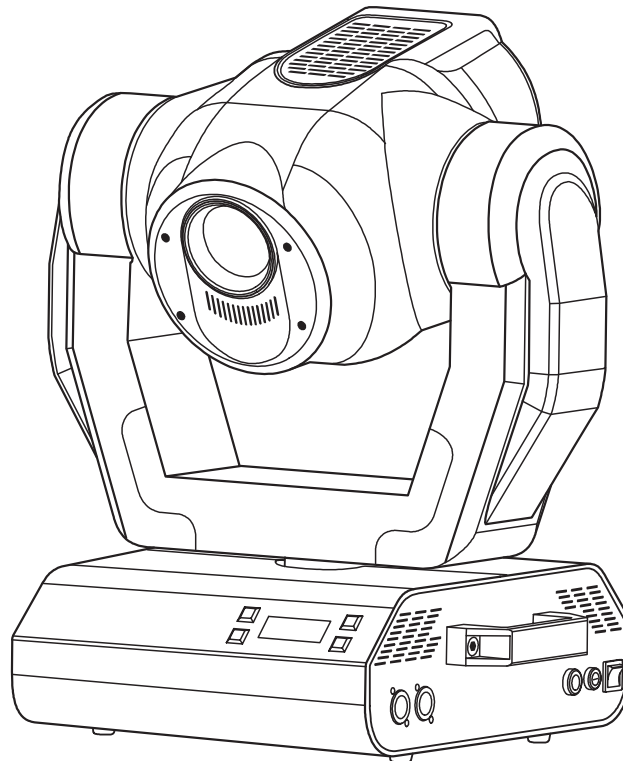
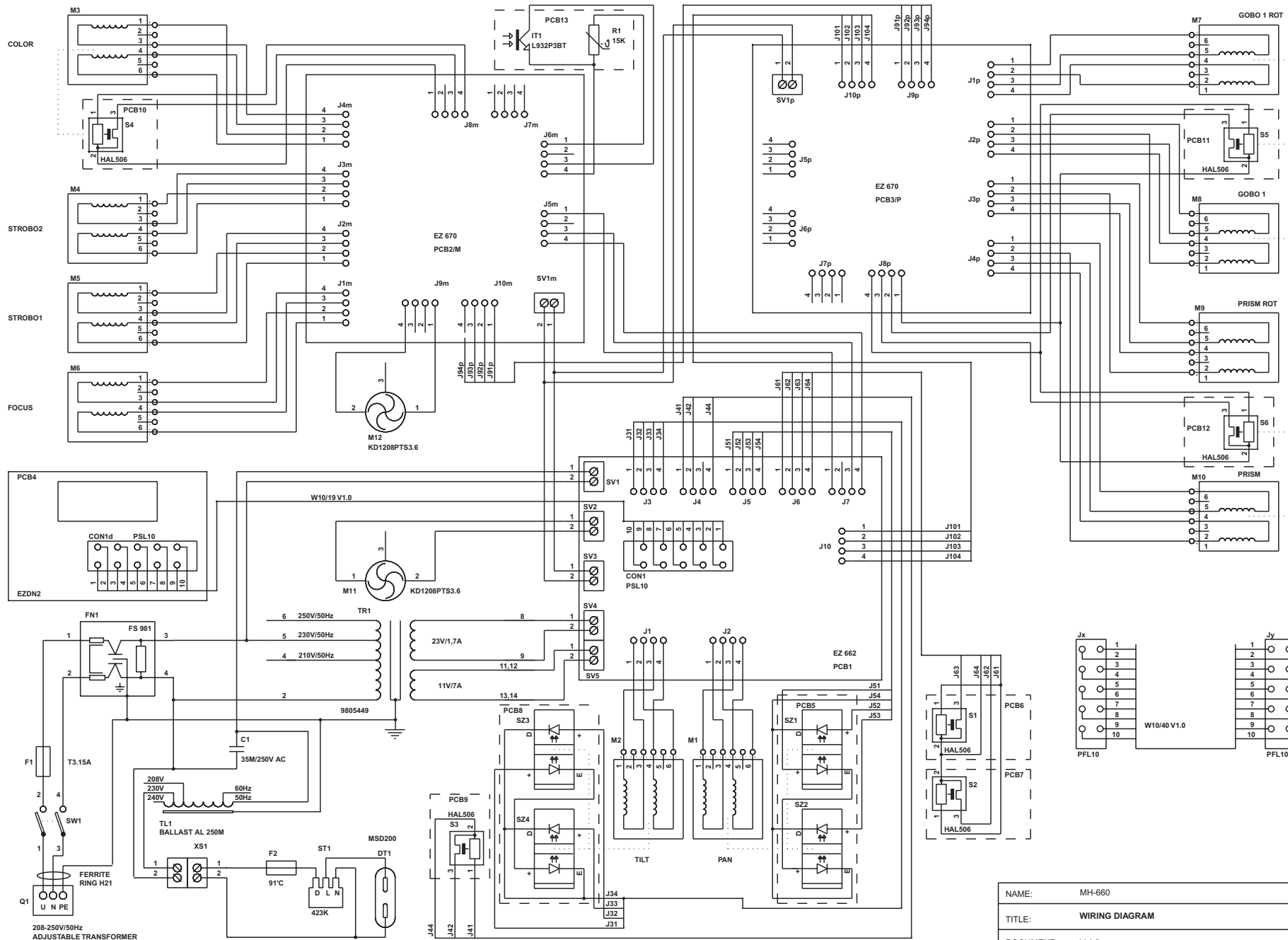


