

MICRO-HYDRO GENERATOR

LV1500

12/24/48/120 VOLT

1500 WATT

HYDRO INDUCTION POWER

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WIRING INSTRUCTIONS FOR LOW VOLTAGE UNIT

1. Connect and clamp flexible pipe to nozzle tubes (see diagram). Warming the plastic pipe with warm water or propane torch makes it easier to work with.
2. Connect and fuse Hydro to batteries, using appropriate wire and fuse (see chart). *WARNING: Reverse Polarity will destroy the fuse and/or the rectifier.* If no meter is available to check and wire is not color coded, use a small fuse (<10A) or a short piece of thin wire (single strand of speaker wire) as a fuse, until you are sure you have it right. Red = Positive. Code requires a fuse at both ends of wire.
3. Slowly open gate valve and check that output does not exceed 1200 Watts (Amps x Volts = Watts). The Amp meter should be at least 2" from motor and other wires when reading. It can be removed and placed on line near residence for convenience.
4. Wait to see if pressure is maintained. If not, use smaller nozzle. Maximum power will be produced if running pressure is 2/3 or more of static pressure.
5. Check housing for adequate drainage - do not allow wheel to be flooded.
6. Check hydro about an hour after installation, and then monthly, for excessive heat, noise, or vibration.
7. Check runner annually: there should be no play or noise from the bearing. Output will increase slightly, when bearings are seated.
8. Check motor and rectifier annually for corrosion. Coat every other year with grease or oil to prevent corrosion.
9. Cover any sign of corrosion on the motor, connections or your batteries with a liberal layer of oil, grease or liquid tape.

FLOW THROUGH NOZZLES IN GPM AT VARIOUS HEADS														
Feet	Psi	1/8"	3/16"	1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	7/8"	1.0"	RPM for 4" Turbine	
5	2.2	-	-	-	-	6.18	8.4	11	17.1	24.7	33.6	43.9	460	
10	4.3	-	-	3.88	6.05	8.75	11.6	15.6	24.2	35	47.6	62.1	650	
15	6.5	-	2.68	4.76	7.4	10.7	14.6	19	29.7	42.8	58.2	76	800	
20	8.7	1.37	3.09	5.49	8.56	12.4	16.8	22	34.3	49.4	67.3	87.8	925	
30	13	1.68	3.78	6.72	10.5	15.1	20.6	26.9	42	60.5	82.4	107	1140	
40	17	1.94	4.37	7.76	12.1	17.5	23.8	31.1	48.5	69.9	95.1	124	1310	
50	22	2.17	4.88	8.86	13.6	19.5	26.6	34.7	54.3	78.1	106	139	1470	
60	26	2.38	5.35	9.51	14.8	21.4	29.1	38	59.4	85.6	117	152	1600	
80	35	2.75	6.18	11	17.1	24.7	33.6	43.9	68.6	98.8	135	176	1850	
100	43	3.07	6.91	12.3	19.2	27.6	36.6	49.1	76.7	111	150	196	2070	
120	52	3.36	7.56	13.4	21	30.3	41.2	53.8	84.1	121	165	215	2270	
150	65	3.76	8.95	15	23.5	33.8	46	60.1	93.9	135	184	241	2540	
200	87	4.34	9.77	17.4	27.1	39.1	53.2	69.4	109	156	213	278	2930	
250	108	4.86	10.9	19.9	30.3	43.6	59.4	77.6	121	175	238	311	3270	
300	130	5.32	12	21.3	33.2	47.8	65.1	85.1	133	191	261	340	3590	
400	173	6.14	13.8	24.5	38.3	55.2	75.2	98.2	154	221	301	393	4140	
		3/4" NOZZLE HOLDER							TURGO ONLY					

WIRE LOSS CHART

This 10%, 12V, Wire Chart represents a normal situation for most hydros.

Hydros can have a much larger voltage drop, as they are not 'voltage limited' like solar panels. In some cases, a 50% or larger voltage drop is acceptable as long as the final power output matches your needs. For example, having a 12V hydro 1000 feet away, will result in about 50% loss at 20A, using #2 wire. Meaning, the hydro will be running at 24V, producing 480W, while the battery is at 12V, receiving 240W.

