

Tally Computerdrucker GmbH
D-89275 Elchingen
Germany
FCC ID: EUIT3016

EXHIBIT B

June 29, 1999
W. Boehm, Dept. TQV

Application for FCC Part 15, Subpart B, Class B Certification

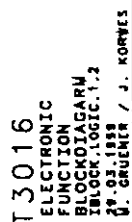
Matrix Printer Model T3016

Documentation of Electrical Assemblies

Scope:

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- | | | |
|----|--|----------|
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Date: 18.06.99
Name: Rolf Winterhalder/TEE
File: fcc 8.doc

Tally Computerdrucker GmbH

Significant design elements for EMC
Ink Jet Printer Model T3016.

1 Generated Frequencies:

1.1 Power-Supply BG 47878

Kind	Part Nb.	Frequency	Remarks
Clock	IC3	80kHz	Clock for PWM 34V
Clock	IC4	180kHz	Clock for PWM 5V

1.2 Control-Board BG 47882

Kind	Part Nb.	Frequency	Remarks
Clock	G1	15,9744MHz	Clock Processor IC5
Clock	G2	15,9744MHz	Clock DSP IC37, IC41
Clock	G4	24MHz	Clock Processor IC48
Clock	G3	32,768kHz	Internal Timer
Clock	IC28, IC56, IC57	approx 20kHz	Stepper Motor Driver
Clock	IC40	approx 20kHz	Horizontal Motor Driver
Clock	IC83	approx 20kHz	Vertical Motor Driver
Clock	IC81	approx 20kHz	Air Valve Controller

1.3 Panel: BG 47809

Kind	Part Nb.	Frequency	Remarks
Clock	IC4	approx. 280kHz	Clock Panel

1.4 Ink-Pump Driver Board: BG 48009

Kind	Part Nb.	Frequency	Remarks
Clock	IC1, IC2, IC4, IC5	approx. 20kHz	Stepper Motor Driver

1.5 Standard Interface: BG 48250

Kind	Part Nb.	Frequency	Remarks
Clock	IC2 IC3	approx. 250kHz	supply for RS232 Interface

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1.6 Interface Module 20mA BG 046755

Kind	Part Nb.	Frequency	Remarks
Clock	V11	approx. 40kHz	DC/DC-Converter

1.7 Option Paper Cut BG 046759

Kind	Part Nb.	Frequency	Remarks
Clock	IC3/IC4	approx. 20kHz	Motor driver
Clock	Q1	3MHz	Clock for Single Chip Controller IC1

1.8 Option 2. Tractor BG 047556

Kind	Part Nb.	Frequency	Remarks
Switching	IC1, IC2	approx. 20kHz	Motor Driver

1.9 Option ASF-Module BG 046760

Kind	Part Nb.	Frequency	Remarks
Switching	IC2	approx. 20kHz	Motor Driver

2 List of Components used for EMI suppression

2.1 Power-Supply BG 47878

Part	Value	Name	Ident.-Nr	Manufacturer
X-Capacitor	220nF, 250V, Class X2	C16, C19	708512	Roederstein, Arcotronics
Y-Capacitor	2,2nF, 250V, Class Y	C50, C51	709710	Roederstein
Choke	2X10mF	L1	710225	Vogt, see attached data sheets
Y1-Capacitor	4,7nF	C22	711411	Roederstein, see attached data sheets
Capacitor	1,5nF, 50V, COG, 1206, 5%	C52, C53	711474	Any

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2.2 Control-Board BG 48018 (2155) or BG 48015 (T2170)

Part	Value	Name	Ident.-Nr	Manufacturer
Capacitor	330pF, 100V, 0603, 10%	C3, C4, C5, C6, C7, C8, C9, C10, C11, C16, C17, C21, C22, C23, C29, C30, C32, C33, C34, C35, C36, C39, C40, C44, C45, C48, C49, C52, C55, C56, C57, C58, C59, C60, C62, C63, C65, C66, C67, C69, C71, C72, C76, C77, C78, C80, C81, C83, C85, C87, C90, C92, C98, C104, C113, C147, C254, C255, C259, C336, C337, C338, C339, C340, C341, C342, C343, C344, C345, C346, C351, C352	710331	Any
Capacitor*	220pF, 50V, COG, 0805, 5%	C355, C356, C357, C358, C359	711473	Any
Capacitor***	1,5nF, 50V, COG, 1206, 5%	C354	711474	Any
Capacitor***	100nF, 50V, 0805, 20%	C41, C75	709999	Any
Resistor**	22R, 0,125W, 0805, 5%	R18, R30, R41, R45, R50, R53, R70, R89, R110		Any
Resistor*	100R, 0,125W, 0805, 5%	R4, R9, R144, R163, R167	710423	Any
Resistor**	4X22R	RA8, RA10, RA12, RA15, RA18, RA20, RA21, RA26, RA27, RA28, RA29, RA30, RA32, RA33, RA34, RA35, RA36, RA37, RA38	710423	Rohm, see attached data sheets
Resistor**	4X33R	RA42	710422	Rohm, see attached data sheets
Resistor**	4X100R	RA9, RA11, RA14, RA17, RA22-25	710213	Rohm, see attached data sheets
Spread-Spectrum Clock Generator	W42C31-02	IC3	710446	IC-WORKS, see attached data sheets
Spread-Spectrum Clock Generator	W42C31-03	IC77	710400	IC-WORKS, see attached data sheets
PCB	4 Layers Multilayer			Any

* - RC-Filter for Head-Communication Signals

** - serial Resistors in Address and Databus

*** - Capacitor to Earth

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2.3 Standard Interface: BG 48250

Part	Value	Name	ID-No.	Manufacturer
Choke	2,25uH	L1, L2	708518	Roederstein, see attached data sheets

2.4 Interface Module 20mA BG 046755

Part	Value	Name	ID-No.	Manufacturer
EMIFIL		L1-5	710061	MuRata, see attached data sheets

2.5 Interface module RS422/SS97 BG 047144/047145

Part	Value	Name	ID-No.	Manufacturer
EMIFIL		L1-7	710061	MuRata, see attached data sheets

2.6 Option Paper Cut BG 046759

Part	Value	Name	ID-No.	Manufacturer
Y-Capacitor	1,5nF			built in by manufacturer
Inductor	2,5uH			built in by manufacturer
Inductor	10uH 5A			built in by manufacturer

2.7 DC-MotorBG 054567

Part	Value	Name	ID-No.	Manufacturer
Ferrite Core	D25/15mm, N=3		711451	Würth, see attached data sheets

2.8 Cable Connection from Power Supply to Logic Board BG 047904

Part	Value	Name	ID-No.	Manufacturer
Ferrite Core	D16,5/8mm, N=2,5		710242	Würth, see attached data sheets

3 Constructive measures for EMI-suppression

3.1

Full shielded power supply. Shield built of two parts of zinc plated steel, which enclose the power supply PCB.

3.2

U-shaped sheet metal of zinc plated steel under the control board. The board is fixed with the plate by two screws and the chassis is connected to the PCB-filter capacitors. Near to X3 is an additional earth connection. The metal plate is connected to the power supply shield via 3 screws.

3.3

A contact spring, zinc plated steel, under the printer housing connects the metal plate of 3.2. with the metal shield of the additional interface module

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3.4

Option additional interface: Metal cover of the additional interface module connects 3.2 and 3.3.

3.5

Option Cut: Full shielded paper cut module top of the Printer

4 Data Sheets

Attached in Order of ID. No.:

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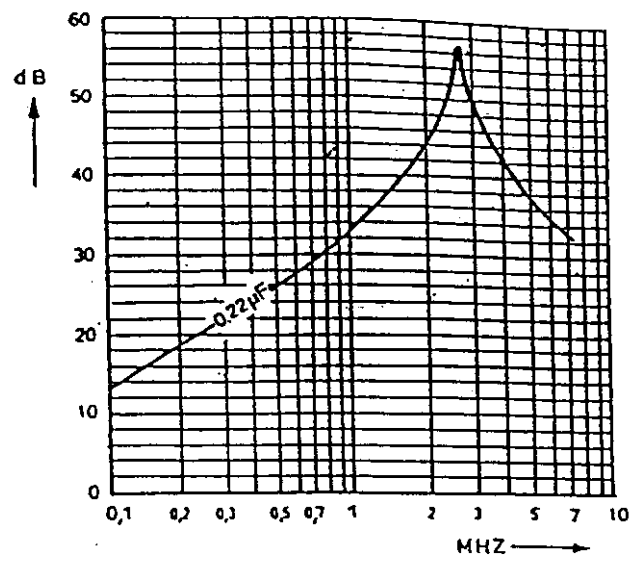
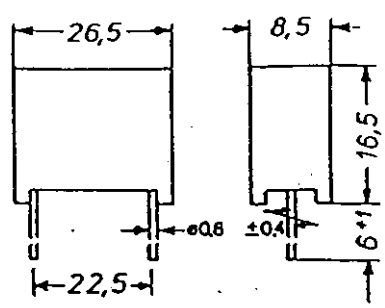
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Medbild:



- Umhüllung: Kunststoffgehäuse, gleichhervergossen, flammhemmend
- Anschlüsse: verzinnter Cu-Draht, radial im Rastermaß herausgeführt
- Prüfzeichen: VDE 565-1, Klasse X 2
IMQ IEC 40-7
SEMKO SEN 432901
DEMKO Reglement AF 1962/C/afsnk 21
USA UL 1283
SEV 1055, 1978 - beantragt -
OVE F 22 / 1974

Einfügungsdämpfung Messung im 60 Ω-System
Anschlüsse je 6 mm

- Technische Unterlagen: VDE 565, Teil 1, IEC-Publication 161
DIN 40040
- Dielektrikum: Polyester-Film
- Belag: Aluminium aufgedampft
- Anwendungsklasse: $\leq 1 \mu F = HMF$
 ~~$\leq 1 \mu F = HMF$~~
nach DIN 40040
- Prüfklasse: 25 / 085 / 21 / nach IEC 68-1 bzw. DIN 40045
- Nennspannung: 250 V~; 50 / 60 Hz
- Kapazitätstoleranz: $> 0,1 \mu F \pm 10 \%$
- Verlustfaktor $\tan \delta$: $< 1 \%$ gemessen bei 1 kHz
- Isolationswiderstand: für $C \leq 0,33 \mu F$
 $3 \times 10^4 M\Omega$ Mittlerer Anlieferungswert
 $1 \times 10^4 M\Omega$ Mindestanlieferungswert
- Zellkonstante: für $C > 0,33 \mu F$
10000 sec. Mittlerer Anlieferungswert
3000 sec. Mindestanlieferungswert
- Prüfspannung: 1075 V~, 2 sec.
(Belag / Belag) (einzelne Aushalleffekte zugelassen)
- Impulsbelastung: d_u / d_t nach VDE 565-1 100 V / μsec .
bei vollem Spannungshub

Von der Zulassung
betroffenes Teil!

VDE	X	UL	X
ETZ	X	CSA	
ZZF	X	FCC	X

Bestellbez.: F 1772-422-2900 = gegurtet
F 1772-422-2000 = lose
Fa. Roederstein

Bes.		9.9.		Ha.		9494 NT1		-IXC-		259-90		Ha.	
Bsp.						9242 NT2		-b-		14.10.86		Ha.	
Bsp.						9187		-a-		04.12.85		Ha.	
Norm.						9085 NT.5				9.9.85		Ha.	
W 85		Boden		Name		Lieferung (Ind.-Nr.)		Ind.-Nr.		Boden		Name	
Werkstoff:						Fertigstellungs-		Datum:		Menge:		Menge:	
Folienabst.						Bearbeitung:							
Paßmaß		Ob. Abm.		Unt. Abm.		Nicht bemessene Kanten nach DIN 6784:							
Oberflächenbeschaffenheit nach DIN ISO 1302						MANNESMANN TALEX GMBH ELCHINGEN							
Maße ohne Toleranzangabe: spannschiebend						708 512 1		10					
nach DIN 7168 - m						Entstörkondensator 220nF / 250V~							

Allgemeine technische Daten:

Technische Unterlagen:

DIN 41 260

DIN 40 040

VDE 0565 Teil 2

Kernmaterial:

Ferit

Wicklung:

CuL-Draht / Cu-Draht verzinkt

Anschlüsse:

Wicklungsdraht beidseitig herausgeführt, Enden verzinkt

Anwendungsklasse:

H L F nach DIN 40 040

Temperaturbereich:

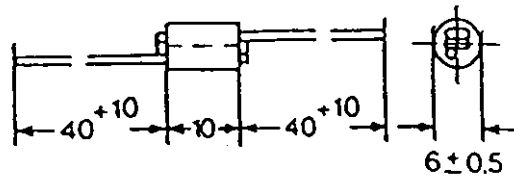
-25°C bis +100°C

Schaltbild:



Nennspannung:

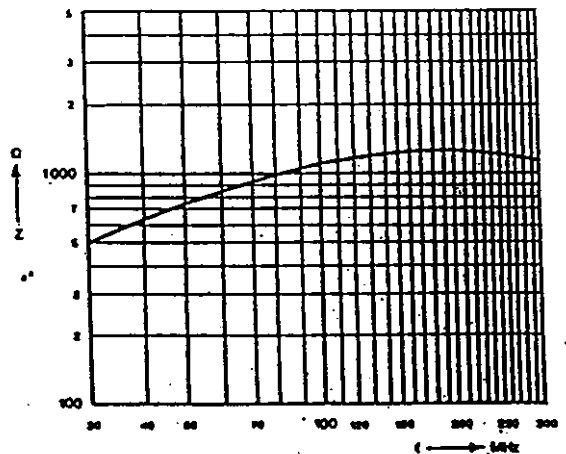
250 V~ für isolierte Bauformen



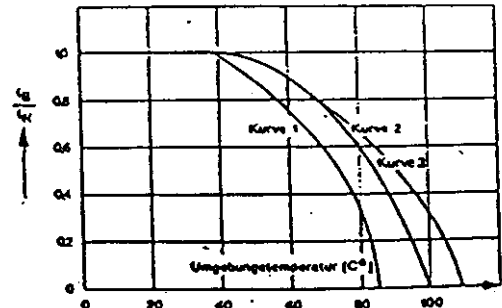
Nennstrom (A) DB	Mindest-induktivität µH	Gleichstrom-widerstand mΩ Richtwert
2,5	2,25	13

Prüfzeichen:

Land	Prüfstelle	Norm	Ausweis-Nr.	Freigabezeichen
Deutschland	VDE	0565 Teil 2	27906	



Scheinwiderstand Z in Abhängigkeit von der Frequenz f.
(Richtwerte)



Kurve 1: max. Betriebstemperatur 85°
I₀: max. Betriebsstrom
Kurve 2: max. Betriebstemperatur 100°C
I₀: Nennstrom bei Umgebungstemperatur +40°C
Kurve 3: max. Betriebstemperatur 110°C

Basistyp: F1750-003-013

Fa. Roederstein

Drossel

Type 2 Capacitors for Radio Interference Suppression
Class Y, AC250V

WY

Features:

Disc capacitor with epoxy resin coating.

Rated Voltage U_R :

AC250V; 50/60Hz

Test Voltage U_T :

Component test: AC1800V, 50Hz, 2sec

(Current limitation: max. 50mA)

Random sampling test: AC1500V,
50Hz, 60 sec.

Voltage resistant coating:

22000V, 50Hz, 60 sec.

Capacitance Tolerance:

$\pm 20\%$

Dissipation Factor $\tan \delta$:

$\leq 25 \cdot 10^{-3}$

Insulation Resistance R_i :

$\geq 6 \cdot 10^9 \Omega$

Temperature Characteristic to

CECC 30 700:

2 E 3

Category Temperature Range V_u :

$(-40 \dots +85)^\circ\text{C}$

Climatic Application Class to DIN 40 040:

F

Climatic Testing Class to DIN 40 045:

40/085/21

Coating

Epoxy resin, dipped, insulating, flame retarding.

Taping:

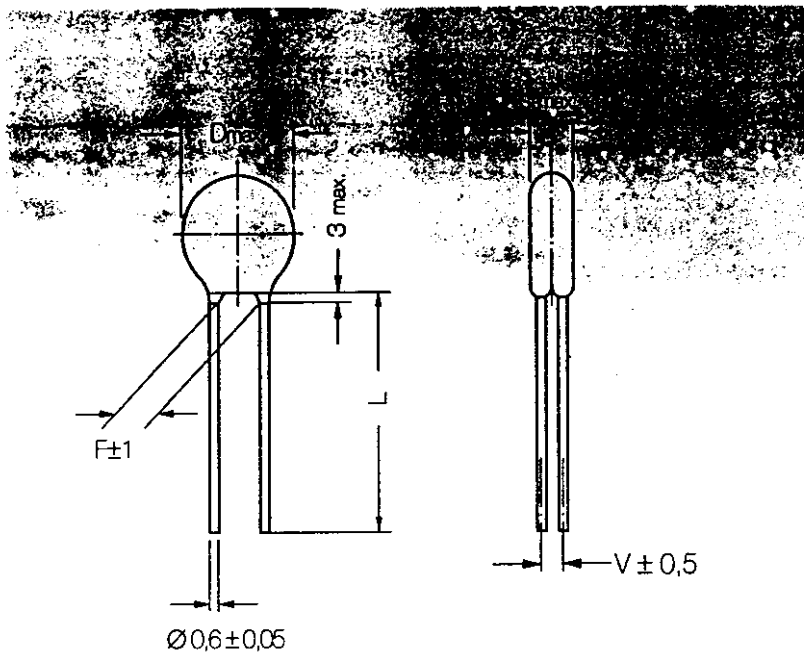
On request

Special Lead Configurations:

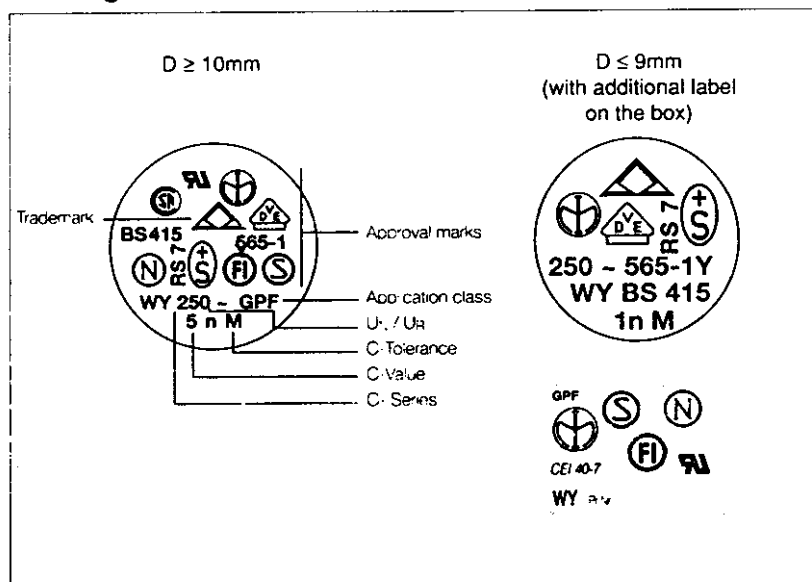
On request

Special Lead Space & Lead Length:

On request



Marking:



**Capacitors Type 2 for Radio Interference Suppression Class Y
AC250V**

WY

Capacitance pF / μ F	Dimensions (mm) D x s (max)	F $\pm$ 1	d $\pm$ 0,5	l (max)	V $\pm$ 0,5	Ordering Code	Resonance frequency L = 5mm [MHz]	
1000 pF	6,5 x 4,5	5,0	0,6		1,4	WYO102MCMBF0K	> 30	
1500 pF	8,0 x 4,5					WYO152MCMBF0K	> 20	
1800 pF	8,0 x 4,5					WYO182MCMBF0K		
2200 pF	9,0 x 4,5					WYO222MCMBF0K		
2500 pF	9,0 x 4,5					WYO252MCMBF0K		
3300 pF	10,0 x 4,5	7,5				1,6	WYO332MCMCF0K	> 15
4700 pF	12,0 x 4,5						WYO472MCMCF0K	
5000 pF	12,0 x 4,5						WYO502MCMCF0K	
6800 pF	17,0 x 4,5					1,8	WYO682MCMCF0K	
8200 pF	17,0 x 4,5						WYO882MCMCF0K	
0,01 μ F	21,0 x 4,5						WYO103MCMCF0K	
0,012 μ F	21,0 x 4,5						WYO123MCMCF0K	

Approvals

Country	Specification	Approval Reference	Approval Mark
Germany	VDE 0565 - 1 Class Y	46845 Bl.1 + Bl.2	
Switzerland	SEV 1055. 1978 Class Y	89.1 02395.02	
Finland	FIMKO/IEC 384/14-82 Class Y	104533-01 / E127521-01	
USA	UL 1414	E 100682	
Italy	IMQ/CEI 40-7/VI-1980	V 1739	
Great Britain*	BS 415, 1979, Clause 14.2, TL 22/TL1 (only F=7,5mm)	227020	BS 415
Sweden	SEMKO 4430414 or IEC 384-14	8710240 / 8933048	
Norway	NEMKO 132/85 or IEC 384-14	E 36000 / E43023	

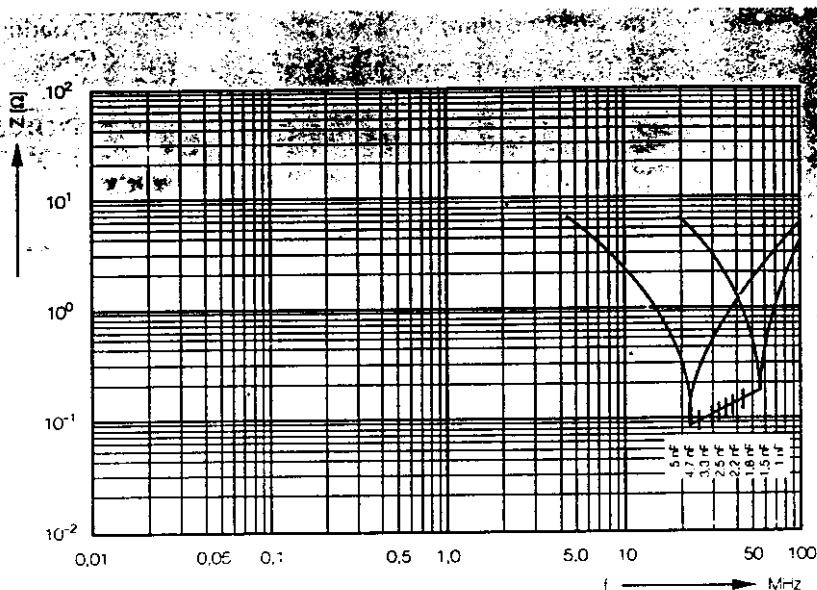
*Ordering code digit 10/11/12: "SVG"

709710

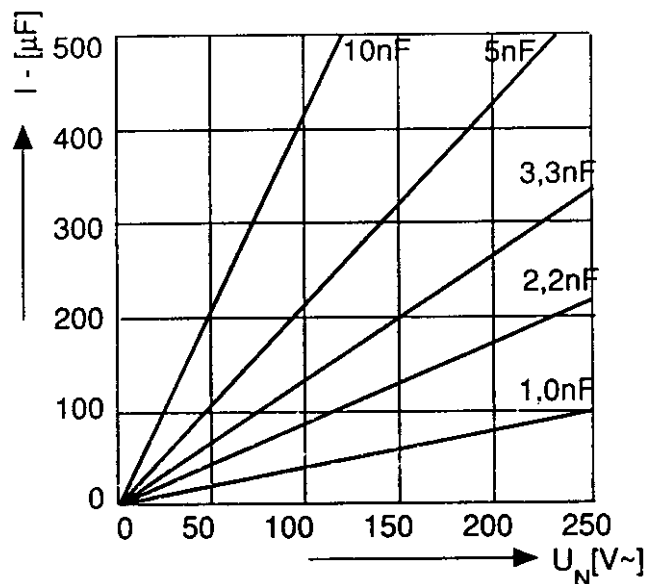
Capacitors Type 2 for Radio Interference Suppression Class Y
AC250V

WY

Impedance (Z) as a function of frequency (f) at
 $T_a = 20^\circ\text{C}$ (Average)
 Measurement with lead length 6mm



Leakage current (I) as a function of rated
 voltage (U_N)



Ordering Example

WY 0	102	..M*	CM	BFO	K
C-Series	C-Value	C-tolerance	Rated Voltage	Finish	Code



CHIP SOLID INDUCTOR

murata

Chip Solid Inductor BLM21/31/41 Series

Suppresses EMI and Prevents Abnormal Oscillation, Mountable at 2.5mm Pitch.

Chip solid inductor BLM series is excellent in noise suppression from several MHz to several hundreds of MHz and prevents abnormal oscillation of high frequency amplifying circuits.

FEATURES

1. Excellent for high-density mounting at a uniform pitch of 2.5mm or 2.0mm.
2. Simple structure. Elimination of stray capacitance up to 1GHz effectively suppresses high-frequency noise ranging from several MHz to several hundred MHz.
3. The super-miniature, high-impedance BLM21A05 demonstrates excellent noise suppression.
 - Size : 2.0 × 1.25 × 0.9 (mm)
 - Impedance : 120Ω (Typ.) at 100MHz
4. BLM21B03 is ideal for preventing abnormal oscillation in tuners and similar electronic equipment.
5. Nickel-barrier structure of external electrodes provides excellent solder heat resistance, thus accommodating component soldering by flow or reflow method.

APPLICATIONS

Computers, and peripherals, TVS, VCRS, car-electronic equipment, tuners, etc.

PART NUMBERING

(* Please specify the part number when ordering.)

Ex: **BLM** **31** **A02** **PB**

① Chip solid inductor.

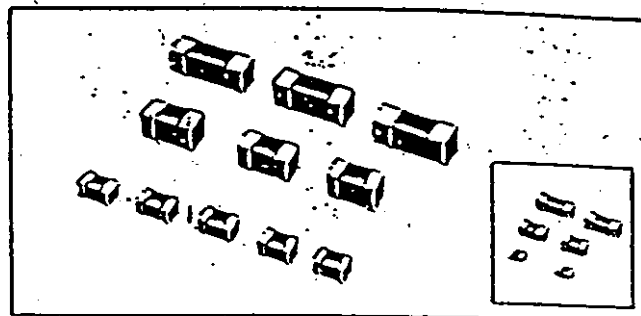
② Type.

③ Characteristics.

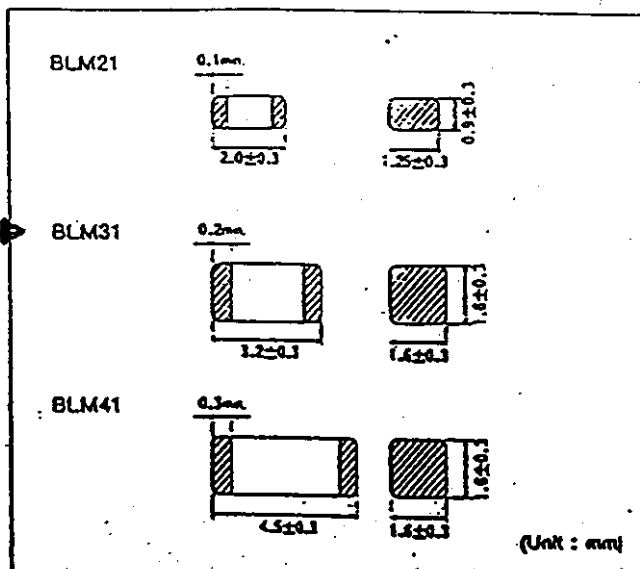
④ Packaging code.

PB : Bulk package

PT : Taped



DIMENSIONS



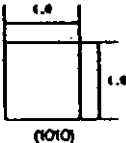
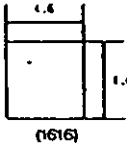
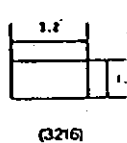
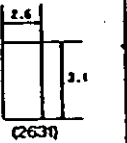
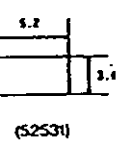
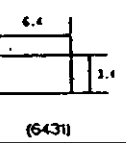
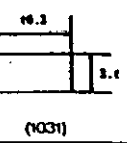
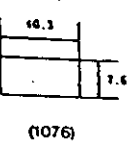
RATING

Part Number	Characteristics	Impedance (Ω) (Typ.) at 100MHz	Rated Current (mA)	DC resistance r(Ω max)
BLM21A05		120	200	0.6
BLM21B03		6	600	0.2
BLM31A02		70	200	0.5
BLM41A01		80	600	0.3
BLM41A04		150	200	0.7

R Resistor Chip Networks (Surface Mounted Types)

Two new smallest resistor chip networks are now available. The MNR02, the smallest resistor network in the world and MNR35 which fits into a high densed packaging. These chip networks surely facilitate in building highly reliable, compact industrial equipment.

●Dimensions list

Type	MNR02	MNR12	MNR14	MNR32	MNR34	MNR35	MNR38	MNR78
Dimensions	 (1010)	 (1616)	 (3216)	 (2631)	 (5231)	 (6431)	 (1031)	 (1076)
Real size								
Magnification dimensions (x2.0)							 (x1.5)	 (x1.5)

Type	No. of elements	Rated dissipation (70°C)	Maximum working voltage (V)	Resistance tolerance	Resistance range	Operating ambient temperature (°C)
MNR02	2	0.063W/Device	25	J (±5%)	10Ω ~ 1MΩ (E12 Series)	-55 ~ 125
MNR12	2	0.063W/Device	12			-40 ~ 125
MNR14	4	0.063W/Device	12		22Ω ~ 1MΩ (E12 Series)	
MNR32	2	0.063W/Device	50		22Ω ~ 1MΩ (E12 Series)	
MNR34	4	0.063W/Device	50		100Ω ~ 100kΩ (E6 Series)	
MNR35	8	0.063W/Device	50		22Ω ~ 1MΩ (E12 Series)	
MNR38	8	0.063W/Device	50		100Ω ~ 330kΩ (E12 Series)	
MNR78	8 ~ 16	0.063W/Device	50			

●Ordering Designation

P2	MNR12/14/78	Bulk	Polyethylene bag
P3	MNR32/34/38		
M0	MNR02	Taping	Paper tape reel
E0	MNR12/14		
J0	MNR32		Embossed tape reel
J5	MNR34/35		
H0	MNR38		
W1	MNR78		Adhesive paper tape reel

Package and forming specifications

710213,
710423
710 422

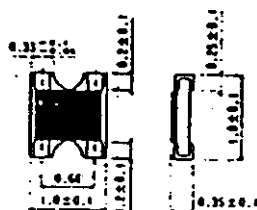
MNR 0 2 - M 0 - J -

Resistor Chip Networks (Surface Mounted Types)

ROHM

(Unit : mm)

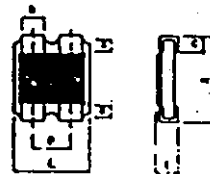
MNR02



Equivalent Circuit Diagram



MNR12 MNR32



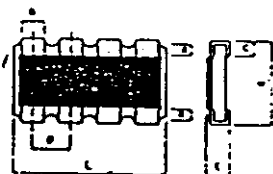
Type	L	W	t	a	b	c	D
MNR12	1.6±0.30	1.6±0.15	0.5±0.10	0.3±0.20	0.5±0.15	0.3Max.	0.80
MNR32	2.6±0.20	3.1±0.20	0.55±0.10	0.5±0.30	0.8±0.20	0.5Max.	1.27

Equivalent Circuit Diagram



MNR14 MNR34

×

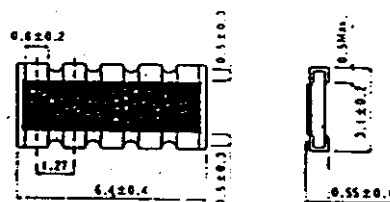


Type	L	W	t	a	b	c	p
MNR14	3.2±0.10	1.6±0.10	0.50±0.10	0.3±0.20	0.5±0.15	0.3Max.	0.80
MNR34	5.2±0.40	3.1±0.20	0.55±0.10	0.5±0.30	0.8±0.20	0.5Max.	1.27

Equivalent Circuit Diagram

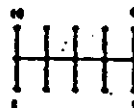


MNR35

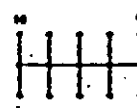


Equivalent Circuit Diagram

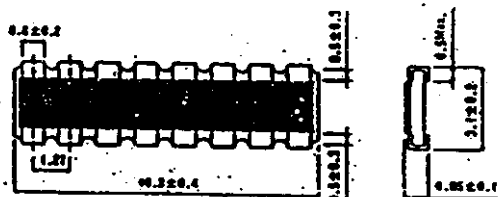
(R circuit)



(S circuit)



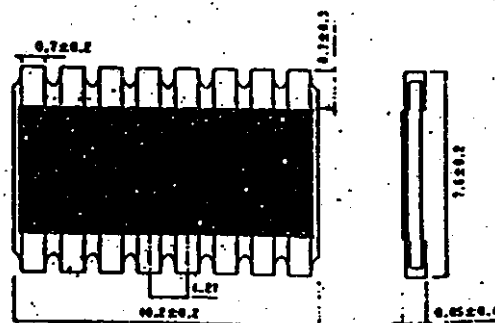
MNR38



Equivalent Circuit Diagram



MNR78

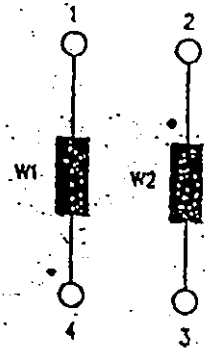
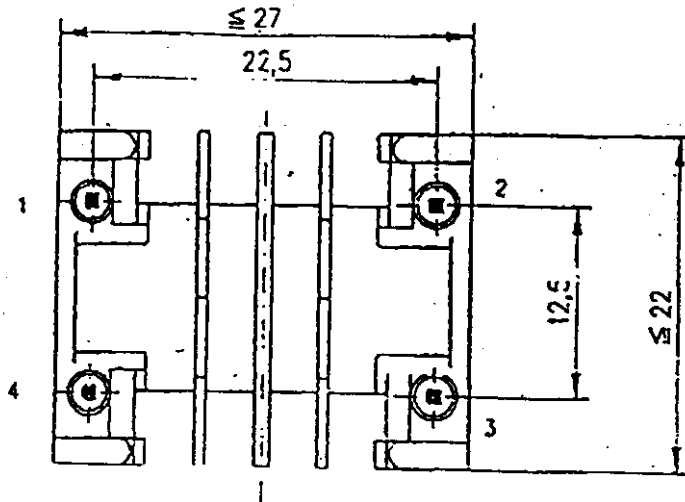


Equivalent Circuit Diagram

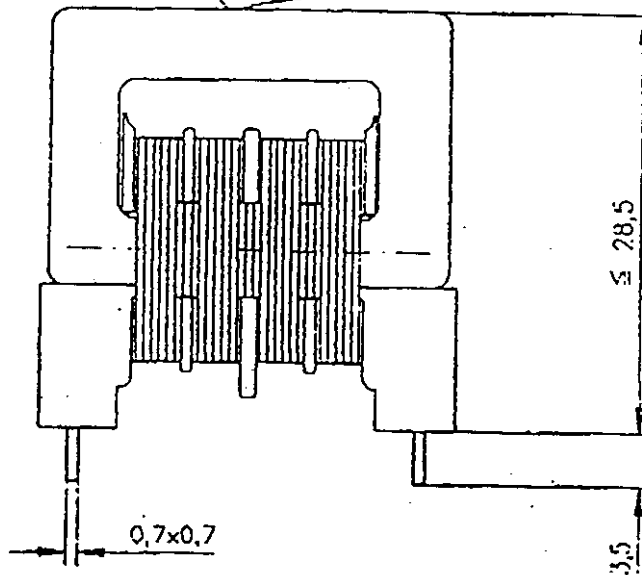


Resistors

Empfohlener Durchmesser für Anschlußlöcher: $1,3^{+0,1}$



VOGT...
570 26 003 00



Technische Daten:

Kern/Material/Luftspalt	Rahmenkern RK 26 / FI 360 / 0mm		
Induktivität L	4 - 1	10 mH +50% -30%	Tu 25°C
	2 - 3	10 mH +50% -30%	f = 10kHz U _n ≤ 50mV
Strom I _N	(0)	2,2 A	T _v = 40°C
Kupferwiderstand R _{cu}	4 - 1	0,17 Ω ±20%	
	2 - 3	0,17 Ω ±20%	
Spannungsfestigkeit W1-W2		1,5 kV _{eff} 50 Hz	
W1/W2 - Kern		1,5 kV _{eff} 50 Hz	
Anwendungsklasse	DIN 40 040	GKF	

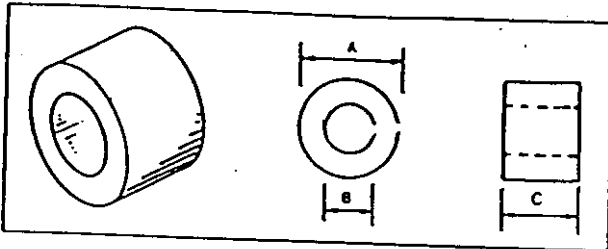
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26.08.1994