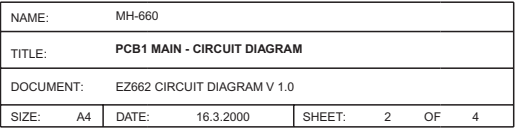
Service manual V 1.3

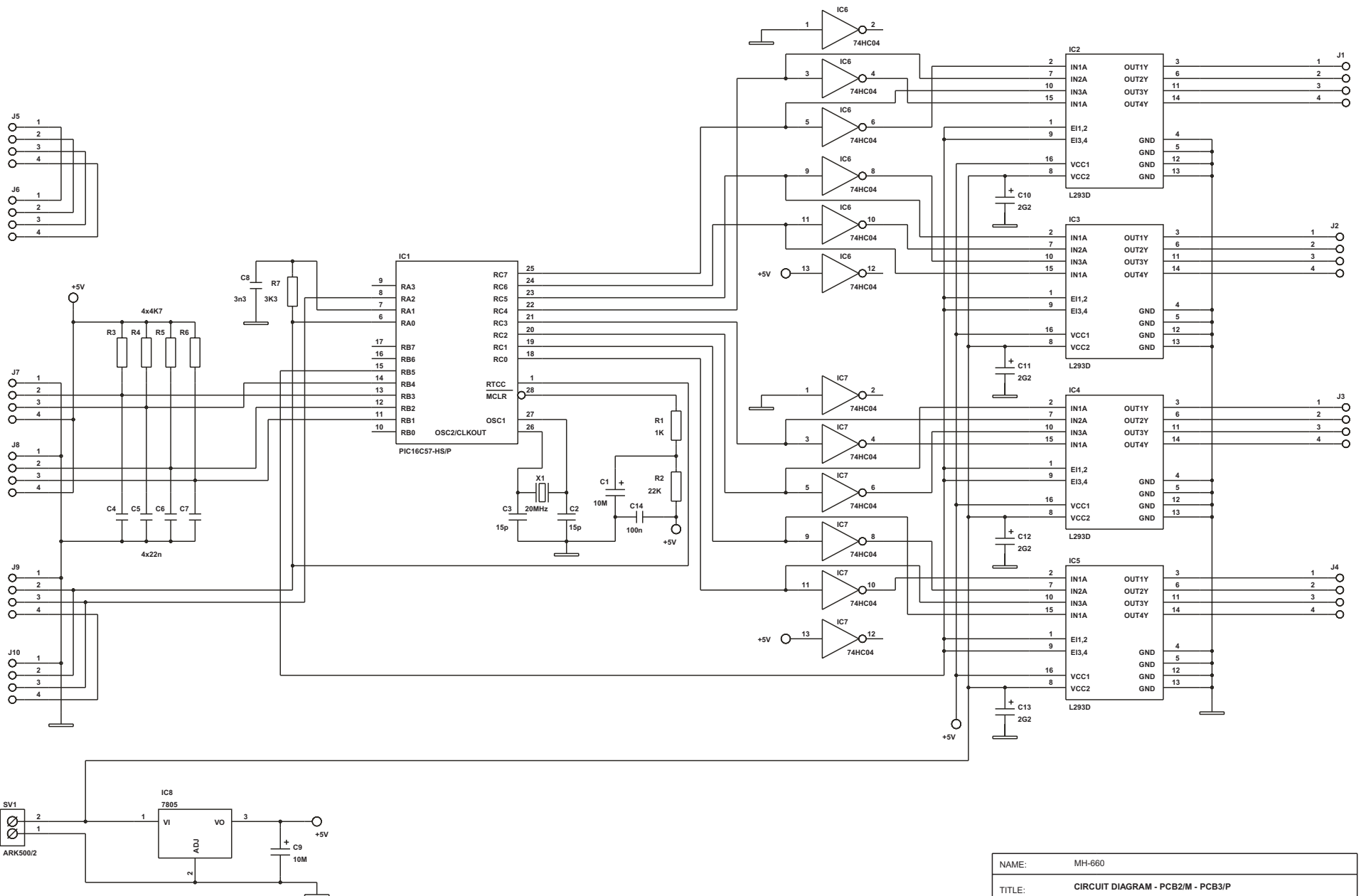


MH - 660 Spotlight



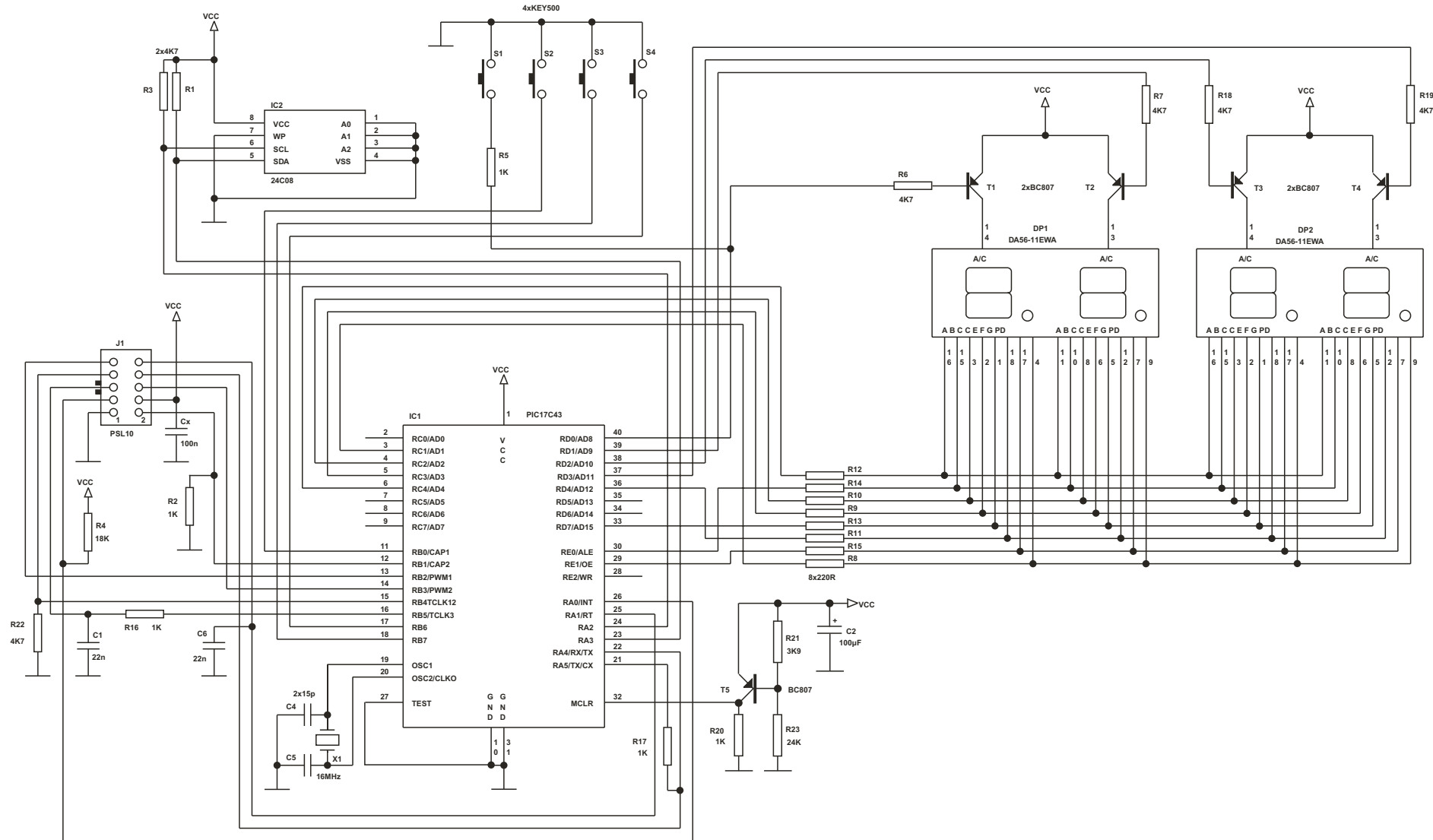
NAME:		MH-660	
TITLE:		WIRING DIAGRAM	
DOCUMENT:		V 1.2	
SIZE:	A4	DATE:	27.11.2000
SHEET:		1	OF 4



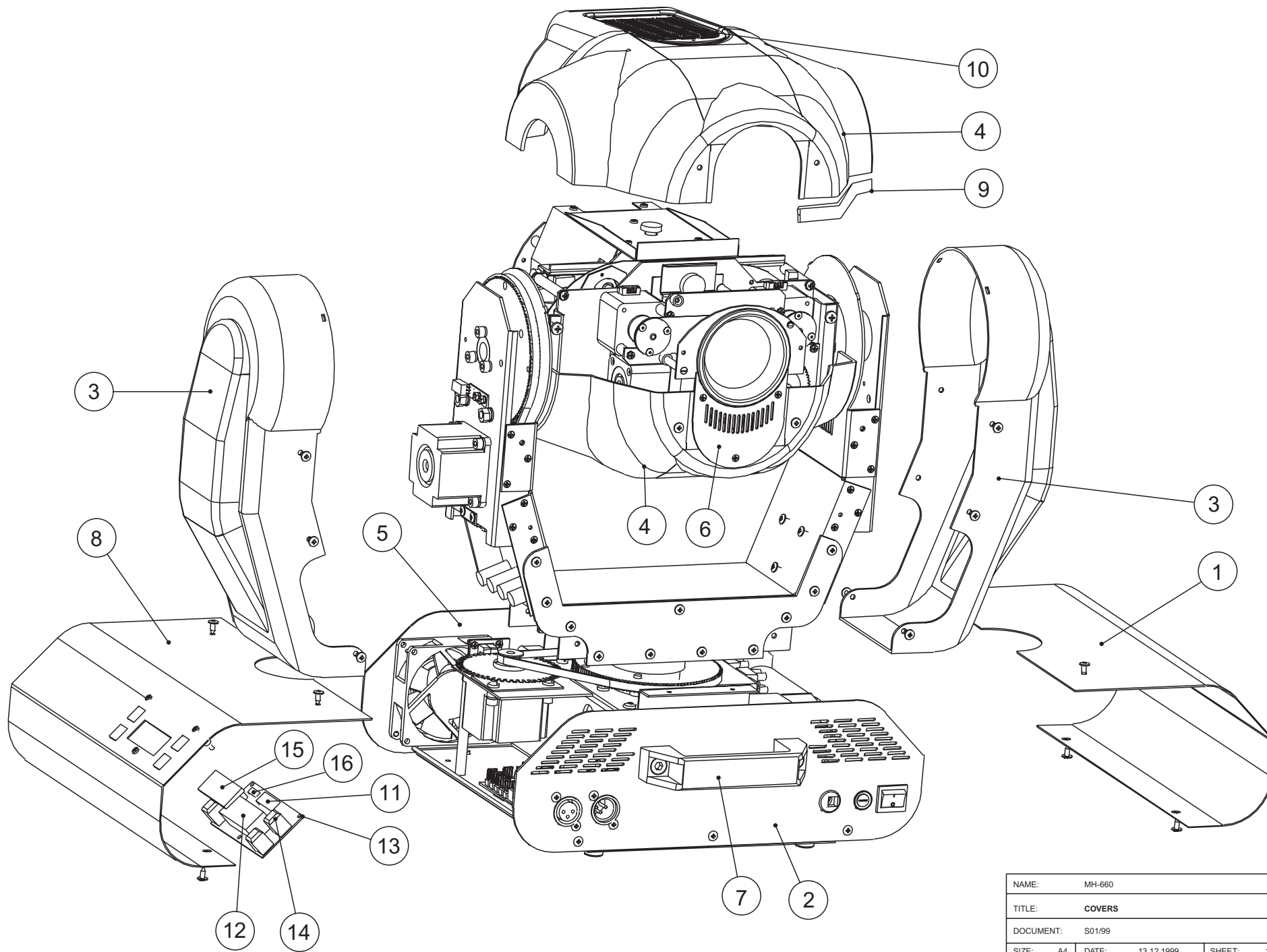


NAME:	MH-660		
TITLE:	CIRCUIT DIAGRAM - PCB2/M - PCB3/P		
DOCUMENT:	EZ670 CIRCUIT DIAGRAM V 1.0		
SIZE:	A4	DATE:	13.12.1999
SHEET:	3	OF	4

