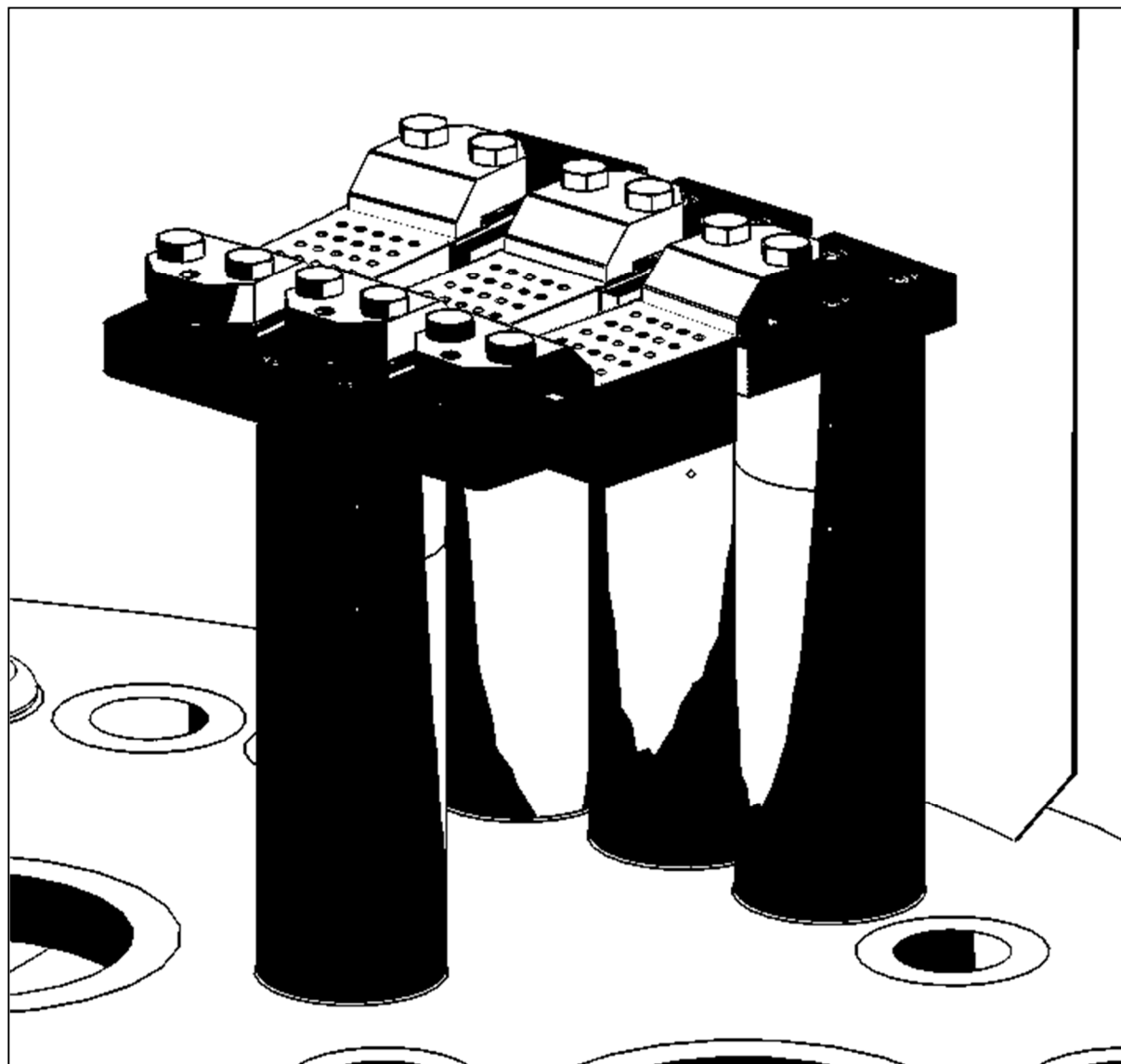