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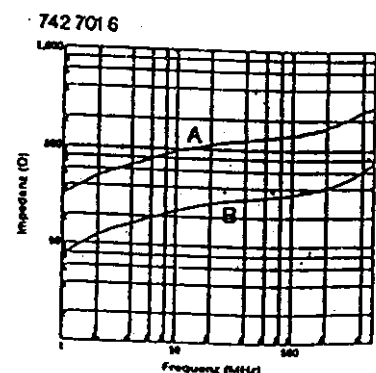
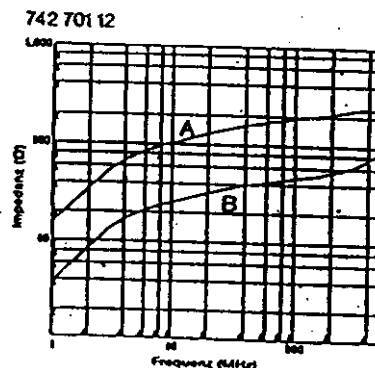
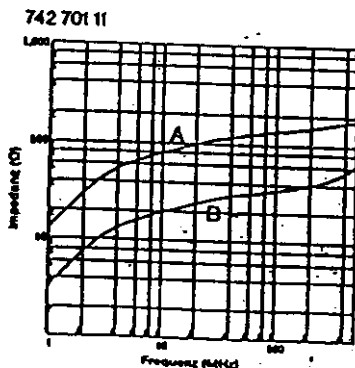
Anwendung:
Drähte, Koaxialkabel, verdrehte Drähte,
Mehrfeder-Kabel

Artikel-Nr.	A mm	B mm	C mm	(1 Win) Impedanz (Ω) (2 Win)				Material	Kabel Ø mm	AL-Wert (nH/N ²) (Näherung)
				25 MHz	100 MHz	25 MHz	100 MHz			
742 701 11	7,3	3,3	4,3	29	37	123	151	K 32	2,5	912
742 701 12	9,0	5,3	8,0	33	44	136	199	K 32	4,5	1113
742 701 6	10,0	5,1	5,0	28	34	113	136	3 A 6	4,5	1555
742 701 13	11,0	5,0	9,0	60	80	221	330	K 32	4,5	1584
742 701 05	12,6	8,1	12,0	39	58	147	219	3 A 4	7,5	1646
742 701 16	12,7	7,9	6,35	45	154			3 W 6	7,5	1374
742 701 14	13,0	7,1	6,3	33	45	123	180	K 32	6,5	1340
742 701 06	13,0	7,1	12,7	67	91	272	342	K 32	6,5	1772
742 701 17	14,0	10,0	8,0	41	161			3 W 6	9,5	1341
742 701 7	14,5	10,2	8,0	21	34	77	120	3 A 4	9,5	1406
742 701 01	16,5	8,0	13,0	79	127	330	513	3 A 4	7,5	2547
742 701 08	16,5	8,0	13,0	69	123	301	488	3 A 6	7,5	3184
742 701 09	16,0	10,0	7,0	77	38	109	160	K 32	9,5	1421
742 701 1	16,5	8,0	10,0	41	55	165	222	K 32	9,5	1650
742 701 8	18,0	10,0	16,0	94	148	395	574	3 A 4	7,5	2748
742 701 9	20,4	10,2	6,0	31	40	124	163	3 A 6	9,5	2155
742 701 07	20,0	10,0	10,0	29	43	112	160	3 A 4	9,5	1692
742 701 18	21,2	12,7	6,0	68	160			3 W 6	9,5	2551
742 701 19	22,5	13,8	6,4	40	128			3 W 6	12,0	1768
742 701 2	23,8	11,4	14,0	30	90			3 W 6	13,0	1854
742 701 02	23,8	11,4	14,0	80	115	328	462	3 A 4	10,5	3306
742 701 03	25,0	15,0	12,0	106	181	361	482	3 A 6	10,5	4133
742 701 3	28,0	16,0	13,0	60	125			3 W 6	14,5	2743
742 701 4	28,0	16,0	20,0	72	159			3 W 6	15,5	3137
742 701 110	28,0	18,0	7,5	99	138	409	513	3 A 4	15,5	3771
742 701 111	29,5	19,0	7,7	45	152			3 W 6	17,5	2155
742 701 04..	31,6	19,4	8,0	55	155			3 W 6	18,5	2234
742 701 15	31,5	19,0	16,0	33	55	131	232	3 A 4	18,5	2460
742 701 112	35,6	25,4	7,5	80	167			3 W 6	18,5	3528
742 701 5	40,6	27,4	15,0	39	127			3 W 6	24,5	2173
				55	86	223	352	3 A 4	26,5	3530

IEU

Charakteristik bei zwei (A) und einer (B) Leitungsdurchführung

- Die aufgeführten Diagramme zeigen die charakteristischen Kurven von einer und zwei Windungen der oben beschriebenen Ferrite.



Spread Spectrum Frequency Timing Generator

Features

- Maximized EMI suppression using IC WORKS' Spread Spectrum technology
- Generates a spread spectrum copy of the provided input
- Integrated loop filter components
- Operates with a 5V supply
- Low power CMOS design
- Available in 8-pin SOIC (Small Outline Integrated Circuit)

Overview

The W42C31-03 incorporates the latest advances in PLL spread spectrum frequency synthesizer techniques. By frequency modulating the output with a low frequency carrier, EMI is greatly reduced. Use of this technology allows systems to pass increasingly difficult EMI testing without resorting to costly shielding or re-design.

In a system, not only is EMI reduced in the various clock lines, but also in all signals which are synchronized to the clock. Therefore, the benefits of using this technology increase with the number of address and data lines in the system. Figure 1 shows a simple implementation.

Figure 1 Simplified Block Diagram

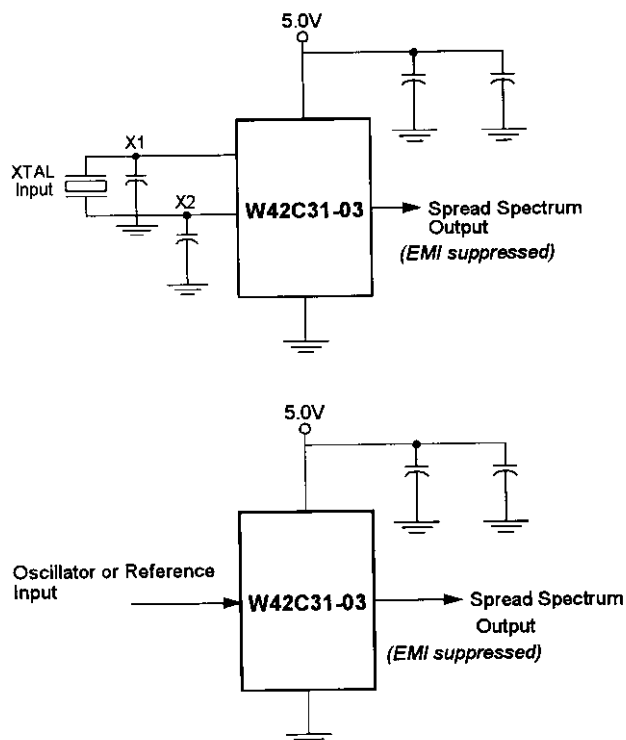


Table 1 Frequency Spread Selection

W42C31-03		Oscillator Input Frequency (MHz)	XTAL Input Frequency (MHz)	Output Frequency (MHz)
FS1	FS0			
0	0	10 to 20	10 to 20	$f_{IN} \pm 1.875\%$
0	1	10 to 20	10 to 20	$f_{IN} \pm 1.0\%$
1	0	20 to 33	20 to 25	$f_{IN} \pm 1.875\%$
1	1	20 to 33	20 to 25	$f_{IN} - 2.0\%$

Figure 2 W42C31-03 Pin Diagram

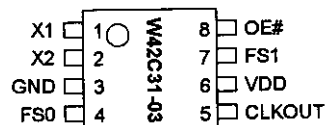


Table 2 Order Information

Part Number	Freq. Mask Code	Package
W42C31	03	G = Plastic SOIC (150 mil)

Safety Capacitors, Type 2, AC400V
Suppression Capacitors Class Y1 and X1 (according to EN 132 400)

WKP

Features:

Disc capacitor with epoxy resin coating.

Rated Voltage U_R :

AC400V; 50/60Hz as Safety Capacitor Type 2

AC275V; 50/60Hz as AC-Capacitor Class X1

(UL/CSA approval only AC250V)

AC250V; 50/60Hz as AC-Capacitor Class Y2

Test Voltage U_T :

Component test: AC4KV, 50Hz, 2sec

Random sampling test:

4KV, 50Hz, 60 sec.

Voltage resistant coating:

AC4KV, 50Hz, 60 sec.

Capacitance Tolerance:

$\pm 10\%$ or $\pm 20\%$

Dissipation Factor $\tan \delta$:

$\leq 30 \cdot 10^{-3}$

Insulation Resistance R_i :

$\geq 10 \cdot 10^9 \Omega$

Temperature Characteristic to

CECC 30 700:

2 E 3

Category Temperature Range V_u :

$(-40 \dots +85)^\circ\text{C}$

Climatic Application Class to

DIN 40 040:

GPF

Climatic Testing Class to

DIN 40 045:

40/085/21

Coating:

Epoxy resin, dipped, insulating,
flame retarding.

Taping:

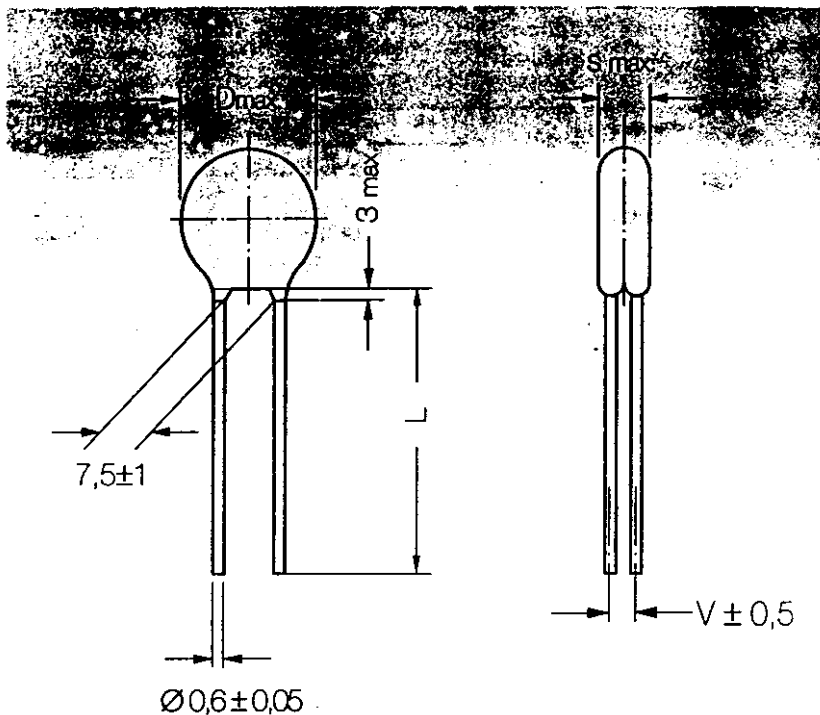
On request

Special Lead Configurations:

On request

Special Lead Space & Lead Length:

On request



Marking

Values $\geq 1000\text{pF}$

Marking after
Quarter 4, 1994

Values $\leq 680\text{pF}$
(with additional label
on the box)

GPF (S) (N) (P)
BS 415 CEI 40-7
560-2 CEI 12-13
WKP

Safety Capacitors, Type 2, AC400V
Suppression Capacitors Class Y1 and X1 (according to EN 132 400)

WKP

Capacitance pF	Dimensions (mm) D x s (max)	F ±1	d ±0,5	l (max)	V ±0,5	Ordering Code	Resonance frequency wire length = 5mm [MHz]
33	8 x 6,5	12,5	0,6	3,0	1,9	WKP330 .CPE.0K	N750
47	8 x 6,5				2,3	WKP470 .CPE.0K	K1200
68	8 x 6,5					WKP680 .CPE.0K	
100	8 x 6,5					WKP101 .CPE.0K	
150	8 x 6,5					WKP151 .CPE.0K	K1500
220	8 x 6,5					WKP221 .CPE.0K	K2000
330	8 x 6,5		0,8	3,0	2,5	WKP331 MCPE.0K	K4000
470	8 x 6,5					WKP471 MCPE.0K	
680	9 x 6,5					WKP681 MCPE.0K	
1000	10 x 6,5					WKP102 MCPE.0K	
1500	12 x 6,5				2,7	WKP123 MCPE.0K	
2200	13 x 6,5					WKP222 MCPE.0K	
3300	15 x 6,5					WKP332 MCPE.0K	
3900	16 x 6,5					WKP392 MCPE.0K	
4700	18 x 6,5					WKP472 MCPE.0K	

Approvals

CB-Test Certificate	IEC 384-14, Issue 2 Y1/X1 40/125/21	FI 179	pr EN 132 400 (applied for EN 132 400)
CB-Procedure for	Austria, Belgium, Denmark, Finland, France, Germany, Great Britain, Greece, Ireland, Iceland, Italy, Netherlands, Norway, Poland, Spain, Switzerland		

Country		Specification	Approval Reference	Approval Mark
Germany	D	VDE 0565.2/5.70 DIN IEC 65, 14.2 VDE 0560-1/12.79; Y, X1; AC250V	53120...53124 57290...93 (33pF..220pF) 57268(330pF..4700pF)	
USA	USA	UL1414(AC250V)	E 100682	
Great Britain	GB	BS 415: 1979 Clause14,2; TL.22	226702	BS415
Switzerland	CH	SEV 1016 1959(Safety Class II)	92.5 51024.01	
Sweden	S	SEMKO 101-1982/IEC65,14.2 SEMKO 4430414/IEC 384-14(Y, AC400V)	8642109 8644057	
Norway	N	NEMKO 661-77/IEC 14.2 NEMKO 132/85/IEC384-14(Y, AC400V)	E 34884 E 34886	
Finland	SF	SETI IEC 65, 14.2 SETI IEC 384-14 (Y, AC400V)	098890-01 098891-01	
Canada	CAN	CSA C22.2 NR..1-M1981(AC250V)	064546x0000	
Italy	I	IMQ CEI 12-13/VII 1985. 14.2 IMQ CEI 40-7/VI-1980	V.1881 V.2085	

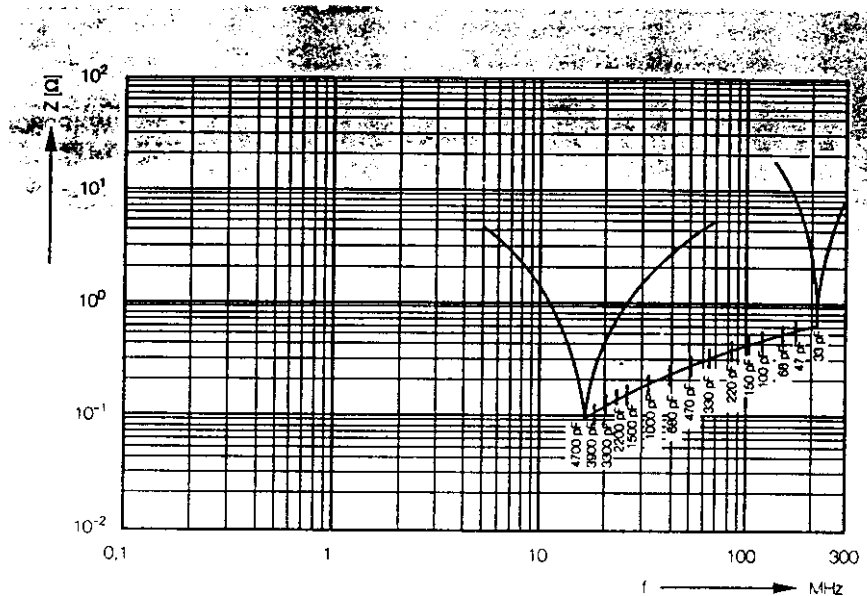
711 411

Safety Capacitors, Type 2, AC400V
Suppression Capacitors Class Y1 and X1 (according to EN 132 400)

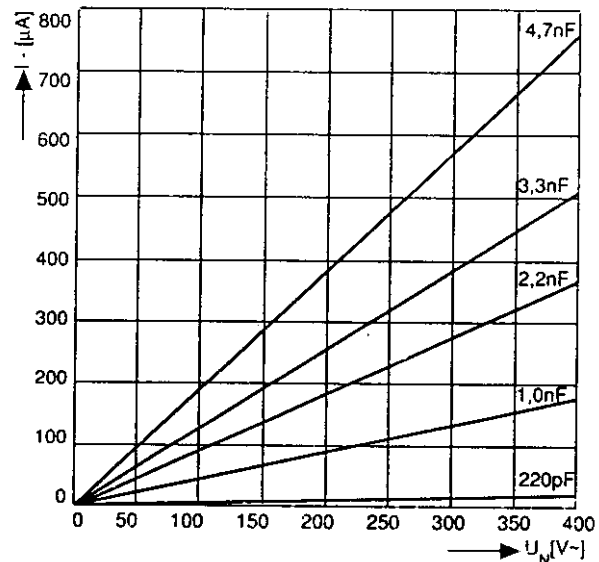
WKP

Impedance (Z) as a function of frequency (f)
at $T_a = 20^\circ\text{C}$ (Average)

Measurement with lead length 6mm



Leakage current ($T_{\sim}$) as a function of rated
voltage (U_N)



Ordering Code:

7th digit: Tolerance $\pm 10\% = "K"; \pm 20\% = "M"$

11th digit: Lead Length: $L = 10 \pm 1\text{mm}$ at $\varnothing d = 0,6\text{mm} = "D"$; $\varnothing d = 0,8\text{mm} = "H"$

Lead Length: $L = 30 - 3\text{mm}$ at $\varnothing d = 0,6\text{mm} = "F"$; $\varnothing d = 0,8\text{mm} = "J"$

Ordering Example

WK P	102	..M"	CP	E"J"O	K
C-Series	C-Value	C-tolerance	Rated Voltage	Finish	Code



IC WORKS

W42C31-02

Preliminary

SPREAD SPECTRUM REFERENCE CLOCK**FEATURES**

- Generates a spread spectrum clock
- Output frequency is twice the input frequency
- Reduces measured EMI by as much as 12 dB
- Integrated loop filter components
- Operates with a 5V supply
- Requires a single low cost fundamental crystal for operation
- Selectable frequency spread
- Modulation can be turned on and off

OVERVIEW

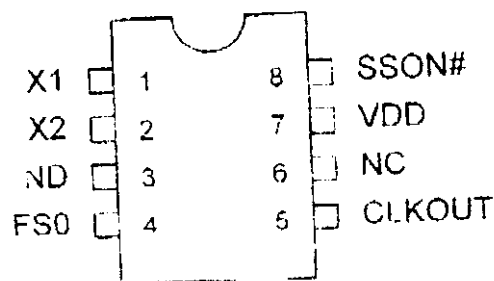
The W42C31 modulates the output of a single PLL in order to 'spread' the bandwidth of a synthesized clock and, more importantly, decrease the peak amplitudes of its fundamental and harmonics. Since peak amplitudes are reduced, the radiated electromagnetic emissions of the W42C31 are significantly lower than the typical narrow band signal produced by oscillators and most frequency generators. Lowering a signal's amplitude by increasing its bandwidth is a method of reducing EMI called 'spread spectrum clock generation'. This patented technique not only reduces the emissions of the primary clock, but also impacts every signal synchronized to it.