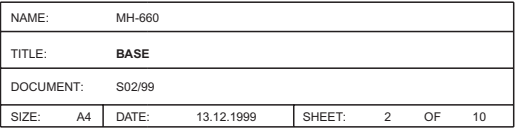
1. GND
2. DMX DIRECTION
3. LAMP SENSOR
4. VCC +5V
5. TERMISTOR 20 C=15k, 37 C=10k
6. INTERNAL DATA
7. LAMP ON/OFF
8. DMX DATA
9. FAN PWM OUT
10. 50Hz IN

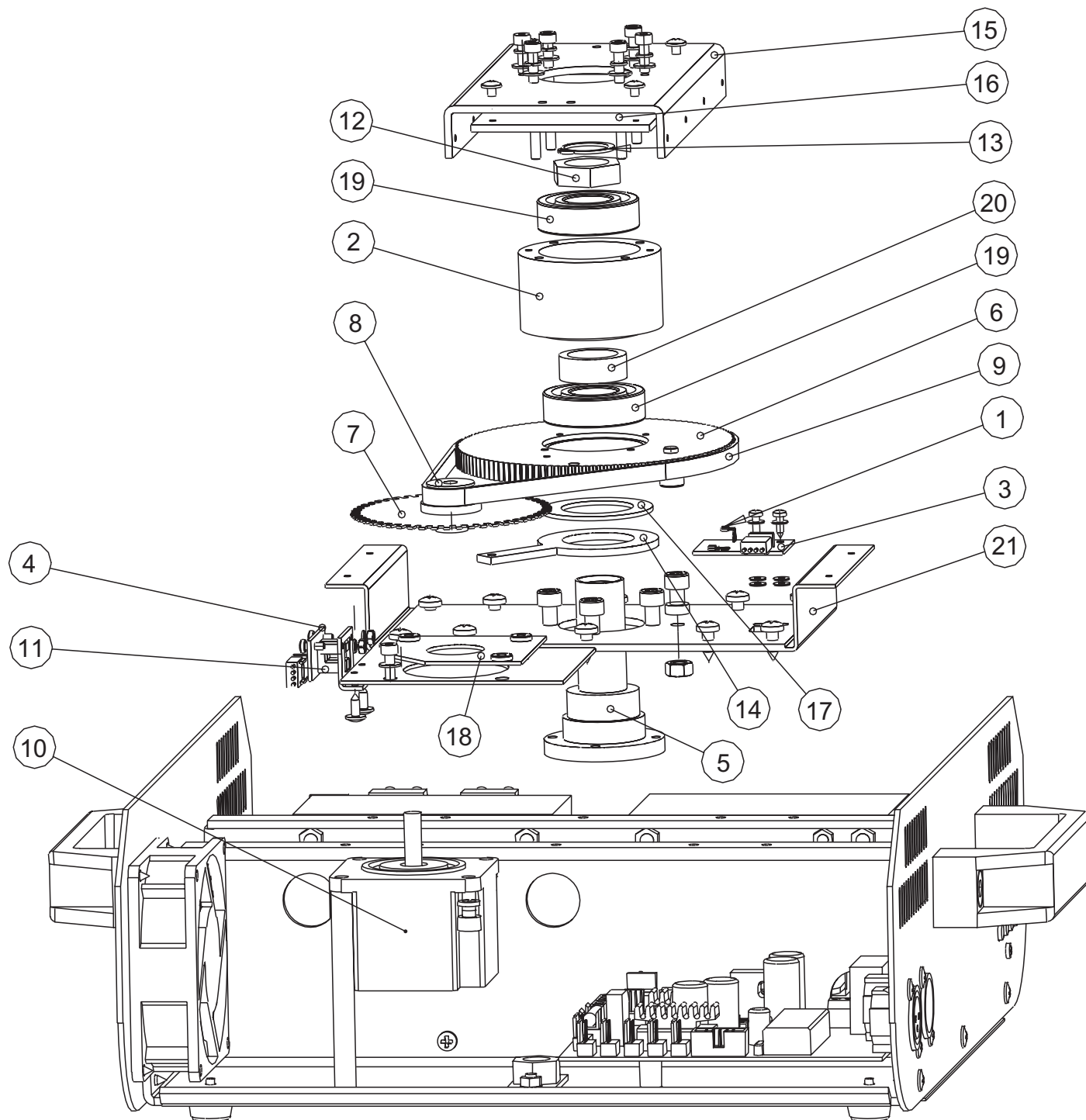


NAME:	MH-660		
TITLE:	PCB4 DISPLAY - CIRCUIT DIAGRAM		
DOCUMENT:	EZND2 CIRCUIT DIAGRAM V 1.0		
SIZE:	A4	DATE:	13.12.1999
SHEET:	4	OF	4