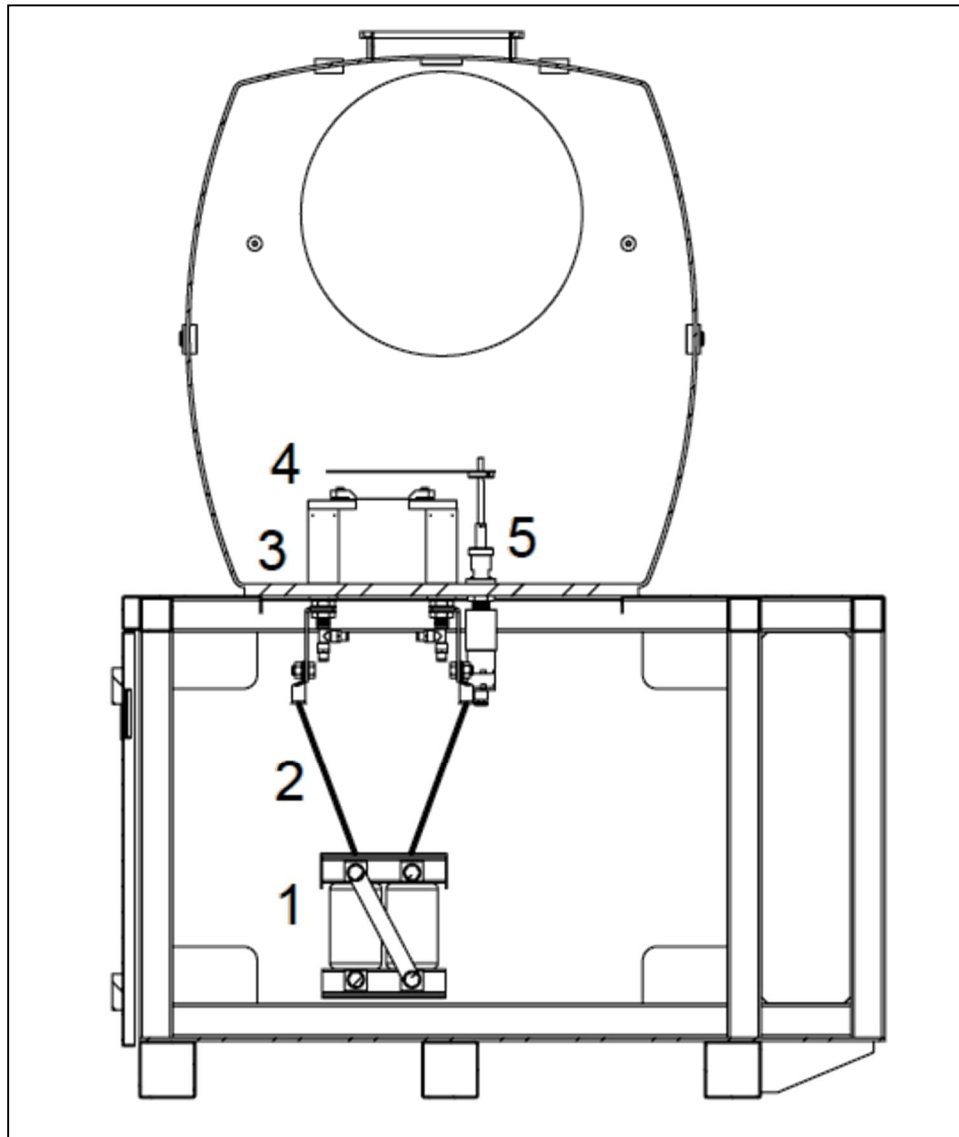


