

# TRISK

## North American Curemaster with Temperature Control

### SERVICE MANUAL

**E214dt, E310dt & E516dt**

**IF IN ANY DOUBT CONTACT:**  
**EDWIN TRISK LIMITED.**

**MASTER**  
FORM FM444  
ISSUE 2 (VALID FROM 29/11/05)  
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# IMPORTANT

**PLEASE READ THESE INSTRUCTIONS THOROUGHLY BEFORE COMMENCING ASSEMBLY OR OPERATION OF THE UNIT. FAILURE TO DO SO COULD RESULT IN DAMAGE OR INJURY FOR WHICH EDWIN TRISK LIMITED WILL ACCEPT NO RESPONSIBILITY OR LIABILITY.**

THIS EQUIPMENT MUST BE EARTHED.

REMOVE PACKING PIECES FROM CASSETTE HEADS BEFORE USE.

THIS UNIT MUST NOT BE USED IN A SPRAY BOOTH WHERE THERE IS A POTENTIALLY FLAMMABLE ATMOSPHERE UNTIL EXTRACTION OF ANY FLAMMABLE VAPOUR IS COMPLETE. WE ALSO ADVISE CONTINUED EXTRACTION DURING CURE.

DO NOT MOVE THE UNIT AROUND USING THE MAINS CABLE.

DO NOT MOVE THIS UNIT DURING OPERATION AS THIS MAY LEAD TO PREMATURE EMITTER FAILURE

A SUITABLY FUSE MUST BE USED TO PROTECT THE UNIT.

THE UNIT SHOULD ONLY BE USED TO CURE PAINT OR PRIMER APPLIED TO METALLIC PANELS.

DO NOT POINT THE UNIT AT PERSONNEL OR EASILY FLAMMABLE SUBSTANCES.

ISOLATE MAINS SUPPLY BEFORE REMOVING COVERS.

ISOLATE THE MAINS SUPPLY BEFORE REMOVING COVERS.

THE SUPPORT ARM EXTENDS FIERCELY WHEN CASSETTE ASSEMBLY IS NOT FITTED.

IN CASE OF DAMAGE TO THE SUPPLY CORD, IT MUST NOT BE REPLACED BY THE USER AND INSTEAD QUALIFIED PERSONNEL SHOULD BE CONTACTED.

TAKE CAUTION WHEN OPERATING MECHANICAL COMPONENTS – ENSURE THAT ALL BODY PARTS (THE USERS OR OTHERWISE) ARE FREE FROM WITHIN OPERATIONAL AREAS TO AVOID ENTRAPMENT.

THIS MANUAL (ISSUE 01) IS ONLY INTENDED FOR THE ASSEMBLY AND OPERATION, OR THE SERVICING OF THE MODELS MENTIONED ON THE FIRST PAGE.

THIS MANUAL IS AN UNCONTROLLED DOCUMENT. TRISK RESERVE THE RIGHT TO UPDATE UNIT SPECIFICATIONS WITHOUT PRIOR NOTICE OR CONSULTATION.

PLEASE READ THE RELEVANT REPAIR PROCEDURE THOROUGHLY AT LEAST ONCE BEFORE COMMENCING ANY SERVICING OPERATION.

SERVICING OPERATIONS SHOULD ONLY BE CARRIED OUT BY QUALIFIED PERSONNEL WHO MUST USE TRISK APPROVED COMPONENTS.

**IF IN ANY DOUBT ABOUT ASSEMBLY, OPERATION OR SERVICING OF THE UNIT, PLEASE DO NOT HESITATE TO CONTACT YOUR DISTRIBUTOR OR THE TRISK SERVICE DEPARTMENT.**

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# **1. INTRODUCTION**

This manual is intended to aid the servicing of the TRISK branded products listed on the cover. Servicing operations should only be carried out by qualified service personnel, who must use TRISK approved components. Although every effort has been made to ensure that the following information is accurate, it is only intended to help service personnel rather than direct them in their every step. It is vitally important that any problems encountered when servicing units are referred to your importer or Edwin Trisk Ltd.

PLEASE NOTE THAT WHEN SERVICING THE UNIT, REFER TO SECTION 5 - FAULT FINDING GUIDE, BEFORE COMMENCING ANY REPAIR PROCEDURE.

## **1.1. SERVICING TOOLS**

The following tools are the minimum required to service the range of products listed on the front cover:

No. Required Description

1	Round, Parallel Tipped 3mm, Screwdriver
1	Round, Parallel Tipped 5mm, Screwdriver
1	Round, Supadrive No. 1, Screwdriver
2	19mm Combination Spanners
2	17mm Combination Spanners
1	Hand Drill
1	Drill 3mm diameter
1	Combination Pliers
1	Wire Strippers / Cutters
1	Allen Key (6mm AF)
1	Crimp Tool for Crimping Red, Blue and Yellow Insulated Crimp Connections
1	Hand Rivet Gun with nozzle for 3mm rivets.
1	Heyco Hand-pliers

## **2. TECHNICAL SPECIFICATIONS**

All units use quartz, tungsten filament, ruby sleeved Infra-Red Emitters.

### **2.1. CUREMASTER SUPER digital ETS2dt (E214dt)**

Rated Voltage:	220-240V, 60Hz, 1 phase
Power Consumption (nominal):	3 emitters, full power: 3300W
Heating Elements:	3 quartz, tungsten filament, ruby sleeved Infrared Emitters
Area of Cover:	100cm x 80cm / 39" X 31"
Dimensions:	(Width) 66cm / 27", (Height) 164cm / 66", (Length) 150cm / 60"
Weight:	50Kg / 110lbs

### **2.2. CUREMASTER ULTRA digital ETS3dt (E310dt)**

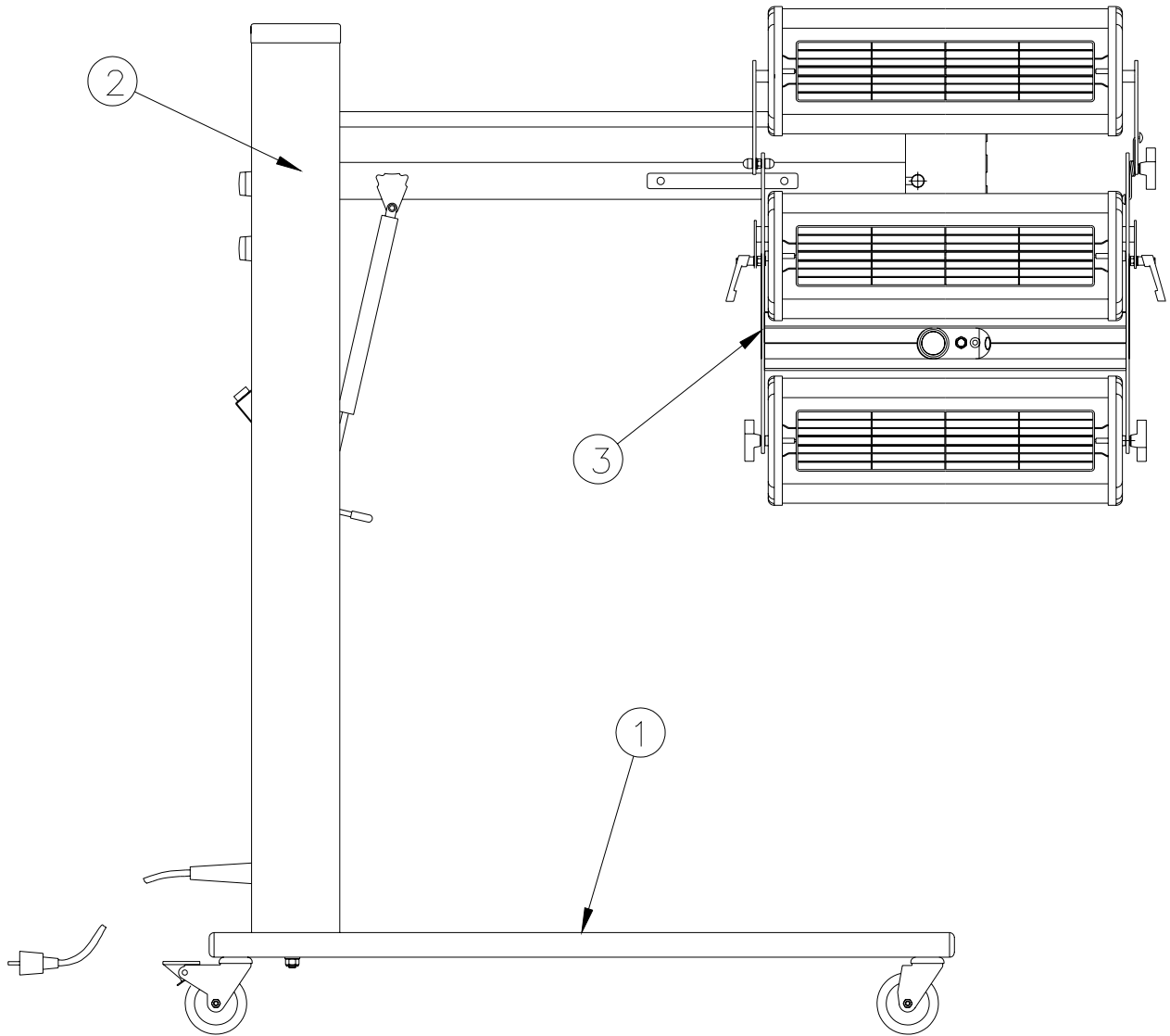
Rated Voltage:	220-240V, 60Hz, 1 phase
Power Consumption (nominal):	3 emitters, full power: 4500W
Heating Elements:	3 quartz, tungsten filament, ruby sleeved Infrared Emitters
Area of Cover:	100cm x 120cm / 39" X 47"
Dimensions:	(Width) 66cm / 27", (Height) 164cm / 66", (Length) 150cm / 60"
Weight:	50Kg / 110lbs

### **2.3. CUREMASTER SUPER TWIN digital ETS5dt (E516dt)**

Rated Voltage:	220-240V, 60Hz, 1 phase
Power Consumption (nominal):	6 emitters, full power: 6000W
Heating Elements:	6 quartz, tungsten filament, ruby sleeved Infrared Emitters
Area of Cover:	100cm x 180cm / 39" X 71"
Dimensions:	(Width) 95cm / 38", (Height) 164cm / 66", (Length) 150cm / 60"
Weight:	65Kg / 144lbs

# 3. MAJOR COMPONENTS

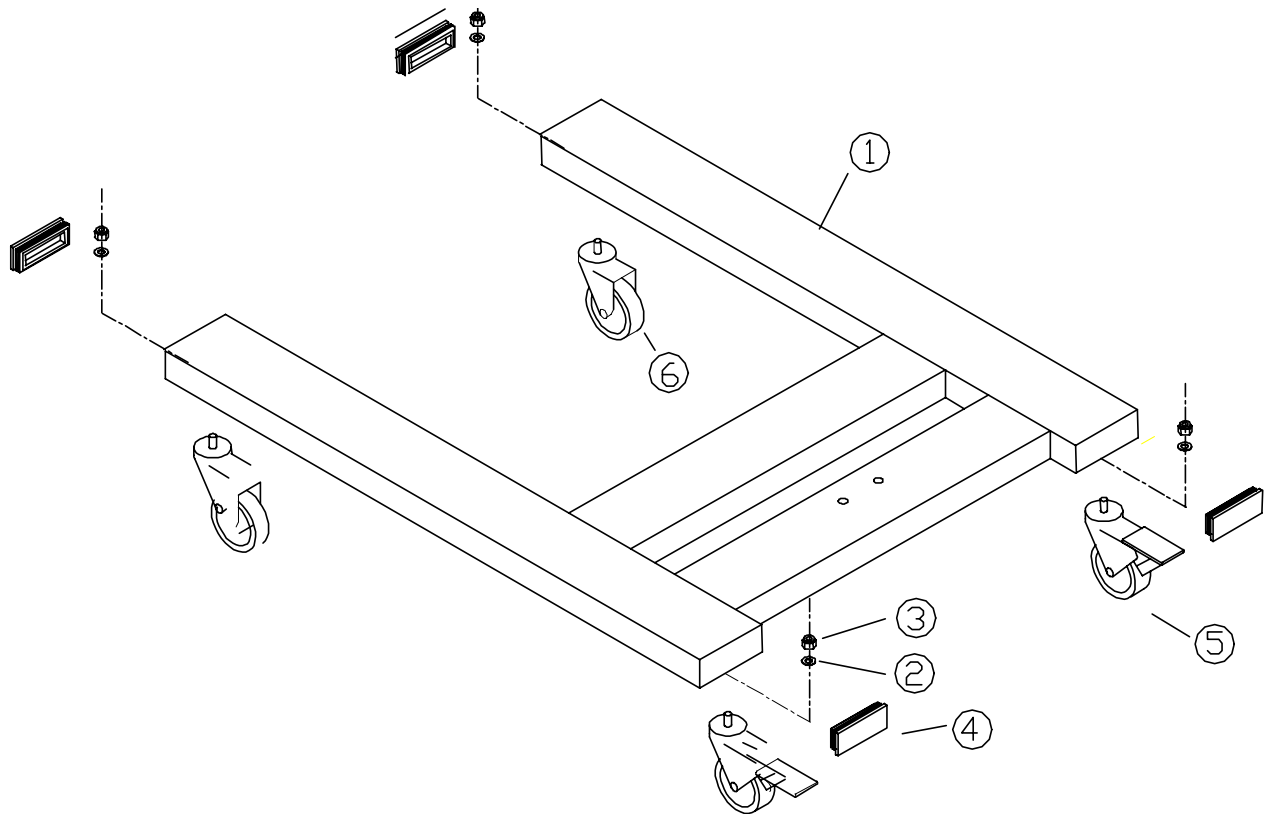
## 3.1. E214dt



- 1 BASE
- 2 ARM & UPRIGHT ASSEMBLY
- 3 BACKBAR / IR CASSETTE



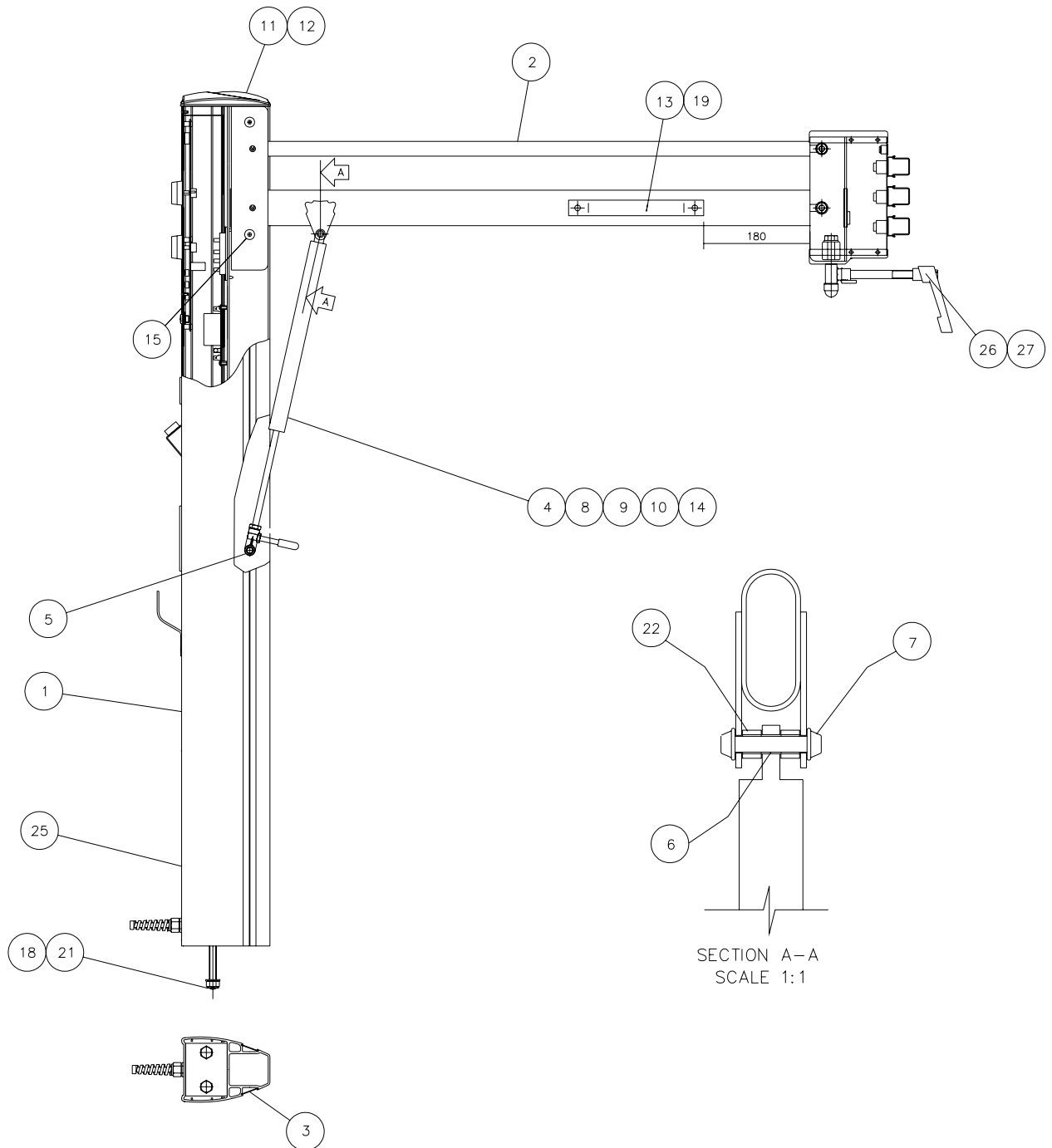
### 3.1.1. BASE



### BASE COMPONENTS

ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1	E214.01	BASE	1
2	S8031	WASHER, M10	4
3	S0293A	NUT, NYLOCK, M10	4
4	S0075D	END CAP – PLASTIC	4
5	S0065	BRAKED CASTOR	2
6	S0064	UNBAKED CASTOR	2

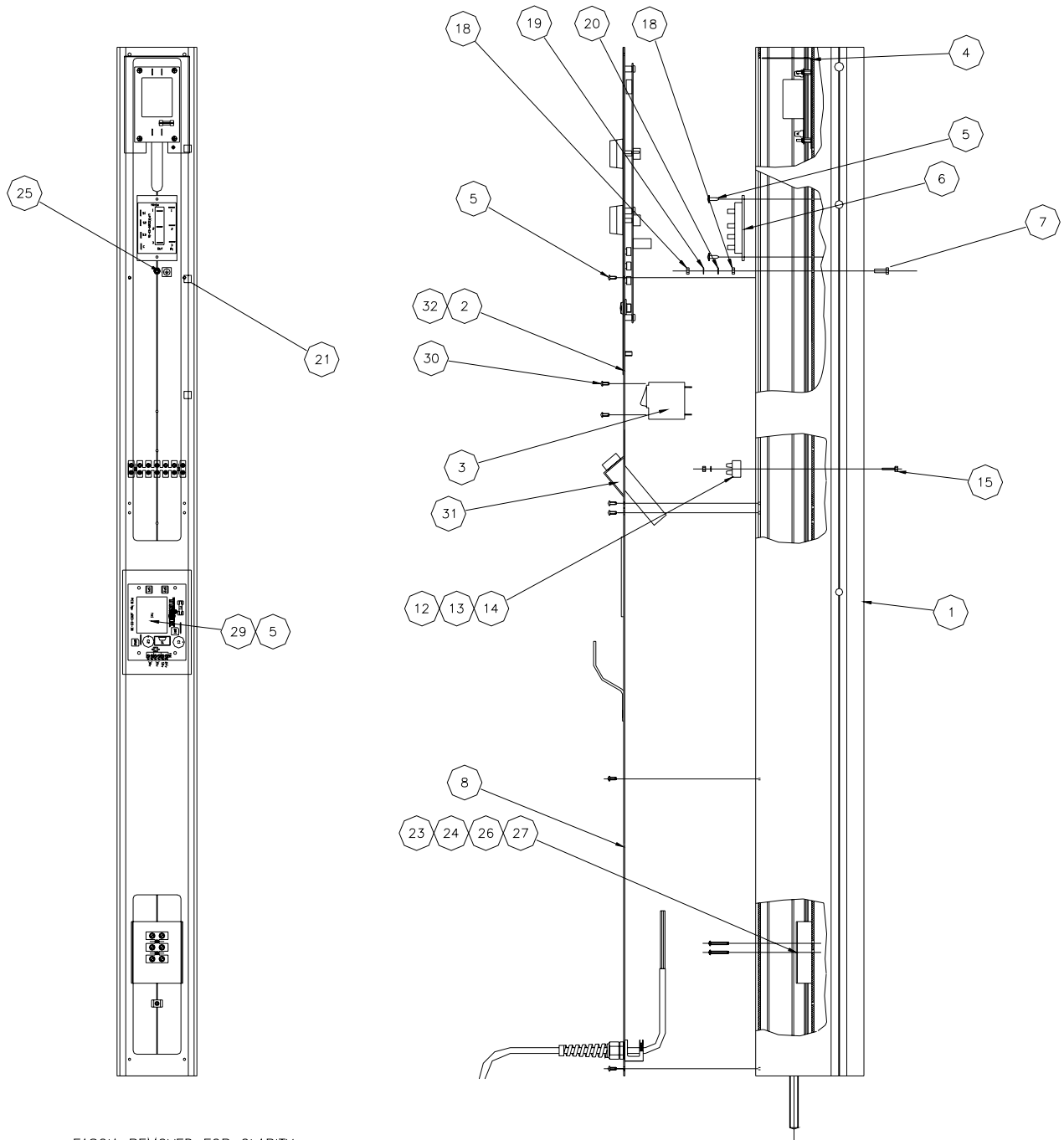
### 3.1.2. ARM & UPRIGHT ASSEMBLY



## ARM & UPRIGHT ASSEMBLY COMPONENTS

ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1	E214-03t	UPRIGHT ASSEMBLY (SEE PART 3.1.3.)	1
2	E214-06t	ARM ASSEMBLY (SEE PART 3.1.4.)	1
3	E221-02-20	COVER, SIDE	2
4	141.02	NUT (GAS STRUT)	1
5	PDD033	PIN	1
6	D320-03-36	STRUT ARM PIN	1
7	177.01	STARLOCK, CAPPED, 5/16"	2
8	S0112	GAS STRUT, 800N	1
9	S0117	GAS STRUT LEVER	1
10	E221-02-01	GAS STRUT END	1
11	121.07	SCREW, SELF-TAPPER, No6x3/8"	2
12	E221-02-21	TOP CAP	1
13	T1040	HANDLE, PLASTIC, LARGE	1
14	S0118	LEVER GRIP	1
15	108.04	SCREW, BUTTON HEAD, M10x15	4
16			
17			
18	S0294A	NUT, NYLOCK, M12	2
19	S0330	RIVET, Ø4.8x15	2
20			
21	S0314	WASHER, PLAIN, M12	2
22	194.01	SPACER	2
23			
24			
25	E214-03-24t	RATING LABEL	1
26	PDD131	PIVOT BOLT ASSEMBLY	1
27	T1011	RATCHET LEVER, FEMALE, M12	1