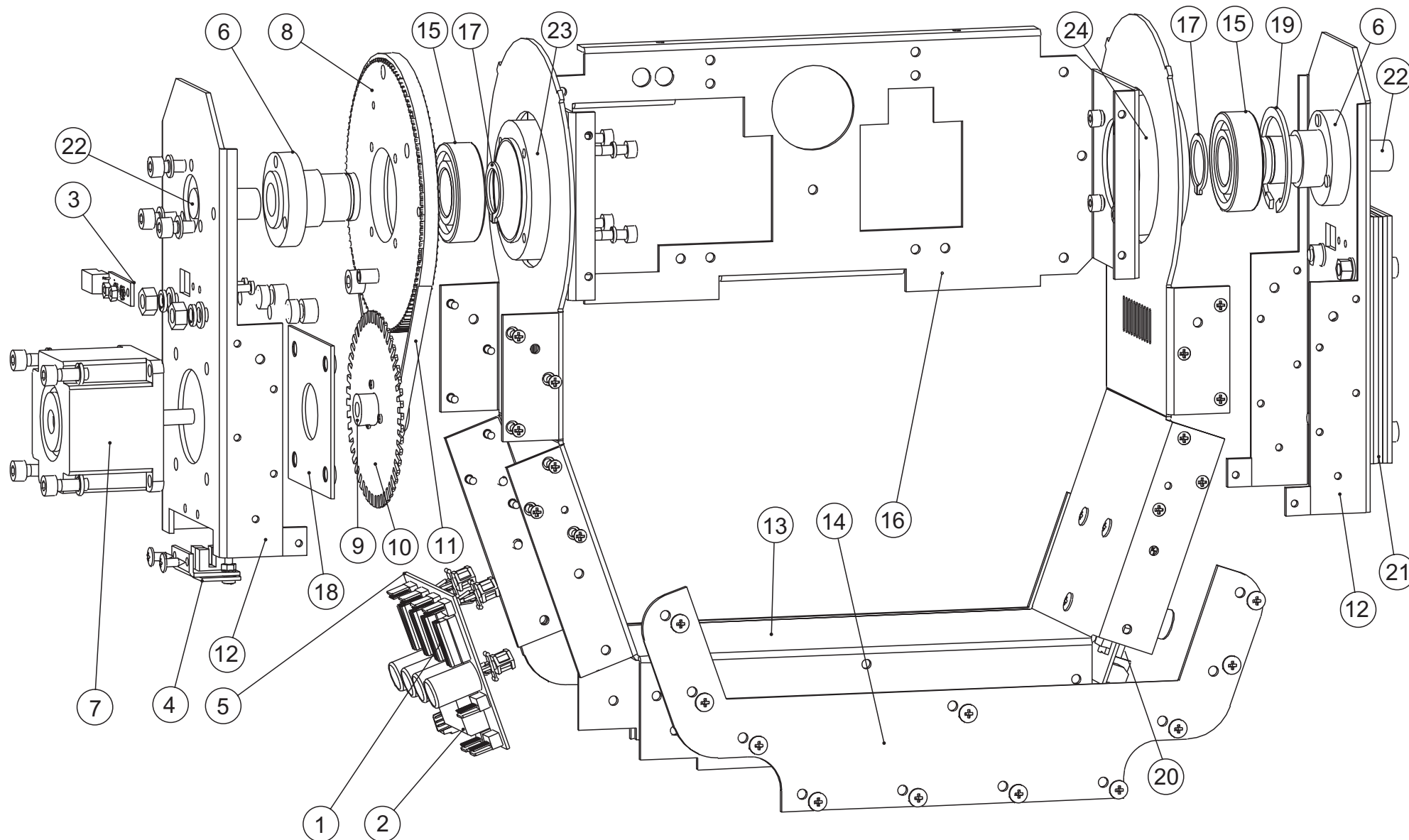


NAME:	MH-660			
TITLE:	COVERS			
DOCUMENT:	S01/99			
SIZE:	A4	DATE:	13.12.1999	SHEET: 1 OF 10

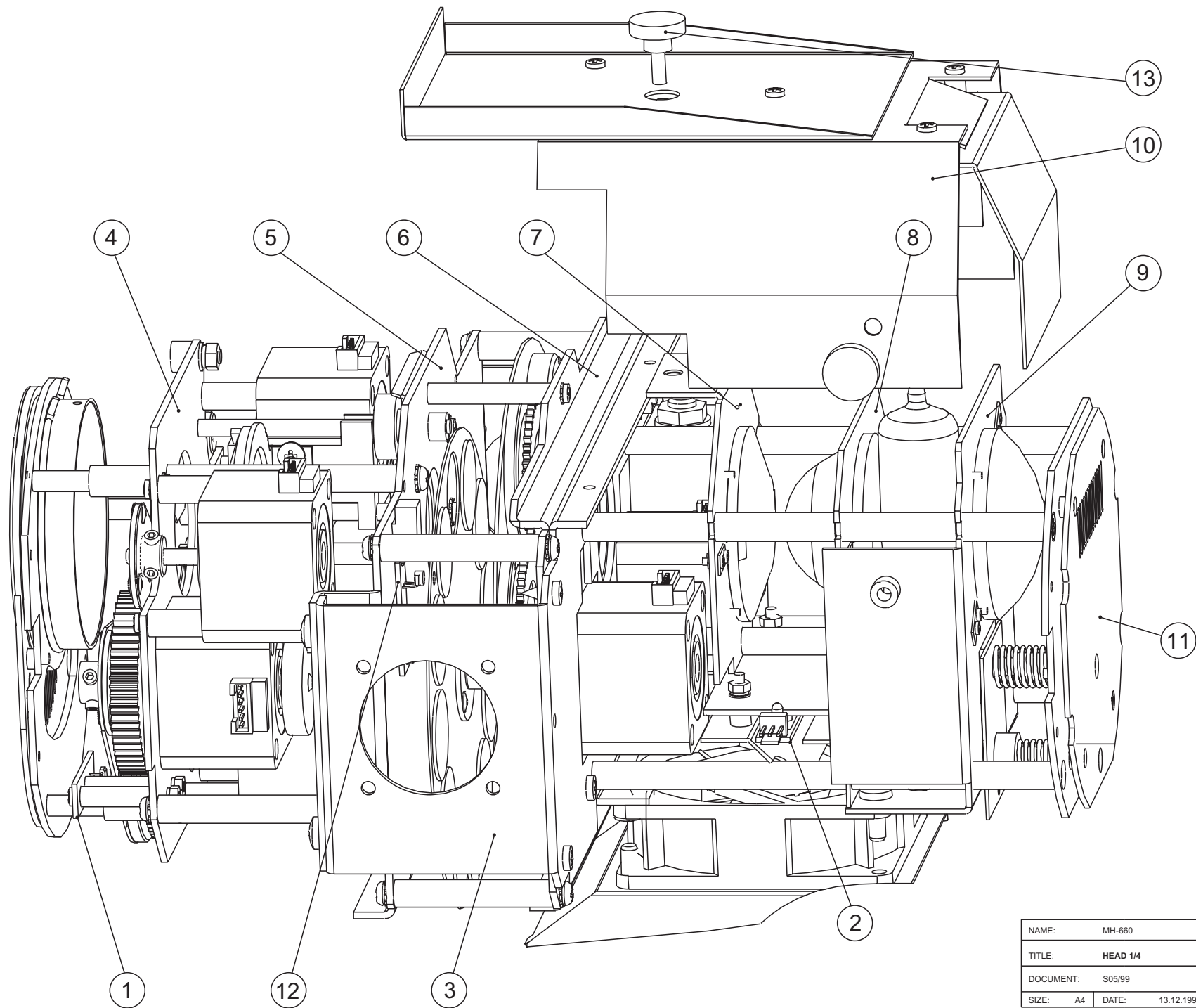




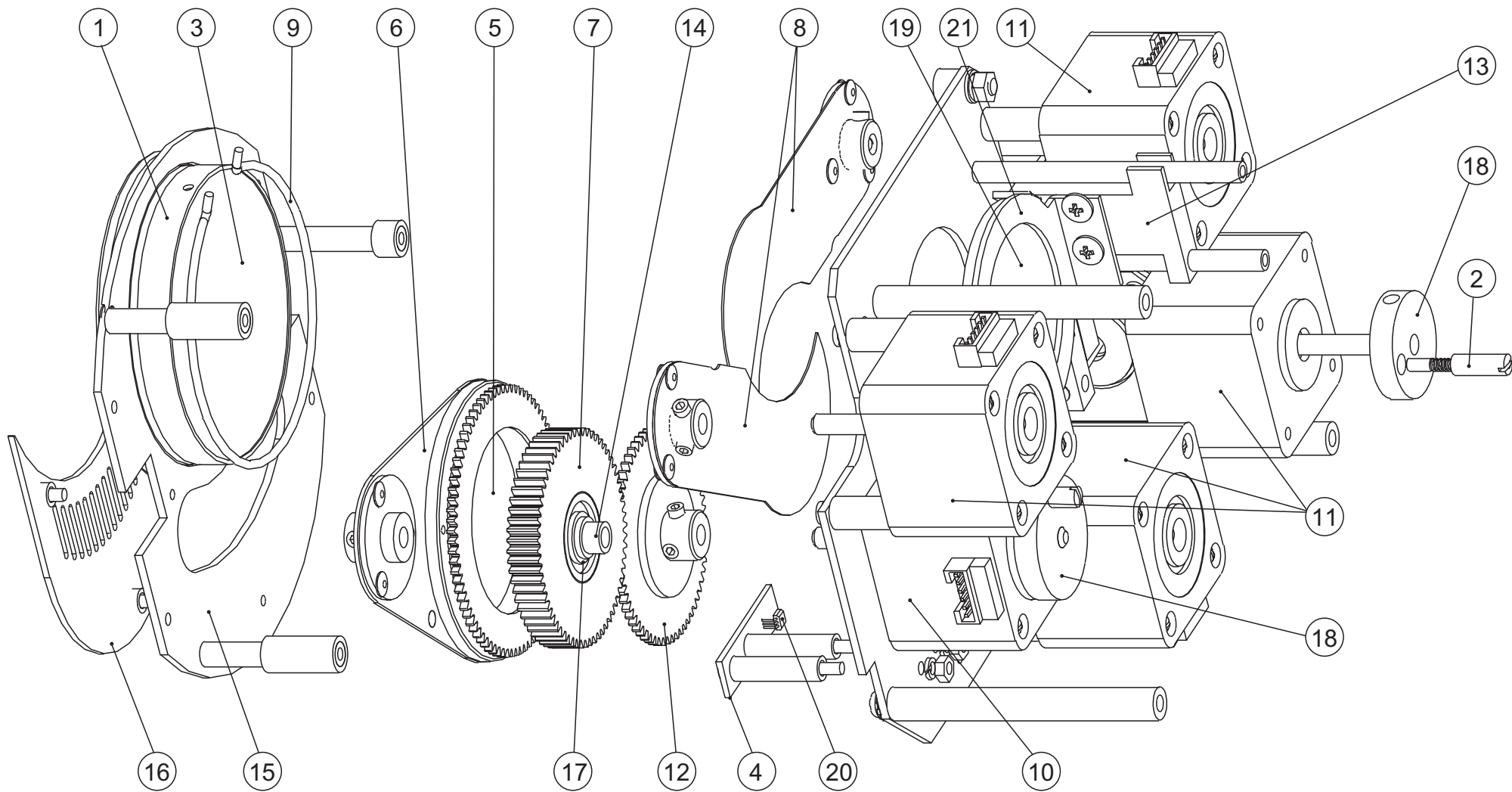
NAME:	MH-660			
TITLE:	AXE "X"			
DOCUMENT:	S03/99			
SIZE:	A4	DATE:	13.12.1999	SHEET: 3 OF 10