FREQUENCY SPREAD

FS0	INPUT FREQUENCY	CLKOUT
0	14MHz to 24MHz	2xfin -1.00%
1	14MHz to 24MHz	2xfin -1.50%

KEY SPECIFICATIONS

- 250 ps cycle-to-cycle jitter
- 48:52 duty cycle around 1.4V
- Frequency spread of either -1.00% or -1.50%
- Input frequency range 14MHz to 24MHz
- 3 ns rise/fall time 0.8V to 2.0V
- 5V±10% supply

PIN DESIGNATION**PROFILE DISCUSSION**

CLKOUT will be spread by either 1% or 1.5%, depending on the state of FS0. The spread will be non-coherent, insuring that the clock is never faster than twice the input clock.

Tally Computerdrucker GmbH
D-89275 Elchingen
Germany
FCC ID: EUIT3016

EXHIBIT B

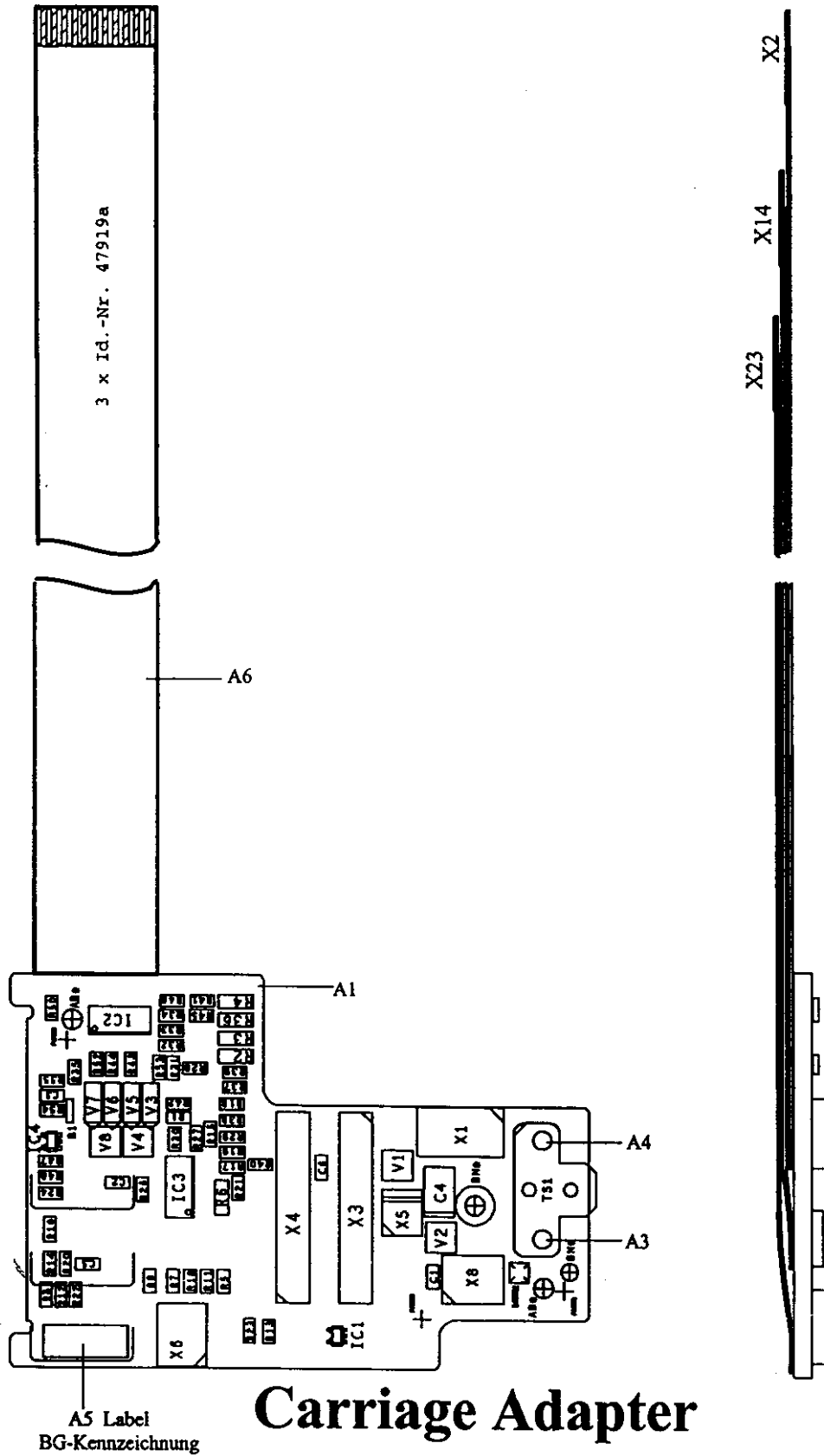
June 29, 1999
W. Boehm, Dept. TQV

Application for FCC Part 15, Subpart B, Class B Certification

Matrix Printer Model T3016

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8. User Panel (PANEL ⑥) Circuit Diagram, Layout, Placement Sketch and Parts List	1-3
9. Peripheral Assemblies (numbered ⑦ to ⑪), Sensors, Wiring, DC-Motor Circuit Diagrams, Drawings, Data Sheets	1-16



Carriage Adapter

Tally

						047860/06	Bl.-Nr.: 1 Folgebl.: 2
47859-d	47860-A	20162-04	-B-	18.05.99	Pe		
47859-d	47860-A	20162-03	-A-	05.05.99	Pe		
47859-c	47860-	20162/01	-	22.03.99	Pe		
Ersatz für:							

Tally Computerdrucker GmbH
D-89275 Elchingen
Germany
FCC ID: EUIT3016

EXHIBIT B

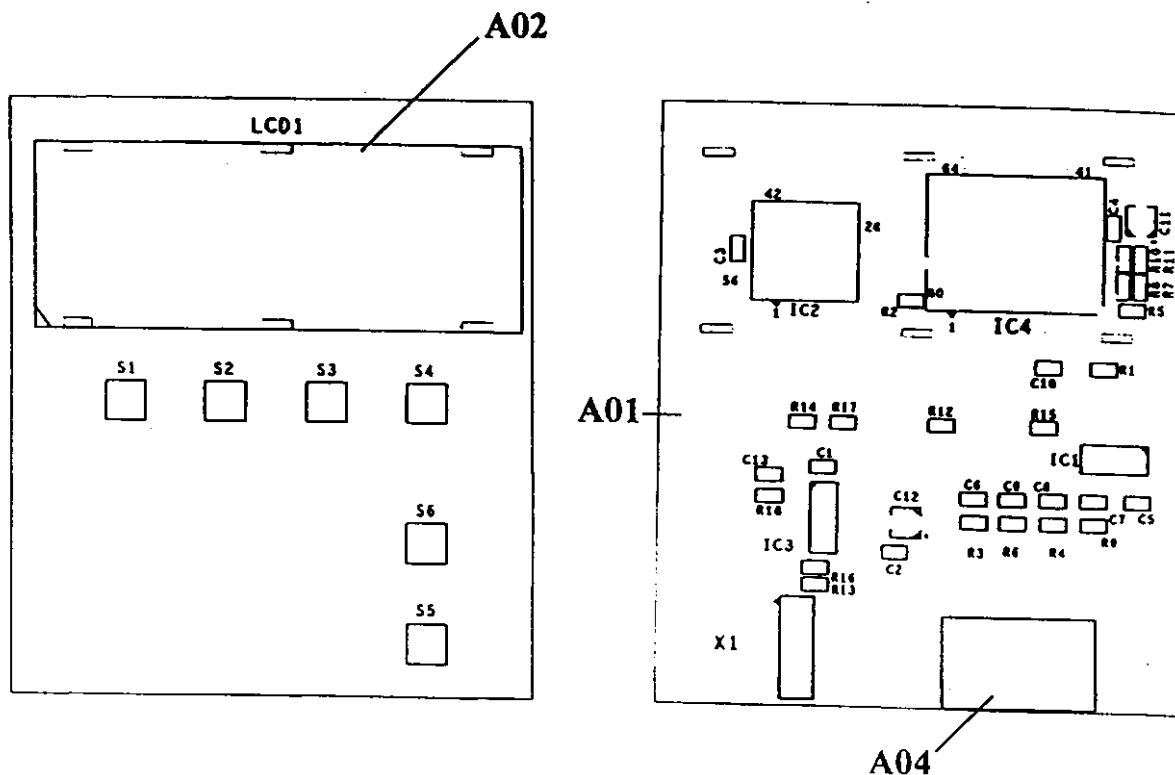
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- A01 - Leiterplatte
- A02 - Rahmen LCD
- A03 - Zebracontact für LCD-Anz.
- A04 - Etikett Baugruppen-Kennzeichnung

- Änderung Leiterbahnbild	20120/3	-C-	03.12.1998	Pe
Bemerkung	Ander.-Nr.	Zch.-Ind.	Datum	Name

Tally
GmbH Elchingen

Panel Kpl. T2x40

Zeichnungs-Nr.:
47 809 / 06

Bl.-Nr.: 1 Folgebl.: 2

Ersatz für: 47809 Ixb

Diagram illustrating the components of the alarm system (Panel 47809) and their assembly:

- Panel 47809**: The main alarm unit, shown in an exploded view and a perspective view.
- Fenster Panel**: The window panel, shown in an exploded view.
- Schaltelement 2-fach**: A 2-way switch component.
- Schaltelement 4-fach**: A 4-way switch component.
- Kabelklammer**: A cable clamp.
- Panelblende (bedruckt)**: The printed panel cover.
- Taste grau (4x)**: Four grey push buttons.
- Taste blau (2x)**: Two blue push buttons.

Tally Computerdrucker GmbH		W.-Merkmalbuchdruckdatum, Teil- undg.-906-17906060606 Doc	
Copyright reserved / DIN 34		Seite / Sheet.: 1 Folgebl. / next Sheet.: 2 Ersatz für / replacement of : Ersetzt durch / replaced by :	
Panel Kpl. T3016 047 906 / 06		Zeichnungs-Nr. / drawing No.	
- Einführung Änderungsgrund/change description	047807 .E. Lp-Ind./publ-Rev.	047 906 -- BG-Ind./ Assy- rev.	202100 AM-Nr. / DCR-No
			27.01.1999 Datum / date
			Pe Name/name

Tally Computerdrucker GmbH
D-89275 Elchingen
Germany
FCC ID: EUIT3016

EXHIBIT B

June 29, 1999
W. Boehm, Dept. TQV

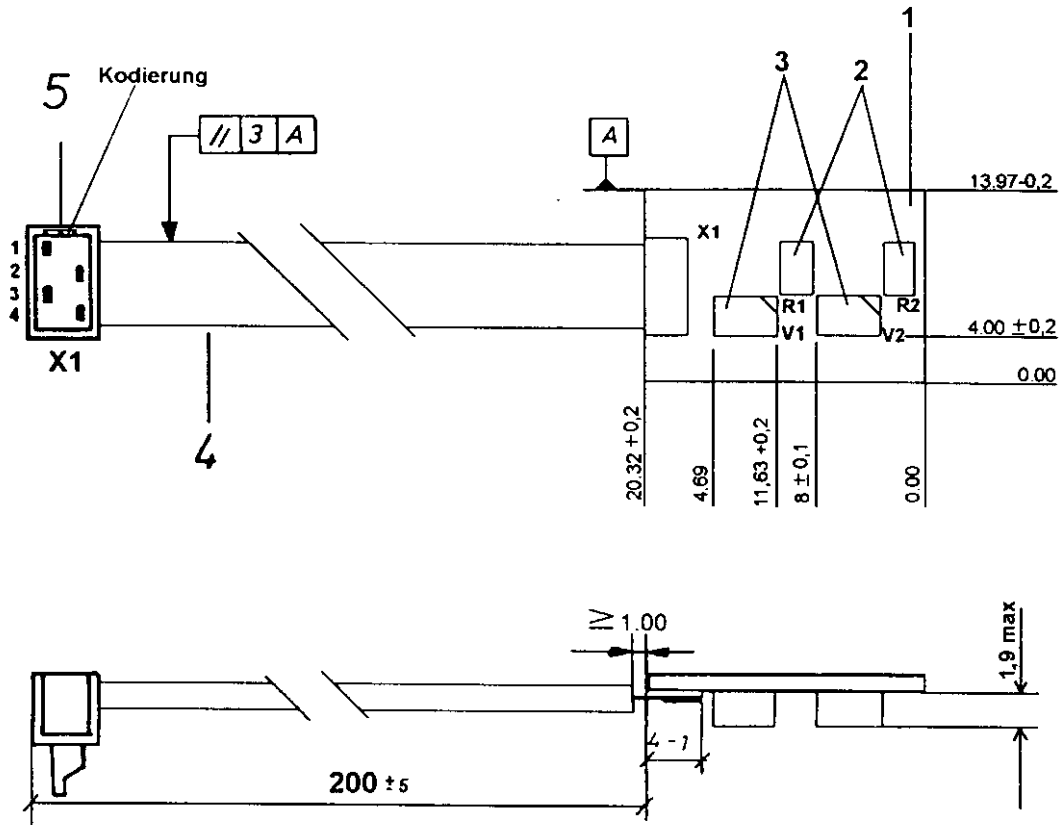
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Matrix Printer Model T3016

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Zeichnung nicht maßstäblich



- 1 Leiterplatte 47684
- 2 Widerstand 180R +/- 5% / 0,125W / 0805
- 3 Encoder GP2S27C / Sharp
- 4 Flachbandleitung 4x AWG 28 UL
- 5 Mikro Match Male rt

- Länge von 246mm in 200mm geändert und Maß 1,9 max. hinzu	20182/7	-b-	22.04.99	Pe
Anderungsgrund	Änd.-Nr.	Zch.-Ind.	Datum	Name

Tally

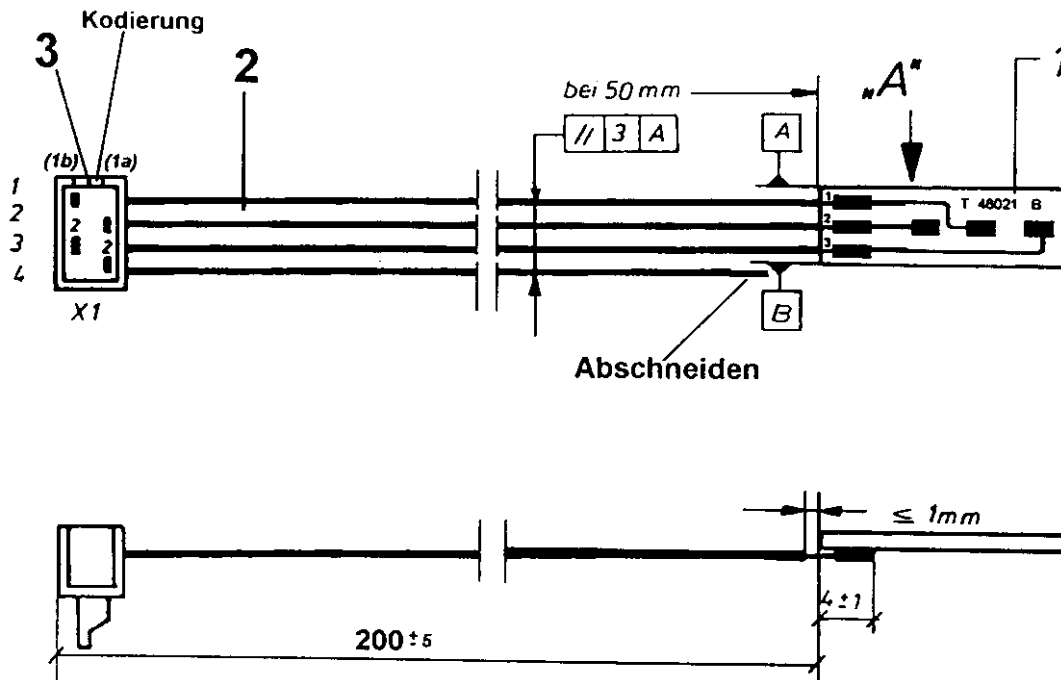
**Doppelsensor
T2155/T2170/T3016**

Zeichnungs-Nr.