### 3.1.3. UPRIGHT ASSEMBLY

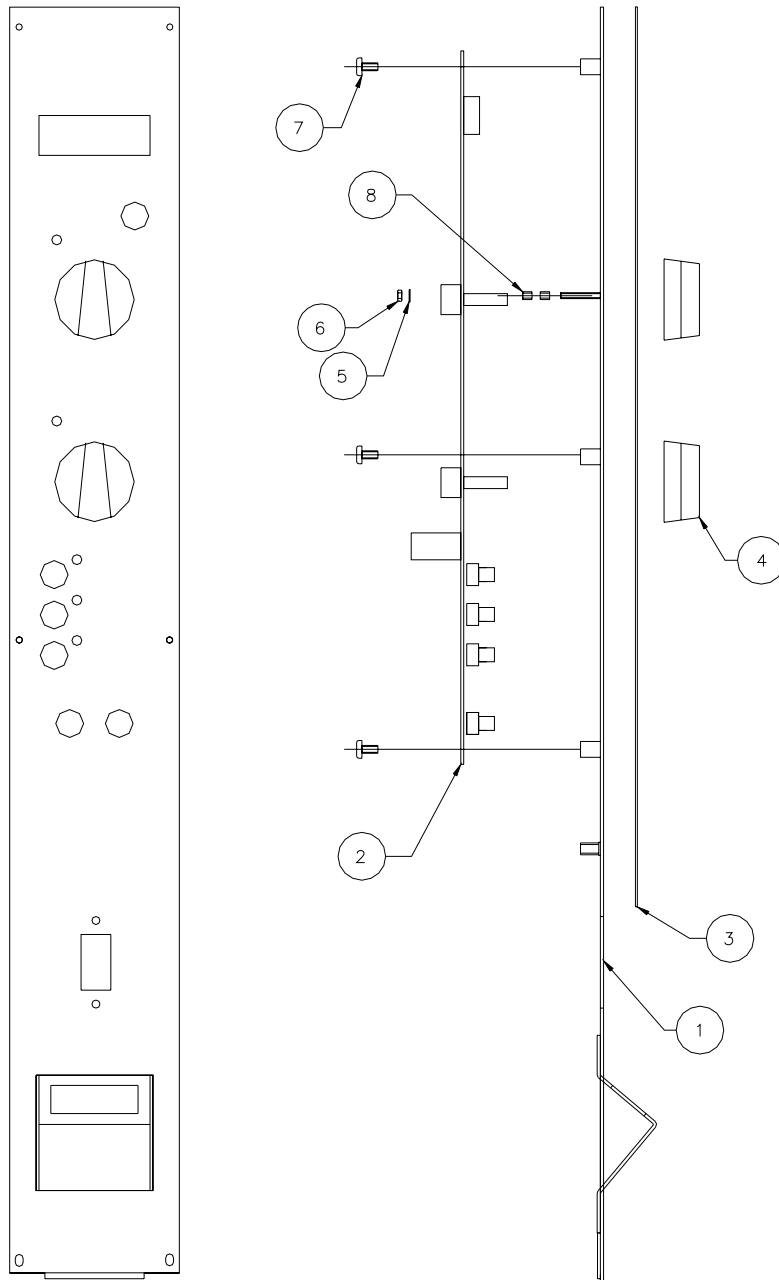


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## UPRIGHT ASSEMBLY COMPONENTS

ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1	E221-03-01	UPRIGHT FABRICATION	1
2	E214-04t	TOP FASCIA ASSEMBLY (SEE PART 3.1.2.A)	1
3	S0161	MCB, SINGLE POLE, 15A	1
4	E516-03-03	TRANSFORMER PCB ASSEMBLY	1
5	121.07	SCREW, SELF-TAPPING, No6x3/8"	15
6	D320-03-15	UNIVERSAL POWER MODULE	1
7	S0269	SCREW, M5x16	1
8	E214-04-04t	BOTTOM FASCIA ASSEMBLY (SEE PART 3.1.2.B.)	1
9			
10			
11			
12	S0173C	TERMINAL BLOCK, 20A	7/12
13	158.01	WASHER, PLASTIC, M4	2
14	148.01	NUT, PLASTIC, M4	2
15	118.01	BOLT, PLASTIC, M4	2
16	E214-03-06t	WIRING LOOM DETAIL	1
17	E214-03-07t	CIRCUIT DIAGRAM (SEE PART 3.1.5.)	REF
18	S0291	NUT, M5	2
19	S0308	WASHER, PLAIN, M5	2
20	S0308A	WASHER, STAR, M5	2
21	E221-03-08	CABLE CLIP	3
22			
23	E221-03-28	TERMINAL BLOCK SHROUD	1
24	121.09	SCREW, SELF-TAPPER, No6x1"	2
25	790.01	LABEL – EARTH SYMBOL	1
26	PDD089	LABEL – 1ph TERMINAL BLOCK	1
27	S0174	TERMINAL BLOCK, 30A	3+2/12
28			
29	E516-03-03t	TRIPLE POWER SUPPLY MOUNTED ASSEMBLY	1
30	S0256	SCREW, POZI-PAN, M3x8	2
31	282.04	TEMPERATURE CONTROLLER	1
32	E221-03-09t	PCB TO TB MOLEX CABLE ASSEMBLY	1

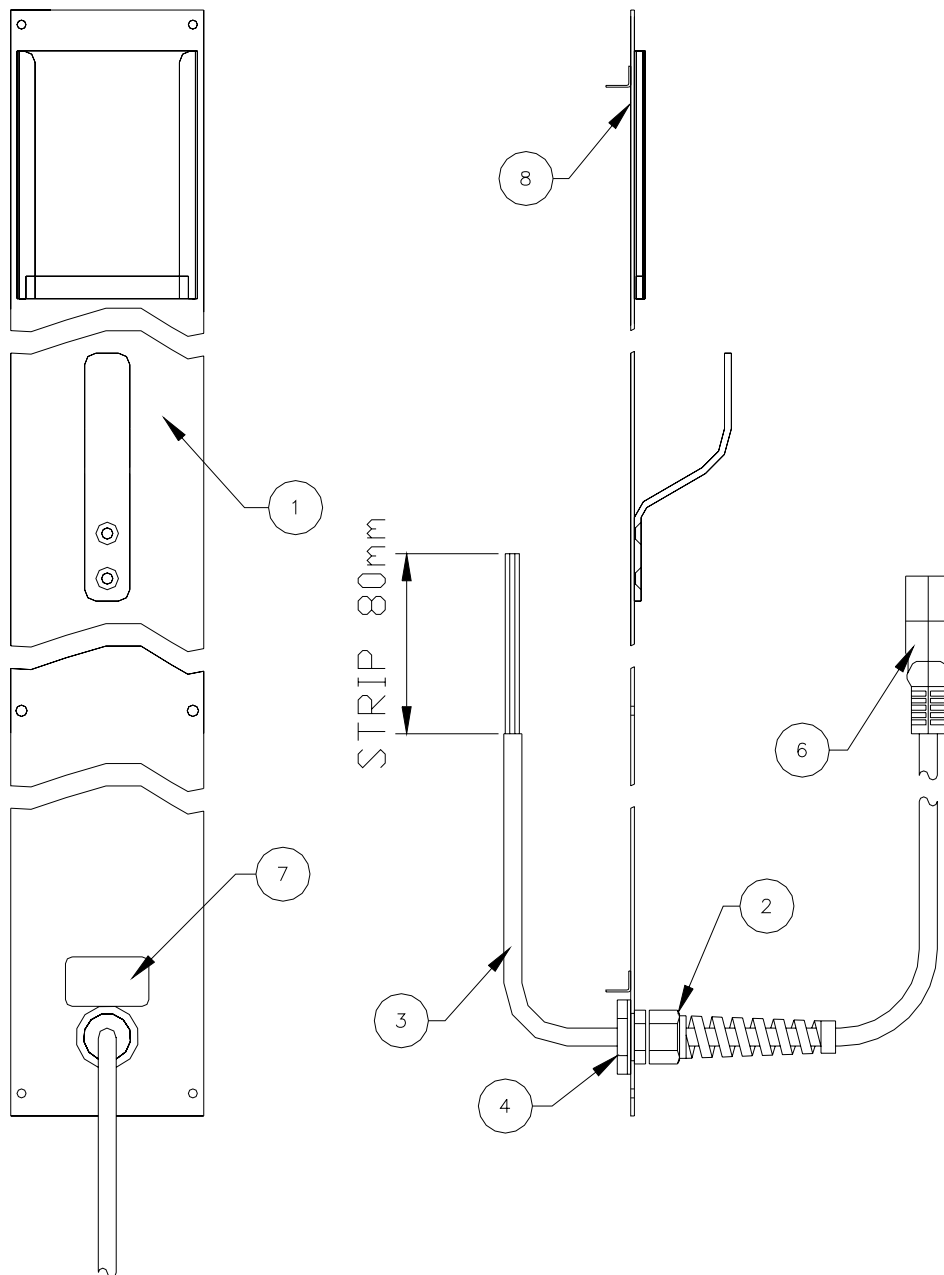
### 3.1.3.A. TOP FASCIA ASSEMBLY



#### TOP FASCIA ASSEMBLY COMPONENTS

ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1	E221-04-05t	FASCIA PLATE FABRICATION	1
2	E214-04-01	ETS2/3 PCB ASSEMBLY, UL	1
3	D220-03-20	FASCIA LABEL	1
4	S0227	TIMER KNOB	2
5	S0307	WASHER, NYLON, M3	1
6	140.04	NUT, M3	1
7	126.10	SCREW, PAN HEAD, M4x10	6
8	546.12	SPACER	2

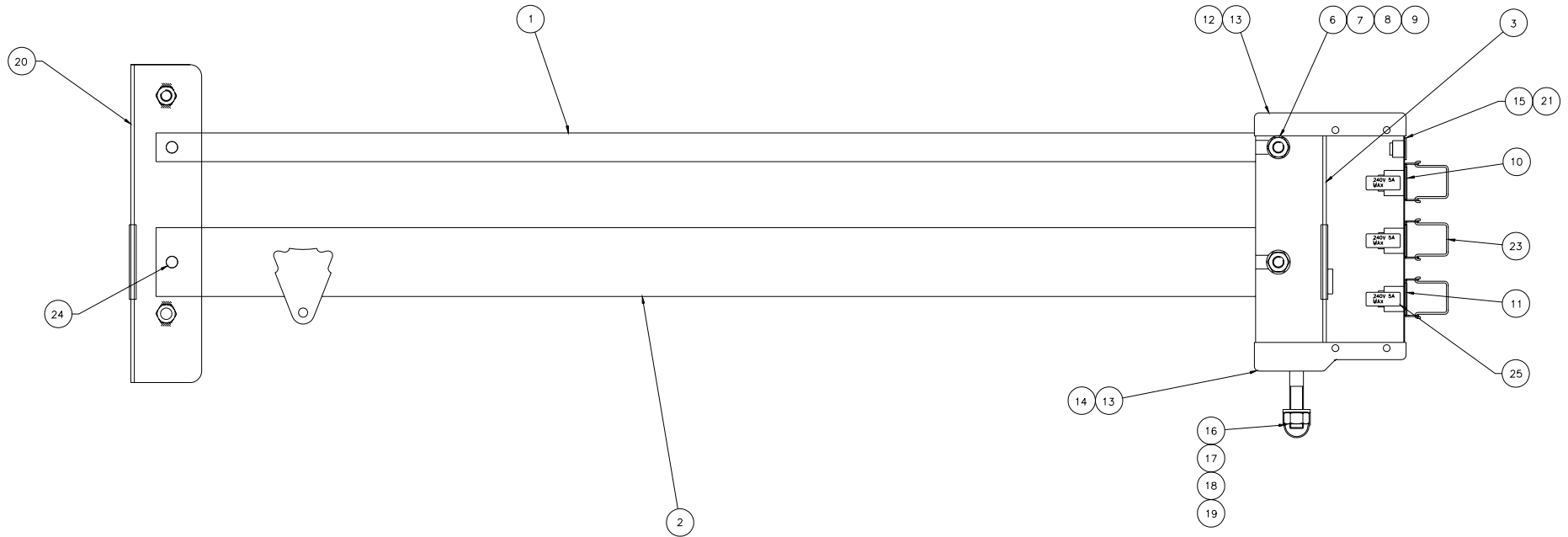
### 3.1.3.B. BOTTOM FASCIA ASSEMBLY



### BOTTOM FASCIA ASSEMBLY COMPONENTS

ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1	E214-04-02	BTM FASCIA PANEL FABRICATION	1
2	350.01	STRESS RELIEF GLAND, PG16	1
3	S0191	CABLE, 14AWG, 3-CORE	6m
4	351.01	GLAND NUT, PG16	1
5			
6	S0240A	PLUG	1
7	PDD196	LABEL – DANGER	1
8	790.01	LABEL – EARTH SYMBOL	1

### 3.1.4. ARM ASSEMBLY

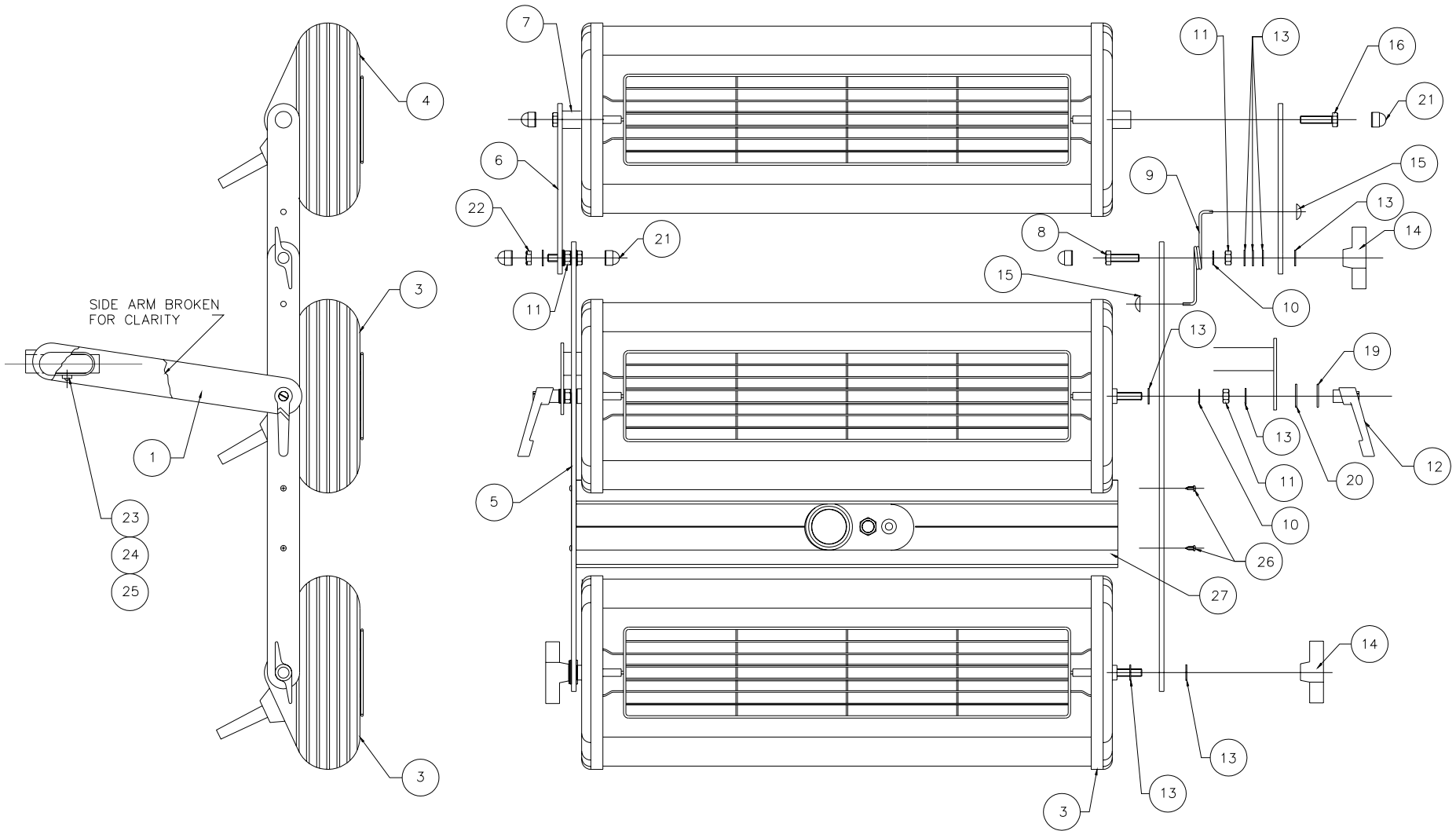




## ARM ASSEMBLY COMPONENTS

ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1	PDD002Y	CONTROL ARM	1
2	PDD002X	SUPPORT ARM	1
3	PDD003Y	'U' CHANNEL, SOCKET	1
4			
5			
6	S8032	BOLT, HEX HEAD, M10x60	2
7	S8031	WASHER, PLAIN, M10	4
8	S0293A	NUT, NYLOCK, M10	2
9	S8030	NUT CAP, M10	4
10	E214-06-02	SINGLE SOCKET HOUSING ASSEMBLY	1
11	372.03	IEC SOCKET	3
12	PDD040Y	TOP END CAP (SOCKET HOUSING)	1
13	121.07	SCREW, POZI HEAD, No6x3/8"	8
14	PDD040X	BOTTOM END CAP (SOCKET HOUSING)	1
15	E221-06-03t	DISTANCE INDICATOR ARM CABLE (WITH TEMPERATURE CONTROL)	1
16	S0275	BOLT, HEX HEAD, M12x90	1
17	S0294A	NUT, NYLOCK, M12	1
18	S0076	NUT CAP, M12	1
19	S0314	WASHER, PLAIN, M12	2
20	PDD003X	'U' CHANNEL, COLUMN	1
21	121.21	SCREW, SELF-TAPPING, No4x1/2"	2
22	E214-06-06	ARM WIRING DETAILS	1
23	E330-06-07	SOCKET RETAINING CLIP ASSEMBLY	3
24	S8027A	SPIRAL PIN Ø10x50	2
25	PDD105	LABEL – MAX VOLTAGE / AMPS	3
26	S0220B	CABLE TIE, MEDIUM	1