Most systems are designed with a 5 - 30% loss, which is what you would expect to lose in high voltage transformers, etc. This means, you would go 1-3 times the distance suggested in the chart for 12V and 2-6 times for 24V.

Maximum distance one way in feet of various gauges 2 conductor copper wire from hydro to battery. Using one size larger aluminum wire with correct (non-copper) connectors works very well.

AMPS	#14	#12	#10	#8	#6	#4	#2	1/0	2/0	4/0
1	225	350	575	900	1450	2280	3600			
2	112	175	287	450	725	1140	1800	2900	3600	5300
4	50	87	137	225	362	570	900	1450	1800	2900
6	37	60	87	150	237	375	600	965	1215	1900
8	27	42	75	112	177	285	450	725	900	1450
10	22	35	60	90	142	227	362	575	725	1150
15	15	22	35	60	85	150	240	382	480	750
20		17	27	45	72	112	180	287	362	580
25			22	35	57	90	145	230	290	460
30			17	30	47	75	120	192	242	385

FUSES:

Use 20A or less fuses with #12 wire, or 30A if using #10 or larger wire.
Max fuse for 12V: 60A, 24V: 60A, 48V: 30A, 150V: 15A.

MAXIMUM OUTPUT:

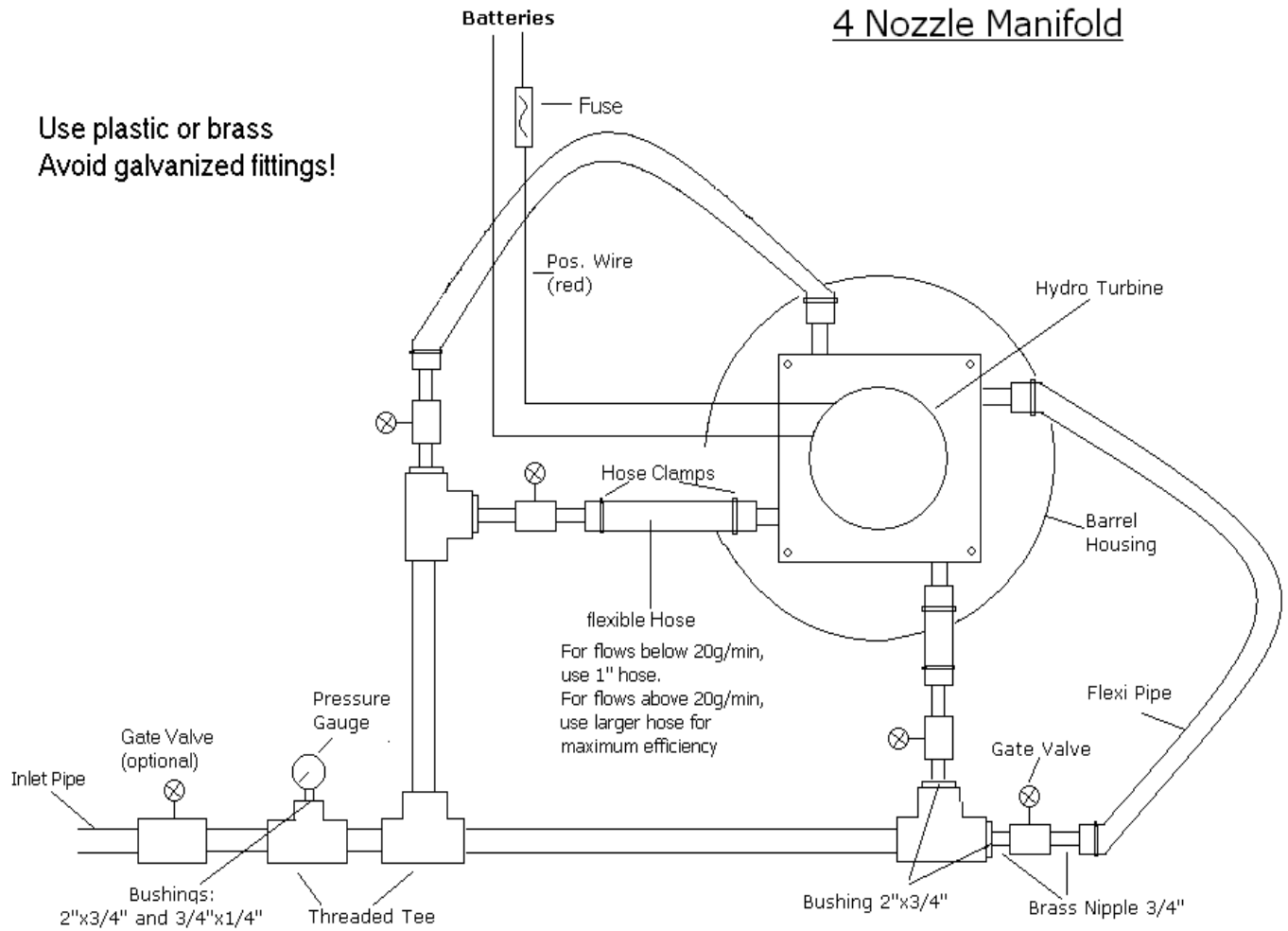
Although the unit is capable of putting out 1500W (Volts x Amps = Watts), the motor may get hot below this output at some sites. The maximum output is limited to the heat of the motor. If the motor is too hot to keep your hand on, you should reduce the flow. If the motor is getting hot and you would like more power, this can be achieved with the use of an MPP tracker, available from us. Different trackers are used, depending on the site. Check our website www.homehydro.com.