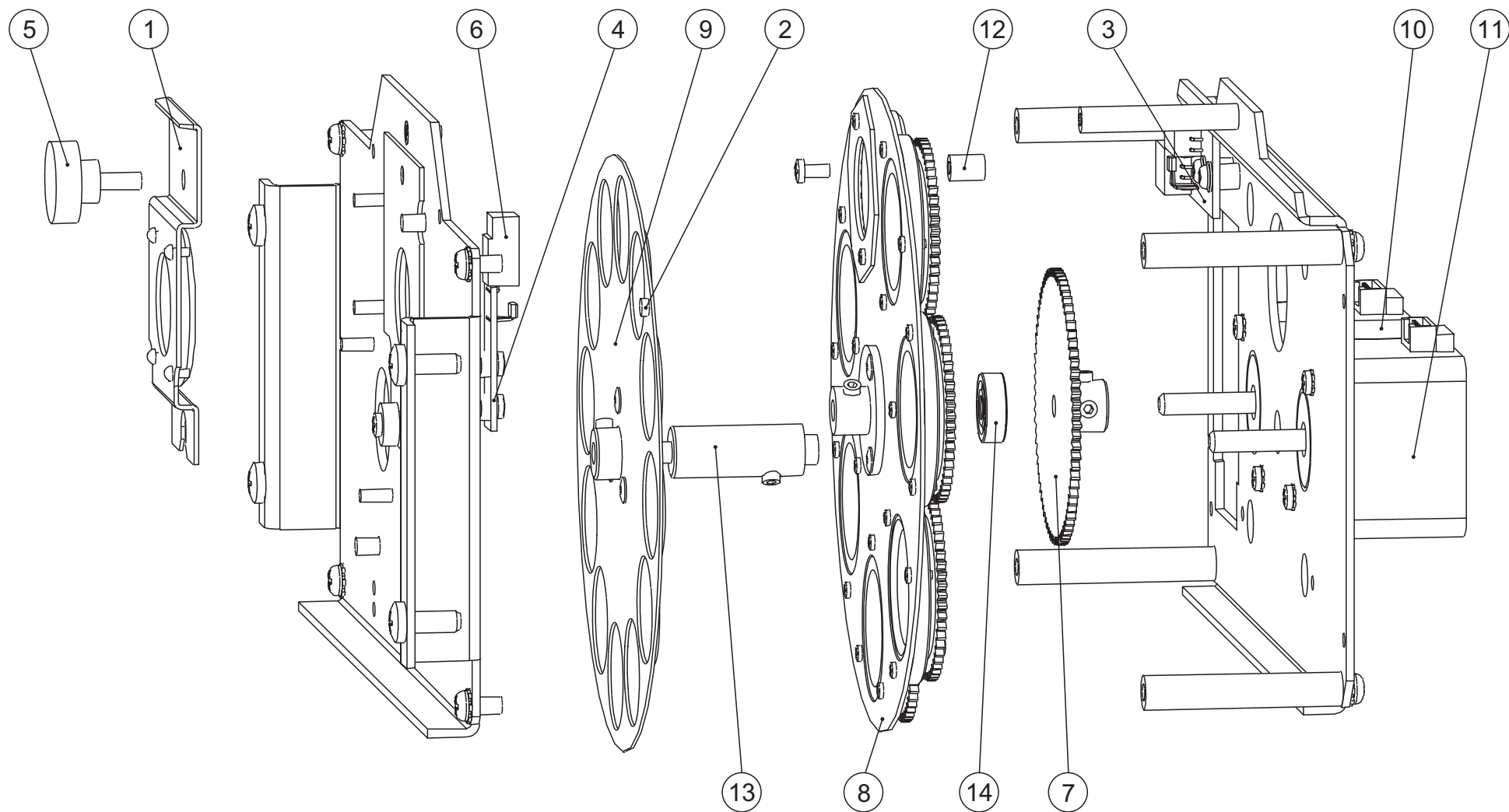
NAME:	MH-660			
TITLE:	ARM OF HEAD			
DOCUMENT:	S04/99			
SIZE:	A4	DATE:	13.12.1999	SHEET: 4 OF 10



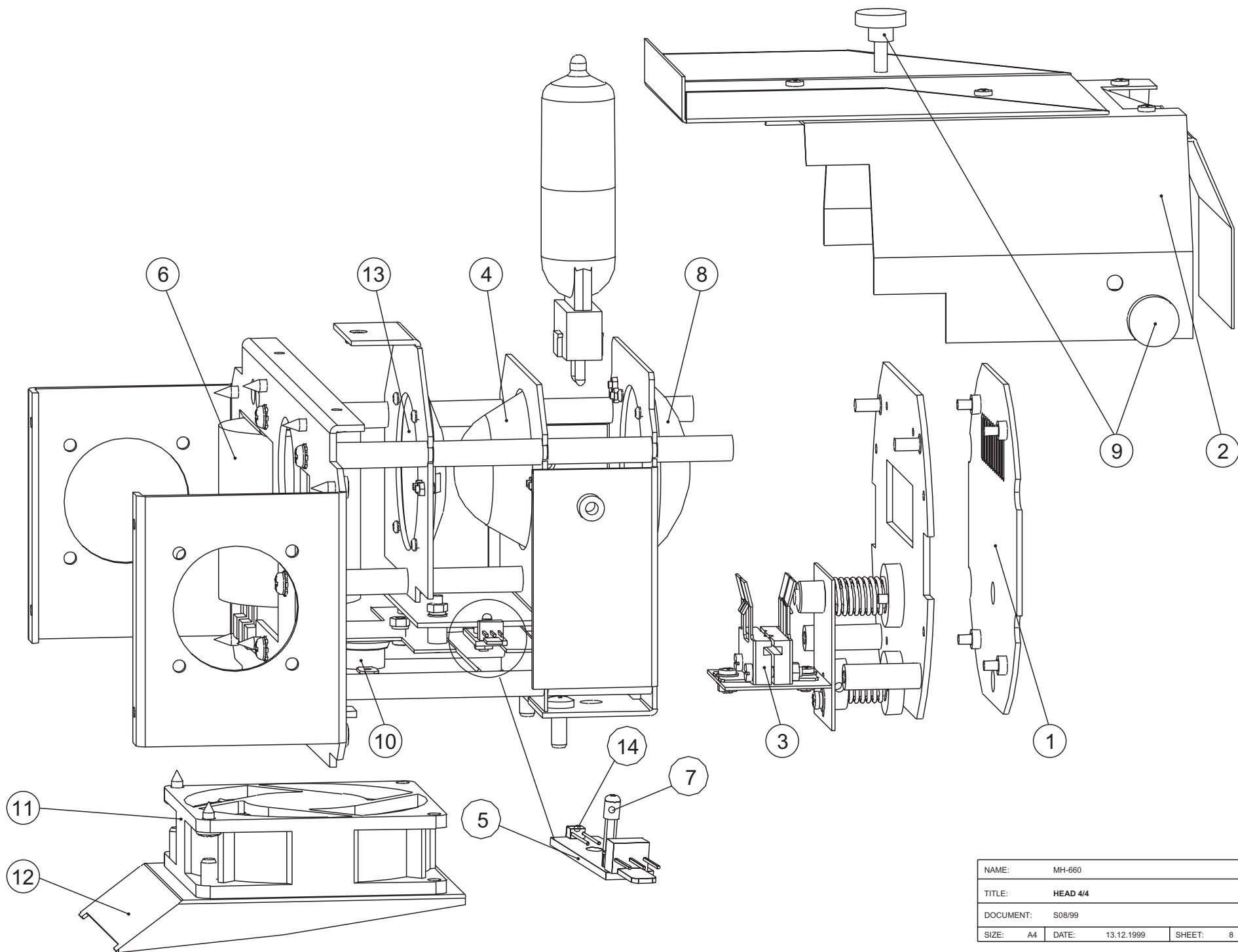
NAME:	MH-660				
TITLE:	HEAD 1/4				
DOCUMENT:	S05/99				
SIZE:	A4	DATE:	13.12.1999	SHEET:	5 OF 10