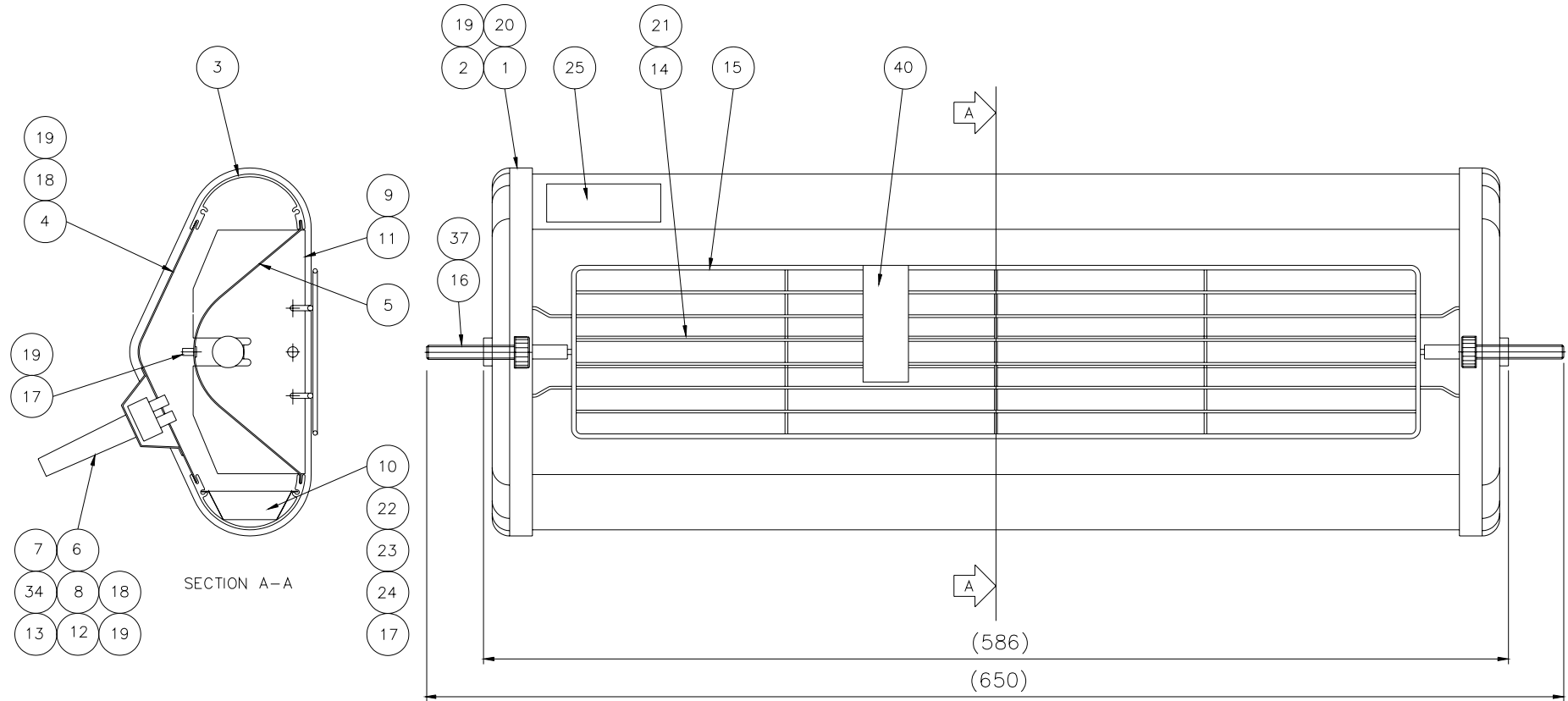
### 3.1.5. BACKBAR / IR CASSETTE ASSEMBLY



## BACKBAR / IR CASSETTE ASSEMBLY COMPONENTS

ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1	PDD132	BACKBAR BRACKET, LONG	1
2			
3	PPA008W	ETS2d CASSETTE ASSEMBLY, NUT FIX (SEE PART 3.1.5.A.)	2
4	PPA008Y	ETS2d CASSETTE ASSEMBLY, SCREW FIX (SEE PART 3.1.5.A.)	1
5	D320-05-20	ETS2/3d SIDE BRACKET, LONG	2
6	PDD014Y	SIDE BRACKET, SHORT	2
7	PDD036X	SPACER	2
8	S8040	BOLT, HEX HEAD, M8x30	2
9	PDD034X	SIDE BRACKET SPRING, RIGHT	1
10	S0321A	WASHER, SHAKEPROOF, M8	4
11	S8054	NUT, M8	4
12	S0087B	RATCHET LEVER, FEMALE, M8	2
13	S0312	WASHER, PLAIN, M8	16
14	S0087A	WING KNOB, FEMALE, M8	3
15	177.03	STARLOCK, CAPPED, 1/8"	2
16	S0273	SCREW, HEX HEAD, M8x50	2
17			
18			
19	152.01	WASHER, BLACK	2
20	157.01	WASHER, FIBRE	2
21	S0077	NUT CAP, M8	5
22	S0292B	NUT, BINX, M8	1
23	395.03	CABLE TIE MOUNT	1
24	S0328A	RIVET, BLACK, Ø3.2x8	1
25	S0220	CABLE TIE, SMALL	1
26	S0256	SCREW, POZI TAPTITE, M3x8	4
27	E214-05t	USA DISTANCE INDICATOR & TEMPERATURE SENSOR ASSEMBLY	1

### 3.1.5.A. IR CASSETTE ASSEMBLY, NUT & SCREW FIX

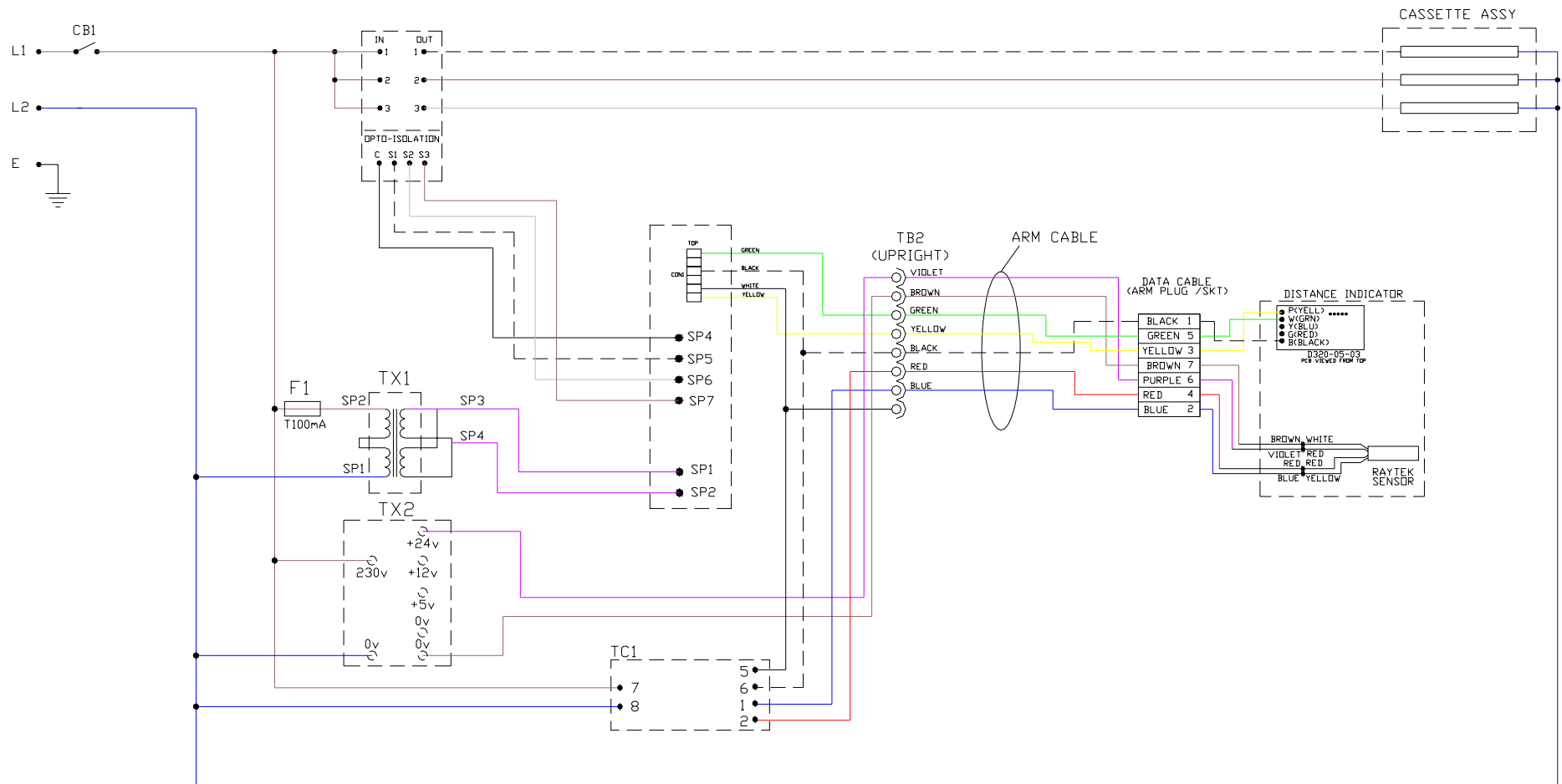


IR CASSETTE ASSEMBLY, NUT & SCREW FIX COMPONENTS

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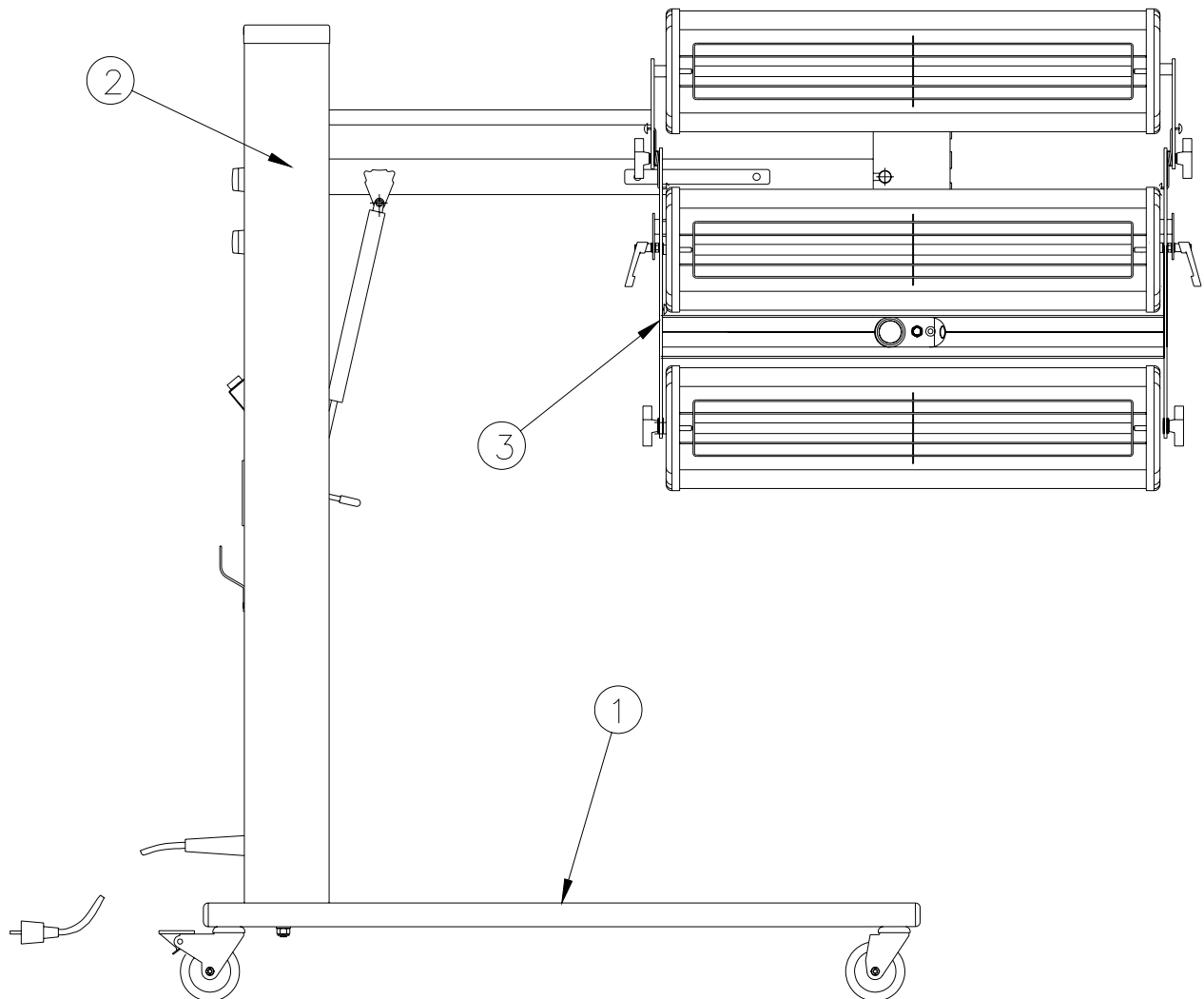
ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1	PDD072	DIE CAST END CAP	2
2	S0251	SCREW, SELF-TAPPER, POZI-PAN HEAD, No4x3/8"	8
3	PDD006Y	CASSETTE SIDE EXTRUSION, LONG	2
4	PDD006W	CASSETTE BACK, LONG	1
5	PDD007X	BACK REFLECTOR, LONG	1
6	CM01-05-20	STRAIN RELIEF PLATE	1
7	350.05	FLEXI STRAIN RELIEF GROMMET	1
8	S0173C	TERMINAL BLOCK, 20A	3/12
10	PDD082	CASSETTE CABLE TRAY, LONG	1
11	PDD021	SIDE REFLECTOR	2
12	370.20	CORDSET	1
13	PDD026	LABEL – INSPECTED BY	1
14	380.07	INFRA RED EMITTER TUBE, LONG, 240V, 1000W	1
15	PDD161	GRILLE, LONG	1
16	S8049	SCREW, SOCKET HEAD CAP, M8x50 (NUT FIX ONLY)	2
17	S0332	RIVET, Ø3.2x8	4
18	S0328A	RIVET, Ø3.2x8, BLACK	6
19	S0309	WASHER, SHAKEPROOF, M3	4
20	S8008	CABLE CLIP	2
21	S0561H	TUBE PACKER, 74x14x12	3
22	S0220A	CABLE TIE, SNAP IN	4
23	395.02	CABLE TIE BASE	1
24	S0220	CABLE TIE, SMALL	1
25	PDD196	LABEL – ISOLATE MAINS	1
26	S0211B	CRIMP TERMINAL, RED MALE COUPLER	2
31	S0210	CRIMP TERMINAL, R-M3-RG	1
32	385.04	HEATPROOF SLEEVING, Ø12mm	45mm
33	S0215	CRIMP TERMINAL, R-BLADE	2
34	S0349	TERMINAL BLOCK RETAINING PIN	1
35	S0256	SCREW, POZI-PAN TAPTITE, M3x6	3
36	3853.01	HEATPROOF SLEEVING, Ø3mm	465mm
37	S0321A	WASHER, SHAKEPROOF, M8 (NUT FIX ONLY)	2
38	E214-07-06	WIRING LOOM DETAIL	1
40	PDD166	LABEL – CAUTION, REMOVE PACKING	1

### 3.1.6. CIRCUIT DIAGRAM



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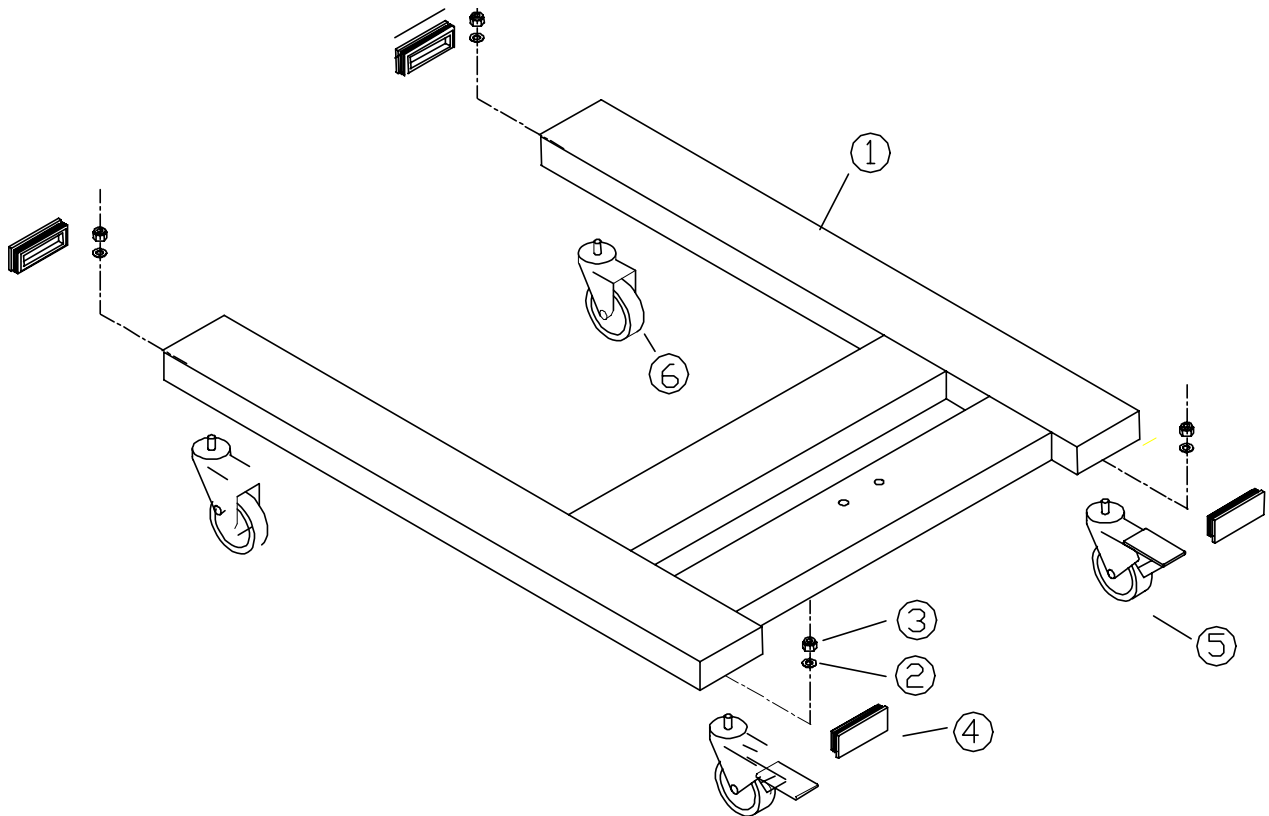
## 3.2. E310dt



