING DIAGRAM
KUNDEN NO./SPEC. NO.	:	9203-1054 PHELPS DODGE / USA
AUFTRAGS NO./ORDER NO.	:	92-164
DATUM/DATE	:	15.12.1992
NAME	:	Höller

Klemmleisten-Aufteilung:
Connector block distribution :

X0 = POWER SUPPLY
X1 = POWER PART COILER
X2 = CONTROL PART COILER
X3 = CONTROL PART TABLEAU
X4 = EXTERNAL SUPPLY 220VAC
X5 = TERMINALBOX RIGHT
X6 = TERMINALBOX LEFT
X7 = TERMINALBOX CONVEYORS
X8 = TERMINALBOX INTERN LEFT
X9 = TERMINALBOX HYDRAULIC/VALVES
X10= TERMINALBOX EXTERNAL LINE

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ANY MODIFICATIONS CAN ONLY BE MADE BY OURSELVES

Rev	date	made by	ART DER ÄNDERUNG / kind of rev.	pages
3				
2				
1				
			GESAMT /general	all
2			GESAMT /general	all
1			ERSTELLUNG/first edition	all
0	15.07.92	Höller		

ANLAGE / plant: COILER KW 800
BETREFF / subject: STROMLAUFPLAN/WIRING DIAGRAM
BENENNUNG / discrip.: Deckblatt
STAND / print: 10.12.92

BONGARD MASCHINEN GMBH
OHLWEG 7
5758 FRÖNDENBERG-LANGSCHEDE

FLEMMING
AUTOMATIONSTECHNIK GMBH
5253 LINDLAR GERMANY
P 49/2266-8447 FAX -2616

"-USA-"

AUFTRAG-NR./order-no.: 92-164
ZEICHNUNGS-NR./drawing-no.: 92031054 PHELPS DODGE

ANLAGE/unit: -
DRT. WERK: +
BLATT / page: 1