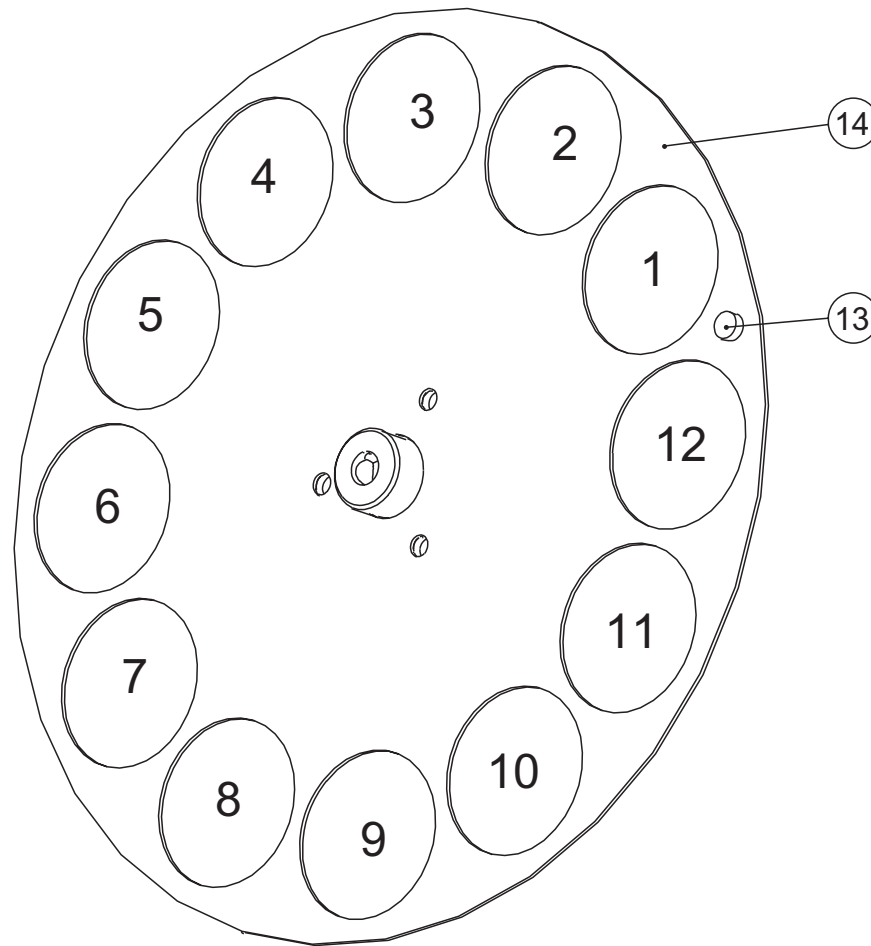
NAME:	MH-660				
TITLE:	HEAD 2/4				
DOCUMENT:	S06/99				
SIZE:	A4	DATE:	13.12.1999	SHEET:	6 OF 10



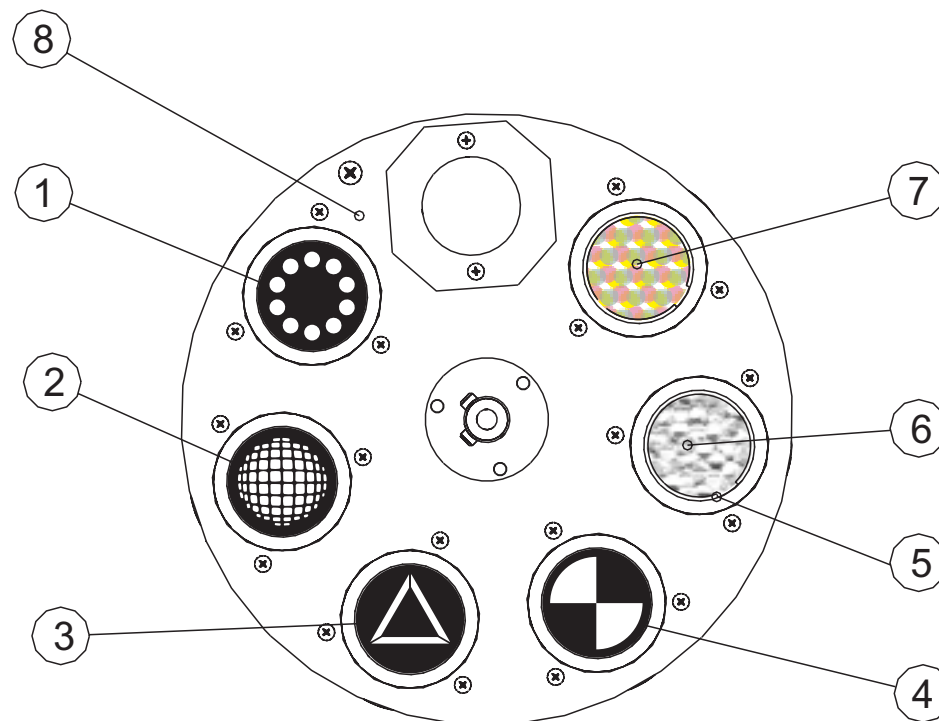
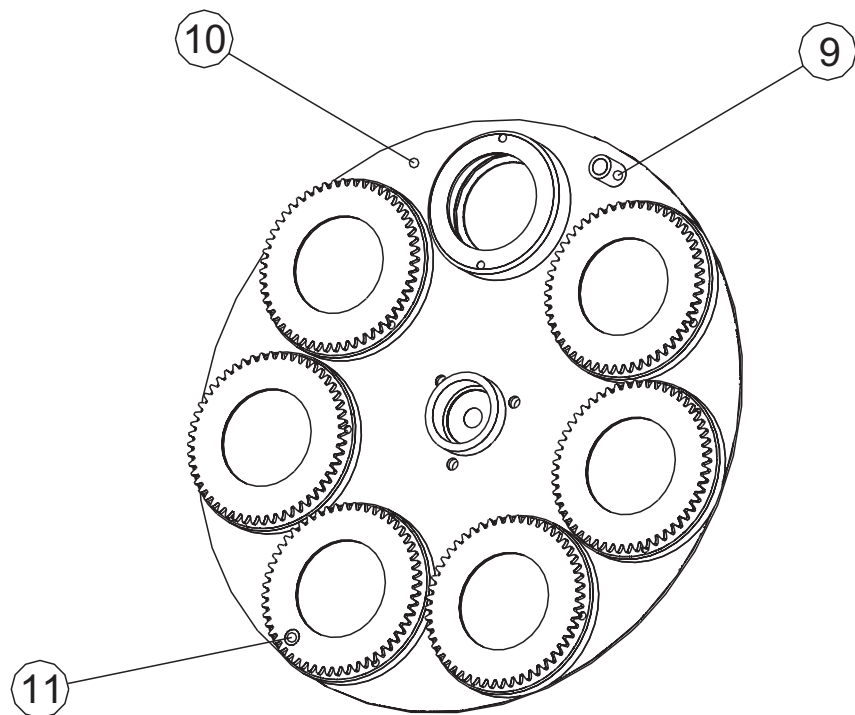
NAME:		MH-660		
TITLE:		HEAD 3/4		
DOCUMENT:		S07/99		
SIZE:	A4	DATE:	13.12.1999	SHEET: 7 OF 10