## Thermal Source Evaporation Equipment



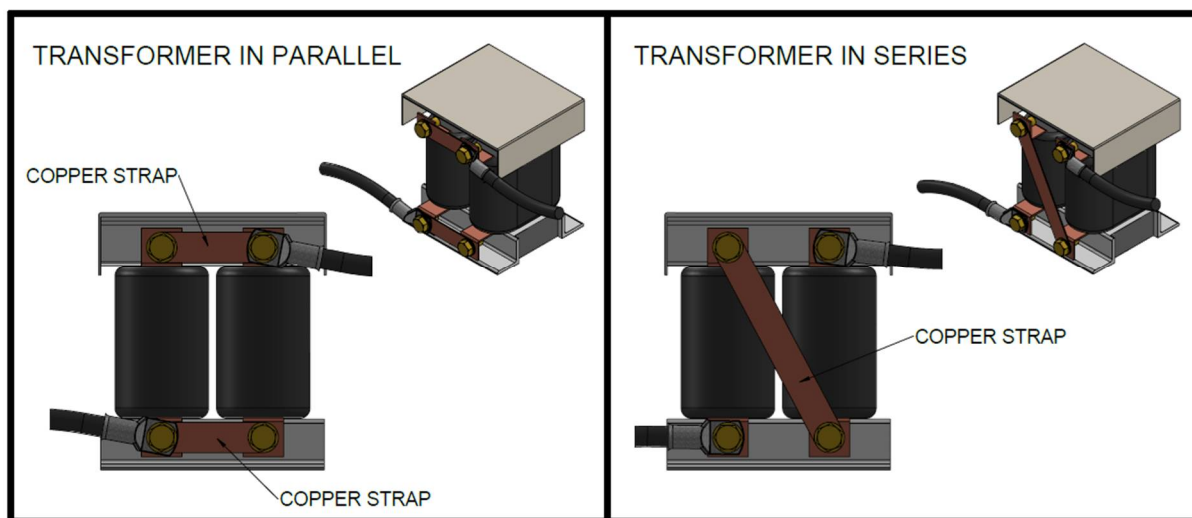
Material evaporation by means of resistance heated evaporation sources is a method which is often used in thin film production. The main features of resistance heated evaporation are uncomplicated apparatus, low cost procurement, simple to use, and provides a wealth of combinations and variations. Indirect resistance heating is the method used most in actual practice, the coating material being heated in a 'live' carrier from which it is evaporated or sublimated, depending on the material. Carriers are usually plates or wires of refractory metals such as Tungsten, Tantalum, or Molybdenum in the form of boats or spirals. Graphite boats are used for materials which easily alloy with the above mentioned refractory metals.

## Basic Equipment Setup For Thermal Source Evaporation



- 1) High Current Transformer
- 2) High Current Cable
- 3) High Current Feedthrough pole
- 4) Thermal Source Boat Clamp
- 5) Rotary Shutter With Drive

## 1) High Current Transformer



The high current transformer provides the current for heating the source to the temperature required to evaporate the material. For each evaporation source a separate transformer is required.

### Technical Data

Connection Type	Parallel	Series
Primary Voltage	220 V	220 V
Secondary Voltage	4 V	8 V
Secondary Current	950 A	475 A
Continuous Output	3.8 kVA	3.8 kVA

