Product: Speedometer	Description: With an Allison transmission	Date: Oct 00
Type: Electrical		Issue: 1

First, Gillig used our speedometer with an Allison transmission. Noise in the speed sensor or wires caused the speedometer to work like a tachometer. Gillig placed a low-pass filter in-line (510 ohms with 1uF cap, as documented below), which solved this problem. But, they said competitive speedometers worked without the need for this filter.

Blue Bird's problem is also with an Allison transmission. Blue Bird said the minimum speed signal has an amplitude of around 10V, so they can easily divide down to eliminate the noise, as Wilt suggested. (The peak noise amplitude was .8V).

I tested the circuit in the lab, and found the following:
1) The input circuit will respond to signals as little as .3V (the spec you showed me states that the minimum voltage must be 1V).
2) The speedometer already has as much filtering as can be tolerated for the frequency range of the speed input; so adding low pas filters is usually not going to solve the problem, except in cases where the maximum speed frequency is low.

If we modified our speedometer to reject any signal which is below our spec (1V), I think many of these problems would go away. Do we really need to work with <1V?
Noise in the speed sensor or wires caused the speedometer to work like a tachometer. Placed a low-pass filter in-line (510 ohms with 1uF cap, as documented below), which solved this problem. But, they said competitive speedometers worked without the need for this filter.

But this solution did not work with a ZF transmission. The pointer went to zero above around 25 MPH. Gillig claimed that our speedometer was setting off the over-current limit of the ZF transmission, which was around 50mA. I do not see how this is possible, since our speedometer has 30K ohm input resistors. But the ZF has a 10K ohm pull-up resistor, which when working with the in-line filter, will filter out the speed signal. I have a sample of this filter if you want to look at it.

Attached are BMP files I made of the same.
(See attached file: 51-20028.bmp)(See attached file: 50-40996.bmp)(See attached

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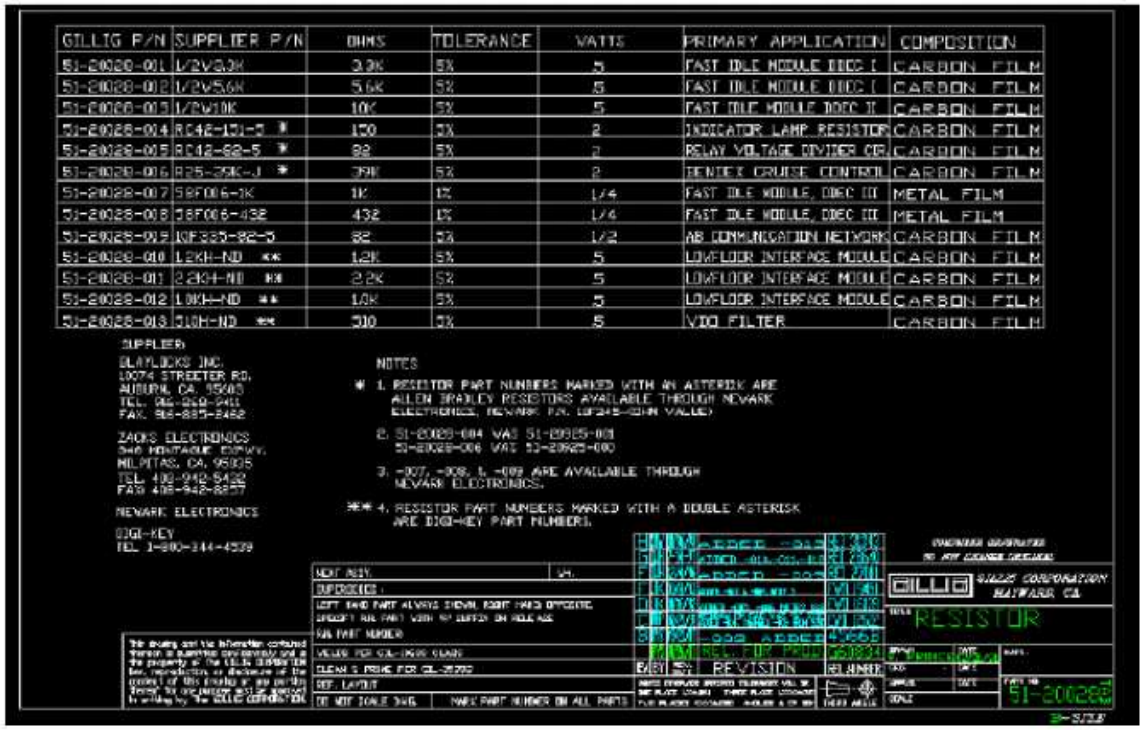