NAME:	MH-660			
TITLE:	HEAD 4/4			
DOCUMENT:	S08/99			
SIZE:	A4	DATE:	13.12.1999	SHEET: 8 OF 10



NAME:		MH-660		
TITLE:		COLOURWHEEL		
DOCUMENT:		S09/99		
SIZE:	A4	DATE:	13.12.1999	SHEET: 9 OF 10



NAME:	MH-660		
TITLE:	GOBOWHEEL		
DOCUMENT:	S10/99		
SIZE:	A4	DATE:	13.12.1999
SHEET:	10	OF	10

No.	Designation - German	Designation - English	Designation - French	Designation - Spanish	Sheet/Pos.
E3123697	Seitenabdeckung für Base MH-660 (links)	Base cover for MH-660 (left)	Base couvercle pour MH-660 (à gauche)	Base cubierta para MH-660 (a la izquierda)	1/1
		Grill of plastic-cover			1/10
		IC PIC 17C43 16/P MH-660 DS V 1.4/IC1			1/11
		Display 7-segment DA56-11EWA			1/12
		PCB4 Display MH-660 EZND2 V 3.0			1/13
E3123625	Taster für Display MH-660	Contact switch for display MH-660	Bouton poussoir pour display MH-660	Pulsador para display MH-660	1/14
		Plexiglass f. display			1/15
13040059		IC EEPROM 24C08 MH-660/E V 1.0/IC2			1/16
		Cover front "3"			1/2
E3123692	Armabdeckung für MH-660	Cover of arm for MH-660	Couvercle de bras pour MH-660	Cubierta de brazo para MH-660	1/3
E3123690	Gehäusedeckel für MH-660 (Projektorkopf)	Housing-lid for MH-660 (head)	Couvercle de boîtier p.MH-660 (tête)	Tapa de caja p. MH-660 (cabeza)	1/4
		Cover rear "3"			1/5
E3123696	Seitenabdeckung für Base MH-660 (rechts)	Base cover for MH-660 (right)	Base couvercle pour MH-660 (à droit)	Base cubierta para MH-660 (al la derecha)	1/8
E3123691	Gummidichtung für MH-660 (Satz)	Rubbergasket for MH-660 (set)	Joint en caoutchouc pour MH-660 (set)	Junta de goma para MH-660 (set)	1/9
E3123678	Drossel für MH-660	Ballast for MH-660	Ballast pour MH-660	Reactor para MH-660	2/1
E3123617	IC PBL-3772 für MH-660	IC PBL-3772 for MH-660	IC PBL-3772 pour MH-660	IC PBL-3772 para MH-660	2/10
E3123620	Platine für MH-660	PCB for MH-660	Platine pour MH-660	Platina para MH-660	2/12
E3123023	XLR-Einbaustecker (für SC-740/-780 Scan)	XLR-Connector male (for SC-740/-780 Scan)	Fiche encastrable XLR (pour SC-740/-780)	Clavija incorporado XLR (p.SC-740/-780)	2/13
		Transistor IRFZ 44N			2/14
		Plug male PCB PAW-2,54-04			2/15
		Rubber base GF2			2/17
E3123629	Netzschalter für MH-660	Powerswitch for MH-660	Interrupteur ON/OFF pour MH-660	Interruptor de alimentación para MH-660	2/18
E3123022	XLR-Einbaubuchse (für SC-740/-780)	XLR mounting-socket (for SC-740/-780)	Douille XLR encastrable (p.SC-740/780)	Casquillo XLR incorporado (p.SC-740/-780)	2/19
E3123676	Kondensator für MH-660	Capacitor for MH-660	Condensateur for MH-660	Condensador para MH-660	2/2
		Terminal 2 pole CZN 5/2, PCB			2/20
		Terminal 3 pole CZN 5/3, PCB			2/21
		Toothwheel D115,6			2/22,3/6,4/8
E3123677	Trafo für MH-660	Transformer for MH-660	Transformateur pour MH-660	Transformador para MH-660	2/23
11010252		Stiffener cover of base			2/25
		Grip-black			2/3,1/7
		Grill of fan 80x80 mm black			2/4
		Fuse socket SILO12			2/6
		Fuse socket PCB			2/7
E3123610	IC PIC 17-C-43-16/P für MH-660	IC PIC 17-C-43-16/P for MH-660	IC PIC 17-C-43-16/P pour MH-660	IC PIC 17-C-43-16/P para MH-660	2/8
		Relay Type 40.61 16A/250V			2/9
E3123619	Magnetsensor für MH-660	Hall sensor magnet for MH-660	Senseur magnetique pour MH-660	Sensor magnético para MH-660	3/1,6/20
E3123621	Lichtschranke für MH-660	Light-sensor for MH-660	Senseur de lumière pour MH-660	Sensor de luz para MH-660	3/11,2/14
		Nut axes "X"			3/12
		Movement-stop "X"			3/14
		Holder axes "X"			3/15
		Stiffener of holder axes "X"			3/16
		Ring-plastic "X"			3/17
E3123699	Halteblech für Achse MH-660	Holder for axle MH-660	Support pour axe MH-660	Soporte para eje MH-660	3/19
		Holder ball-bearing			3/2
		PCB MAG-6 version "A"			3/3
		Pivot "Y"			3/5
		Toothwheel D25			3/8,4/9
E3123660	Zahnriemen für Kopfbewegung MH-660 (PAN)	Toothed-belt f.head-movement MH-660 (PAN)	Courroie dentée p.movement de tête (PAN)	Correa dentada p.movimien. de cabeza (PAN)	3/9

No.	Designation - German	Designation - English	Designation - French	Designation - Spanish	Sheet/Pos.
E3121008	IC L-293-D	IC L-293-D	IC L-293-D	IC L-293-D	4/1
		Toothwheel D83			4/10,3/7
E3123661	Zahnriemen für Kopfbewegung MH-660 (TILT)	Toothed-belt f.head-movement MH-660 (TILT)	Courroie dentée p.movem. de tête (TILT)	Correa dentada p.movimien.de cabeza (TILT)	4/11
E3123693	Halterung für Steppermotor TILT MH-660	Holder for Steppermotor TILT MH-660	Support pour moteur TILT MH-660	Soporte para motor TILT MH-660	4/12
		Arm of head			4/13
		Stiffener arm of head			4/14
		Bearing 6004 2ZR			4/15
E3123694	Montageplatte für Steppermotoren MH-660	Holder of head main for MH-660	Support pour moteur pour MH-660	Soporte para motor para MH-660	4/16,5/3
		Lock ring axes "X"			4/17,3/13
		Fixation steppermotor "Y" axe			4/18
		Lock ring No..40			4/19
E3123616	IC PIC 16-C-57-HS/P für MH-660 IC1-M	IC PIC 16-C-57-HS/P for MH-660 IC1-M	IC PIC 16-C-57-HS/P pour MH-660 IC1-M	IC PIC 16-C-57-HS/P para MH-660 IC1-M	4/2
		PCB MHO			4/4,2/11,3/4
E3123622	Platine für MH-660 Bedieneinheit	PCB for MH-660 remote control	Platine pour MH-660 télécommande	Platina para MH-660 teled medida	4/5
		Pivot "X"			4/6
E3123650	Steppermotor für Kopfbewegung MH-660	Steppermotor for head-movement MH-660	Moteur pas à pas p.movement de tête MH660	Motor paso a paso p.movimiento de cabeza	4/7,3/10
		Cover lamp-adjustment "2"			5/11,8/1
		Thermistor 15k NTC			5/2
		Module prism "1"			5/4
		Module gobo-static "1"			5/5
		Module color "1"			5/6
		Module condensor "1"			5/7
		Module aspherical "1"			5/8
		Module reflector "1"			5/9
13030072		PCB MAG-4 version "C"			5/12
13050051		Thermistor 15k NTC			5/13, 5/2
		Holder objectiv lens D70 "2"			6/1
		Toothwheel plastic D52			6/12
		Spacer of focus "2"			6/13
		Spacer ball bearing			6/14
		Holder of objective			6/15
		Cover of plastic			6/16,1/6
		Holder damper device D26/1			6/17
		Holder damper device D30/1			6/18
E3123632	Linse für Fokus MH-660	Focus lens for MH-660	Lentille de foyer pour MH-660	Lente de foco para MH-660	6/19
		Damper device			6/2
		Bearing 625 2ZR			6/21
E3123633	Objektivlinse für MH-660	Objective-lens for MH-660	Objectif pour MH-660	Objetivo para MH-660	6/3
		Prism lens D47/3			6/5
		Yoke Prism complet			6/6
		Toothwheel rubber D52			6/7
E3123639	Shutter für MH-660	Shutter for MH-660	Shutter pour MH-660	Shutter para MH-660	6/8
		Spring objective-lock "1"			6/9
		Lens wide-angle complet unit			7/1
		Steppermotor 17PM-KO11-03V/ (2Axis)			7/10,6/10
		Steppermotor 17PM-KO11-04V			7/11,6/11
		Spacer Steppermotor-Wheel			7/13
		Bearing 608 2ZR			7/14