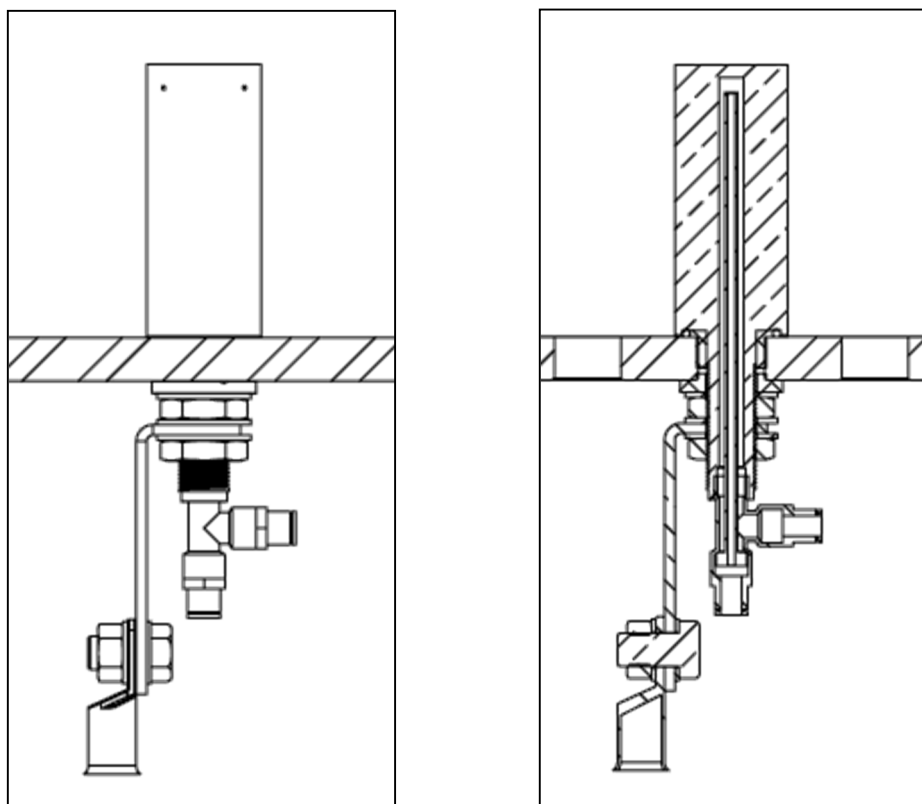
## 2) High Current Cable

Insulated Copper-flex cable with cable lugs at both ends. Two high current cables are required for each evaporation source.

### Technical Data

Length	-
Cross-section	185mm <sup>2</sup>

### 3) High Current Feedthrough Pole

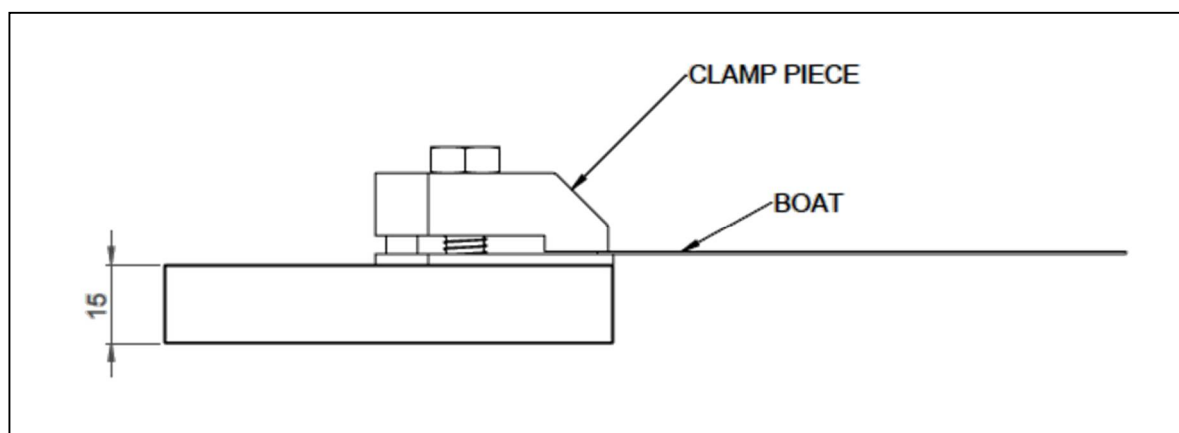


The feedthrough comprises of a heavy duty feedthrough body, power and water connection. The feedthrough body is water cooled up the entire length to maintain good thermal stability. Permissible continuous load is 5000A with water cooling which allows for very high evaporation temperatures and long evaporation times. The way that the thermal source assembles means that the in chamber height can be increased if required with spacer blocks making it more flexible than regular thermal sources.

#### Technical Data

Chamber Port Size	32.5mm
Water Connection	10mm Push Fitting
Power Connection	Copper Elbow, 18mm through hole
Amperage, Max	5000 A
Material	Copper (Cu)
Feedthrough Pole Height In Chamber (Excluding Boat Clamp)	132mm