- 1 BASE
- 2 ARM & UPRIGHT ASSEMBLY
- 3 BACKBAR / IR CASSETTE ASSEMBLY



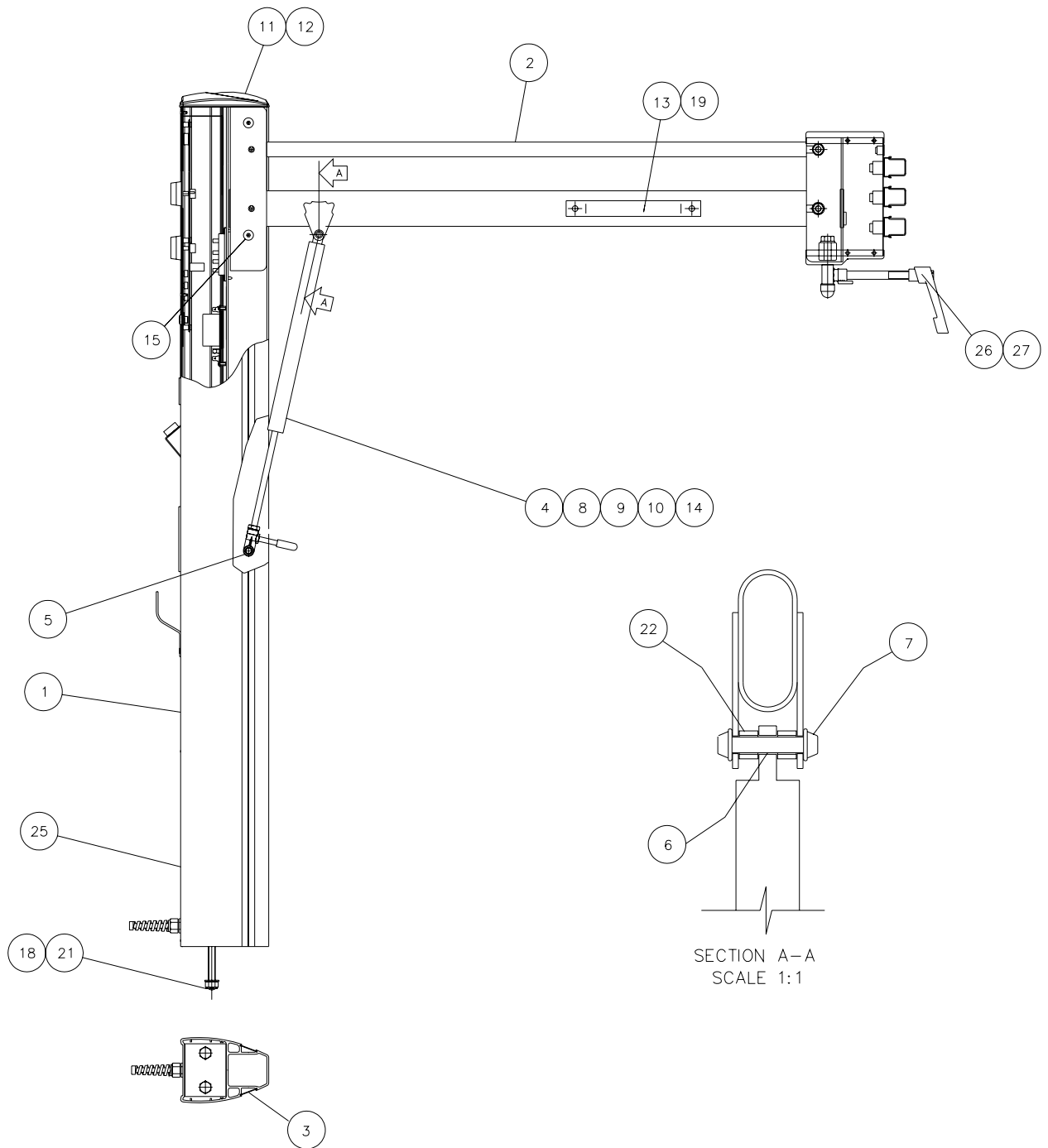
### 3.2.1. BASE



### BASE COMPONENTS

ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1	E221.01	BASE	1
2	S8031	WASHER, M10	4
3	S0293A	NUT, NYLOCK, M10	4
4	S0075D	END CAP – PLASTIC	4
5	S0065	BRAKED CASTOR	2
6	S0064	UNBAKED CASTOR	2

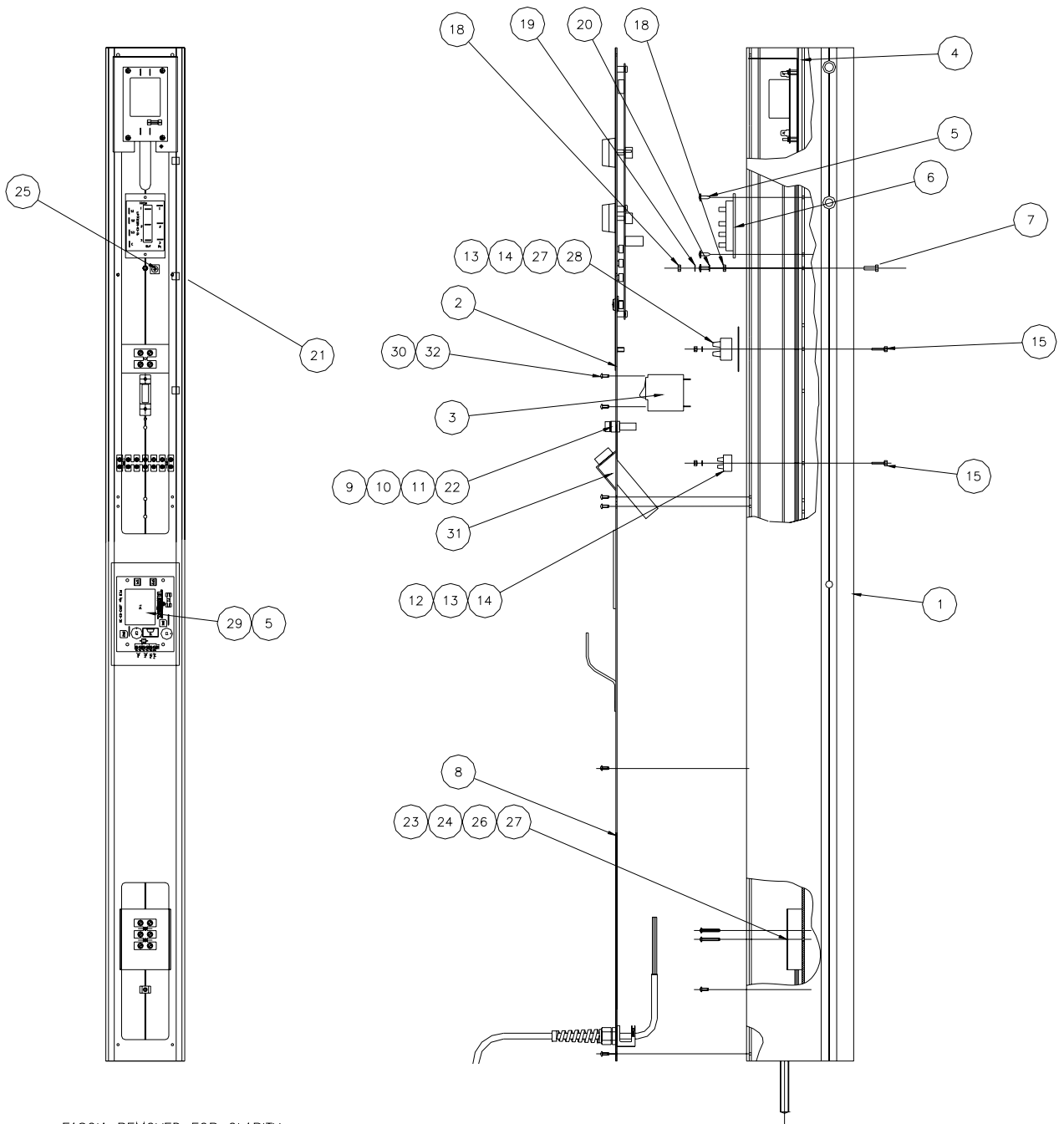
### 3.2.2. ARM & UPRIGHT ASSEMBLY



## ARM & UPRIGHT ASSEMBLY COMPONENTS

ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1	E310-03t	UPRIGHT ASSEMBLY (SEE PART 3.2.3.)	1
2	E310-06t	ARM ASSEMBLY (SEE PART 3.2.4.)	1
3	E221-02-20	COVER, SIDE	2
4	141.02	NUT (GAS STRUT)	1
5	PDD033	PIN	1
6	D320-03-36	STRUT ARM PIN	1
7	177.01	STARLOCK, CAPPED, 5/16"	2
8	550.03	GAS STRUT, 1200N	1
9	S0117	GAS STRUT LEVER	1
10	E221-02-01	GAS STRUT END	1
11	121.07	SCREW, SELF-TAPPER, No6x3/8"	2
12	E221-02-21	TOP CAP	1
13	T1040	HANDLE, PLASTIC, LARGE	1
14	S0118	LEVER GRIP	1
15	108.04	SCREW, BUTTON HEAD, M10x15	4
16			
17			
18	S0294A	NUT, NYLOCK, M12	2
19	S0330	RIVET, Ø4.8x15	2
20			
21	S0314	WASHER, PLAIN, M12	2
22	194.01	SPACER	2
23			
24			
25	E310-03-24t	RATING LABEL	1
26	PDD131	PIVOT BOLT ASSEMBLY	1
27	T1011	RATCHET LEVER, FEMALE, M12	1

### 3.2.3. UPRIGHT ASSEMBLY

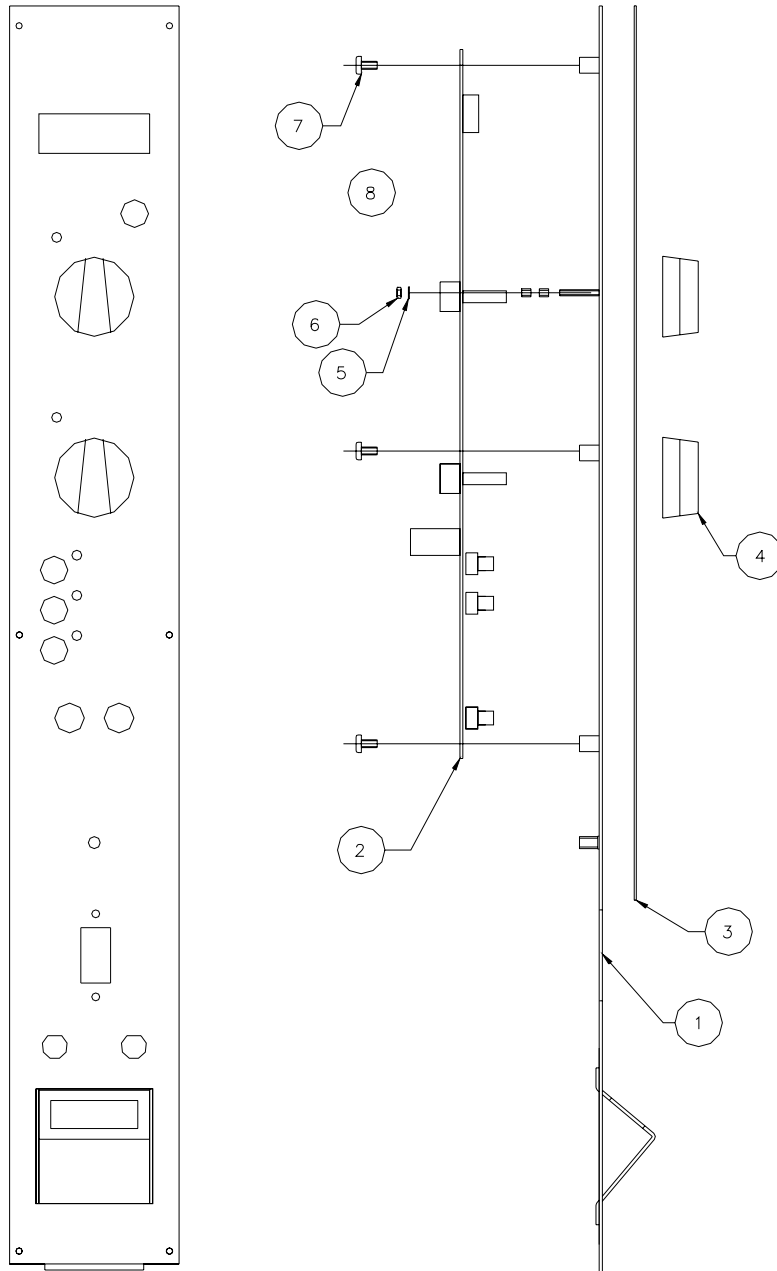


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## UPRIGHT ASSEMBLY COMPONENTS

ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1	E221-03-01	UPRIGHT FABRICATION	1
2	E310-04t	TOP FASCIA ASSEMBLY (SEE PART 3.2.3.A.)	1
3	S0162	MCB, SINGLE POLE, 30A	1
4	E516-03-03	TRANSFORMER PCB ASSEMBLY	1
5	121.07	SCREW, SELF-TAPPER, No6x3/8"	15
6	D320-03-15	UNIVERSAL POWER MODULE ASSEMBLY	1
7	S0269	SCREW, M5x16	1
8	E310-04-04t	BOTTOM FASCIA ASSEMBLY (SEE PART 3.2.3.B.)	1
9	320.01	FUSE HOLDER, 30A, 250V AC	2
10	S0180A	FUSE, TIME DELAY, 15A	2
11	S0217B	HEATSHRINK SLEEVING, Ø6.4mm	160mm
12	S0173C	TERMINAL BLOCK, 20A	7/12
13	158.01	WASHER, PLASTIC, M4	3
14	148.01	NUT, PLASTIC, M4	3
15	118.01	BOLT, PLASTIC, M4	3
16	E310-03-06t	WIRING LOOM DETAIL	1
17	E310-03-07t	CIRCUIT DIAGRAM (SEE PART 3.2.6.)	REF
18	S0291	NUT, M5	2
19	S0308	WASHER, PLAIN, M5	2
20	S0308A	WASHER, STAR, M5	2
21	E221-03-08	CABLE CLIP	3
22	PDD220	LABEL – FUSE RATING	1
23	E221-03-28	TERMINAL BLOCK SHROUD	1
24	121.09	SCREW, SELF-TAPPER, No6x1"	2
25	790.01	LABEL – EARTH SYMBOL	1
26	PDD089	LABEL – 1ph TERMINAL BLOCK	1
27	S0174	TERMINAL BLOCK, 30A	3+2/12
28	E516-03-27	TERMINAL BLOCK PACKER	1
29	E516-03-03t	24V POWER SUPPLY MOUNTED ASSEMBLY	1
30	S0256	SCREW, POZI-PAN, M3x8	2
31	282.04	TEMPERATURE CONTROLLER	1
32	E221-03-09t	PCB TO TB MOLEX CABLE ASSEMBLY	1

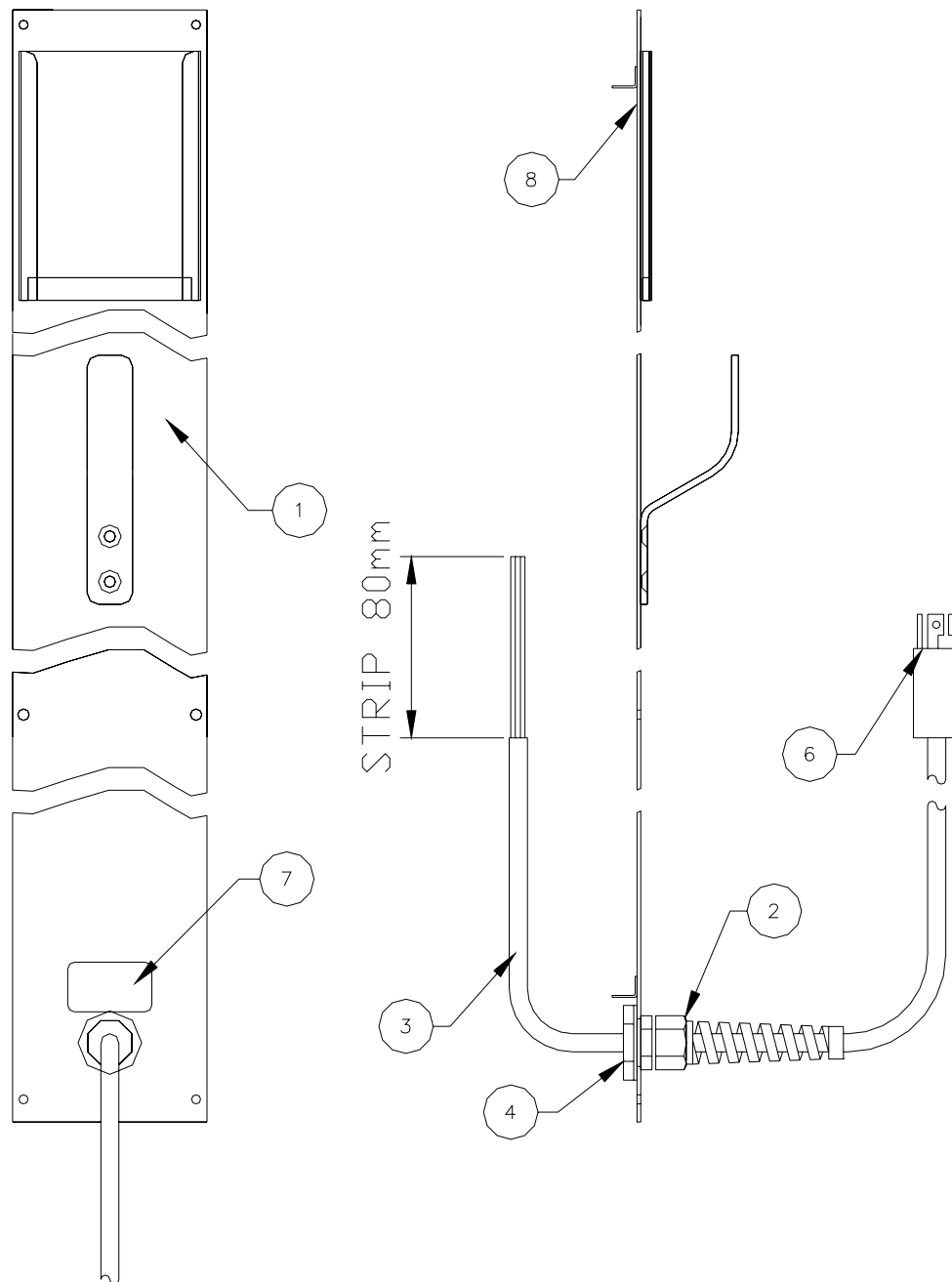
### 3.2.3.A. TOP FASCIA ASSEMBLY



### TOP FASCIA ASSEMBLY COMPONENTS

ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1	E310-04-05t	FASCIA PLATE FABRICATION	1
2	E214-04-01	ETS2/3 PCB ASSEMBLY, UL	1
3	D220-03-20	FASCIA LABEL	1
4	S0227	TIMER KNOB	2
5	S0307	WASHER, NYLON, M3	1
6	140.04	NUT, M3	1
7	126.10	SCREW, PAN HEAD, M4x10	6
8	546.12	SPACER	2

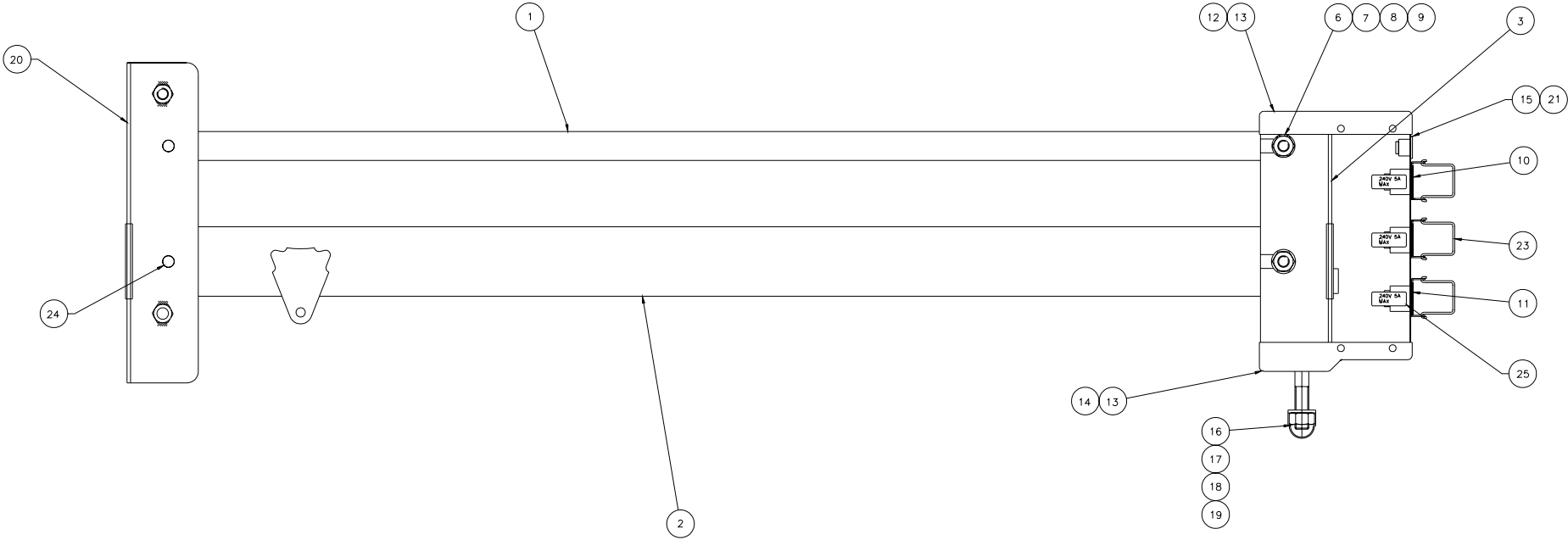
### 3.2.3.B. BOTTOM FASCIA ASSEMBLY



**BOTTOM FASCIA ASSEMBLY COMPONENTS**

ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1	E516-04-02	BTM FASCIA PANEL FABRICATION	1
2	350.08	STRESS RELIEF GLAND, PG21	1
3	S0191A	CABLE, 10AWG, 3-CORE	6m
4	351.02	GLAND NUT, PG21	1
5			
6	S0240B	PLUG	1
7	PDD196	LABEL – DANGER	1
8	790.01	LABEL – EARTH SYMBOL	1