No.	Designation - German	Designation - English	Designation - French	Designation - Spanish	Sheet/Pos.
		Plug male PCB PAWR 2,54/03			7/15,2/16
		PCB MAG-5			7/3
		PCB MAG-4			7/4,6/4,5/1,4/3
		Screw M4x6 knurled metall			7/5,8/9
		Rotating-wheel f. Gobo-wheel "1"			7/6
E3123649	Zahnrad für Gaborotation MH-660	Gearwheel for gaborotation MH-660	Roue dentée pour rotation de gobo MH-660	Rueda dentada p. rotación de gobo MH-660	7/7
		Thermostat 90 °C			8/10
E3123670	Lüfter für MH-660	Cooling fan for MH-660	Ventilateur pour MH-660	Ventilator para MH-660	8/11,2/5
		Cover of fan			8/12
E3123631	Linse 2te für MH-660	Second lens for MH-660	Lentille seconde pour MH-660	Lente segunda para MH-660	8/13
		Cover lamp-optics			8/2,5/10
E3123674	Socket für MH-660	Lampsocket for MH-660	Douille pour MH-660	Casquillo para MH-660	8/3
E3123630	Linse 1te für MH-660	First lens for MH-660	1ière lentille pour MH-660	1a lente para MH-660	8/4
		PCB CNG-4			8/5
E3123675	Starter für MH-660	Ignitor for MH-660	Starter pour MH-660	Encendedor para MH-660	8/6
E3123626	Photodiode für MH-660	Photodiode for MH-660	Photodiode pour MH-660	Fotodiode para MH-660	8/7
E3123634	Reflektor für MH-660	Reflector for MH-660	Réfecteur pour MH-660	Reflector para MH-660	8/8
E3123689	Dichro (orange) für MH-660	Dichroic-filter (orange) for MH-660	Filtre dichroïque (orange) p. MH-660	Filtro dicroico (naranja) p. MH-660	9/1
E3123685	Dichro (grün) für MH-660	Dichroic-filter (green) for MH-660	Filtre dichroïque (vert) p. MH-660	Filtro dicroico (verde) p. MH-660	9/10
E3123686	Dichro (pink) für MH-660	Dichroic-filter (pink) for MH-660	Filtre dichroïque (rose) p. MH-660	Filtro dicroico (rosa) p. MH-660	9/11
E3123688	Dichro (dunkelblau) für MH-660	Dichroic-filter (dark-blue) for MH-660	Filtre dichroïque (bleu-foncé) p. MH-660	Filtro dicroico (azul oscuro) p. MH-660	9/12
		Magnet D4/2,4mm			9/13,7/2
E3123641	Farbrad für MH-660	Colorwheel for MH-660	Roue des couleurs pour MH-660	Rueda de colores para MH-660	9/14,7/9
E3123679	Dichro (dunkelgrün) für MH-660	Dichroic-filter (dark green) for MH-660	Filtre dichroïque (vert foncé) p. MH-660	Filtro dicroico (verde oscuro) p. MH-660	9/3
E3123680	Dichro (rot) für MH-660	Dichroic-filter (red) for MH-660	Filtre dichroïque (rouge) p. MH-660	Filtro dicroico (rojo) p. MH-660	9/4
E3123687	Dichro (cyan) für MH-660	Dichroic-filter (cyan) for MH-660	Filtre dichroïque (cyan) p. MH-660	Filtro dicroico (cyan) p. MH-660	9/5
E3123681	Dichro (hellgrün) für MH-660	Dichroic-filter (lightgreen) for MH-660	Filtre dichroïque (vert clair) p. MH-660	Filtro dicroico (verde claro) p. MH-660	9/6
E3123682	Dichro (magenta) für MH-660	Dichroic-filter (magenta) for MH-660	Filtre dichroïque (magenta) p. MH-660	Filtro dicroico (magenta) p. MH-660	9/7
E3123683	Dichro (blau) für MH-660	Dichroic-filter (blue) for MH-660	Filtre dichroïque (bleu) p. MH-660	Filtro dicroico (azul) p. MH-660	9/8
E3123684	Dichro (gelb) für MH-660	Dichroic-filter (yellow) for MH-660	Filtre dichroïque (jaune) p. MH-660	Filtro dicroico (amarillo) p. MH-660	9/9
E3123647	Gobo Nr.6 für MH-660	Gobo No.6 for MH-660	Gobo No.6 pour MH-660	Gobo No.6 para MH-660	10/1
E3123646	Gobo Nr.5 für MH-660	Gobo No.5 for MH-660	Gobo No.5 pour MH-660	Gobo No.5 para MH-660	10/2
E3123645	Gobo Nr.4 für MH-660	Gobo No.4 for MH-660	Gobo No.4 pour MH-660	Gobo No.4 para MH-660	10/3
E3123644	Gobo Nr.3 für MH-660	Gobo No.3 for MH-660	Gobo No.3 pour MH-660	Gobo No.3 para MH-660	10/4
E3123643	Gobo Nr.2 für MH-660	Gobo No.2 for MH-660	Gobo No.2 pour MH-660	Gobo No.2 para MH-660	10/5
E3123642	Gobo Nr.1 für MH-660	Gobo No.1 for MH-660	Gobo No.1 pour MH-660	Gobo No.1 para MH-660	10/6
E3123640	Goborat für MH-660	Gobowheel for MH-660	Roue des gobos pour MH-660	Rueda de gobos para MH-660	10/7,7/8
		Rotating-wheel f. Gobo-wheel with magnet "1"			10/8
		Spacer of magnet "1"			10/9,7/12
		Fuse T 1,6A			
		Fuse T 3,15A			
		Fuse T 6.3A			
		IC 24C08 EEPROM MH-660/E V 1.0/IC2			
		IC 74HC04 SMD			
		IC 7805 voltage regulator D2Pack			
		IC PBM 3962 SMD			
E3123615	IC PIC 16-C-57-HS/P für MH-660 IC1-P	IC PIC 16-C-57-HS/P for MH-660 IC1-P	IC PIC 16-C-57-HS/P pour MH-660 IC1-P	IC PIC 16-C-57-HS/P para MH-660 IC1-P	
		IC SN 75176 SMD			

No.	Designation - German	Designation - English	Designation - French	Designation - Spanish	Sheet/Pos.
		Lens narrow-angle complet unit			
		Line cord FLEXO 3x1/1.5m			
		Optional gobo-set			
		PCB3/P MH-660 EZ670			
		Plug female PCB PXH-2,54-03			
		Plug female PCB PXH-2,54-04			
		Plug male PCB PAWR 2,54/04			
		Rectifier KBL 06 vertical			
E3123648	Klemmring für rotierendes Gobo MH-660	Clamp ring for rotating gobo MH-660	Anneau de serrage p.gobo rotat. MH-660	Anillo opresor p.gobo girator. MH-660	
		Wheel Color "3" without Dichro-filters			
		Wheel Gobo R "3" without Gobos			
51836236	Linse 18° für MH-660	Lens 18° for MH-660	Lentille 18° pour MH-660	Lente 18° para MH-660	
51836910	Linse 12° für MH-660	Lens 12° for MH-660	Lentille 12° pour MH-660	Lente de 12° para MH-660	
E3123698	Bodenplatte für Base MH-660	Base-cover for Base-unit MH-660	Base couvercle pour base MH-660	Base cubierta para base MH-660	
E3123618	IC PIC 17C43-16/P DS V1.2/IC1 für MH-660	IC PIC 17C43-16/P DS V1.2/IC1 for MH-660	IC PIC 17C43-16/P DS V1.2/IC1 p. MH-660	IC PIC 17C43-16/P DS V1.2/IC1 p. MH-660	
E3123624	Quarz 16MHz für MH-660	Quarz 16MHz for MH-660	Quarz 16MHz pour MH-660	Quarz 16MHz para MH-660	
E3123627	IC PIC 17C43-16/P DS V1.5/IC1 für MH-660	IC PIC 17C43-16/P DS V1.5/IC1 for MH-660	IC PIC 17C43-16/P DS V1.5/IC1 p. MH-660	IC PIC 17C43-16/P DS V1.5/IC1 p. MH-660	
E3123695	Kabelbaum (230V) für MH-660	Cable harness (230V) for MH-660	Harnais de câbles (230V) pour MH-660	Arnés de cables (230V) para MH-660	
E3123611	IC PIC 17C43-16/P für MH-660 V1.6/IC1	IC PIC 17C43-16/P for MH-660 V1.6/IC1	IC PIC 17C43-16/P pour MH-660 V1.6/IC1	IC PIC 17C43-16/P para MH-660 V1.6/IC1	
E6502045	Schaltplan für MH-660	Circuit diagram for MH-660	Schema de connexions pour MH-660	Esquema cableado para MH-660	