#### 4) Thermal Source Boat Clamp

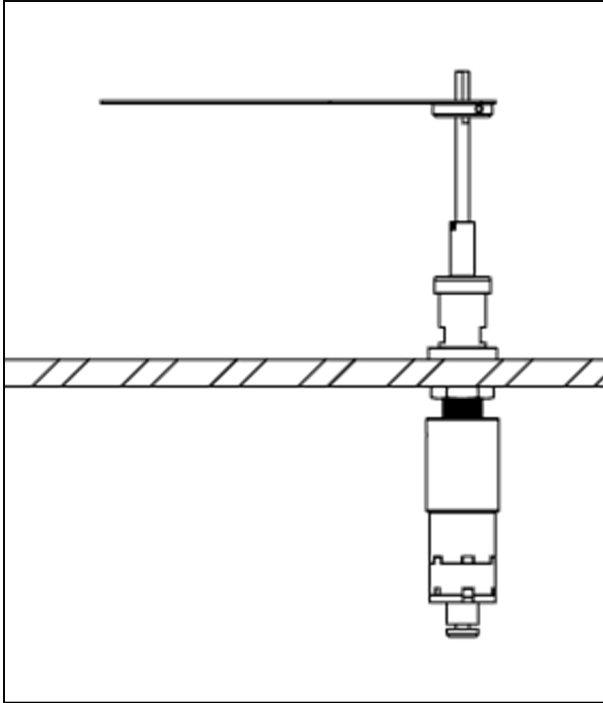


The thermal source boat clamp is the mechanical fixation and provides a low resistance contact between the electrode and the source. The boat is always clamped and contacted across its full width which creates even heating. Boat position is precisely maintained when changing the boat which helps produce excellent reproducibility of the film thickness distribution.

#### Technical Data

Fixing Method	4x M8 x 20 Cap Head Bolts
Clamping Bolts	2x M8 x 25 Hex Head Bolts
Clamping Width	40mm

## 5) Rotary Shutter With Drive



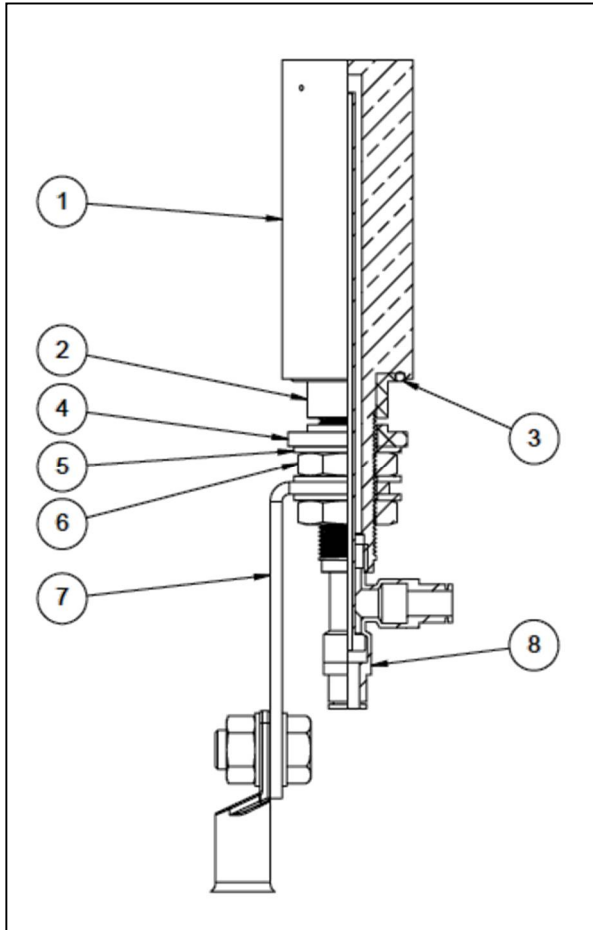
The rotary shutter allows the evaporation process to be precisely cut off by controlled covering of the evaporation source, and it also prevents the substrates from being coated during the degassing process. The shutter is opened and closed by a pneumatic actuator. It will close automatically in the event of a power failure. The shutter is controlled by the evaporation and process control.

The drive mechanism is located outside area where it takes up little space, is not exposed to heat radiation, and produces no interfering magnetic field. The size and shape of the shutter blade are adapted to each individual application and chamber layout.

