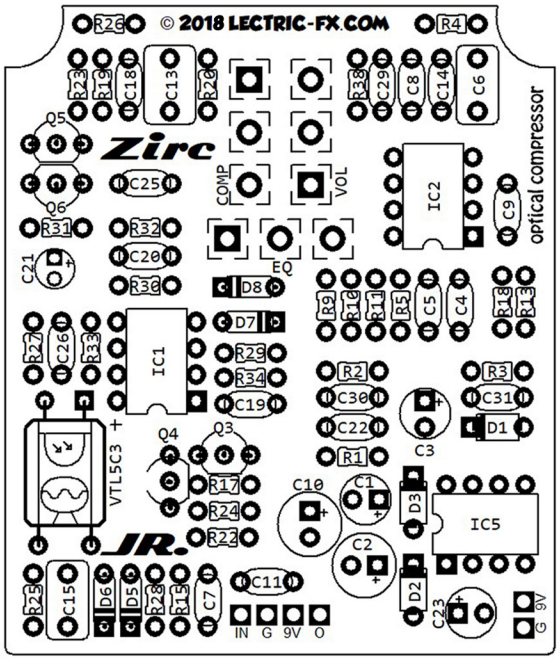
Zirc JR.



Project Info

The lectric-fx Zirc JR. is, like its big brother ZiRCONiA, an optical compressor using VTL5C3 (or similar) that is based on the Diamond®. This smaller project eliminates the inner “Hi-Cut” dipswitch (instead, C29 can either be installed [for hi-cut “on”], or left empty). Also absent on this one is the outer EQ toggle, since the EQ knob at noon is quite like having the toggle “off” on the larger unit. The small value (820pF) parallel caps were also omitted, as they are of little consequence for guitar frequencies. If you’d like to add them, you’d need to tack solder them to C6, 7, 8, 15, & 18 on the back of the pcb.
Finally, it adds 18v operation via charge pump, affording better headroom, which is very useful for high outup pickups, e.g.

Notes

1/8W resistors were used in order to reduce the pcb size for 1590B use, but standing 1/4W resistors would also work if needed. Please take note of the “+” symbol near the vactrol’s silkscreen, which indicates the position of the positive leg.

The controls are:

VOLUME- Sets the output level.

EQ- This is a “tilt” style EQ that cuts bass as the treble is increased (CW) and conversely cuts treble as bass is increased (CCW).