48 020 / 10 (A)₁

Bl.-Nr.: 1 Folgebl.: --

M 2:1

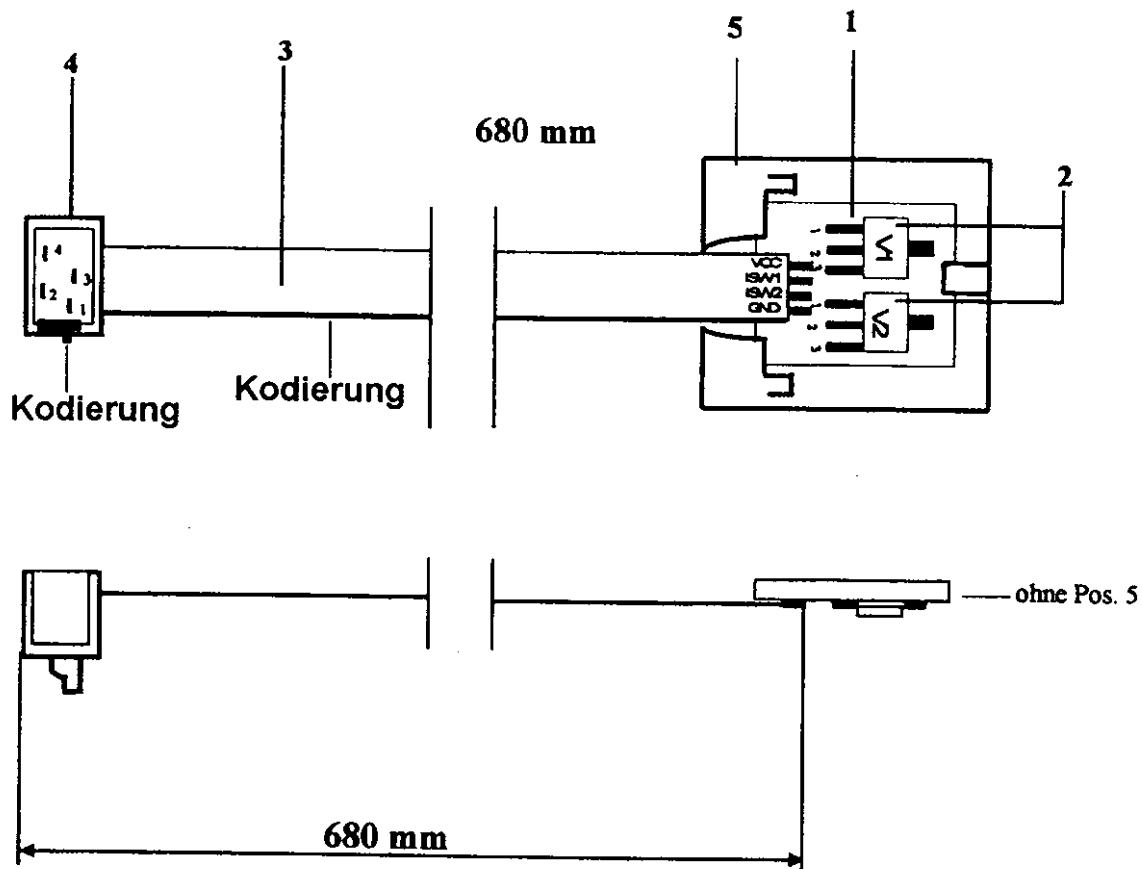


1= LP 48021

2= Flat Ribbon Cable 4x AWG 28 UL

3= Mikro-Match Male gn

- Länge von 396mm in 200mm geändert		20182/7	-a-	22.04.99
Änderungsgrund		And.-Nr.	Zch.-Ind.	Datum
Name				
Tally GmbH Elchingen	Optionserkennung T2155/T2170/T3016	Zeichnungs-Nr.: 48 022 / 10 (B) ₁		
		Bl.-Nr.: 1 Folgebl.: --		



Pos. 1 = LP 47517 x

Pos. 2 = Hall-Effect UGN3113LT (Id.-Nr. 710121)

Pos. 3 = FBL 4x AWG28 UL (Id.-Nr. 708603)

Pos. 4 = Stiftstecker 2x 2 Braun (Id.-Nr. 710097)

Pos. 5 = Sensorhalter

- Zeichnung Richtigstellung	09998-05	-b-	22.04.99	Pe
Anderungsgrund	And.-Nr.	Zch.-Ind.	Datum	Name

Tally

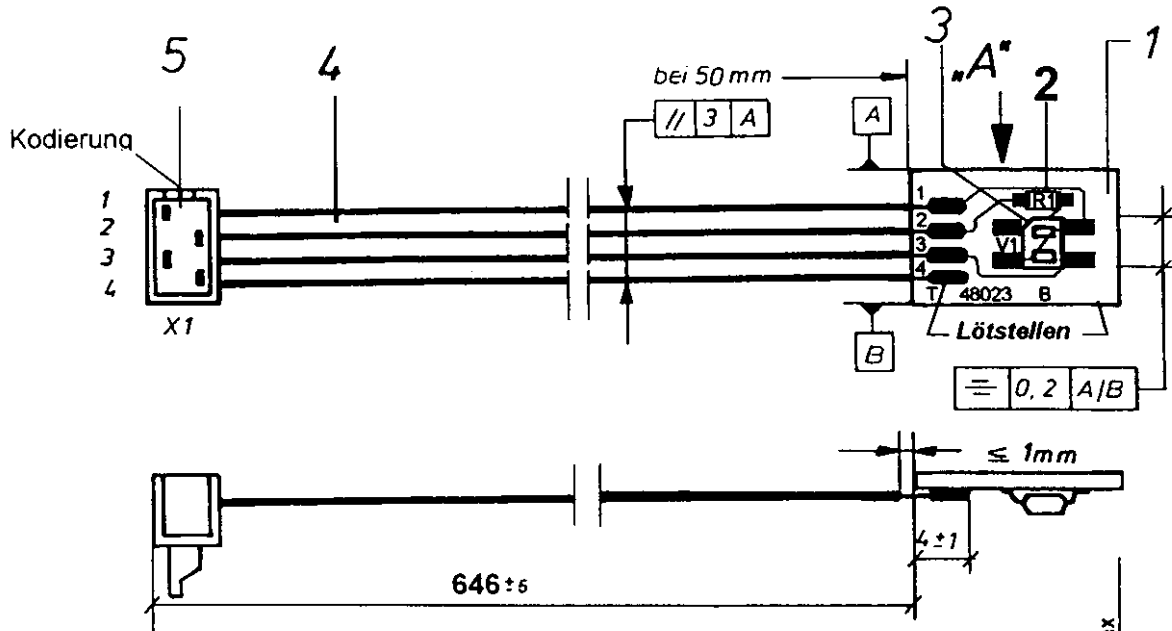
**T2045
INTERLOCK KPL.**

Zeichnungs-Nr.

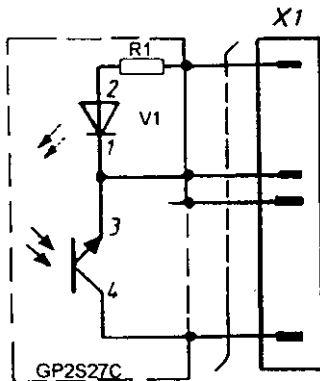
47 523 / 06 ©₁

Bl.-Nr.: 1 Folgebl.: --

M 2:1



Ansicht „A“
M 5:1



- 1= LP 48023
- 2= R1
- 3= Encoder GP 2S27C Sharp
- 4= Flat Ribbon Cable 4x AWG 28 UL
- 5= Mikro-Match Male gn

- Maß 1,9 max. hinzu	20182-07	-a-	22.04.99	Pe
---	20182/0	--	12.11.98	Pe
Änderungsgrund	Änd.-Nr.	Zch.-Ind.	Datum	Name

Tally
GmbH Elchingen

Papiersensoren AFI
T2155/T2170/T3016

Zeichnungs-Nr.:

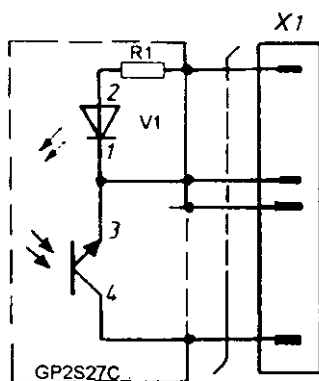
48 024 / 10 Ⓟ₁

Bl.-Nr.: 1 Folgebl.: --

Ansicht „A“
M5:1

7-0,5

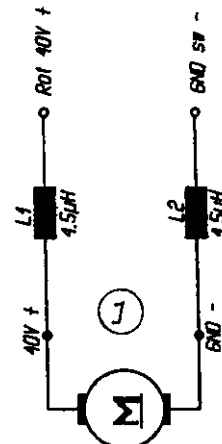
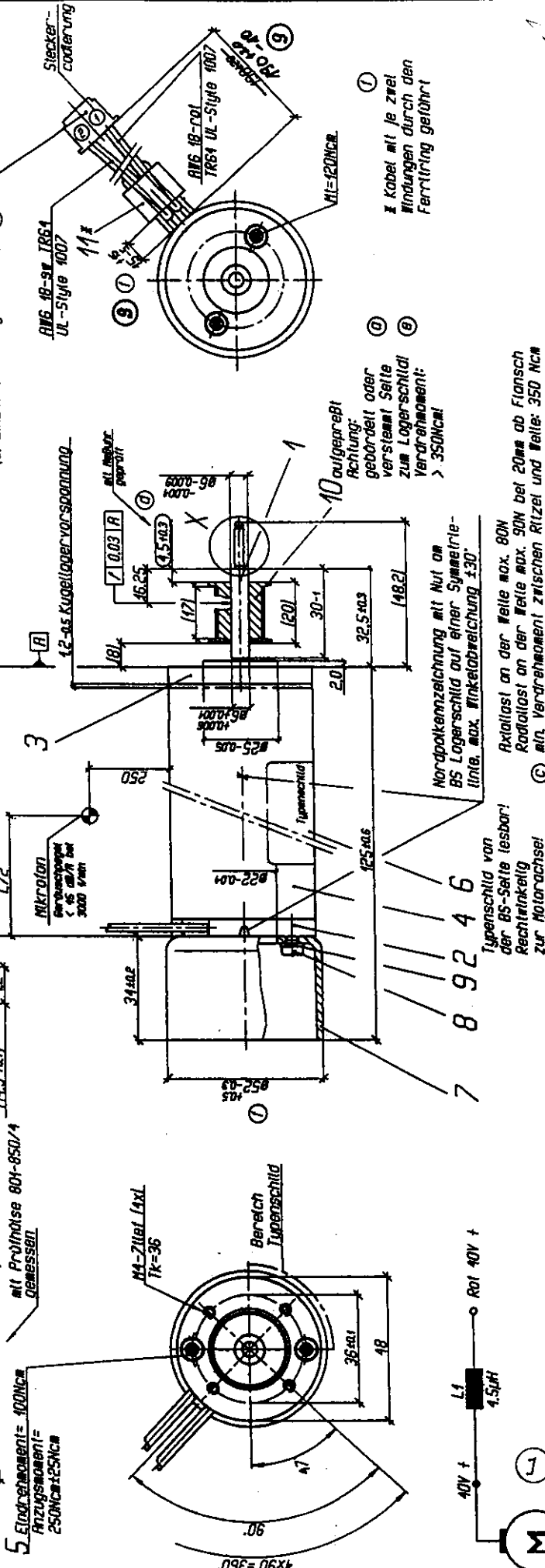
1,9



- 1= LP 48023
- 2= R1
- 3= Encoder GP 2S27C Sharp
- 4= Flat Ribbon Cable 4x AWG 28 UL
- 5= Mikro-Match Male red

- Zeichnung Richtigstellung, Maß 1,9 max. hinzu		20182-07	-a-	22.04.99	Pe
---		20182/0	--	12.11.98	Pe
Anderungsgrund		Änd.-Nr.	Zch.-Ind.	Datum	Name
Tally	Sheet Feeder 2. Tr. T2155/T2170/T3016	Zeichnungs-Nr. 48 025 / 10 			
		Bl.-Nr.: 1 Folgebl.: --			

Steckergehäuse
ANP Best.-Nr.: 2-173268-2
Buchsenkontakt
ANP Best.-Nr.: 2-17602-2
Mo. Einzelausführung: 47603-2



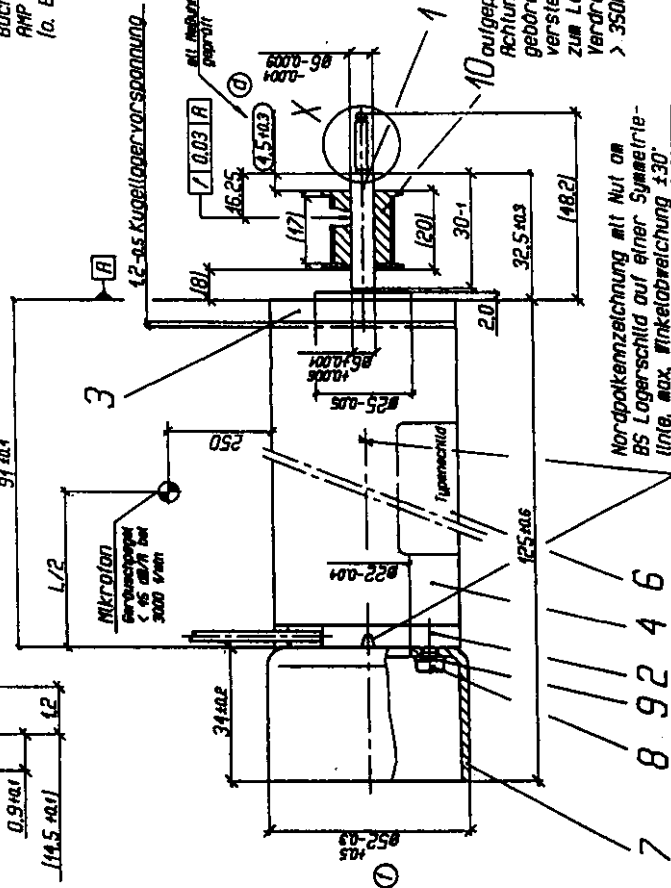
Leerlaufdrehzahl	=	3700	1/min	
Leerlaufstrom	=	0,09	A	
Nennmoment	=	8	Ncm	
Nennendrehzahl	=	3000	1/min	
Nennstrom	=	0,90	A	
				Toleranz:
				± 45%
				± 50%
				± 10%
				± 20%

Drehrichtung auf Wellenstumpf gesehen: rechts

Betriebsspannung: 40V

Prüfspannung : 40V

Entstörung: $2xL = 14.5\mu H$ Innenlegend



Typenschild von
der BS-Seite lesbar!
Rechtswinkelig
zur Motorachse!
☺ ein Verdrehmoment zwischen 800
Axiallast an der Welle max. 80N
Radiallast an der Welle max. 50N

100

25

[illegible]

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱ ⑲ ⑳ ㉑ ㉒ ㉓ ㉔ ㉕ ㉖ ㉗ ㉘ ㉙ ㉚ ㉛ ㉜ ㉝ ㉞ ㉟ ㊱ ㊲ ㊳ ㊴ ㊵ ㊶ ㊷ ㊸ ㊹ ㊺ ㊻ ㊼ ㊽ ㊾ ㊿

Tally Computerdrucker GmbH
D-89275 Elchingen
Germany
FCC ID: EUIT3016

EXHIBIT B

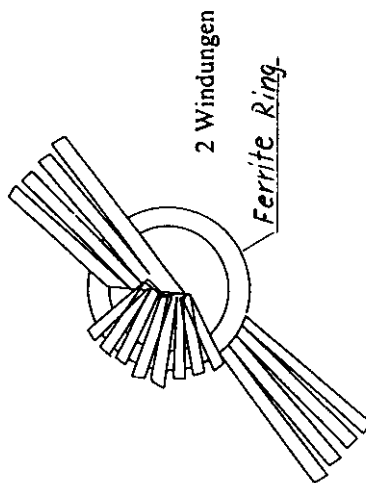
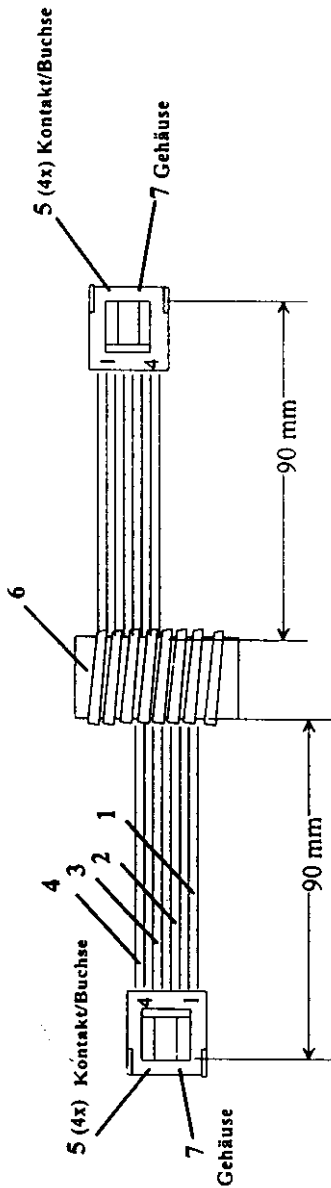
June 29, 1999
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7.	Carriage Adapter (ICAR ADAPT ⑤) Circuit Diagram, Layout, Placement Sketch and Parts List	1-4
8.	User Panel (PANEL ⑥) Circuit Diagram, Layout, Placement Sketch and Parts List	1-3
9.	Peripheral Assemblies (numbered ⑦ to ⑪), Sensors, Wiring, DC-Motor Circuit Diagrams, Drawings, Data Sheets	1-16



Kontakt	Litze	Kontakt
1	sw (1)	1
2	ws (2)	2
3	bl (3)	3
4	rt (4)	4

Pos.	Teil-Nr.	Bezeichnung
1	710408	LIY AWG 20 / 7 x 0,25 sw
2	710407	LIY AWG 20 / 7 x 0,25 ws
3	711480	LIY AWG 20 / 7 x 0,25 bl
4	710409	LIY AWG 20 / 7 x 0,25 rt
5	710224	Crimp-Buchsenkontakt
6	711451	Ferritring D25 / 15
7	711452	Buchsengehäuse 1 x 4

- Einführung		20150-00	-a-	30.03.99	Sc	
-Einführung		20158/0	--	09.11.98	Sc	
Änderungsgrund		Änd.-Nr.	Zch.-Ind.	Datum	Name	
<i>Tally</i>	Kabel Power-Line-Control					
	047 904/10					
	Blatt: I Folgeblatt: ---					
	Erster für					

Tally Computerdrucker GmbH
D-89275 Elchingen
Germany
FCC ID: EUIT3016

EXHIBIT B

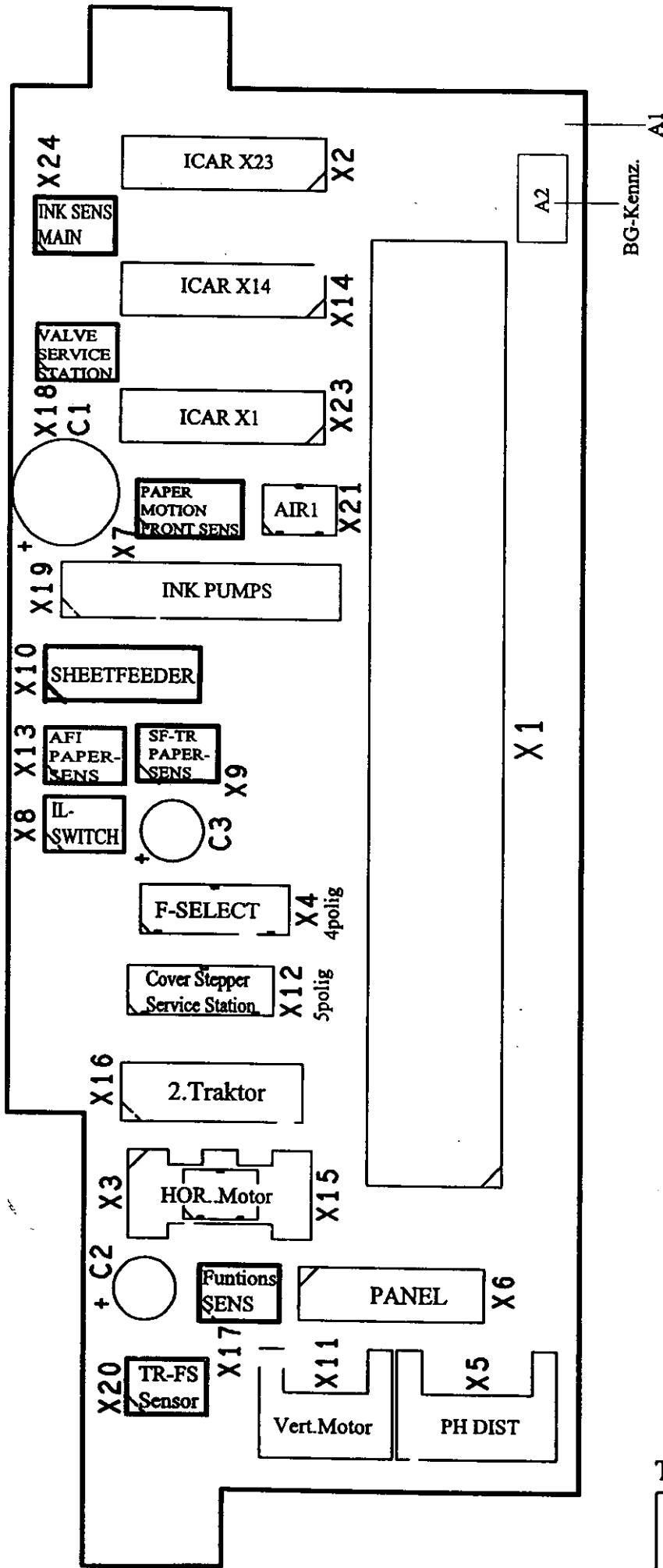
June 29, 1999
W. Boehm, Dept. TQV

Application for FCC Part 15, Subpart B, Class B Certification

Matrix Printer Model T3016

Documentation of Electrical Assemblies

Scope:	Sheet:
1. Overview Drawing of Electrical Assemblies (numbered ① to ⑥) Description of generated Frequencies and EMI Suppression Measures	1 1-5
2. Data Sheets of EMI Suppression Components (in order of its ID-No.)	1-16
3. Main Controller Board (CONTROL ①) Circuit Diagram, Layout, Placement Sketch and Parts List	1-20
4. Power Supply (POWERS ②) Circuit Diagram, Layout, Placement Sketch and Parts List	1-5
5. Connection Board (CONNECT ③) Circuit Diagram, Layout, Placement Sketch and Parts List	1-3
6. Actuator Driver Board (INK PUMPS ④) Circuit Diagram, Layout, Placement Sketch and Parts List	1-3
7. Carriage Adapter (ICAR ADAPT ⑤) Circuit Diagram, Layout, Placement Sketch and Parts List	1-4
8. User Panel (PANEL ⑥) Circuit Diagram, Layout, Placement Sketch and Parts List	1-3
9. Peripheral Assemblies (numbered ① to ⑩), Sensors, Wiring, DC-Motor Circuit Diagrams, Drawings, Data Sheets	1-16



