

Jurgen Haible Frequency Shifter Parts List

Qty	Description	Mouser P/N	Comments
PCB COMPONENTS			
Semiconductors			
3	OP-07	595-OP07CP	
3	TL074	595-TL074BCN	
13	TL072	595-TL072BCP	
4	TL071	595-TL071BCP	
1	LM358	595-LM358P	
2	MC1496	863-MC1496PG	
3	LM13700	513-NJM13700D	can substitute LM13600 or NE5517
1	LM317 TO220	512-LM317T	PSU only; requires heat sink
1	LM337 TO220	512-LM337T	PSU only; requires heat sink
1	SSM2019		mic only; can substitute SSM2017 or THAT1510
2	BC550C	512-BC550CBU	
2	BC560C	512-BC560CBU	
2	BF245A	512-BF245A	
3	2SA733	512-2SA733P	
6	1N4002	512-1N4002	PSU only
13	1N4148	512-1N4148	
4	5.1V 500mW zener	512-BZX55C5V1	mic only
SMT Capacitors; 0805			
37	100nF 35V	80-C0805C104K5R	
4	22pF 35V	80-C0805C220K5G	marked 2 x 22p next to SMT pads
Electrolytic Capacitors			
2	10 uF 25V tantalum	80-T350G106K035AT	PSU only; replace with 22 uF for MOTM power connector
6	10uF 35V	140-MLRH35V10-RC	
10	22uF 35V	140-MLRH35V22-RC	slightly too large - bend to fit for back-to-back; 8 w/o mic; +2 for MOTM power
2	100uF 25V	140-HTRL25V100-RC	mic only
2	470uF 35V	140-HTRL50V470-RC	PSU only; 105 deg C
Polyester Capacitors; Wima MKS, Siemens MKT or similar			
2	10nF	505-MKS20.01/63/5	5 mm - spread to fit 7.5mm
6	15nF	505-MKS4.015/100/10	5mm; marked CAP
1	22nF	505-MKS20.022/63/5	5 mm - spread to fit 7.5mm
1	33nF	505-MKS20.033/63/5	5 mm - spread to fit 7.5mm
3	100nF	505-MKS2.1/63/5	5 mm - spread to fit 7.5mm
2	100nF	505-MKS2.1/63/5	5mm
1	220nF	505-MKS20.22/63/5	5 mm - spread to fit 7.5mm
2	220nF	505-MKS20.22/63/5	5mm
3	1uF	505-MKS21.0/63/5	5mm; 2 w/o mic
Polystyrene Capacitors; 5%			
2	1nF	23PW210	C6 and C7
Ceramic Capacitors			
7	33pF	80-C315C330K1G	
2	100pF	80-C315C101K1G	
3	220pF	80-C315C221K1G	mic only
1	10nF	80-C315C103K1R	
Polystyrene Capacitors; 1% or exact value measured			
1	330p	23PS133	CB6, 5% - need to accurately measure
1	1nF	23PS210	CA6, 5% - need to accurately measure
1	1.2nF	23PS212	CB5, 5% - need to accurately measure
2	2.2nF	23PS222	CA5 and CB4, 5% - need to accurately measure
2	4.7nF	23PS247	CA4 and CB3, 5% - need to accurately measure
1	8.2nF	23PS282	CA3, 5% - need to accurately measure
2	10nF	23PS310	CA2 and CB2, 5% - need to accurately measure
1	22nF	140-PF2A223F	CB1; polyester, 2% - need to accurately measure
1	100nF	140-PF2A104F	CA1; polyester, 2% - need to accurately measure
Resistors; 1/4W 1% metal film			
24	calculated		calculated RA11 RA12 RA21 ... RB62
1	not used		RG1 gain resistor
4	10R	271-10-RC	3 w/o mic
5	100R	271-100-RC	3 w/o mic
2	150R	271-150-RC	
2	240R	271-240-RC	PSU only
3	330R	271-330-RC	

4	430R	271-430-RC	
7	470R	271-470-RC	
9	620R	271-620-RC	8 w/o mic
9	1K	271-1K-RC	
1	2K2	271-2.2K-RC	
2	2K7	271-2.7K-RC	PSU only
2	4K3	271-4.32K-RC	
1	4K7	271-4.7K-RC	
2	5K1	271-5.1K-RC	1 w/o mic
2	6K2	271-6.2K-RC	
4	6K8	271-6.8K-RC	
1	7K5	271-7.5K-RC	
10	10K	271-10K-RC	
6	10K	271-10K-RC	marked RAP
6	15K	271-15K-RC	
2	18K	271-18K-RC	
12	20K	271-20K-RC	11 w/o mic
1	22K	271-22K-RC	
6	27K	271-27K-RC	
18	30K	271-30K-RC	
2	36K	271-36K-RC	
1	43K1	271-43K-RC	
1	51K	271-51K-RC	
1	62K	271-62K-RC	
3	68K	271-68K-RC	
2	82K	271-82K-RC	PSU only
33	100K	271-100K-RC	31 w/o mic
1	150K	271-150K-RC	
1	160K	271-160K-RC	
2	180K	271-180K-RC	
1	200K	271-200K-RC	
4	220K	271-220K-RC	
5	270K	271-270K-RC	
2	330K	271-330K-RC	
11	1M	271-1.0M-RC	10 w/o mic
5	4M7	660-RK1/4DC4704F	
Miscellaneous Resistors			
6	10k	652-4608X-2LF-10K	8 pin SIL with 4 independent resistors
1	1k Tempco		3000-3600 ppm/K; can substitute 1K if temperature compensation not required
Trimpots			
2	10k	652-3386F-1-103LF	single turn square cermet
5	100k	652-3386F-1-104LF	single turn square cermet
1	10k	72-T93YB-10K	multi turn rectangular - screw on top
1	20k	72-T93YB-20K	multi turn rectangular - screw on top
7	100k	72-T93YB-100K	multi turn rectangular - screw on top
Connectors			
28	2 pin MTA header	571-6404542	0.100 spacing
10	3 pin MTA header	571-6404543	0.100 spacing; 7 w/o microphone
1	5 pin MTA header	571-6404545	0.100 spacing; PSU only
1	4 pin MTA header	571-6404454	0.156 spacing; cable length must be short to keep oscillator bleedthru low

PANEL COMPONENTS

6	1/4" jacks	502-112AX	Bridechamber has lower cost alternative
7	SPDT flatted switch	1055-TA2130-EVX	lower cost Mountain alternative to 633-M201202-RO NKK
9	100K potentiometers	531-PC16SC-100K	1/4 x 7/8 shaft; Piher medium quality - cut shaft to fit
7	small knobs	PKES60B1/4	
2	large knobs	PKES90B1/4	
1	Lumex green LED	67-1156-ND	Digikey
1	Lumex red LED	67-1155-ND	Digikey
1	Lumex red/green LED	696-SSI-LXH387HGW	
28	2 pin MTA connector	571-6404412	
28	2 pin MTA dust cover	571-6405502	
10	3 pin MTA connector	571-6404413	7 w/o mic
10	3 pin MTA dust cover	571-6405502	7 w/o mic
1	4 pin MTA connector	571-6404264	
1	4 pin MTA dust cover	571-6405514	