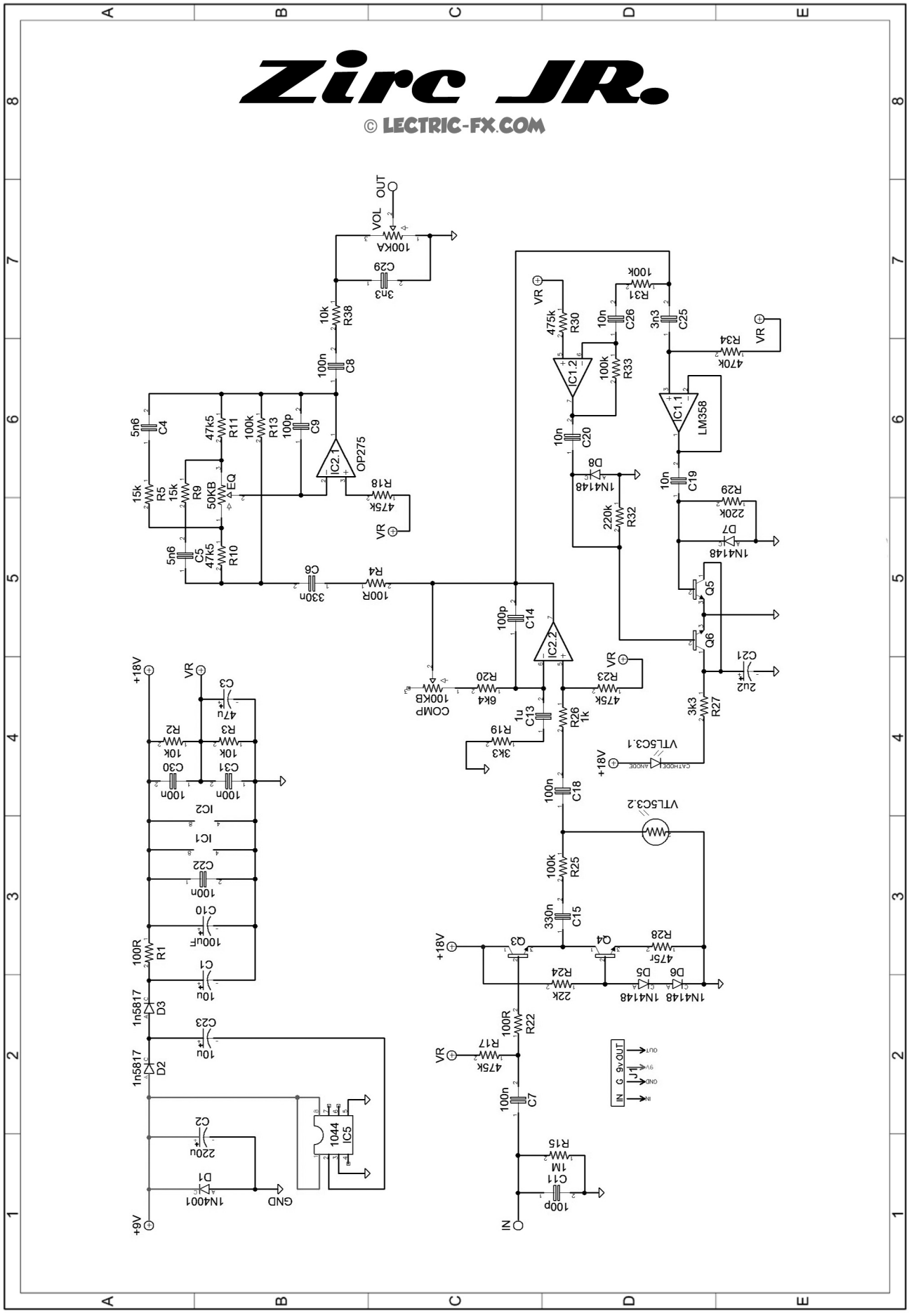
COMP- Increases the amount of compression and sustain.

B.O.M. **Quantities**

Part #	Value	Part #	Value	Part #	Value	Value	Quantity
R1	100R	C1	10u	D1	1N4001	100R	3
R2	10k	C2	220u	D2	1n5817	475R	1
R3	10k	C3	47u	D3	1n5817	1k	1
R4	100R	C4	5n6	D5	1N4148	3k3	2
R5	15k	C5	5n6	D6	1N4148	6k4	1
R9	15k	C6	330n	D7	1N4148	10k	4
R10	47k5	C7	100n	D8	1N4148	15k	2
R11	47k5	C8	100n			22k	1
R13	100k	C9	100p	IC1	LM358	47k5	2
R15	1M	C10	100uF	IC2	OP275	100k	3
R17	475k	C11	100p	IC5	1044SCPA	220k	2
R18	475k	C13	1u			470k	1
R19	3k3	C14	100p	Q3	2N3904	475k	4
R20	6k4	C15	330n	Q4	2N3904	1M	1
R22	100R	C18	100n	Q5	2N3904		
R23	475k	C19	10n	Q6	2N3904	100p	3
R24	22k	C20	10n			3n3	2
R25	100k	C21	2u2	EQ	50KB	5n6	2
R26	1k	C22	100n	COMP	100KB	10n	3
R27	3k3	C23	10u	VOL	100KA	100n	6
R28	475r	C25	3n3			330n	2
R29	220k	C26	10n	OPTO	VTL5C3	1u (film)	1
R30	475k	C29	3n3			2u2	1
R31	100k	C30	100n			10u	2
R32	220k	C31	100n			47u	1
R33	10k					100u	1
R34	470k					220u	1
R38	10k						

I built my prototype with 470R, 47k, and 470k instead of the odd values, and it sounds great. Feel free to do the same if you want to.
For the vactrol, you can use VTL5C3 or the XVIVE equivalent part from smallbear. MI1210CLF-R would also work.
As mentioned on the preceding page, use 1/8w resistors, or standing 1/4w resistors. Also keep in mind this circuit contains a charge pump for 18v operation, so make sure your electrolytic caps are rated 25V or higher.

Zirc JR.



1590B Drilling Template

Drill at your own risk, this is estimated.