T3016 Connection Board

Tally				047862/06		Bl.-Nr.: 1	Folgebl.: 2
				Zeichnungs-Nr.:			
				20163-01	-A-	07.05.1999	Pe
				20163/0	--	24.03.1999	Pe
Seitenerkenn nach DIN 34 beachten				ÄM-Nr.	Index	Datum	Name
							Ersatz für:
							Ersetzt durch:

T3016 Connection Board

047862/06	Bl.-Nr.: 1
-----------	------------

Tally Computerdrucker GmbH
D-89275 Elchingen
Germany
FCC ID: EUIT3016

EXHIBIT B

June 29, 1999
W. Boehm, Dept. TQV

Application for FCC Part 15, Subpart B, Class B Certification

Matrix Printer Model T3016

Documentation of Electrical Assemblies

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Tally Computerdrucker GmbH
D-89275 Elchingen
Germany
FCC ID: EUIT3016

EXHIBIT C

June 29, 1999
W. Boehm, Dept. TQV

Application for FCC Part 15, Subpart B, Class B Certification

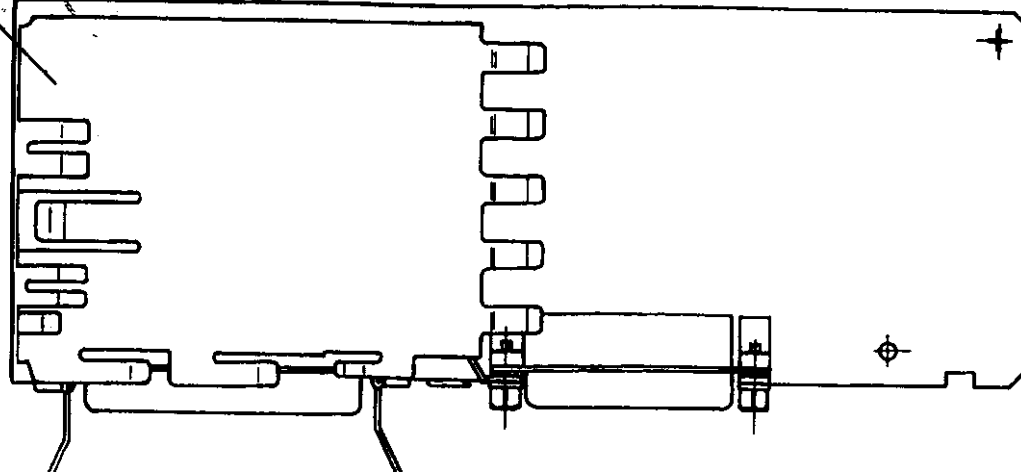
Matrix Printer Model T3016

Documentation of optional Assemblies

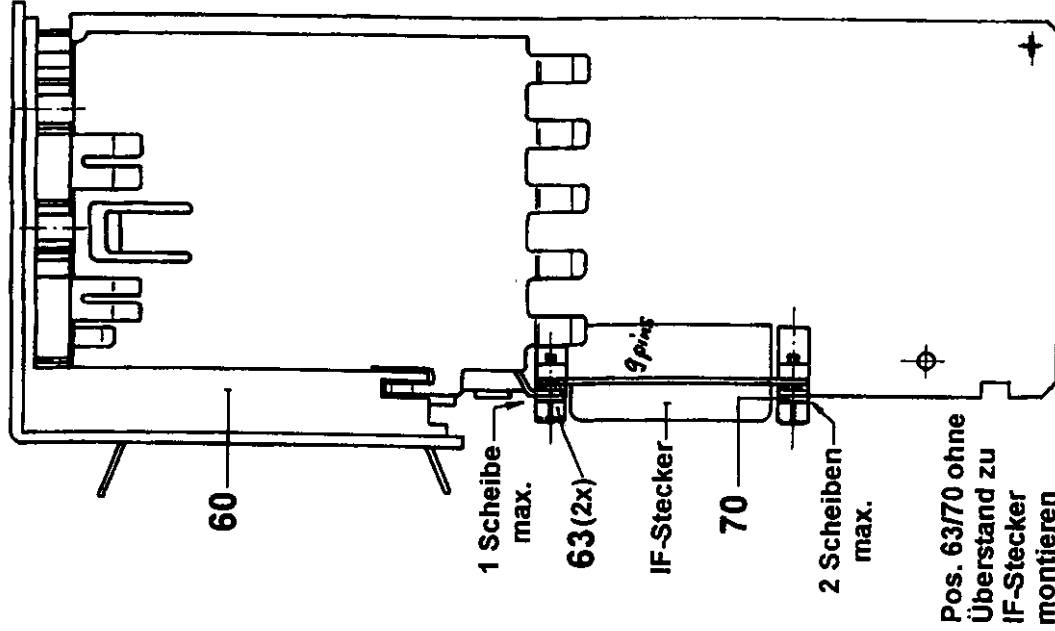
Scope:		Sheet:
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3.	Interface Serial 20mA (③) Circuit Diagram, Placement Sketch Drawing and Parts List	1-4
4.	Sheet Feeder Motor Driver (④) Circuit Diagram, Layout, Placement Sketch and Parts List	1-2
5.	Paper Cutting Device (⑤) Circuit Diagram, Motor Data Sheets, Placement Sketch and Parts List	1-11
6.	2 nd Tractor Motor Driver (⑥) Circuit Diagram, Layout, Placement Sketch and Parts List	1-4

Ansicht ohne IF-Blende

61



Ansicht mit IF-Blende



Scheibenanordnung
bei Einsatz der Feder
54475 Pos. 62

Pos. 62 Feder

Pos. 71 (1x)

Zahnscheibe

61

Pos. 70 (2x)

Scheibe

Tally

IF CENTR. BIDIR. / RS232

047 965 / 06

Seite / Sheet.: 1 Folgebl. / next Sheet.: 2

Copyright reserved / DIN 34

Ersatz für / replacement of:
Ersetzt durch / replaced by:

Einführung 4-fach Nutzen	047 963 -A-	047 965 --	20166-01	-A-	19.05.1999	Pe
Einführung	047 963 -A-	047 965 --	20166-00	--	25.03.1999	Pe
Änderungsgrund/ change description	Lp-Ind./pwb-Rev.	BG-Ind./ Assy-rev.	ÄM-Nr. / DCR-No.	Zch.-Ind./draw-Rev.	Datum / date	Name/name

Parallel Interface

	OPEN	CLOSED
B6	Chassis via R6/C17 on GND	Chassis on GND
B4	not available	always
B5	VCCI via L2	VCCI direct
S1 - 1	Not connected	Not connected
S1 - 2	VCCI on X2/Pin 18 via 3k3 (R7) (Peripheral Logic High)	VCCI on X2/Pin 18 (500 mA max.) (Peripheral Supply)

Serial Interface

	OPEN	CLOSED
S1 - 3		Ready3 on X3/Pin 19
S1 - 4		Ready4 on X3/Pin 25
S1 - 5		Ready2 on X3/Pin 11
S1 - 6		Ready1 on X3/Pin 10

B1	B2	Meaning
OPEN	CLOSED	Serial Interface without CTSX
CLOSED	OPEN	Serial Interface with CTSX

S2 - 1	S2 - 2	Meaning
OPEN	CLOSED	DTR on X3/Pin 20
CLOSED	OPEN	Ready on X3/Pin 20

S2 - 4	S2 - 5	Meaning
OPEN	CLOSED	Ready
CLOSED	OPEN	Ready inverted

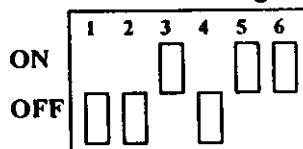
S2 - 3	S2 - 6	Meaning
OPEN	CLOSED	TXD on X3/Pin 2
CLOSED	OPEN	Ready or inverted Ready (dependent from S2-4/S2-5) on X3/pin2

☐ = Standard-Einstellung auf der Leiterplatte

Interface

47965

Schaltereinstellung S1



Einführung IF 47965		20166-00	—	03.05.1999	Pe
Anderungsgrund		Ander.-Nr.	Zch.-Ind.	Datum	Name
Tally Schutzvermerk nach DIN 34 beachten	Brückenplan IF CENTR. BIDIR. / RS232		Zeichnungs-Nr.: 47 963 / 15		
			Bl.-Nr.: 1 Folgebl.: %		
			Ersetzt durch:		

Tally Computerdrucker GmbH
D-89275 Elchingen
Germany
FCC ID: EUIT3016

EXHIBIT C

June 29, 1999
W. Boehm, Dept. TQV

Application for FCC Part 15, Subpart B, Class B Certification

Matrix Printer Model T3016

Documentation of optional Assemblies

Scope:		Sheet:
1.	Overview Drawing of optional Assemblies (numbered ① to ⑧) Standard Dual Interface CENTRONICS / RS232 (①) Circuit Diagram, Placement Sketch, Drawing, Parts List	1 1-5
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Brückenfunktionen <i>Jumpers</i>		
	Erklärung	
Brücke	offen <i>open</i>	geschlossen <i>closed</i>
B 1 B 8	Chassis über geschlossene Brücke B 8 R 11 // C 1 und L 5 an GND	Chassis über geschlossene Brücke B 8 und L 5 an GND
B 2	Pin 1 von X 2 potentialfrei	Chassis auf Pin 1 von X 2
B 3		READY an A/B TxD / RDY
B 4		<u>TxD / READY</u> an B TxD / RDY
B 5		TxD an A / B TxD / RDY
B 6		TxD / READY an B TxD / RDY
B 7		TxD / READY an A TxD / RDY
B 9		<u>TxD / READY</u> an A TxD / RDY

* = Standard-Betrieb/LayoutEinstellung

Disk MT360II/face/47144/brücken

Dok. MT360II/1face/47144/brücken

Interface RS 422 / SS97

②

MANNESMANN
TALLY
GMBH
ELCHINGEN

MT 360 / 350

Zeichnungs - Nr.:

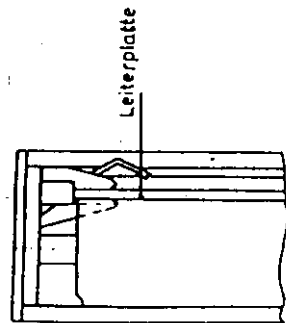
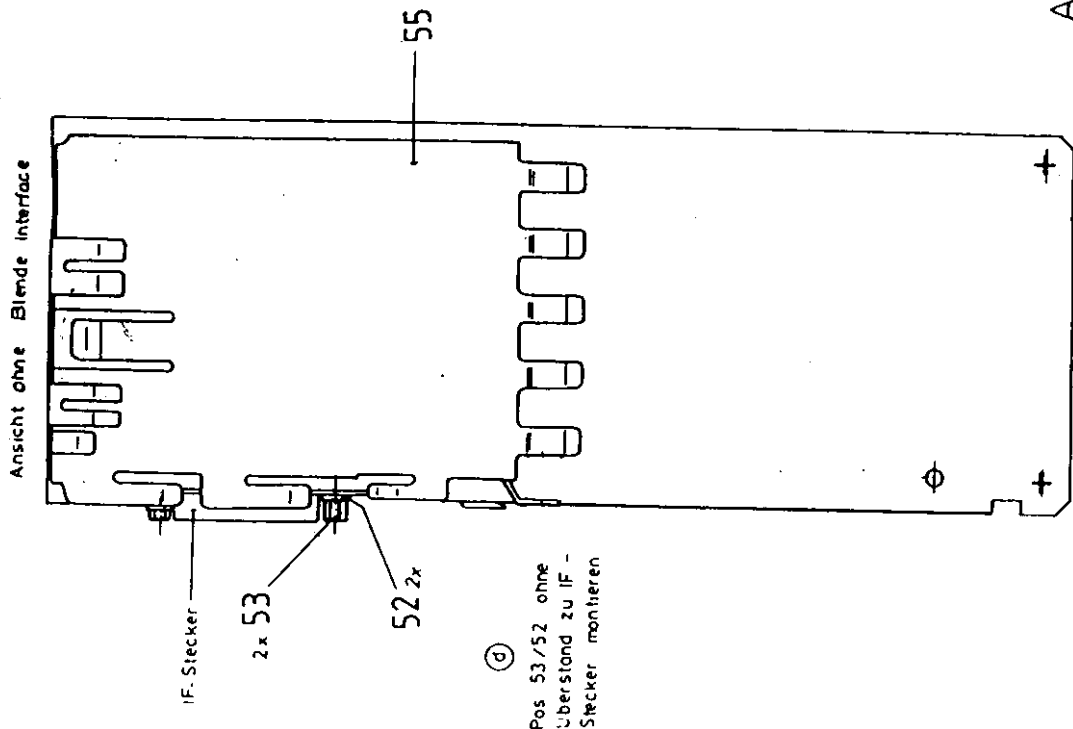
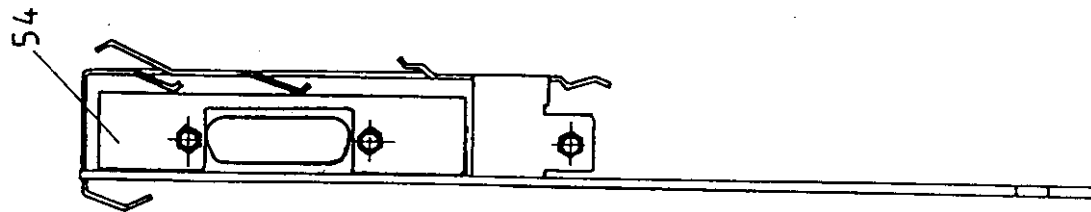
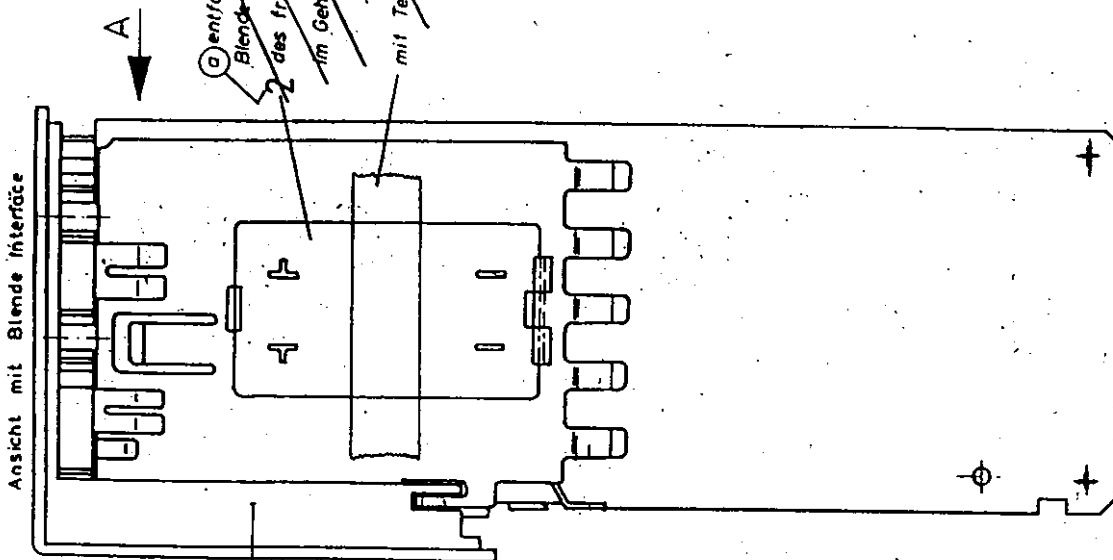
47 143 15

Bl. - Nr.: 1

Folgebbl.:

Schutzvermerk nach DIN 34 beachten

Ersatz für:



MT 360		Interface RS 422			
MANNESMANN FALCON		9884/0	1xd	7.2.94	Se
		9734/4	-C-	8.10.93	Se
		9734/3	-b-	28.9.93	Se
		9772/11	100000000	12.11.93	Se
		L7 14.1.06			
		2			