### Technical Data

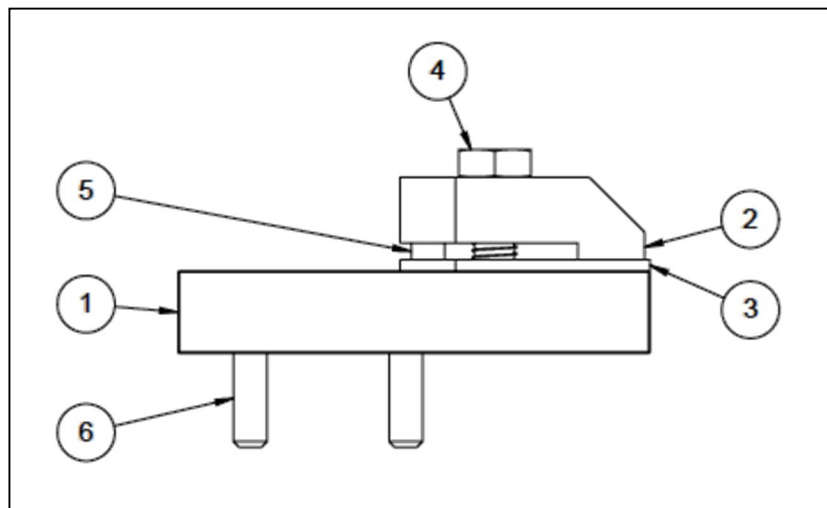
Chamber Port Size	32.5mm
Air Pressure	3-10 bar
Air Connection	6mm Push Fitting

## Spare Parts List



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	18918-151	WATER COOLED THERMAL SOURCE POLE	1
2	18918-157	THERMAL SOURCE PTFE INSULATING RING	1
3	40x4 O-Ring	40MM X 4MM VITON O-RING	1
4	18918-158	THERMAL SOURCE INSULATING WASHER	1
5	18918-159	45 X 25 X 2.5 COPPER WASHER	3
6	18918-160	M24 BRASS NUT	2
7	18918-161	THERMAL SOURCE TERMINAL CONNECTION	1
8	18918-166	3/8" RUN TEE WITH WATER FEED MODIFICATION	1

## Spare Parts List



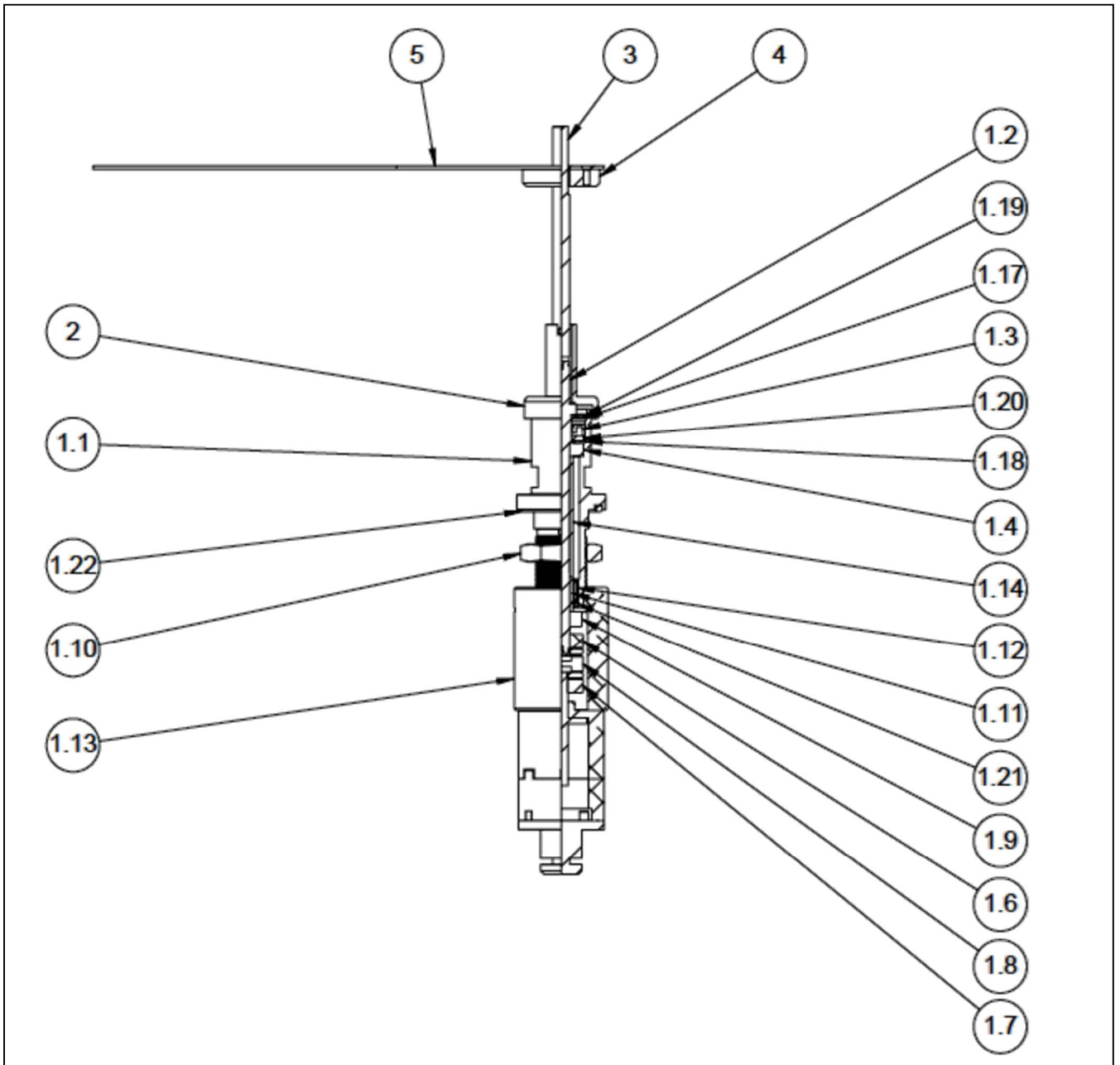
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	18918-152	THERMAL SOURCE SINGLE CLAMP MOUNT PLATE	1
2	18918-154	THERMAL SOURCE BOAT CLAMP	1
3	18918-155	THERMAL SOURCE BOAT CLAMP CONNECTION PLATE	1
4	M8 x 25 Hex	STAINLESS STEEL M8 X 25MM HEX HEAD BOLT	2
5	M6 x 12 Grub	STAINLESS STEEL M6 X 12MM GRUB SCREW	1
6	M6 X 20 Cap	STAINLESS STEEL M6 X 20MM CAP HEAD BOLT	4