GILLIG P/N	SUPPLIER P/N	OHMS	TOLERANCE	WATTS	PRIMARY APPLICATION	COMPOSITION
51-20028-001	1/2V3.3K	3.3K	5%	5	FAST IDLE MODULE DDEC I	CARBON FILM
51-20028-002	1/2V5.6K	5.6K	5%	5	FAST IDLE MODULE DDEC I	CARBON FILM
51-20028-003	1/2V10K	10K	5%	5	FAST IDLE MODULE DDEC II	CARBON FILM
51-20028-004	RC42-151-5 *	150	5%	2	INDICATOR LAMP RESISTOR	CARBON FILM
51-20028-005	RC42-82-5 *	82	5%	2	RELAY VOLTAGE DIVIDER CIR	CARBON FILM
51-20028-006	R25-39K-J *	39K	5%	2	BENDEX CRUISE CONTROL	CARBON FILM
51-20028-007	58F006-1K	1K	1%	1/4	FAST IDLE MODULE, DDEC III	METAL FILM
51-20028-008	58F006-432	432	1%	1/4	FAST IDLE MODULE, DDEC III	METAL FILM
51-20028-009	10F335-82-5	82	5%	1/2	AB COMMUNICATION NETWORK	CARBON FILM
51-20028-010	12KH-ND **	12K	5%	5	LOWFLOOR INTERFACE MODULE	CARBON FILM
51-20028-011	22KH-ND **	22K	5%	5	LOWFLOOR INTERFACE MODULE	CARBON FILM
51-20028-012	10KH-ND **	10K	5%	5	LOWFLOOR INTERFACE MODULE	CARBON FILM
51-20028-013	510H-ND **	510	5%	5	VDO FILTER	CARBON FILM

SUPPLIER:
BLAYLOCKS INC.
10074 STREETER RD.
AUBURN, CA. 95603
TEL. 916-269-9411
FAX. 916-885-2462

ZACKS ELECTRONICS
340 MONTAGUE EXPWY.
MILPITAS, CA. 95035
TEL. 408-942-5432
FAX 408-942-8257

NEWARK ELECTRONICS

DIGI-KEY
TEL 1-800-344-4539

NOTES

* 1. RESISTOR PART NUMBERS MARKED WITH AN ASTERISK ARE ALLEN BRADLEY RESISTORS AVAILABLE THROUGH NEWARK ELECTRONICS, NEWARK P.N. 10F345-(OHM VALUE)

2. 51-20028-004 WAS 51-20925-001
51-20028-006 WAS 51-20925-000

3. -007, -008, & -009 ARE AVAILABLE THROUGH NEWARK ELECTRONICS.

** 4. RESISTOR PART NUMBERS MARKED WITH A DOUBLE ASTERISK ARE DIGI-KEY PART NUMBERS.

NEXT ASSY. | SH.
SUPERSEDES:
LEFT HAND PART ALWAYS SHOWN, RIGHT HAND OPPOSITE
SPECIFY NO. PART WITH NO SUFFIX ON RELEASE
NO. PART NUMBER
VALUE FOR CIL-1000 GLASS
CLEAN & PRIME FOR CIL-35392
REF. LAYOUT
DO NOT SCALE DWG. | MARK PART NUMBER ON ALL PARTS

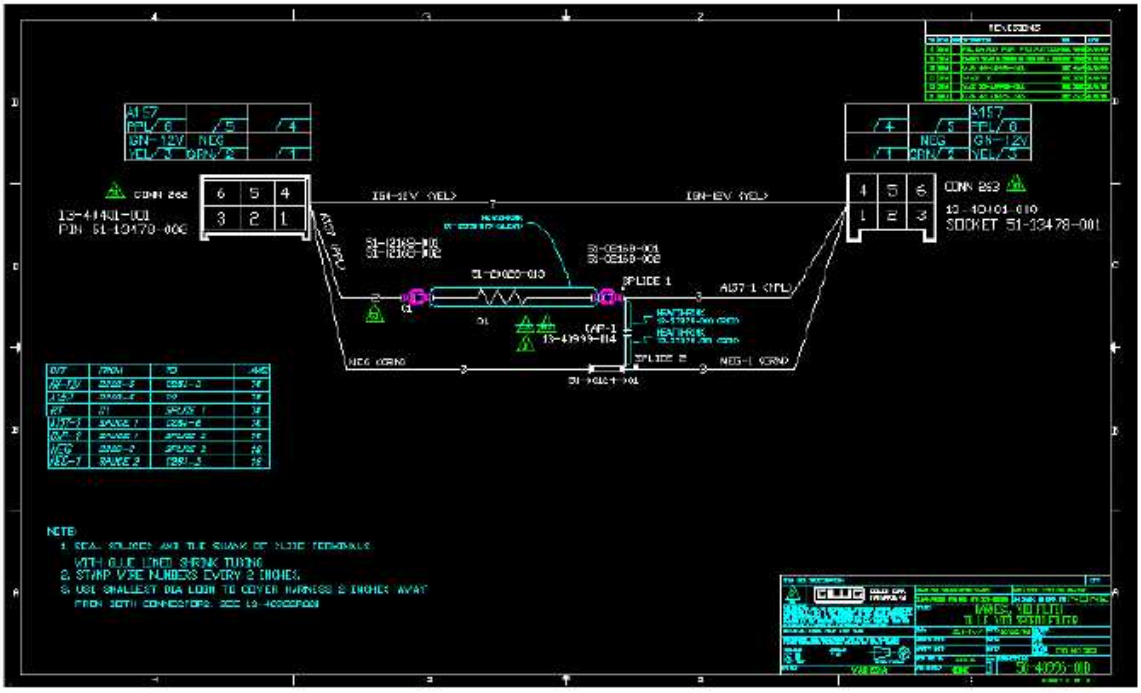
REVISION

GILLIG CORPORATION HAYWARD, CA

RESISTOR

51-20028

B-SIZE



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