Tally Computerdrucker GmbH
D-89275 Elchingen
Germany
FCC ID: EUIT3016

EXHIBIT C

June 29, 1999
W. Boehm, Dept. TQV

Application for FCC Part 15, Subpart B, Class B Certification

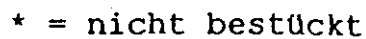
Matrix Printer Model T3016

Documentation of optional Assemblies

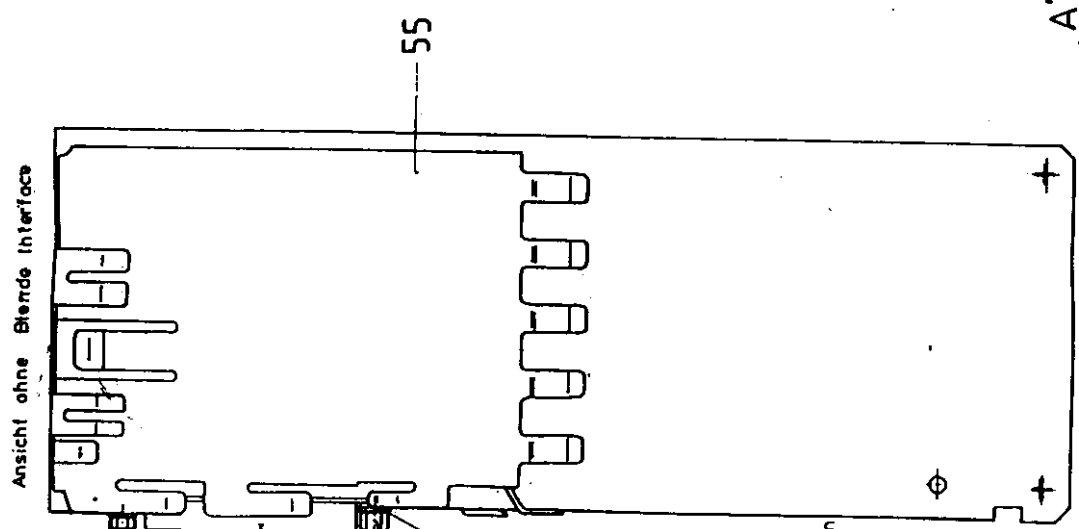
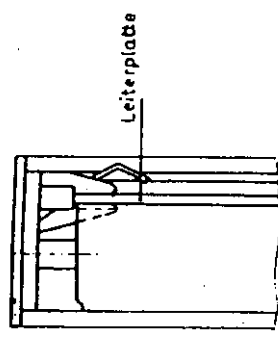
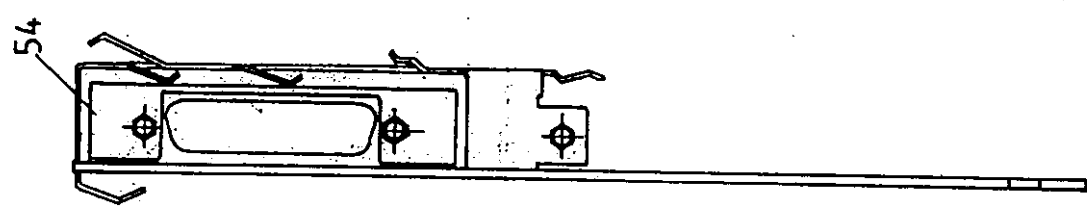
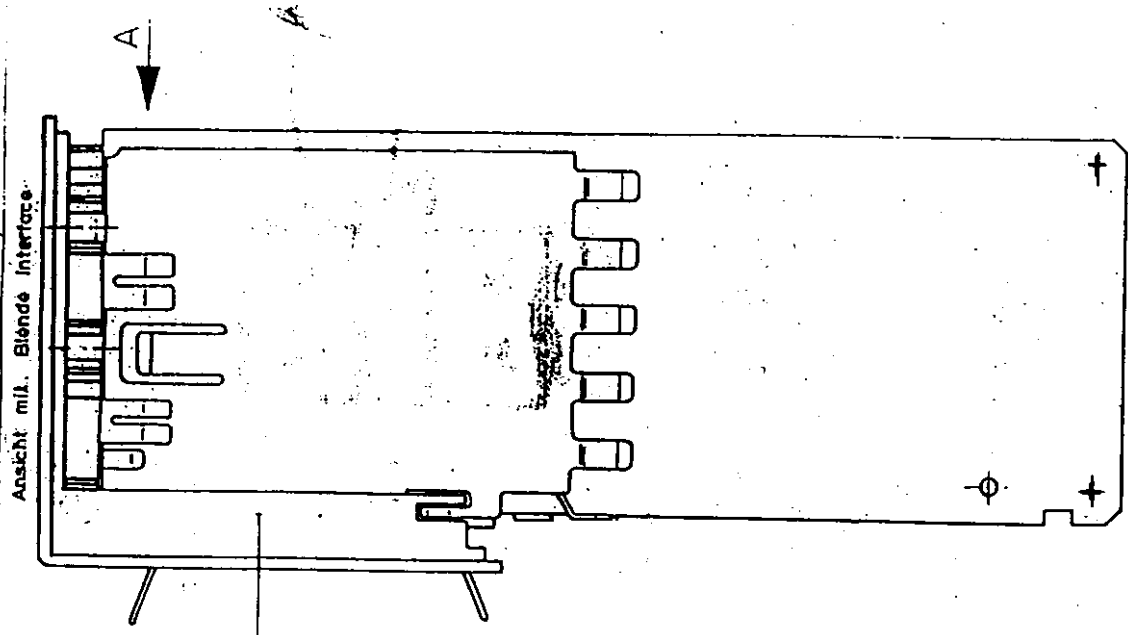
Scope:

Sheet:

- | | | |
|----|---|----------|
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Circuit Diagram, Placement Sketch, Drawing, Parts List | 1
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| 2. | Interface RS422 (②)
Circuit Diagram, Jumpers Table, Placement Sketch
Drawing, Layout and Parts List | 1-6 |
| 3. | Interface Serial 20mA (③)
Circuit Diagram, Placement Sketch
Drawing and Parts List | 1-4 |
| 4. | Sheet Feeder Motor Driver (④)
Circuit Diagram, Layout, Placement Sketch and Parts List | 1-2 |
| 5. | Paper Cutting Device (⑤)
Circuit Diagram, Motor Data Sheets, Placement Sketch and Parts List | 1-11 |
| 6. | 2 nd Tractor Motor Driver (⑥)
Circuit Diagram, Layout, Placement Sketch and Parts List | 1-4 |



MT 350/360		IF-Linienstrom 20mA				46 755/06 (3) ₂	
MANNESMANN TALLY GMBH ELCHINGEN						Zeichnungs-Nr.:	
						Bl.-Nr.:	4
09886/1		-c-	30.11.94	Pc		Folgebl.:	5
09886/0		-d-	26.09.94	Pc		Erstellt für:	
www.mannesmann-tally.com/MTB/OPF4.doc							
Schutzvermerk nach DIN 34 beschriftet		Änderung - Nr.	Index	Datum	Name	Mikrof	Erstellt durch:



IF-Stecker

53 (2x)

52
12x1

Pos. 53/52 ohne
Überstand zu
IF-Stecker montieren

MT 350/360	IF-Liniensstrom 20mA	46 755/06
MANNESMANN TALLY GMBH ELCHINGEN		Zeichnungs-Nr.: BL-Nr.: 5 Polzahl:

[illegible][illegible][illegible][illegible]

Tally Computerdrucker GmbH
D-89275 Elchingen
Germany
FCC ID: EUIT3016

EXHIBIT C

June 29, 1999
W. Boehm, Dept. TQV

Application for FCC Part 15, Subpart B, Class B Certification

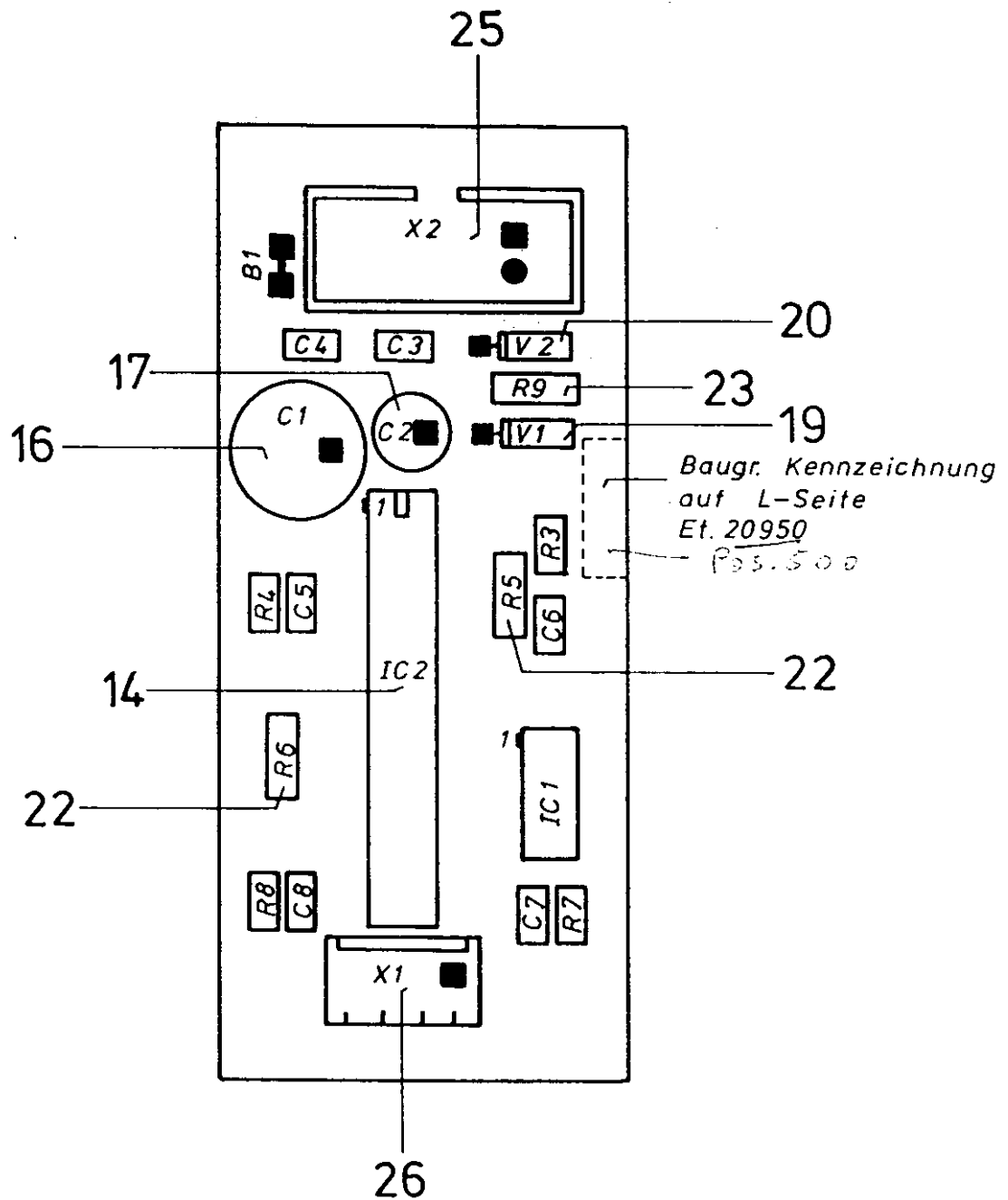
Matrix Printer Model T3016

Documentation of optional Assemblies

Scope:

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- | | | |
|----|---|----------|
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Circuit Diagram, Layout, Placement Sketch and Parts List | 1-4 |



↑	46 760.C	used for ASF and Colour Option			
46733.C	46 760.B	Motorsteuerung			
LP-Index	BG-Index				
MANNESMANN TALLY GMBH ELCHINGEN		9685/6	-c-	21.12.92	Str
		9685/NT 2	-b-	16.03.92	TH
		Zeichnungs-Nr.: 46760 06 Ersatz für: 46760 3x1			
		Bl.-Nr.: Folgebl.:			

Tally Computerdrucker GmbH
D-89275 Elchingen
Germany
FCC ID: EUIT3016

EXHIBIT C

June 29, 1999
W. Boehm, Dept. TQV

Application for FCC Part 15, Subpart B, Class B Certification

Matrix Printer Model T3016

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Circuit Diagram, Layout, Placement Sketch and Parts List | 1-4 |

11

Cutting Device (Option) for Printer Models

T2x55
T2x70
T3016

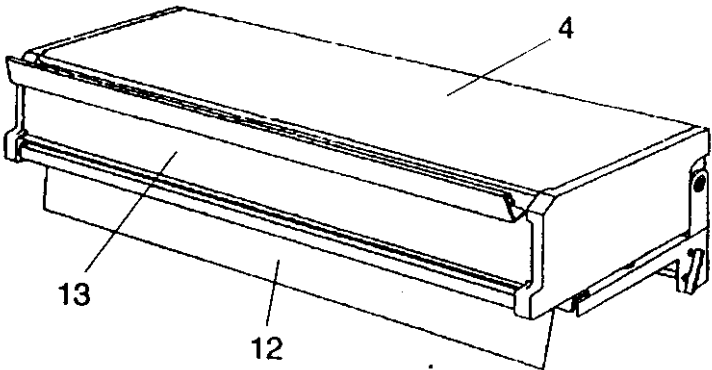
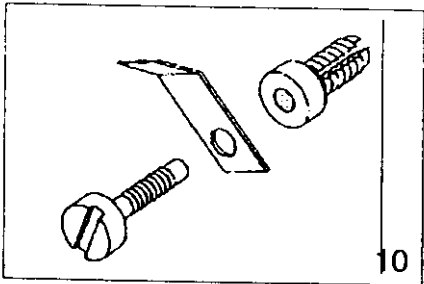
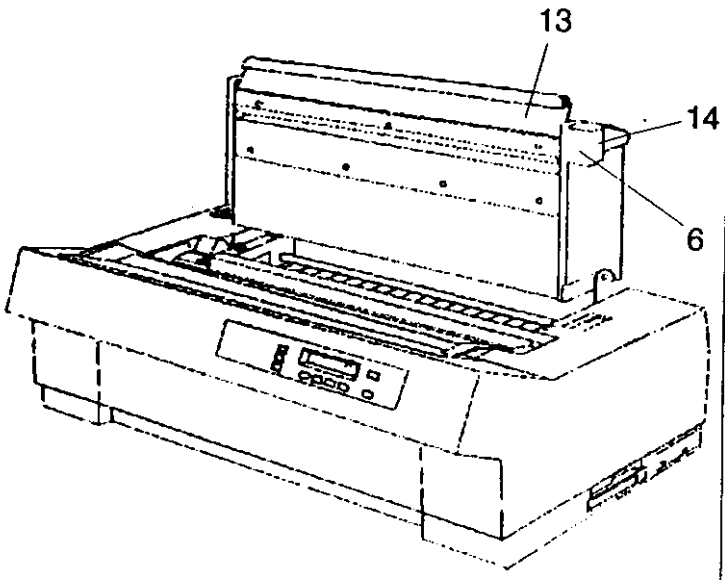
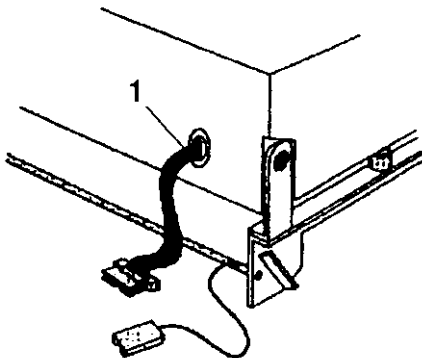
Safety notes:

- If you have any short pieces of paper remaining in the device, turn off the printer first.
- Do not stick unsuitable materials or tools – such as screw drivers etc. – into the device openings as this may damage the mechanical system.
- Replace the protective cap for the drive wheel at the printer when the cutter is no longer needed (in use) to prevent long hair, chains etc. from being pulled into the printer.

11.1
Specifications

Cut width	400 mm																
Cut height	min. form length 2.5 inches (6.35 cm)																
Cut duration	650 ms $\pm$ 10%																
Cutting accuracy	1 to 2 sheet-sets $\pm$ 1 mm $\geq$ sheet-sets $\pm$ 2 mm depending on the stiffness of the cross perforation																
Service life	>250000 cuts																
Weight	approx. 4 kp																
Paper type	fanfold paper																
Paper weight	Single form: 60 g/m² – 120 g/m² Multi-part form (1. tractor): <table> <tr><td>Original</td><td>45 g/m² – 120 g/m²</td></tr> <tr><td>1. sheet</td><td>45 g/m² – 65 g/m²</td></tr> <tr><td>Copies</td><td>45 g/m² – 56 g/m²</td></tr> <tr><td>Last sheet</td><td>45 g/m² – 65 g/m²</td></tr> <tr><td>Total</td><td><280 g/m²</td></tr> </table> Multi-part form (2. tractor): <table> <tr><td>1. sheet</td><td>60 g/m² – 90 g/m²</td></tr> <tr><td>1. copy</td><td>45 g/m² – 56 g/m²</td></tr> <tr><td>2. copy</td><td>45 g/m² – 56 g/m²</td></tr> </table>	Original	45 g/m ² – 120 g/m ²	1. sheet	45 g/m ² – 65 g/m ²	Copies	45 g/m ² – 56 g/m ²	Last sheet	45 g/m ² – 65 g/m ²	Total	<280 g/m ²	1. sheet	60 g/m ² – 90 g/m ²	1. copy	45 g/m ² – 56 g/m ²	2. copy	45 g/m ² – 56 g/m ²
Original	45 g/m ² – 120 g/m ²																
1. sheet	45 g/m ² – 65 g/m ²																
Copies	45 g/m ² – 56 g/m ²																
Last sheet	45 g/m ² – 65 g/m ²																
Total	<280 g/m ²																
1. sheet	60 g/m ² – 90 g/m ²																
1. copy	45 g/m ² – 56 g/m ²																
2. copy	45 g/m ² – 56 g/m ²																
Copies	1. push tractor 1 + 6 2. push tractor 1 + 2 depending on paper quality																
Stacker	1 sheet-sets >150 sheets 80 g/m² 6 sheet-sets >50 sets multi-part depends on crimping (punch printing on edge of sheet) and perforation/paper weight Paper stacking, above all of multi-part sets, depends on the quality of the crimping																

For all further data and specifications, please refer to your printer's standard operator's manual or the operator's manual "Cutting Device".



11.2

Spare Parts and
Schematics

11.2.1

Mechanical
Components

Item	name	Part No	Stand.	Color	T2045 T2055	T2060 T2070	T2060-2T T2070-2T	Class	Qty.
1	Connection Cable	395 076						A	1
2	Controller PCB	395 077						A	1
3	Motor compl. incl. Gear	395 078						B	1
4	Housing (upper Part)	395 079						B	1
5	Drive Belt	395 080						B	2
6	Toothed Wheel compl. with Flat Spring and Axle	395 081							
7	Friction Shaft with Roller	395 082						B	1
9	Switch	395 083						C	1
10	Frame Ground Connector Assy*	047 428						B	1
11	Paper Stacker (-Support)	053 493						B	2
12	Foil	395 166						A	1
13	Lip Holder Metal	395 568						B	1
14	Housing Toothed Wheel	395 597						B	1
15	Finger Foil	397 825						A	1

* contains:

Wedge Insert M4x9.5

Flat Plug 6,3

Screw M4x10

11.2.2

Maintenance and
Adjustments

No preventive maintenance has to be performed. No adjustments need to be done.

Motoren mit Schneckenradgetriebe

DC motors with worm gear

Moto-réducteurs à vis sans fin

Baureihe/Series/Série

0223 (SWMP)

Technische Beschreibung

Das Motorgehäuse und das rückseitige Lagerschild bestehen aus sendzimirverzinktem Stahlblech, die Schalenmagnete aus Sintermetall und das Getriebegehäuse aus Zinkdruckguß. Die Ankerwelle (mit aufgewalzter oder gefräster Schnecke) ist motorseitig in einem Sintermetall-Gleitlager, getriebeseitig im Boden des Getriebegehäuses entweder in einem Kugellager oder ebenfalls in einem Sintermetall-Gleitlager gelagert. Das Axialspiel kann mit einer Justierschraube eingestellt werden. Aus Kunststoff oder Hartgewebe ist das Schneckenrad gefertigt, das in einem Sintermetall-Gleitlager montiert ist.