### 3.2.4. ARM ASSEMBLY

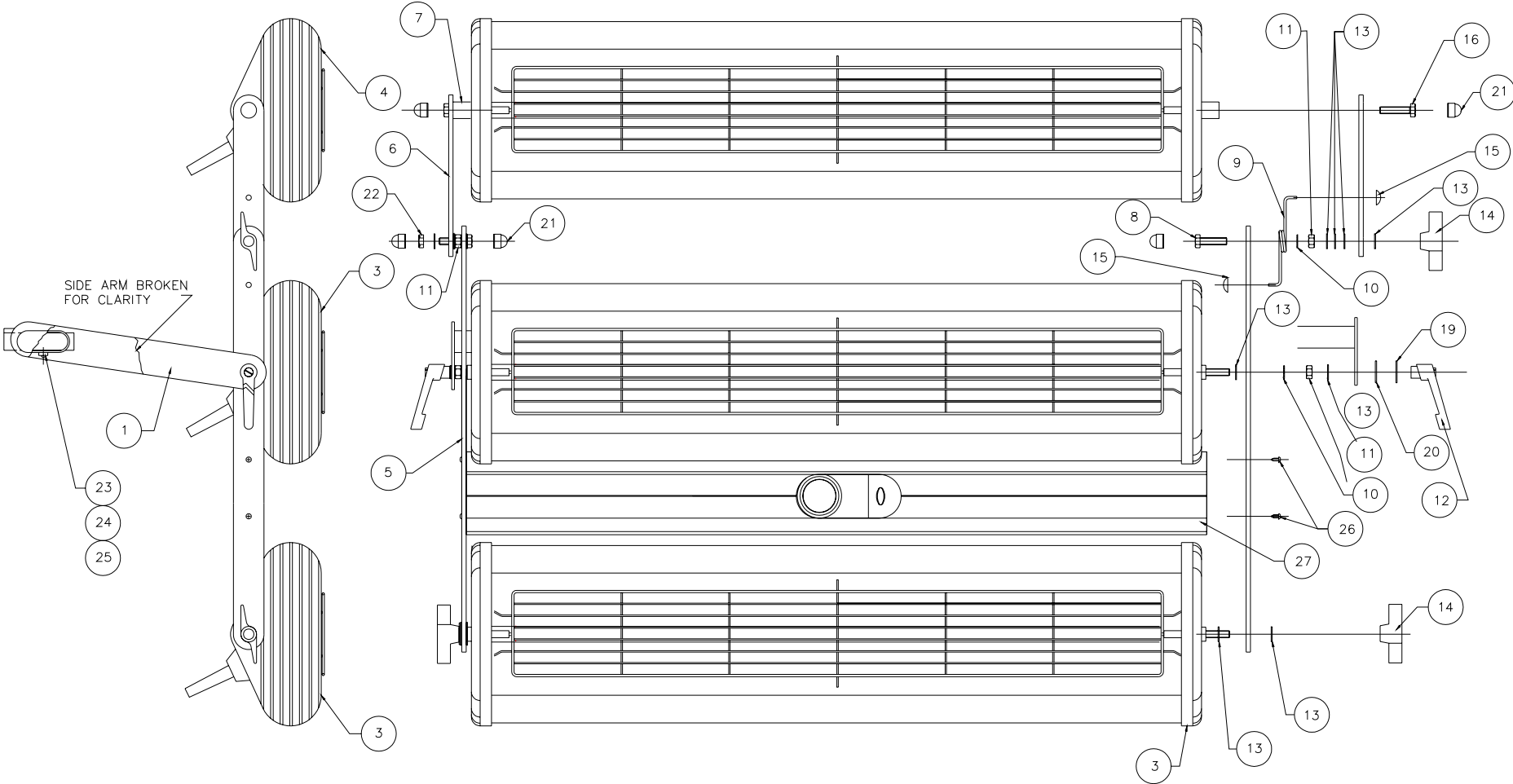




## ARM ASSEMBLY COMPONENTS

ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1	PDD002Y	CONTROL ARM	1
2	PDD002X	SUPPORT ARM	1
3	PDD003Y	'U' CHANNEL, SOCKET	1
4			
5			
6	S8032	BOLT, HEX HEAD, M10x60	2
7	S8031	WASHER, PLAIN, M10	4
8	S0293A	NUT, NYLOCK, M10	2
9	S8030	NUT CAP, M10	4
10	E214-06-02	SINGLE SOCKET HOUSING ASSEMBLY	1
11	372.03	IEC SOCKET	3
12	PDD040Y	TOP END CAP (SOCKET HOUSING)	1
13	121.07	SCREW, POZI HEAD, No6x3/8"	8
14	PDD040X	BOTTOM END CAP (SOCKET HOUSING)	1
15	E221-06-03t	DISTANCE INDICATOR ARM CABLE (WITH TEMPERATURE CONTROL)	1
16	S0275	BOLT, HEX HEAD, M12x90	1
17	S0294A	NUT, NYLOCK, M12	1
18	S0076	NUT CAP, M12	1
19	S0314	WASHER, PLAIN, M12	2
20	PDD003X	'U' CHANNEL, COLUMN	1
21	121.21	SCREW, SELF-TAPPING, No4x1/2"	2
22	E310-06-06	ARM WIRING DETAILS	1
23	E330-06-07	SOCKET RETAINING CLIP ASSEMBLY	3
24	S8027A	SPIRAL PIN Ø10x50	2
25	PDD105	LABEL – MAX VOLTAGE / AMPS	3
26	S0220B	CABLE TIE, MEDIUM	1

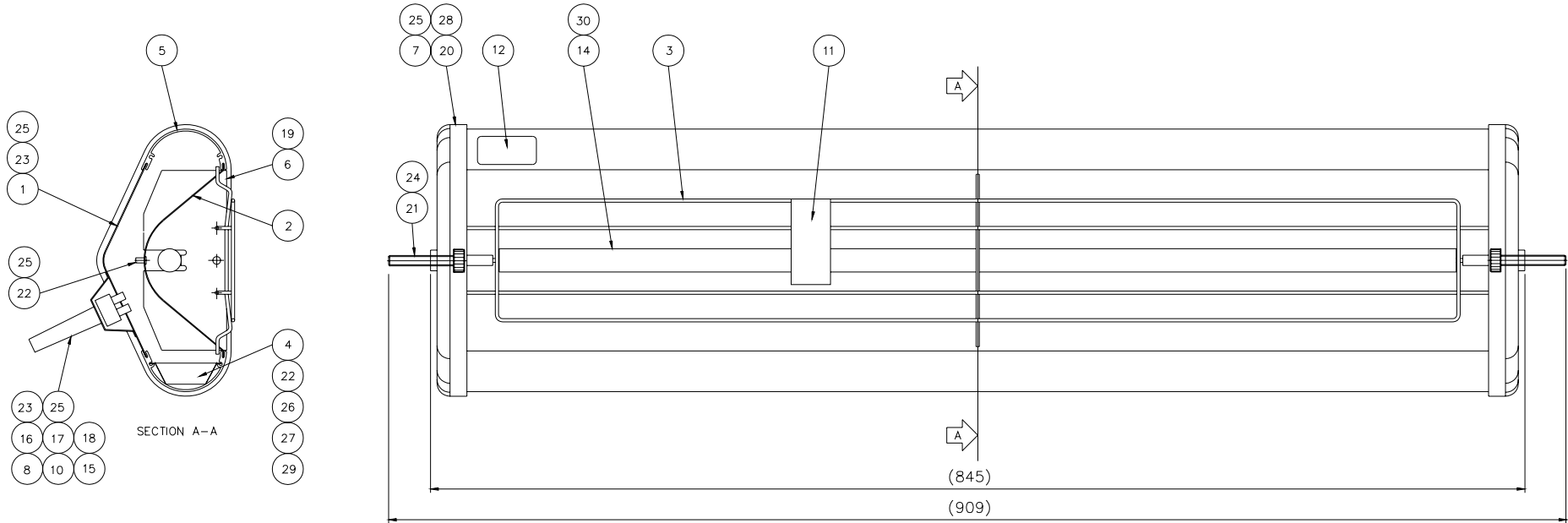
### 3.2.5. BACKBAR / IR CASSETTE ASSEMBLY



## BACKBAR / IR CASSETTE ASSEMBLY COMPONENTS

ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1	S360-06	BACKBAR BRACKET, V-LONG	1
3	S310-05-02	ETS3d CASSETTE ASSEMBLY, NUT FIX (SEE PART 3.2.4.A.)	2
4	S310-05-01	ETS3d CASSETTE ASSEMBLY, SCREW FIX (SEE PART 3.2.4.A.)	1
5	D320-05-20	ETS2/3d SIDE BRACKET, LONG	2
6	PDD014Y	SIDE BRACKET, SHORT	2
7	PDD036X	SPACER	2
8	S8040	BOLT, HEX HEAD, M8x30	2
9	PDD034X	SIDE BRACKET SPRING, RIGHT	1
10	S0321A	WASHER, SHAKEPROOF, M8	4
11	S8054	NUT, M8	4
12	S0087B	RATCHET LEVER, FEMALE, M8	2
13	S0312	WASHER, PLAIN, M8	16
14	S0087A	WING KNOB, FEMALE, M8	3
15	177.03	STARLOCK, CAPPED, 1/8"	2
16	S0273	SCREW, HEX HEAD, M8x50	2
19	152.01	WASHER, BLACK	2
20	157.01	WASHER, FIBRE	2
21	S0077	NUT CAP, M8	5
22	S0292B	NUT, BINX, M8	1
23	395.03	CABLE TIE MOUNT	1
24	S0328A	RIVET, BLACK, Ø3.2x8	1
25	S0220	CABLE TIE, SMALL	1
26	S0256	SCREW, POZI TAPTITE, M3x8	4
27	E310-05t	USA DISTANCE INDICATOR & TEMPERATURE SENSOR ASSEMBLY	1

3.2.5.A. IR CASSETTE ASSEMBLY, NUT & SCREW FIX



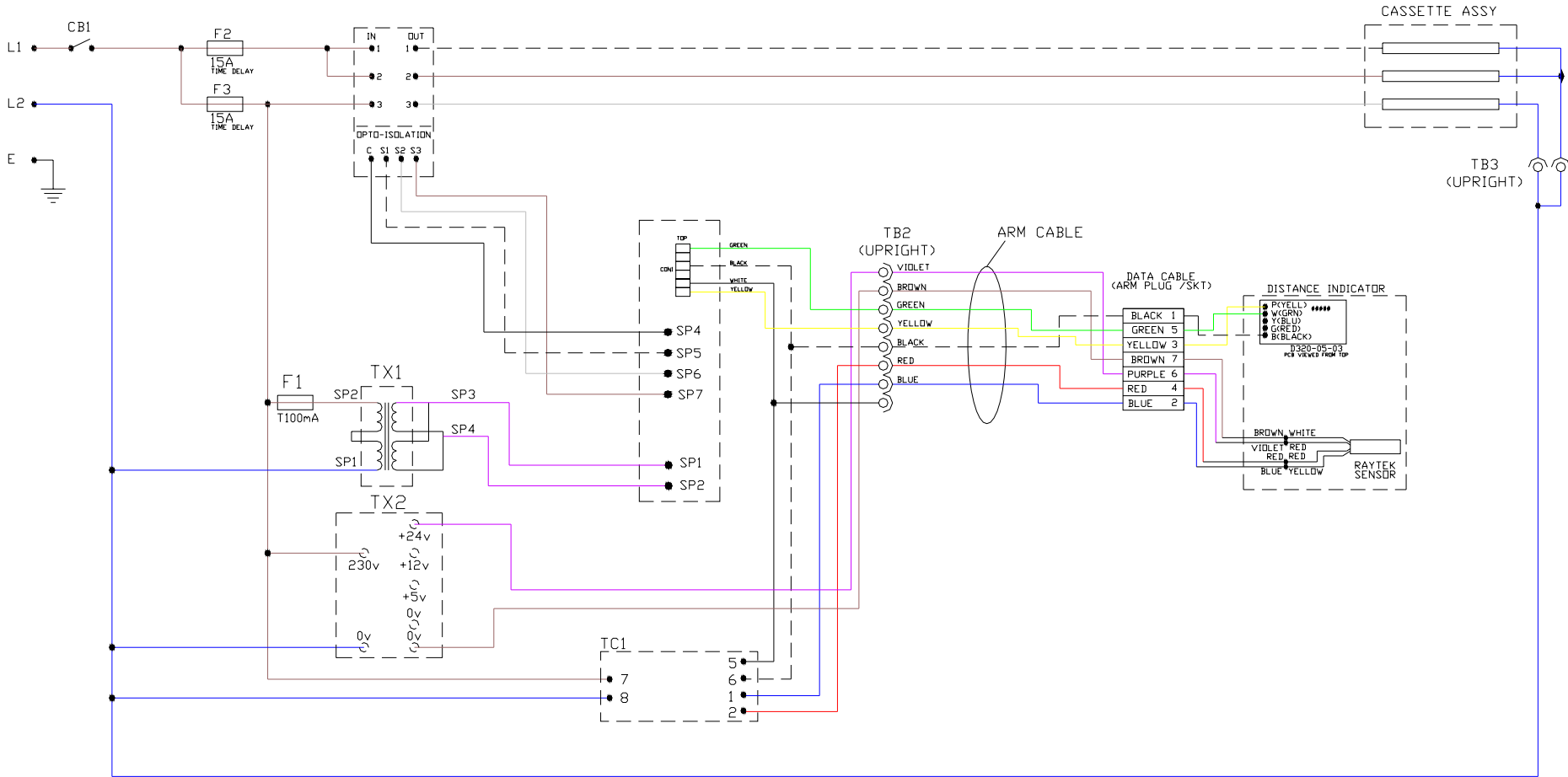
IR CASSETTE ASSEMBLY, NUT & SCREW FIX COMPONENTS

SEE NEXT PAGE.

PLEASE NOTE: Infrared emitters do not come fitted in the cassette assembly.  
Part number for IR emitters is 380.11.

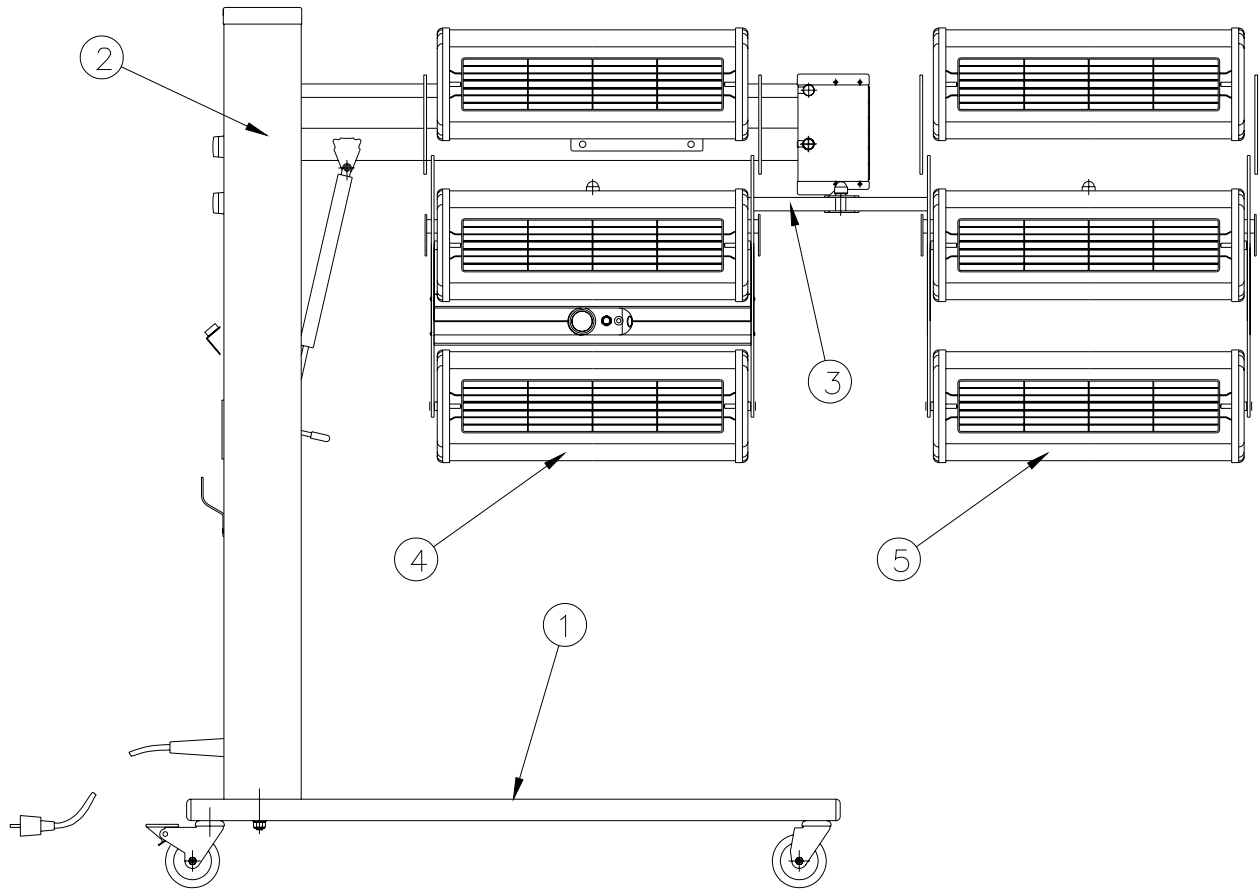
ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1	S330-05-20	CASSETTE BACK, V-LONG	1
2	S330-05-21	BACK REFLECTOR, V-LONG	1
3	S320-05-20	GRILLE, V-LONG	1
4	S330-05-23	CASSETTE CABLE TRAY, V-LONG	1
5	S330-05-24	CASSETTE SIDE EXTRUSION, V-LONG	2
6	PDD021	SIDE REFLECTOR	2
7	PDD072	DIE CAST END CAP	2
8	CM01-05-20	STRAIN RELIEF PLATE	1
10	PDD026	LABEL – INSPECTED BY	1
11	PDD167	LABEL – CAUTION, REMOVE PACKING	1
12	PDD041	LABEL – ISOLATE MAINS	1
15	370.05	CORDSET	1
16	S0173C	TERMINAL BLOCK, 20A	3/12
17	S0349	TERMINAL BLOCK RETAINING PIN	1
18	350.05	FLEXI-STRAIN RELIEF GROMMET	1
19	S0256	SCREW, POZI-TAPTITE, M3x8	3
20	S0251	SCREW, POZI-PAN, SELF-TAPPER, No4x3/8"	8
21	S8049	SCREW, SOCKET HEAD CAP, M8x50 (NUT FIX ONLY)	2
22	S0332	RIVET, Ø3.2x8	2
23	S0328A	RIVET, Ø3.2x8, BLACK	6
24	S0321A	WASHER, SHAKEPROOF, M8 (NUT FIX ONLY)	2
25	S0309	WASHER, SHAKEPROOF, M3	4
26	395.02	CABLE TIE BASE	1
27	S0220	CABLE TIE, SMALL	1
28	S8008	CABLE CLIP	2
29	S0220A	CABLE TIE, SNAP IN	6
30	S0561H	TUBE PACKER, 74x14x12	5
32	S0211B	CRIMP TERMINAL, RED MALE COUPLER	2
34	S0210	CRIMP TERMINAL, R-M3-RG	1
35	S0215	CRIMP TERMINAL, R-BLADE	2
39	385.01	HEATPROOF SLEEVING, Ø3mm	465mm
40	385.04	HEATPROOF SLEEVING, Ø12mm	45mm
42	E310-07-06	WIRING LOOM	1

