



**synthesis  
technology**

**MOTM-420 Voltage-Controlled Filter  
Assembly Instructions & Owner's Manual**

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# MOTM-420 PARTS LIST

Please carefully check that all parts are in your kit. If you have a suspected shortage, please call or email. If you get free extra stuff, keep it for next time.

**Capacitor** bag, containing the following 15 parts:

2ea 10mfd, 25V Electrolytic	C14, C15
1ea 3.3mfd, 50V non-polar Electrolytic	C5
1ea 33mfd, 35V low-leakage Electrolytic	C12
1ea 22pf (marked 220) ceramic axial	C13
2ea 2200pf axial polystyrene	C10, C11
1ea 1000pf yellow box (marked E102 or 1N)	C2
7ea 0.1mfd (marked 104) ceramic axial	C1, C3, C4, C6, C7, C8, C9

**Resistor** bag, containing the following 36 parts:

6ea 10K (brown, black, orange)	R17, 25, 26, 28, 29, R30
4ea 220 ohm (red, red, brown)	R23, 24, 27, R31
4ea 100K 1% (brown, black, black, orange)	R1, R2, R3, R10
3ea 100K (brown, black, yellow)	R13, R20, R21
3ea 51K1 1% (green, brown, brown, red)	R11, 12, 19
2ea 8K2 (gray, red, red)	R8, R14
2ea 22K (red, red, orange)	R16, R32
1ea 1K 1% 3W tempco (large, black)	R4 (this mounts over Q1)
1ea 44K2 1% (yellow, yellow, red, red)	R5
1ea 475K 1% (yellow, violet, green, orange)	R6
1ea 4K7 (yellow, violet, red)	R7
1ea 221K 1% (red, red, brown, orange)	R9
1ea 2K7 (red, violet, red)	R15
1ea 2K2 (red, red, red)	R18
1ea 75K (violet, green, orange)	R22
1ea 82K (gray, red, orange)	R33
1ea 12K (brown, red, orange)	R34
1ea 39K (orange, white, orange)	R35
1ea 510 ohms (green, brown, brown)	R36

**IC** bag, containing the following 12 parts:

1ea MXL1013CN8 precision op amp	U1
1ea TL072 dual op amp	U2
1ea JRC4558 dual op amp	U3
1ea JRC4556 dual op amp	U4
1ea LM13600AN dual OTA	U5
1ea SSM2220 dual matched PNP	Q1
6ea 1N4148 diodes	D1 – D6

- Misc #1 bag, containing the following 6 parts:**

2ea Axial ferrite beads (plain, gray things)L1, L2  
1ea MTA-156 power connector JP1  
1ea SPDT (ON-OFF-ON) toggle switch SW1  
1ea trimmer, 20K Bourns 3386P TP1  
1ea trimmer 2K Bourns 3386P TP2

- Knobs, 7ea, ALCO PKES90B1/4**

- Jacks, 7ea Switchcraft 112A**

- Pots, 7ea containing the following:**

1ea 100K cermet Spectrol 149 VR7  
3ea 100K conductive plastic Bourns 95A1 VR1, 2, 3  
3ea 100K log conductive plastic Spectrol 148 VR4, 5, 6

- Front panel**

- Mounting bracket**

- Wire bag, containing the following 12 wires:**

4ea RG-174 coax, 4 ½ inches  
1ea RG-174 coax, 7 inches  
3ea 3-wire set 22ga, 6 1/2 inches (white/red/black)  
2ea 2-wire set, 22ga, 7 inches (white/orange)  
1ea 3-wire set, 22ga, 4 inches (white/orange/gray)  
1ea Power Cable, 20"

- Hardware bag, containing:**

4ea #8-32 x 3/8 black screws (for mounting module to rack)  
4ea #6-32 x 1/2 zinc screws (for attaching pc board to bracket)  
4ea 1/4 inch aluminum spacers  
6ea #6 KEPS nuts (2 for attaching bracket to front panel, 4 for pc board)  
7ea small tie-wraps  
9ea small heat-shrink tubing

- Organic Solder**

- No-clean Solder**

- PC Board, MOTM-420**

**\*\*\* In addition, you will need a very small amount of silicone heat-sink compound. Available from Allied, Newark, Mouser, Maplin, and many others \*\*\***