Das mit Fett gefüllte Getriebegehäuse wird mit einem Stahlblechdeckel über eine Dichtung verschlossen.

Der elektrische Anschluß erfolgt über Litzen oder Flachstecker.

Verwendung: Allgemeiner Maschinenbau, Automaten, Landwirtschaftstechnik, Büromaschinen, Laborgeräte, Medizinische Geräte, Verkehrs- und Kommunikationstechnik, Foto/Optik.

Schutzart: IP 20

Gewicht: ca. 0,71 kg.

Technical Description

The motor casing and the rear motor bearing plate consist of Sendzimir-galvanized sheet steel, the shell magnets are made of sintered metal material and the gearbox is a zinc die-casting. The armature shaft (with rolled-on or cut worm) has a sintered metal bush bearing on the motor side, and the gear side bearing, mounted in the bottom of the gearbox, is either a ball bearing or also a sintered metal bush bearing.

The end play of the armature is set by means of an adjusting screw.

The worm wheel is made of plastic or resinbonded fabric and the shaft runs in a sintered metal bush bearing.

The grease-filled gearbox is sealed by means of a sheet steel cover and gasket.

Electrical connection is carried out by means of leads or spade terminals.

Use: General machine construction, automatic machines, agricultural technology, business machines, laboratory appliances, medical appliances, traffic and communications technology, photographic/optical equipment.

Protection: IP 20

Weight: approx. 0.71 kg.

Description technique

Le carter cylindrique du moteur et le disque de support de palier arrière sont en tôle d'acier galvanisée par procédé Sendzimir, les aimants en forme de coquille sont réalisés en Baryum-ferrite et le carter du réducteur est réalisé en zamak.

L'arbre de l'induit, dont l'extrémité comporte une vis sans fin, repose côté face arrière du moteur sur un palier lisse en métal fritté et côté réducteur sur un roulement à billes ou également sur un palier lisse. Le jeu axial de arbre induit est réglé par l'intermédiaire d'une vis d'ajustage.

La roue de vis sans fin est réalisée en matière plastique ou en fibre de résine et l'arbre de sortie repose sur des paliers lisses en métal fritté. Le carter du réducteur est rempli de graisse et est fermé par un couvercle en tôle dont l'étanchéité est assurée par un joint.

Le branchement électrique est effectué à partir de fils multibrins ou de fiches plates.

Applications: Constructions générales de machines, automates, machines agricoles, machines de bureau, appareils de laboratoire, appareils médicaux, techniques de communication et de transports, photographie et optique.

Degré de protection: IP 20

Poids: env. 0,71 kg.

Motoren mit Schneckenradgetriebe

DC motors with worm gear

Moto-réducteurs à vis sans fin

Baureihe/Series/Série

0223 (SWMP)

Bild
Figure
Figure

A

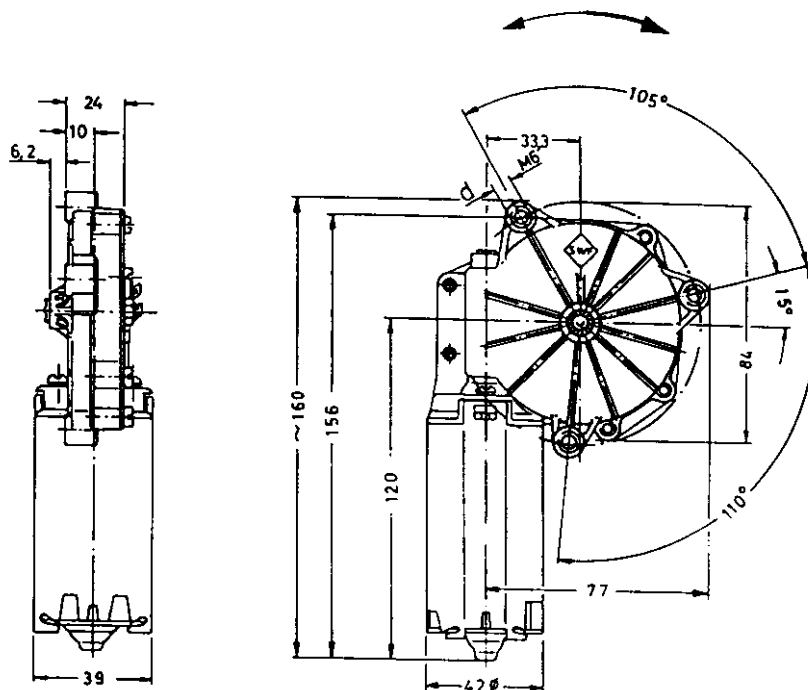


Bild
Figure
Figure

B

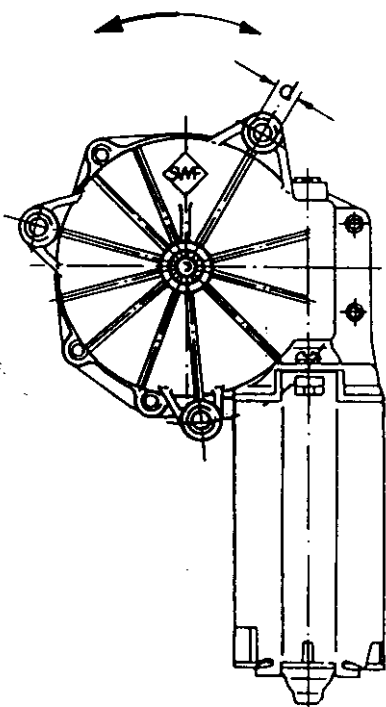
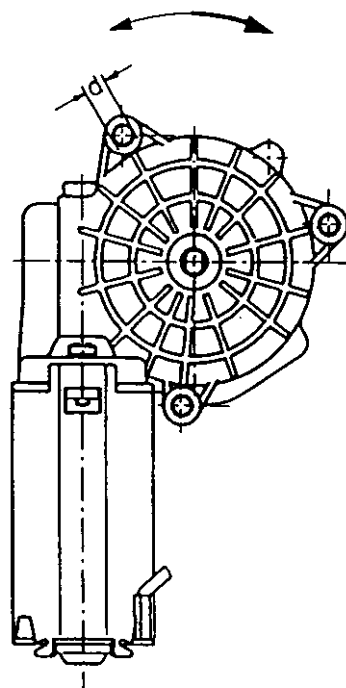


Bild
Figure
Figure

C



Motoren mit Schneckenradgetriebe

DC motors with worm gear

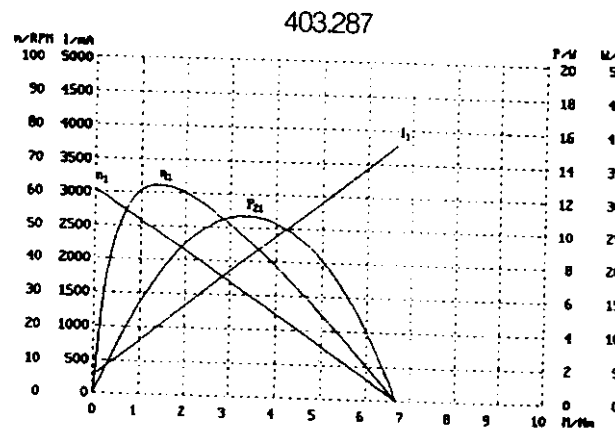
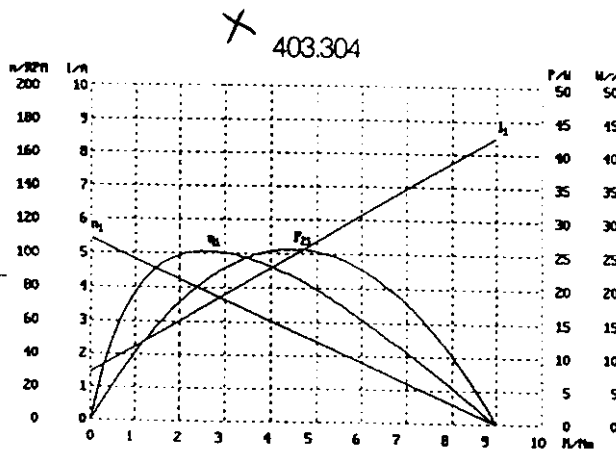
Moto-réducteurs à vis sans fin

Baureihe/Series/Série

0223 (SWMP)

Typ Type Type	Zeichnung / Drawing / Design	Nennspannung Rated voltage Tension nominale	Leertalldrehzahl No-load speed Régime au ralenti	Nennmoment Nominal torque at output shaft Couple nominal sur l'arbre entraîné	Anzugsmoment an der Abtriebswelle Starting torque at driven shaft Couple de traction sur l'arbre	Getriebeübersetzung Gear ratio Démultiplication	Selbsthemmung, bis ... Nm Self-locking, up to ... Nm Autoblocage jusqu'à ... Nm	Hochlaufzeit Acceleration time Temps de montée	Bremszeit, ohne/mit Kurzschlußbremse Deceleration time, without/with short-circuit brake Temps de freinage sans/avec frein à court-circuit	Anschlußwiderstand, 2/4 Lamellen Connection resistance, 2/4 lamellations Inductance de branchement 2/4 lamelles	Anschlußinduktivität, 2/4 Lamellen Connection inductance, 2/4 lamellations Inductivité de branchement 2/4 lamelles	Läuferträgheitsmoment Rotor inertia moment Couple inertiel du collecteur	Zahnradwerkstoff Gear material Matériau des pignons	Zusätzliche Abgriffsmöglichkeit Additional drive possibilities Accès supplémentaires possibles	Welle Shaft Arbre	Schaltbild Wiring diagram Schéma électrique	Anschlußart Connections Connexions	Bemerkungen Remarks Remarques
03 287	B	24	60	1.0	6	$\frac{83}{2}$	1.2	80	230 60	4.5 4.0	5.7 5.0	10	HGW	-	W 42	S 30	K 38	d = 7.1 mm Kugellager
403 304	B	24	110	1.3	7	$\frac{83}{2}$	0.3	70	300 60	3.3 2.8	2.8 2.5	10	KST	-	W 115	S 30	K 36	d = M6 Kugellager
											C 1.5 nF							
extern.											10 μ H							

Motorkennlinien für Ausführung ... / Motor curves for type ... / Caractéristiques moteur pour la version ...



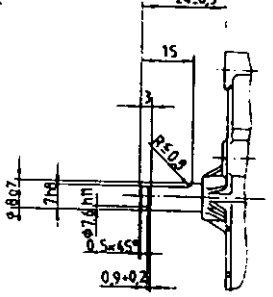
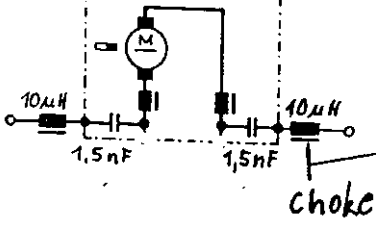
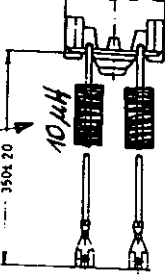
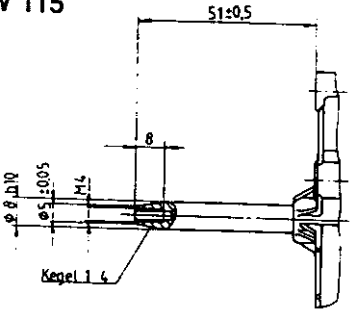
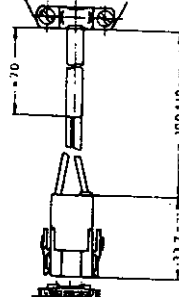
Motoren mit Schneckenradgetriebe

DC motors with worm gear

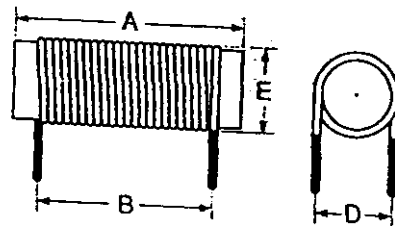
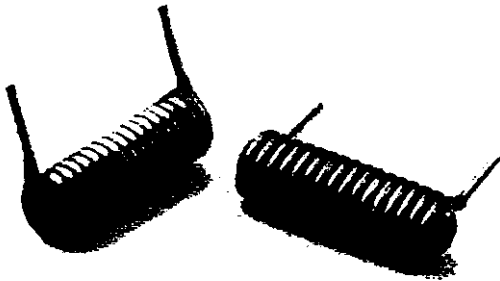
Moto-réducteurs à vis sans fin

Baureihe/Series/Série

0223 (SWMP)

Welle Shaft/Arbre	Schaltbild Wiring diagram/Schéma électrique	Anschlußart Connections / Connexions
W 42 	S 30 	K 36  Flachsteckhülsen 4.8 DIN 46.247
W 115 		K 38 
(vird jedoch bearbeitet)		

Stabkerndrosseln WE - SD Choke



Maß B und D nach Kundenwunsch

- Entstörung von Schaltnetzteilen, Motoren, Leistungsverstärker, unterbrechungsfreie Stromversorgungen...
- Ströme bis 14 A
- besonders geeignet für Anwendungen der Automobilindustrie

4

Artikel-Nr.	Induktivität (µH)	Stab E x A	Drahtdurch- messer	DC Widerstand (mΩ)	Nennstrom (A)
744 710 1	1,8	5 x 15	1,0	6,0	5
744 711 0	2,4	5 x 20	1,4	4,0	12
744 711 1	10,0	5 x 20	0,6	30,0	2
744 712 0	2,4	5 x 21	1,05	4,0	12
744 712 1	2,1	5 x 21	1,6	4,0	14
744 713 0	2,0	5 x 25	1,6	4,0	14
744 714 0	5,1	6 x 20	0,8	15,0	3
744 715 0	10,0	6 x 25	1,0	15,0	5
744 716 0	10,0	6 x 30	1,3	10,0	10

weitere kundenspezifische Ausführungen auf Anfrage

Tally Computerdrucker GmbH
D-89275 Elchingen
Germany
FCC ID: EUIT3016

EXHIBIT C

June 29, 1999
W. Boehm, Dept. TQV

Application for FCC Part 15, Subpart B, Class B Certification

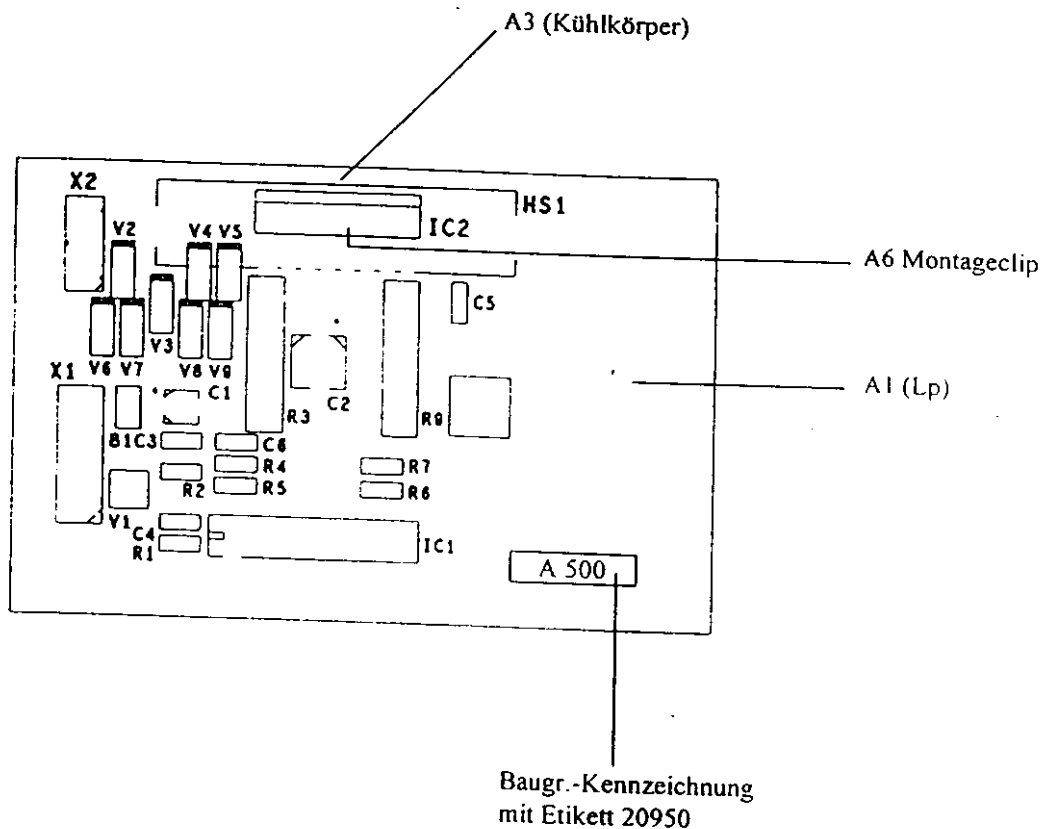
Matrix Printer Model T3016

Documentation of optional Assemblies

Scope:

Sheet:

- | | | |
|------|---|----------|
| 1. | Overview Drawing of optional Assemblies (numbered ① to ⑧)
Standard Dual Interface CENTRONICS / RS232 (①)
Circuit Diagram, Placement Sketch, Drawing, Parts List | 1
1-5 |
| 2. | Interface RS422 (②)
Circuit Diagram, Jumpers Table, Placement Sketch
Drawing, Layout and Parts List | 1-6 |
| 3. | Interface Serial 20mA (③)
Circuit Diagram, Placement Sketch
Drawing and Parts List | 1-4 |
| 4. | Sheet Feeder Motor Driver (④)
Circuit Diagram, Layout, Placement Sketch and Parts List | 1-2 |
| 5. | Paper Cutting Device (⑤)
Circuit Diagram, Motor Data Sheets, Placement Sketch and Parts List | 1-11 |
| 6. ● | 2 nd Tractor Motor Driver (⑥)
Circuit Diagram, Layout, Placement Sketch and Parts List | 1-4 |



47 556 -a-	47554 -a-	siehe AM	20052/3	-b-	03.02.97	Pe
47 556 -a-	47554 -a-	Layout Änderung	20052/1	-a-	14.11.96	Pe
47 556 --	47554 --	Einführung	20052/0	--	25.09.96	Pe
BG-Index	LP-Index	Anderungsgrund	Ander.-Nr.	Zch.-Ind.	Datum	Name
Tally GmbH Elchingen		Motorsteuerung 2. Traktor T2060	Zeichnungs-Nr.: 47 556 / 06			
			Bl.-Nr.: 1 Folgebl.: 2 Ersatz für :			
Schutzvermerk nach DIN 34 beachten						