### 3.2.6. CIRCUIT DIAGRAM



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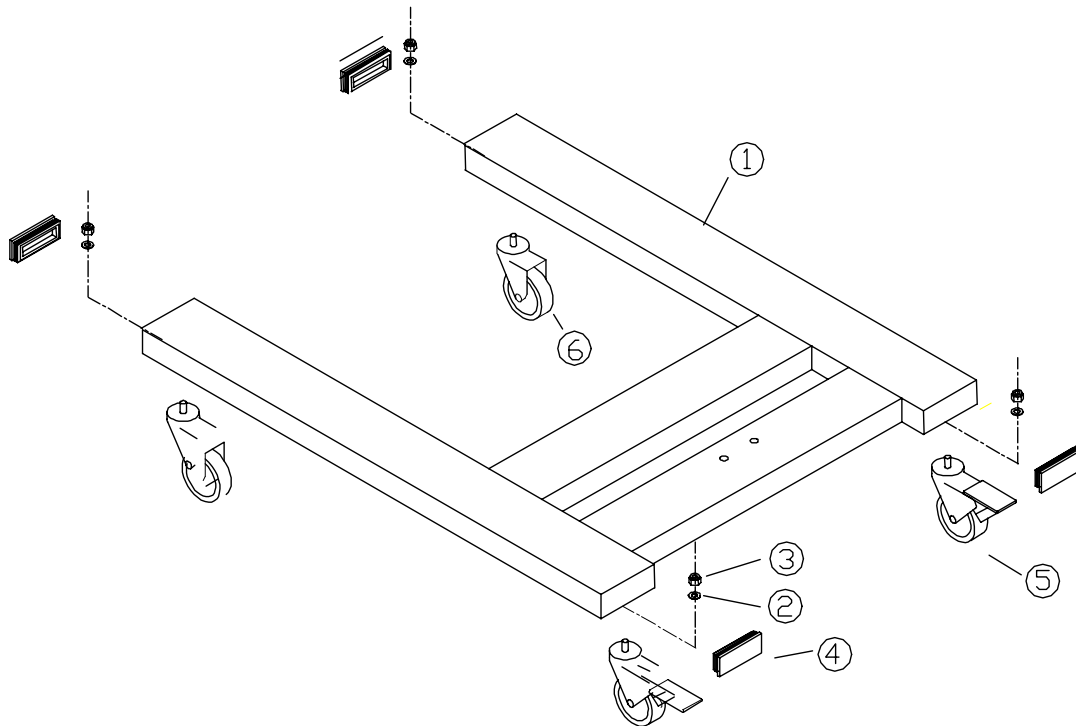
### 3.3. E516dt



- 1 BASE
- 2 ARM & UPRIGHT ASSEMBLY
- 3 BACK BAR ASSEMBLY
- 4 CASSETTE WITH DISTANCE INDICATOR / TEMPERATURE SENSOR ASSEMBLY
- 5 CASSETTE ASSEMBLY



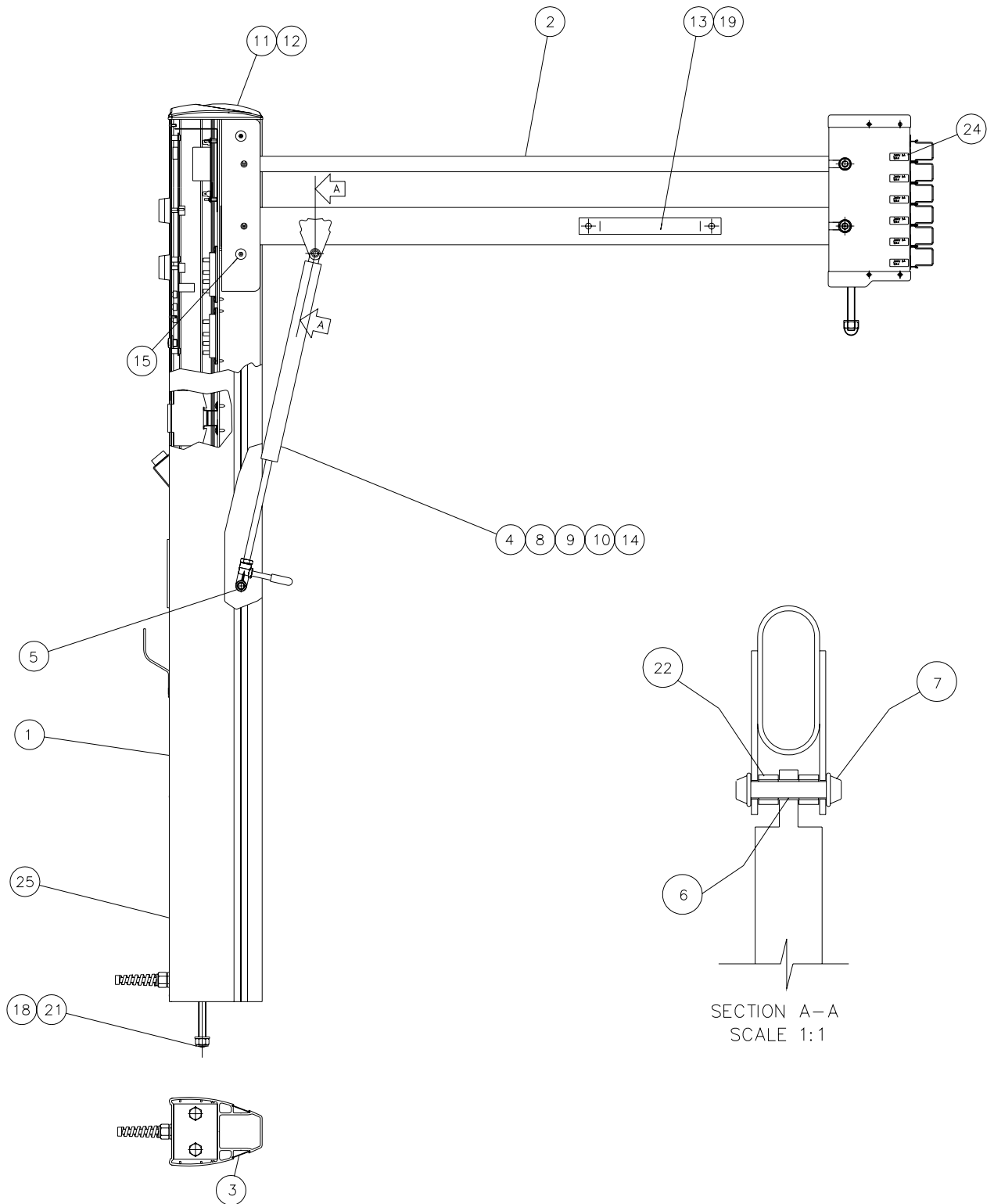
### 3.3.1. BASE



### BASE COMPONENTS

ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1	E321.01	BASE	1
2	S8031	WASHER, M10	4
3	S0293A	NUT, NYLOCK, M10	4
4	S0075D	END CAP – PLASTIC	4
5	S0065	BRAKED CASTOR	2
6	S0064	UNBAKED CASTOR	2

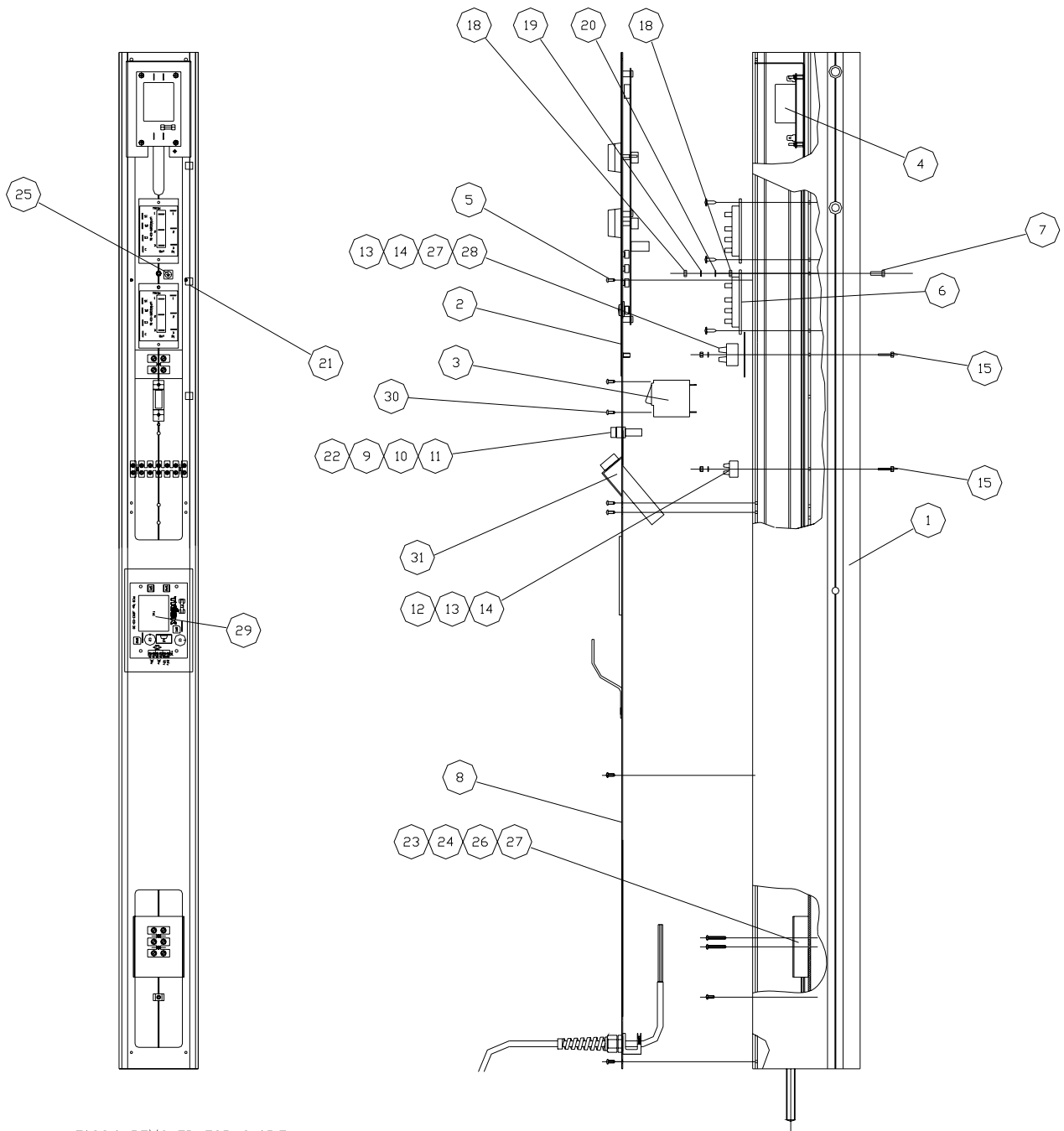
### 3.3.2. ARM & UPRIGHT ASSEMBLY



## ARM & UPRIGHT ASSEMBLY COMPONENTS

ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1	E516-03t	UPRIGHT ASSEMBLY (SEE PART 3.3.3.)	1
2	E516-06t	ARM ASSEMBLY (SEE PART 3.3.4.)	1
3	E221-02-20	COVER, SIDE	2
4	141.02	NUT (GAS STRUT)	1
5	PDD033	PIN	1
6	D320-03-36	STRUT ARM PIN	1
7	177.01	STARLOCK, CAPPED, 5/16"	2
8	S0115	GAS STRUT, 1500N	1
9	S0117	GAS STRUT LEVER	1
10	E221-02-01	GAS STRUT END	1
11	121.07	SCREW, SELF-TAPPER, No6x3/8"	2
12	E221-02-21	TOP CAP	1
13	T1040	HANDLE, PLASTIC, LARGE	1
14	S0118	LEVER GRIP	1
15	108.04	SCREW, BUTTON HEAD, M10x15	4
16			
17			
18	S0294A	NUT, NYLOCK, M12	2
19	S0330	RIVET, Ø4.8x15	2
20			
21	S0314	WASHER, PLAIN, M12	2
22	194.01	SPACER	2
23			
24	PDD105	LABEL – MAX VOLTAGE / AMPS	6
25	E516-03-24t	RATING LABEL	1

### 3.3.3. UPRIGHT ASSEMBLY

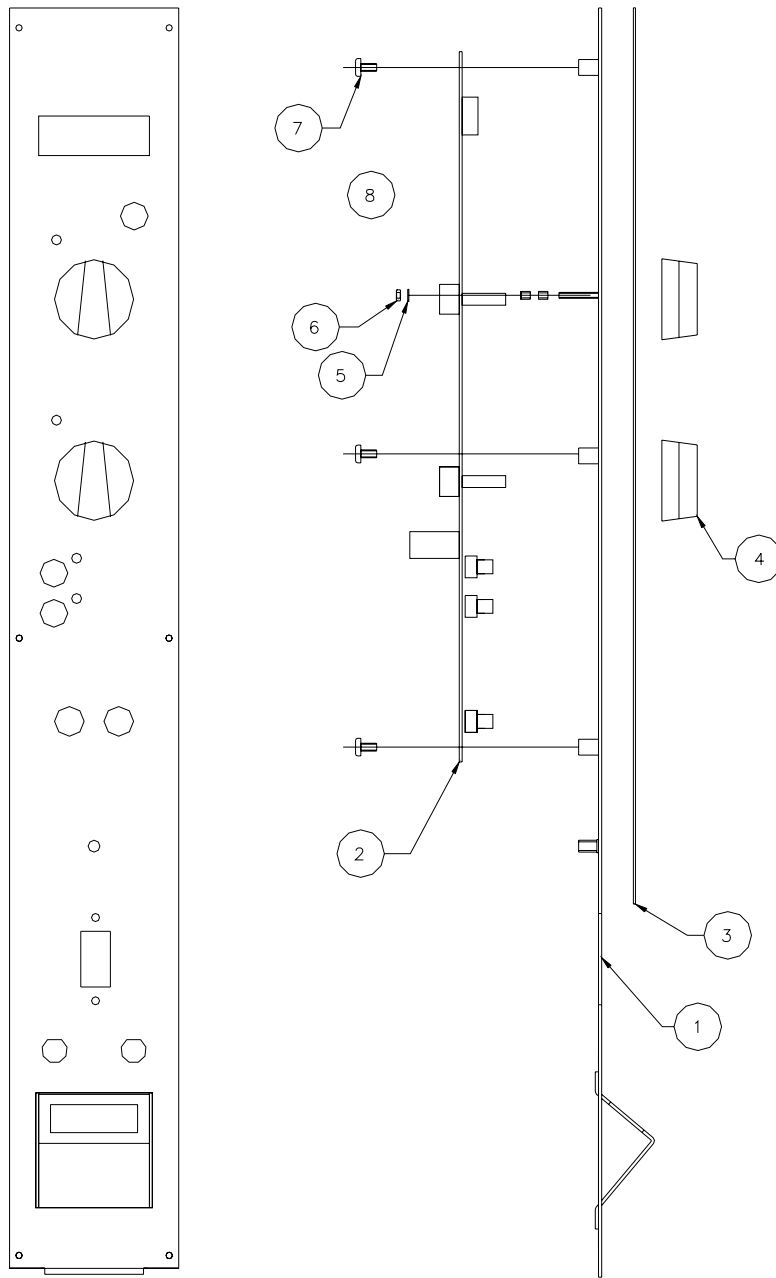


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## UPRIGHT ASSEMBLY COMPONENTS

ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1	E221-03-01	UPRIGHT FABRICATION	1
2	E516-04t	TOP FASCIA ASSEMBLY (SEE PART 3.3.3.A)	1
3	S0162	MCB, SINGLE POLE, 30A	1
4	E516-03-03	TRANSFORMER PCB ASSEMBLY	1
5	121.07	SCREW, SELF-TAPPER, No6x3/8"	15
6	D320-03-15	UNIVERSAL POWER MODULE ASSEMBLY	2
7	S0269	SCREW, M5x16	1
8	E516-04-04t	BOTTOM FASCIA ASSEMBLY (SEE PART 3.3.3.B)	1
9	320.01	FUSE HOLDER, 30A, 250Vac	2
10	S0180A	FUSE, 15A TIME DELAY	2
11	S0217B	HEATSHRINK SLEEVING, Ø6.4	160mm
12	S0173C	TERMINAL BLOCK, 20A	7/12
13	158.01	WASHER, PLASTIC, M4	3
14	148.01	NUT, PLASTIC, M4	4
15	118.01	BOLT, PLASTIC, M4	3
16	E516-03-06t	WIRING LOOM	1
17	E516-03-07t	CIRCUIT DIAGRAM (SEE 3.3.8.)	REF ONLY
18	S0291	NUT, M5	2
19	S0308	WASHER, PLAIN, M5	2
20	S0308A	WASHER, STAR, M5	2
21	E221-03-08	CABLE CLIP	3
22	PDD220	LABEL – FUSE RATING	1
23	E221-03-28	TERMINAL BLOCK SHROUD	1
24	121.09	SCREW, SELF-TAPPER, No6x1"	2
25	790.01	LABEL – EARTH SYMBOL	1
26	PDD089	LABEL – 1phase TERMINAL BLOCK	1
27	S0174	TERMINAL BLOCK, 30A	3+2/12
28	E516-03-27	TERMINAL BLOCK PACKER	1
29	E516-03-03t	24V POWER SUPPLY MOUNTED ASSEMBLY	1
30	S0256	SCREW, POZI-PAN, M3x8	2
31	282.04	TEMPERATURE CONTROLLER	1
32	E221-03-09t	PCB TO TB MOLEX CABLE ASSEMBLY	1

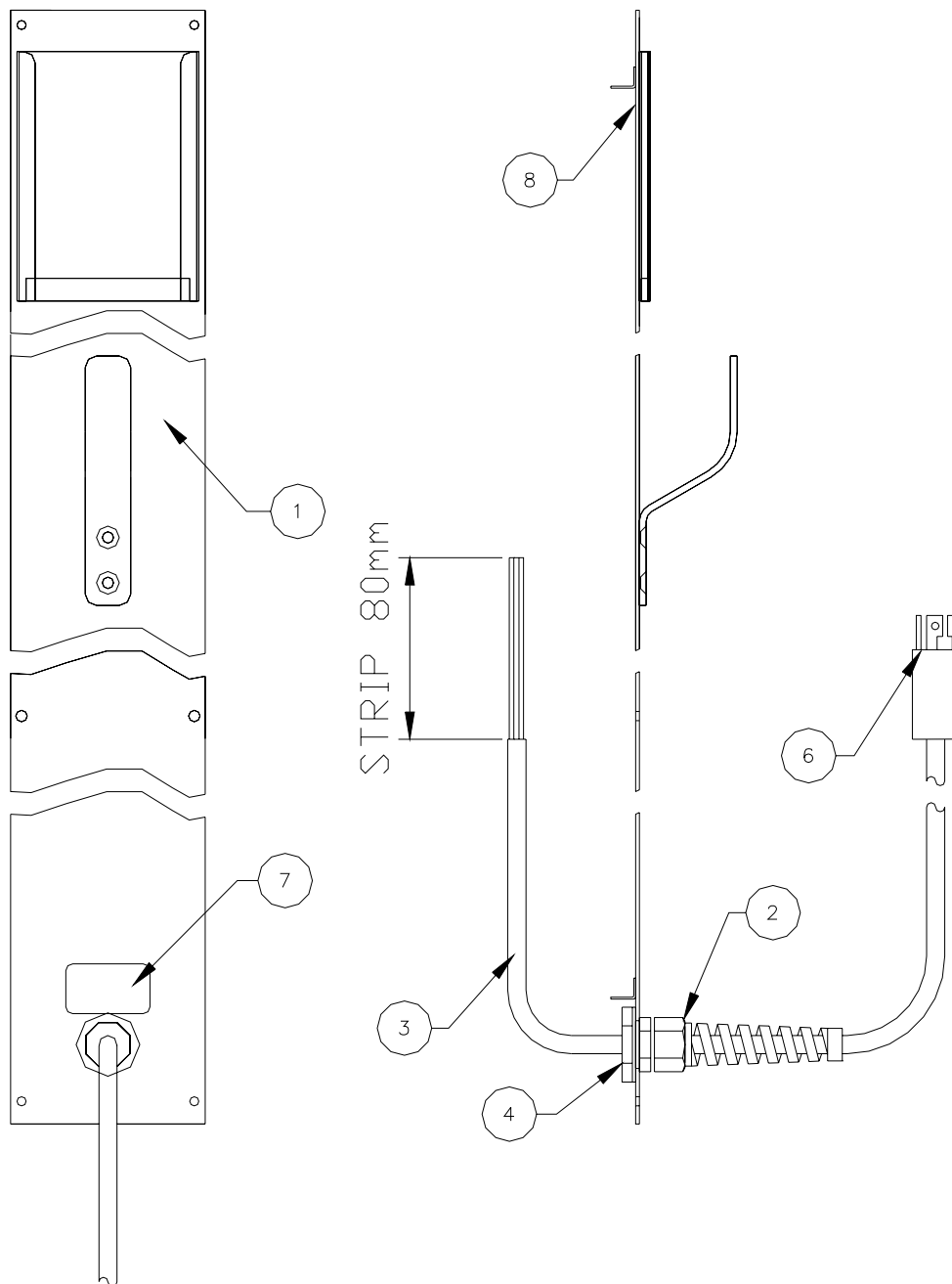
### 3.2.3.A. TOP FASCIA ASSEMBLY



#### TOP FASCIA ASSEMBLY COMPONENTS

ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1	E516-04-05t	FASCIA PLATE FABRICATION	1
2	E516-04-01	ETS5 PCB ASSEMBLY, UL	1
3	E521-04-23	FASCIA LABEL	1
4	S0227	TIMER KNOB	2
5	S0307	WASHER, NYLON, M3	1
6	140.04	NUT, M3	1
7	126.10	SCREW, PAN HEAD, M4x10	6
8	546.12	SPACER	2