## Thermal Source Accessories

PART NUMBER	DESCRIPTION	QTY.
18918-156	THERMAL SOURCE TRIPLE CLAMP MOUNT PLATE	1
18918-183	THERMAL SOURCE SPACER BLOCK	1
M6 X 55 Cap	STAINLESS STEEL M6 X 55MM CAP HEAD BOLT (FOR USE WITH 18918-183)	1



## Spare Parts List



## Spare Parts List

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	Shutter Feedthru Assy		1
1.1	1041 01 001	FEEDTHRU BODY	1
1.2	1041 01 002	SHUTTER FEEDTHRU SHAFT	1
1.3	12x28x7	LIP SEAL	1
1.4	6000	6000 BEARING	1
1.5	CDRB2BWU30-180S	SMC ROTARY ACTUATOR	1
1.6	423-1747	10MM JAW COUPLING	1
1.7	423-1731	8MM JAW COUPLING	1
1.8	423-1911	JAW COUPLING ELEMENT 92 SHORE	1
1.9	691-8049	10MM SHAFT CLAMP	1
1.1	1041 01 004	M30 FEEDTHRU NUT	1
1.11	1041 01 005	BEARING SLEEVE 10 X 14 X 20	1
1.12	HK1412	CAGED NEEDLE ROLLER 14 X 20 X 12	1
1.13	1041 01 006	SHUTTER ACTUATOR MOUNT	1
1.14	1041 01 003	FEEDTHRU SPACER TUBE	1
1.15	M5 x 50 cap	STAINLESS STEEL M5 X 50MM CAP HEAD BOLT	3
1.16	M5 x 20 cap	STAINLESS STEEL M5 X 20MM CAP HEAD BOLT	1
1.17	40 washer		1
1.18	26mm Internal circlip		1
1.19	30mm Internal circlip		1
1.2	Felt Packer		1
1.21	G14X20X3		1
1.22	40x4 O-Ring	40MM X 4MM VITON O-RING	1
2	shutter mount boss 1	SHUTTER FEEDTHROUGH ASSEMBLY - SHUTTER MOUNT BOSS	1
3	Shutter shaft 1 - 135mm long		1
4	Shutter boss 1		1
5	1043 01 021	SHUTTER BLADE	1