OUTPUT IN WATTS PER NOZZLE FOR LV1500

Psi	Feet	1/8		3/16		1/4		5/16		3/8		7/16		1/2		9/16		5/8	
30	69	GPM				9.9		15.5		22.3		30.4		39.6		50.2		62.0	
		Efficiency	Watts			40%	49	49%	94	57%	157	56%	211	55%	269	43%	266	36%	280
40	92			6.4		11.4		17.9		25.8		35.1		45.8		57.9		71.6	
				39%	42	55%	103	61%	181	64%	274	63%	365	60%	452	47%	447	39%	466
43	100			6.7		11.9		18.5		26.8		36.5		47.6		60.2		74.4	
				39%	47	56%	119	64%	213	63%	303	65%	429	60%	512	47%	514	40%	539
50	115			3.2		7.2		12.7		19.9		28.8		39.2		51.1		64.7	
		12%	8	47%	70	61%	160	64%	264	66%	393	66%	534	61%	650	48%	638	40%	668
52	120			3.26		7.3		13.0		20.3		29.3		39.9		52.1		65.9	
		14%	10	47%	74	60%	169	65%	285	65%	414	63%	540	61%	687	48%	677	41%	713
60	139			3.51		7.9		14.0		21.9		31.6		43.0		56.0		70.9	
		21%	18	51%	100	62%	216	65%	357	64%	506	62%	662	60%	835	46%	812	40%	869
65	150			3.64		8.2		14.5		22.7		32.8		44.7		58.2		73.7	
		28%	28	51%	113	63%	245	66%	404	64%	569	62%	750	58%	910	46%	914	39%	962
70	162			3.79		8.5		15.1		23.6		34.1		46.4		60.5		76.6	
		33%	36	52%	130	62%	271	66%	455	65%	646	61%	829	57%	1005	44%	987	39%	1072
80	185			4.05		9.1		16.1		25.2		36.4		49.6		64.7		81.9	
		36%	49	54%	165	60%	323	66%	558	63%	770	61%	1004	54%	1170	44%	1213	38%	1292
90	208			4.3		9.7		17.1		26.8		38.7		52.7		68.7		86.9	
		39%	62	55%	200	60%	382	65%	654	63%	914	60%	1179	53%	1357	44%	1420	36%	1454
100	231			4.52		10.2		18.0		28.2		40.7		55.5		72.3		91.6	
		41%	78	56%	237	60%	452	65%	761	63%	1067	58%	1346	51%	1539	42%	1596	35%	1627
110	254			4.75		10.7		18.9		29.6		42.7		58.2		75.9		96.1	
		45%	97	55%	270	59%	512	63%	849	62%	1207	56%	1502	49%	1690	30%	1722		

Suggested Hookup

Use plastic or brass
Avoid galvanized fittings!



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