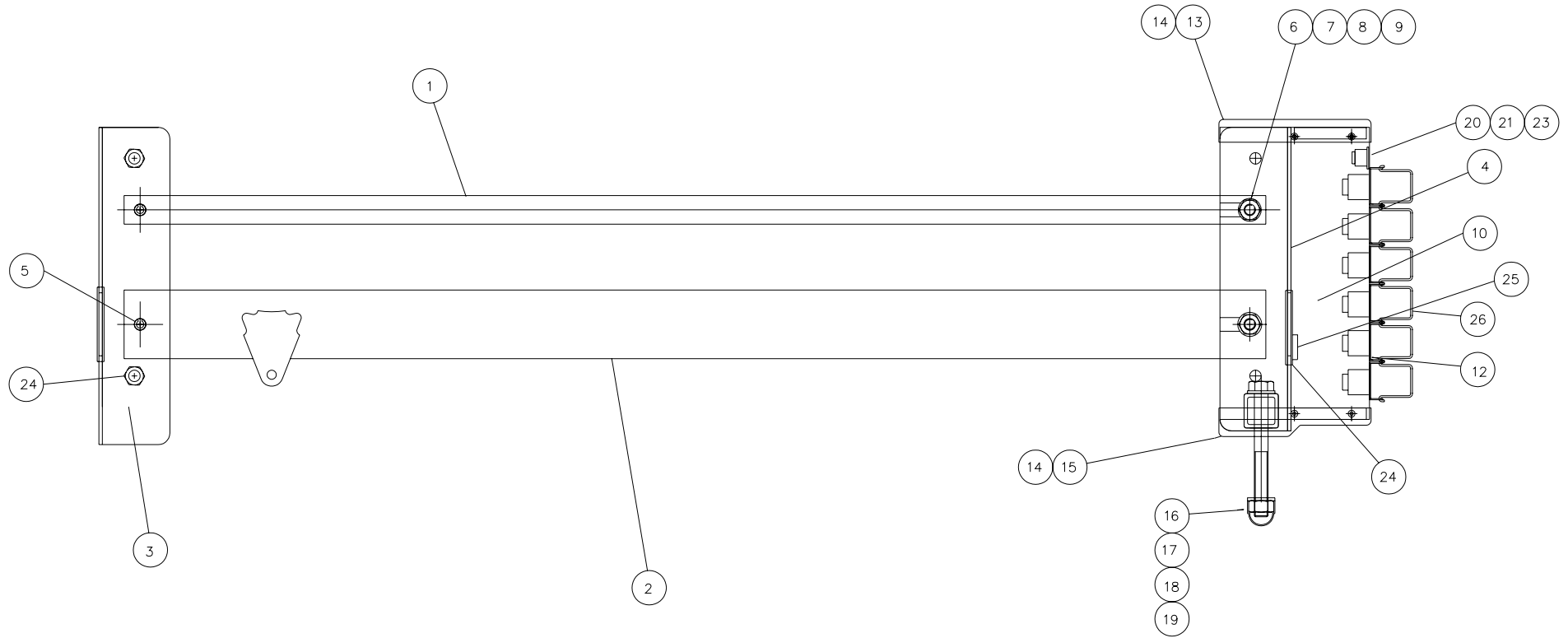
### 3.3.3.B. BOTTOM FASCIA ASSEMBLY



**BOTTOM FASCIA ASSEMBLY COMPONENTS**

ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1	E516-04-02	BTM FASCIA PANEL FABRICATION	1
2	350.08	STRESS RELIEF GLAND, PG21	1
3	S0191A	CABLE, 10AWG, 3-CORE	6m
4	351.02	GLAND NUT, PG21	1
5			
6	S0240B	PLUG	1
7	PDD196	LABEL - DANGER	1
8	790.01	LABEL - EARTH SYMBOL	1

### 3.3.4. ARM ASSEMBLY



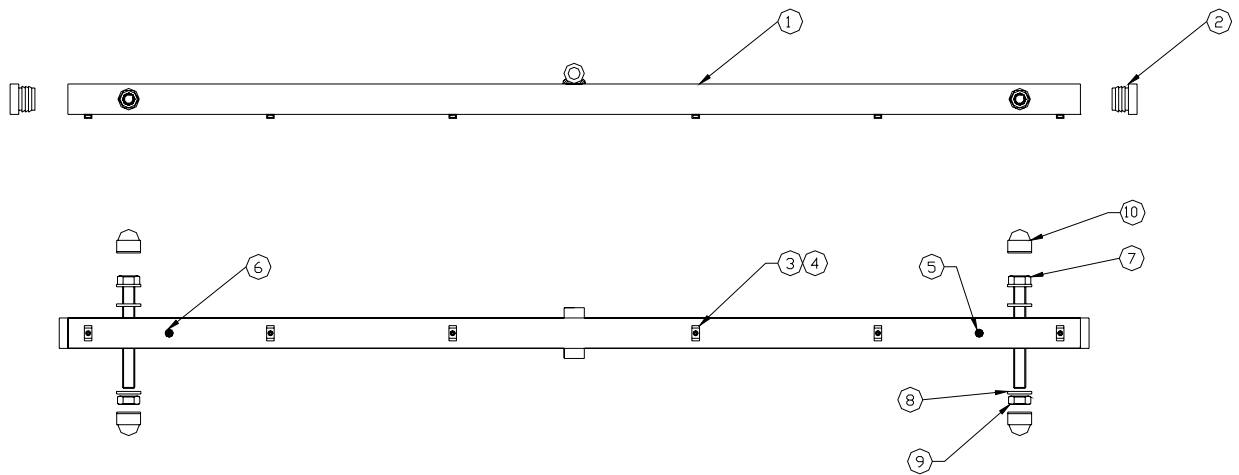


## ARM ASSEMBLY COMPONENTS

ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1	PDD002Y	CONTROL ARM	1
2	PDD002X	SUPPORT ARM	1
3	PDD003X	'U' CHANNEL, COLUMN	1
4	E521-06-04	'U' CHANNEL, SOCKET	1
5	S8027A	SPIRAL PIN, Ø10x50	2
6	S8032	BOLT, HEX HEAD, M10x60	2
7	S8031	WASHER, LAIN, M10	4
8	S0293A	NUT, NYLOCK, M10	2
9	S8030	NUT CAP, M10	2
10	E516-06-03	SOCKET HOUSING ASSEMBLY	1
11			
12	372.03	SOCKET, IEC	6
13	PDD040Y	END CAP, SOCKET HOUSING, TOP	1
14	121.07	SCREW, POZI HEAD, No6x3/8"	8
15	01.04.07	END CAP, SOCKET HOUSING, BOTTOM	1
16	S0283	BOLT, HEX HEAD, M12x100	1
17	S0294A	NUT, NYLOCK, M12	1
18	S0076	NUT CAP, M12	1
19	S0314	WASHER, PLAIN, M12	2
20	E221-06-03t	DISTANCE INDICATOR / TEMPERATURE SENSOR ARM CABLE	1
21	121.21	SCREW, SELF-TAPPER, No4x1/2"	2
22	E516-06-06	WIRING LOOM, ARM	1
23	386.02	HEATSHRINK SLEEVING, Ø19mm	120mm
24	S0078	GROMMET STRIP	2x127mm
25	S0355	GROMMET, Ø11.1	2
26	E330-06-07	SOCKET RETAINING CLIP ASSEMBLY	6

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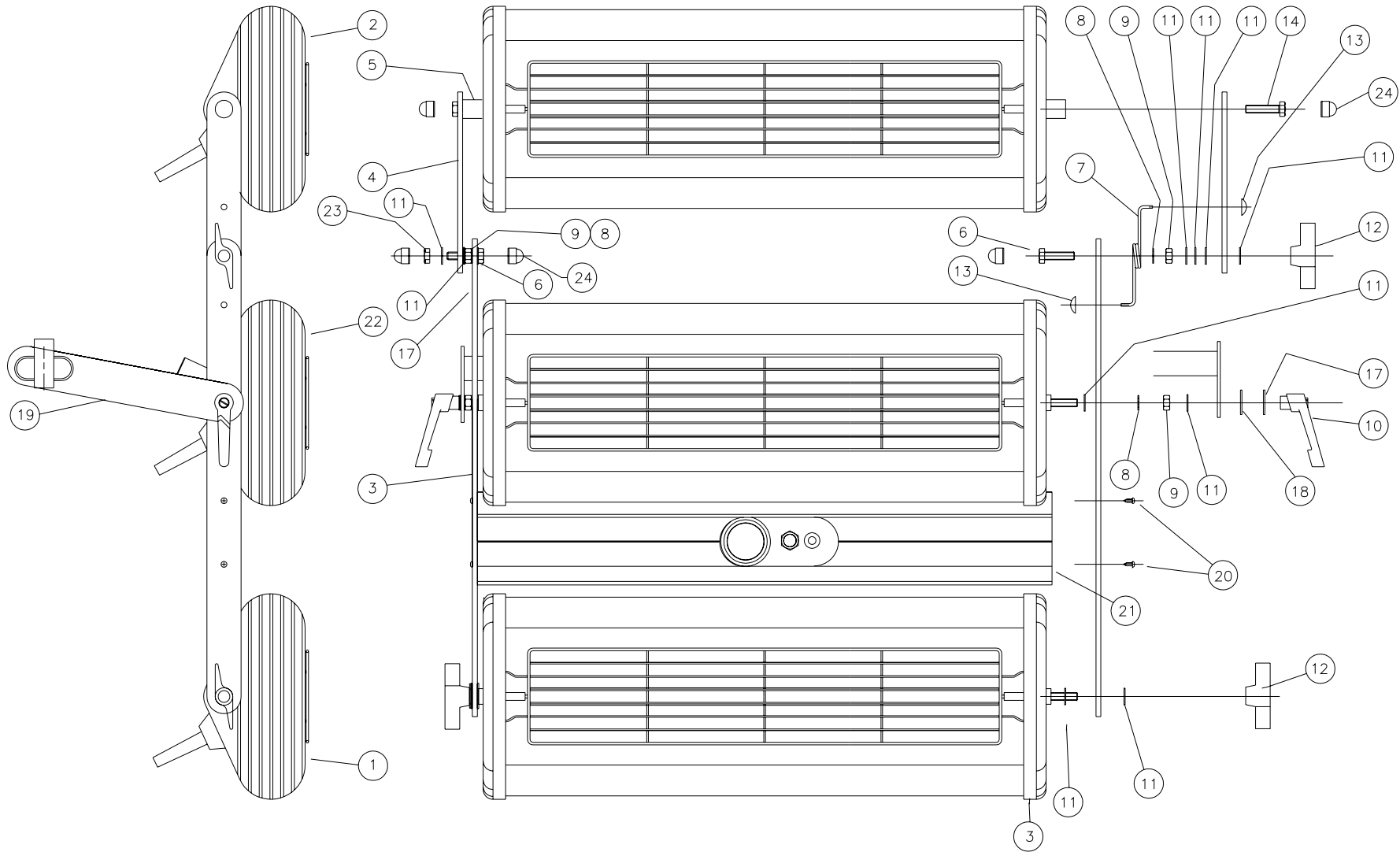
### 3.3.5. BACKBAR ASSEMBLY



### BACKBAR ASSEMBLY COMPONENTS

ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1	E521-08-01	BACKBAR	1
2	T1038	END CAP	2
3	395.03	CABLE TIE BASE	6
4	S0328A	RIVET, BLACK, Ø3.2x8	6
5	790.03	LABEL – GREEN	1
6	790.04	LABEL – RED	1
7	S0283	BOLT, M12x100	2
8	S0314	WASHER, M12	6
9	S0294A	NUT, NYLOCK, M12	2
10	S0076	NUT CAP, M12	4

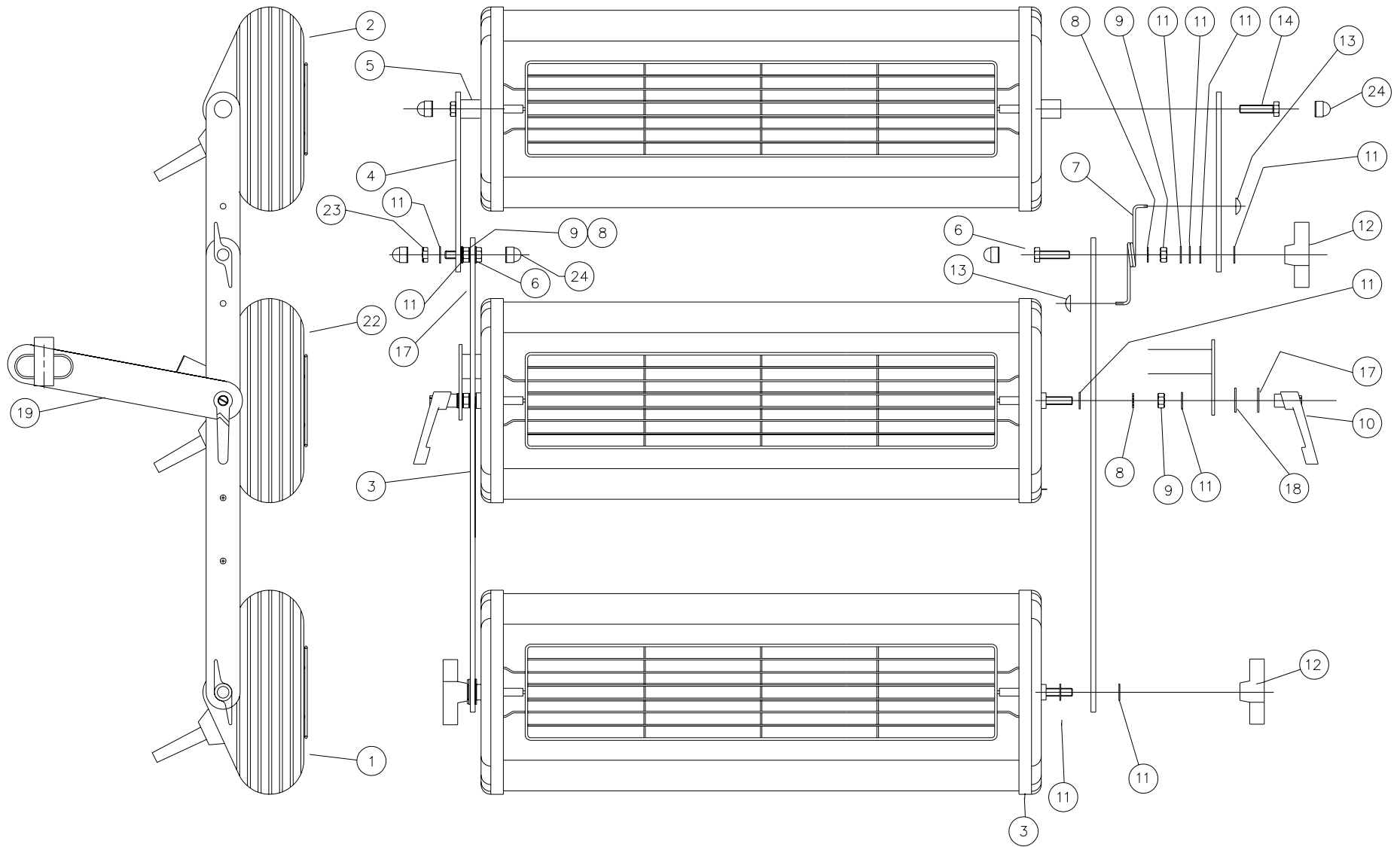
### 3.3.6. CASSETTE WITH DISTANCE INDICATOR / TEMPERATURE SENSOR ASSEMBLY



## CASSETTE WITH DISTANCE INDICATOR / TEMPERATURE SENSOR ASSEMBLY COMPONENTS

ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1	PPA008W	ETS2d CASSETTE ASSEMBLY, NUT FIX (SEE PART 3.1.5.A)	1
2	PPA008Y	ETS2d CASSETTE ASSEMBLY, SCREW FIX (SEE PART 3.1.5.A)	1
3	D320-05-20	ETS2/3d SIDE BRACKET, LONG	2
4	PDD014Y	SIDE BRACKET, SHORT	2
5	PDD036X	SPACER	2
6	S8040	BOLT, M8x30	2
7	PDD034	SPRING	1
8	S0321A	WASHER, SHAKEPRROF, M8	4
9	S8054	NUT, M8	4
10	S0087B	RATCHET LEVER, FEMALE, M8	2
11	S0312	WASHER, PLAIN, M8	16
12	S0087A	WING, KNOB, FEMALE, M8	3
13	177.03	SPIDERFIX, CAPPED, 1/8"	2
14	S0273	SCREW, HEX HEAD, M8x50	2
15			
16			
17	152.01	WASHER, BLACK, 5/16"	2
18	157.01	WASHER, FIBRE, M8	2
19	E521-07-05	BACKBAR ASSEMBLY, LONG	1
20	S0256	SCREW, POZI HEAD, TAPTITE, M3x8	4
21	E214-05t	DISTANCE INDICATOR / TEMPERATURE SENSOR ASSEMBLY	1
22	PPA008V	ETS5d CASSETTE ASSEMBLY, CABLE STANDOFF, NUT FIX	1
23	S0292B	NUT, BINX, M8	1
24	S0077	NUT CAP, M8	5

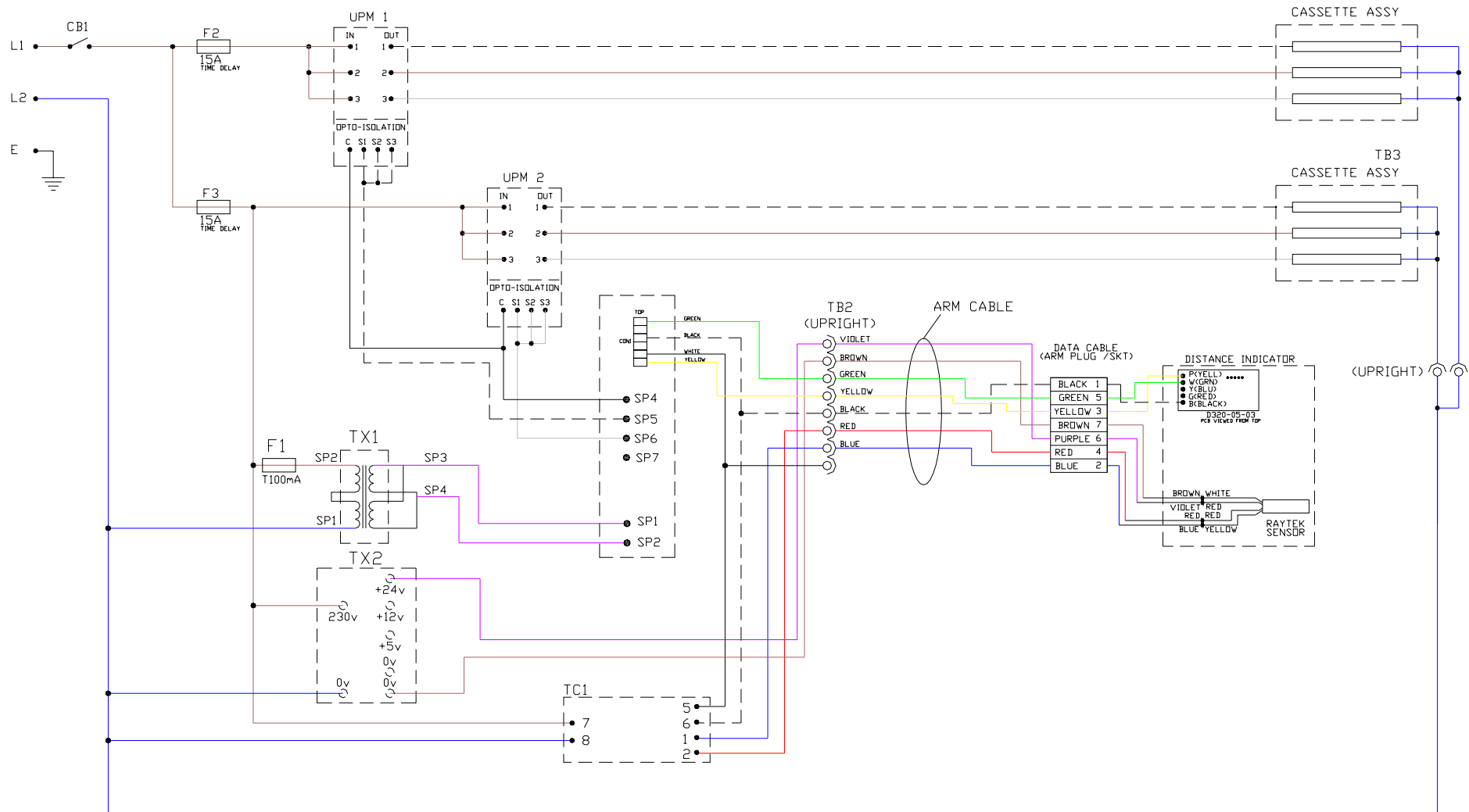
### 3.3.7. CASSETTE ASSEMBLY



## CASSETTE ASSEMBLY COMPONENTS

ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1	PPA008W	ETS2d CASSETTE ASSEMBLY, NUT FIX (SEE PART 3.1.5.A)	1
2	PPA008Y	ETS2d CASSETTE ASSEMBLY, SCREW FIX (SEE PART 3.1.5.A)	1
3	D320-05-20	ETS2/3d SIDE BRACKET, LONG	2
4	PDD014Y	SIDE BRACKET, SHORT	2
5	PDD036X	SPACER	2
6	S8040	BOLT, M8x30	2
7	PDD034	SPRING	1
8	S0321A	WASHER, SHAKEPRROF, M8	4
9	S8054	NUT, M8	4
10	S0087B	RATCHET LEVER, FEMALE, M8	2
11	S0312	WASHER, PLAIN, M8	16
12	S0087A	WING, KNOB, FEMALE, M8	3
13	177.03	SPIDERFIX, CAPPED, 1/8"	2
14	S0273	SCREW, HEX HEAD, M8x50	2
15			
16			
17	152.01	WASHER, BLACK, 5/16"	2
18	157.01	WASHER, FIBRE, M8	2
19	E521-07-05	BACKBAR ASSEMBLY, LONG	1
20			
21			
22	PPA008V	ETS5d CASSETTE ASSEMBLY, CABLE STANDOFF, NUT FIX	1
23	S0292B	NUT, BINX, M8	1
24	S0077	NUT CAP, M8	5

### 3.3.8. CIRCUIT DIAGRAM





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# 4. FAULT FINDING GUIDE

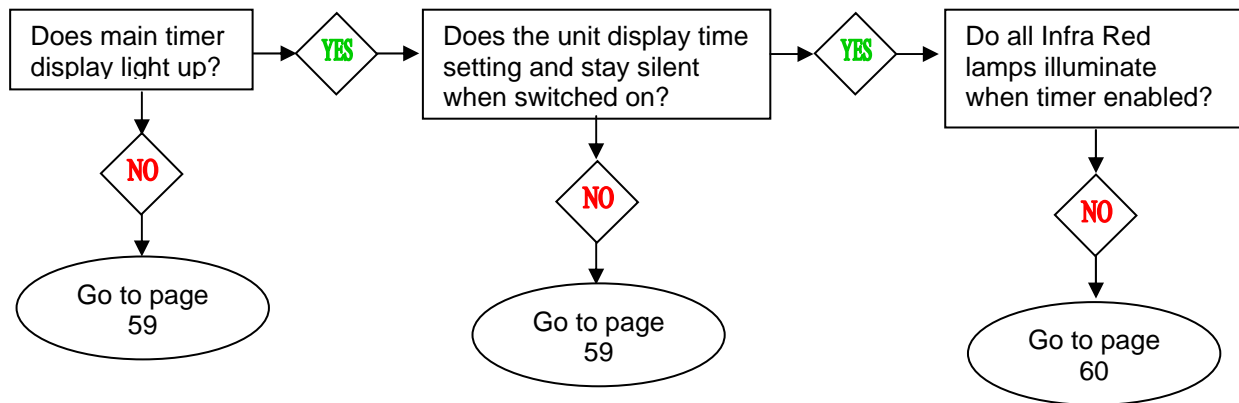
## 4.1. MECHANICAL FAULT

- ARM WILL NOT RAISE OR LOWER

Gas Strut Locknut slack, causing unit to jam. To reset, rotate Gas Strut Shaft one half turn clockwise and check operation with release arm. Continue this operation until a position is obtained which allows the arm to move freely up and down when the Gas Strut Lever is depressed. Tighten Locknut.

If examination of the Gas Strut reveals damage to the unit e.g. Bent Shaft, see 5.7. Gas Strut Replacement.

## 4.2. FAULT FINDING FLOW DIAGRAM



### Hints and Tips

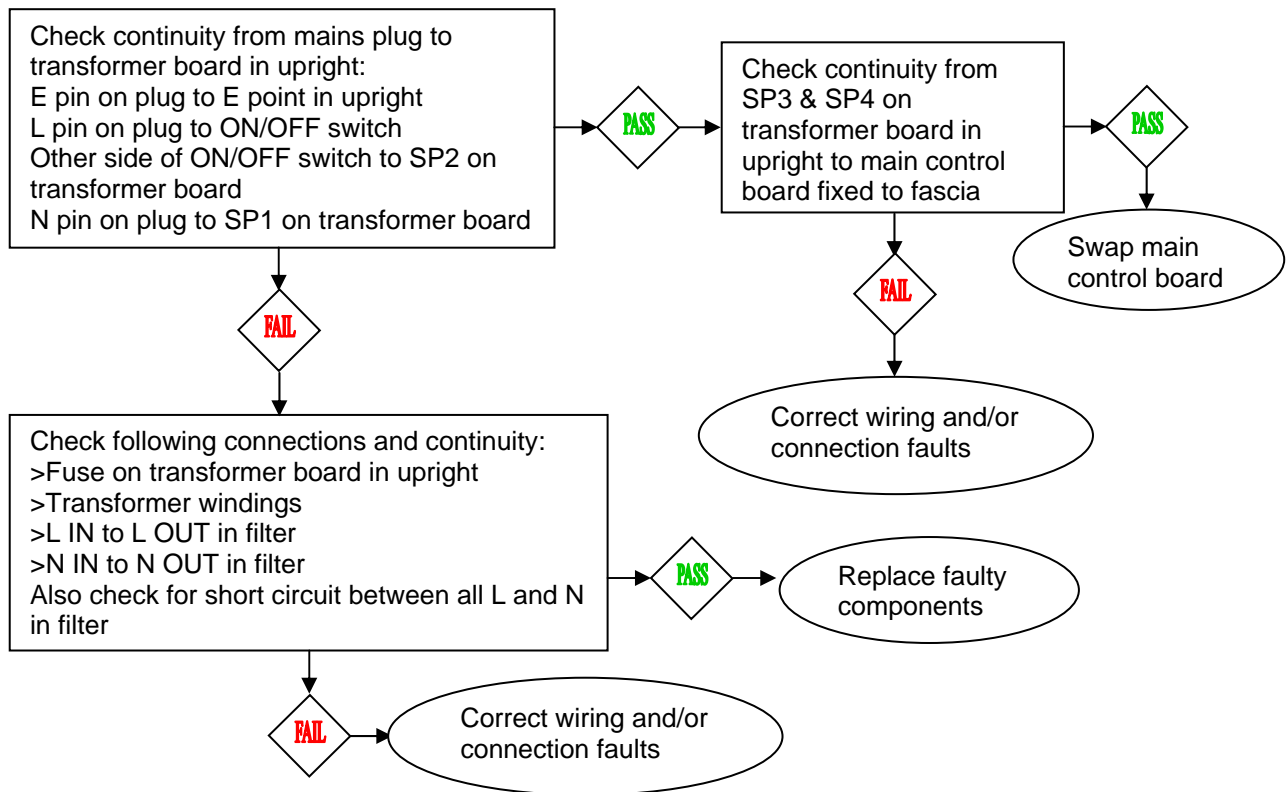
When checking for connection or wiring faults, try moving and bending the wire around. An insecure connection will give an intermittent fault.

If all the wiring seems to be good, check the circuit boards for dry or cracked solder joints. Severe bends and kinks in cables are prone to snapping interior wiring. Melted outer shielding of the mains cable may also be a cause of malfunction.

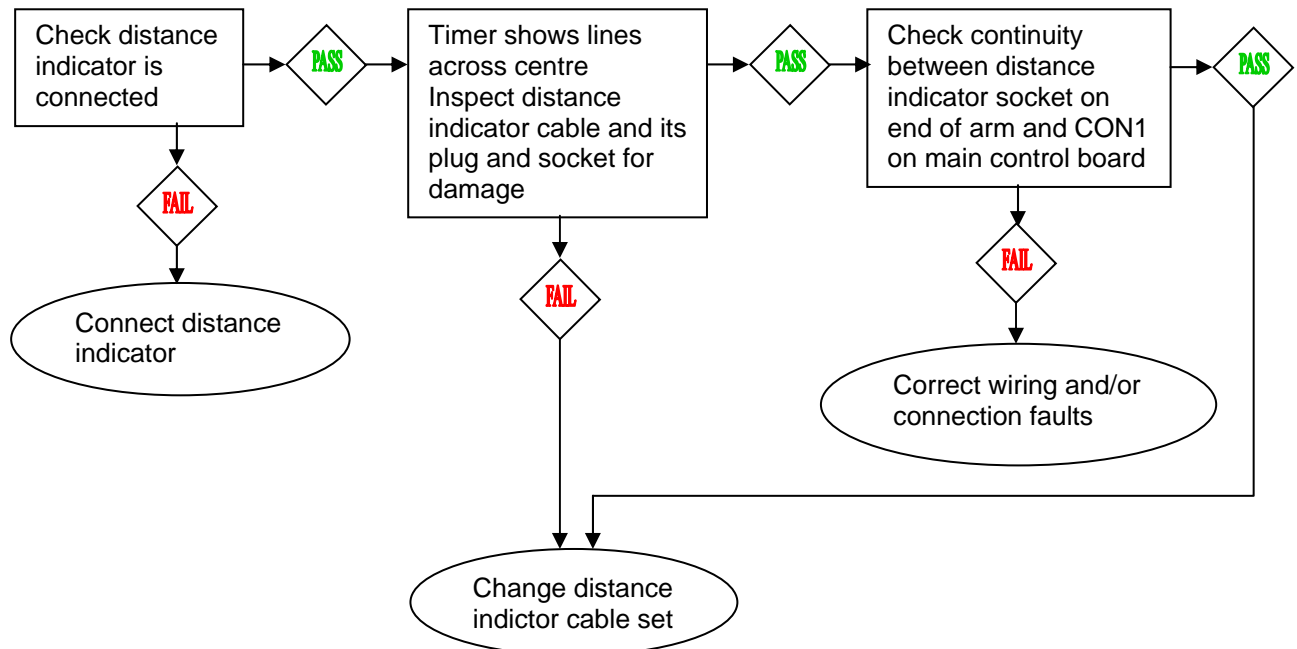
When checking IEC cable for continuity, the resistance across the Live and Neutral of the cable and lamp set should read  $\geq 3.5\Omega$  when cold and  $\leq 16.0\Omega$  just after use.

The Universal Power Module (UPM) is the black component situated approximately 1/3 of the way down the interior of the upright, marked D320.03.15 on casing.

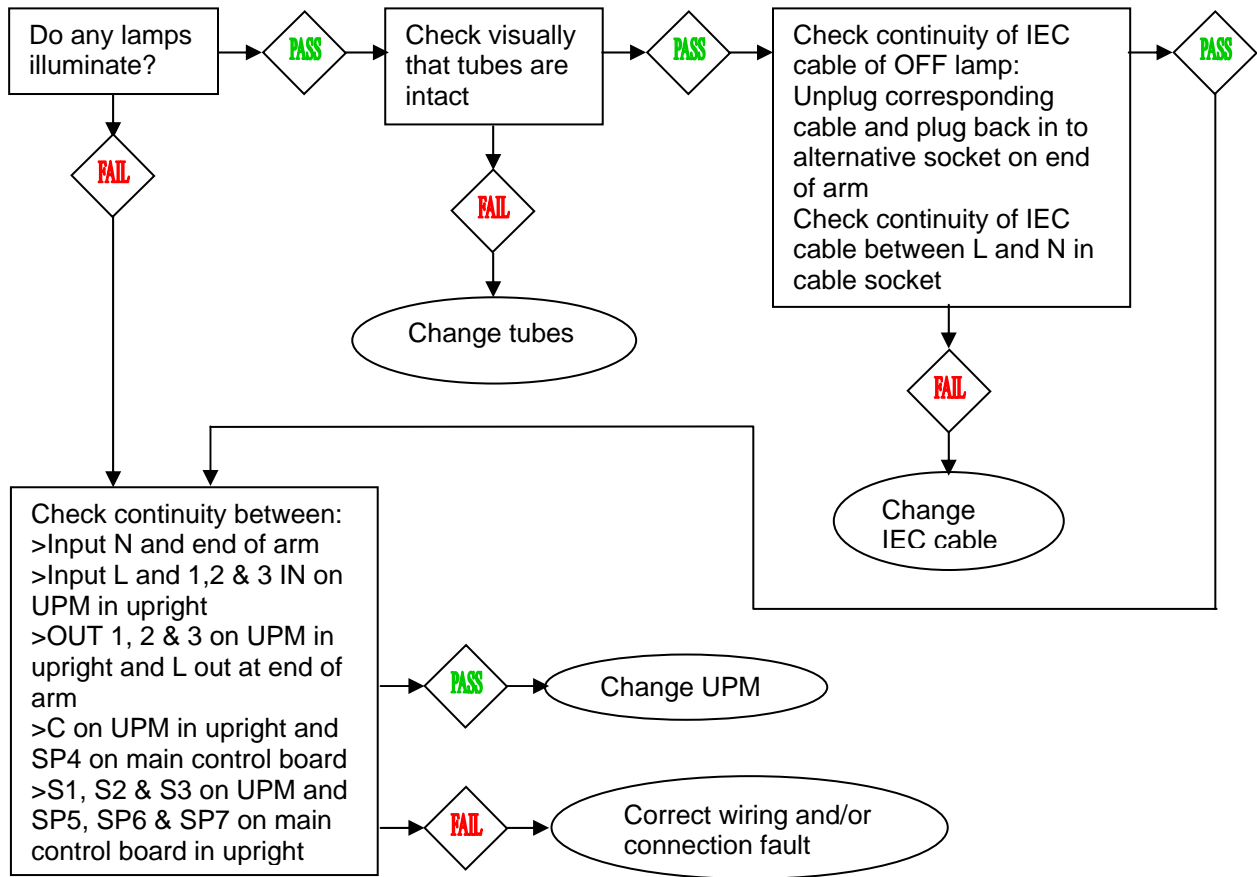
## Does main timer display light up?



## Does the unit display time setting and stay silent when switched on?



**Do all Infra Red lamps illuminate during Flashoff?**



# **5. REPAIR PROCEDURES**

## **5.1. FRONT PANEL REMOVAL**

Ensure unit is disconnected from mains supply.

Remove IR cassette assembly. Take care not to lose the fittings. For double units (ETS5d, dt) at least 2 people are recommended to remove the assembly. With the extended back c-bar it may be easier to remove each set of 3 cassettes and the backbar separately.

Remove upright from base to allow the plastic side strips to be removed. Undo the four screws holding the top cap in position. Remove the four remaining screws holding the front fascia in position. The front fascia can now pivot forward allowing access to the components inside.

## **5.2. MAINS CABLE REPLACEMENT**

Ensure unit is disconnected from mains supply (remove mains plug from the supply).

Remove the six screws that hold the cable gland cover to the upright column. The cover can be eased away from the column exposing the connections to the mains cable.

Disconnect the mains input cable from the terminal block.

Release the clamping screws on the cable clamps and cut the tie wrap holding the cable to the terminal block. Disconnect the earth cable from the cover earth stud. Undo the clamping nut on the spiral gland to release the old mains lead.

To refit the new mains cable, ensure the new cable is the same type as the original. Strip the sheath 270mm back from the end before inserting into the cable gland. Fasten the cable clamp onto the sheath of the mains cable allowing a minimum of 5mm to extend beyond the clamp. Refit the cable tie to tidy cables. Tighten nut of spiral gland. Connect as below:

Black	- Live (Terminal marked L)
White	- Neutral (Terminal marked N)
Green	- Earth (Terminal marked E)

## **5.3. CASSETTE CORD REPLACEMENT\***

\*The Cassette Cord is usually supplied as part of a spares package, complete with Strain Relief Plate and associated components. The following procedure details the steps of replacing just the Cassette Cord itself.

Ensure unit is disconnected from the mains supply.

Disconnect Cassette Cords from IEC Sockets. Remove the affected IR Cassette Assembly from the end of the arm by removing the ratchet lever. Carefully support IR Cassette Assembly and slide this unit off the pivot bolt.

Examination of the rear of the affected IR Cassette will show the cord entering the unit via

a spiral gland mounted on a Strain Relief Plate. Drill out the four rivets which hold the Strain Relief Plate to the Back Mesh, and the central rivet that holds the Earth Terminal to the Strain Relief Plate.

A record should be made of the connections to the Terminal Block before removing old cable.

A pair of Heyco hand pliers are usually required for removing and fitting the Spiral Gland but normal can be used if necessary. Fit new cord. Re-attach the cassette earth terminal. Rivet the Strain Relief Plate onto Back Mesh. The unit is now ready for re-assembly

## **5.4. UPM REPLACEMENT (UNIVERSAL POWER MODULE)**

Ensure unit is disconnected from the mains supply.

See procedure 1 for removal of front panel.

Do not disconnect the old UPM until the new one is in place. The UPM can be swapped by first removing the two securing screws. The new UPM can then be fixed into position, (once thermally conductive paste has been applied). The cabling can then be swapped over, being careful to connect correctly.

## **5.5. MAIN CONTROL PCB REPLACEMENT**

Ensure unit is disconnected from the mains supply.

See procedure 1 for removal of front panel.

Do not disconnect the old control PCB until the new one is in place. Undo the M3 nut located near the six-pin connector. Undo the six screws fixing the control PCB to the front panel. Remove knobs on front of panel. Fix new control PCB in position and carefully swap the interconnections from the old control PCB to the new.

## **5.6. IEC SOCKET REPLACEMENT**

Ensure unit is disconnected from mains supply.

Remove cassette assembly / pivot bolt assembly.

To remove the plastic covers at the end of the arm undo the 8 screws fixing them.

Remove Plastic Caps, which cover bolts that attach socket housing to arm 'U' Channel.

Slacken M10 Lock-nuts sufficiently to allow the Socket Housing to slide off and give access to the sockets. Do not use excessive force or the wires will be damaged.

Take a note of the wiring connections to the damaged socket then remove wires and unclip socket. Clip the new socket into housing and refit cables. Refit Socket Housing to arm.

## **5.7. GAS STRUT REPLACEMENT**

Ensure unit is disconnected from mains supply.

Check rating of replacement Gas Strut is correct (if in doubt, check rating on old gas strut).

Remove cassette assembly, remove upright from base and remove side strips.  
Remove the self – tapping screws that secure the Plastic Cap on the top of Upright.  
Remove the 2 plastic covers from the side of the Upright.  
Carefully support the cassette assembly on a stand or bench.  
Remove the capped starlock from one side of the pin assembly that fasten the Gas Strut to the support arm. (A new capped starlock will probably be needed)  
Push out the lower Gas Strut Pivot Pin. Rotate the Gas Strut and remove from the Upright.  
Replace with a TRISK pre-prepared Gas Strut. Replace the lower Gas Strut Pivot Pin.  
Adjust the support arm height to suit the new Gas Strut setting. Reassemble holding collar arrangement and fix in place with new split pin.  
CAUTION: Once fitted, Gas Strut should only be tested with IR Cassettes in place.  
Check that Gas Strut operation is satisfactory.

## **5.8. IR EMITTER REPLACEMENT**

Check that replacement emitter has correct voltage and wattage ratings. Check old emitter end caps if in doubt.  
Ensure unit is disconnected from mains supply.  
Remove wire Grille from front of IR Cassette.  
Remove Self Tapping Screws, which hold Side Reflectors onto cassette. A small screwdriver will be necessary to lift the side reflector from the cassette.  
When the Side Reflectors are removed, take note of the cable positions before removing old emitter.  
The In-Line connector can be separated by hand, but a better solution is to use two pairs of pliers. One to hold each connector when separating the wires.  
Fit new Infra-Red Emitter to sockets in cassette. To avoid touching the ruby sleeve with bare hands use tissue paper when handling the emitter.  
Reconnect Infra-Red Emitter to cassette wiring, taking care to replace the wires in the original positions.  
Fit side reflectors then clean ruby sleeve and Reflectors with IPA or Methylated Spirits.  
Refit Grille.  
Allow 15 minutes for the solvent to dissipate before switching on.



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