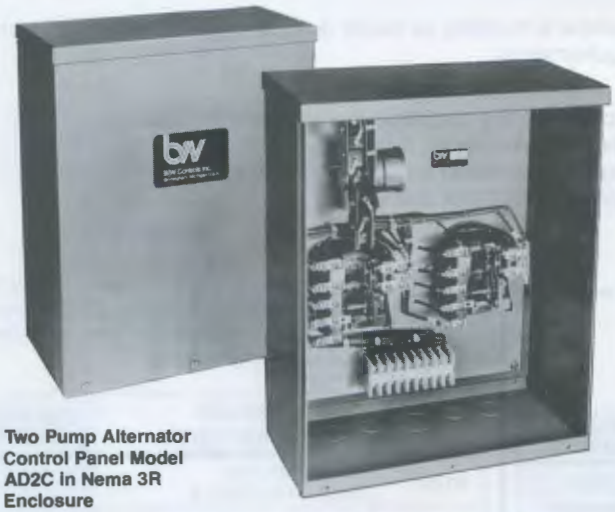


Two Pump Alternator Control Panel Model AD2C In Nema 3R Enclosure

TYPICAL PUMP DOWN SYSTEM

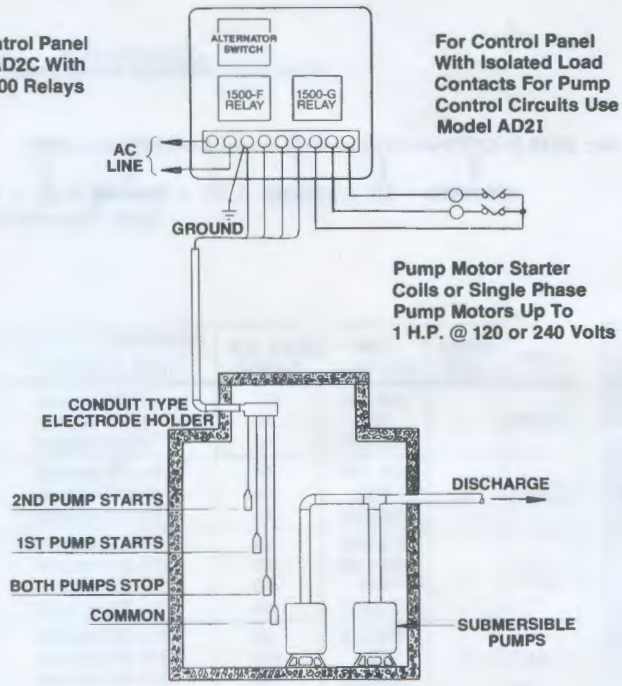
The diagram below illustrates a basic pump down control used on systems for storm drainage condensate return, septic tank effluent, sewage lift stations, water soluble machine tool coolants, and cooling tower sumps.

While any of the B|W relays can be furnished, the Type 1500 induction relays are indicated. These have heavy duty load contacts that are capable of directly operating single phase pumps up to 1 H.P. @ 120 or 240 Volts A.C., or up to size 5 motor starter coils.

The Model AD2C for pump down (or AU2C for pump up) has a common power supply thru the B|W panel to energize the pump control circuits. For many applications it is desirable to have the pump motors and/or their motor starters on their own power supplies. For these situations Model AD2I for pump down or AU2I for pump up) has an isolated load contact for each pump control circuit and should be used.

B|W Control Panel Model AD2C With Type 1500 Relays

For Control Panel With Isolated Load Contacts For Pump Control Circuits Use Model AD2I



B|W Alternators are compact packaged units designed to provide automatic change in the operating sequence of any number of pumps on either "pump down" or "pump up" level control applications. They provide uniform usage of all pumps under normal operating conditions — yet permit use of full pumping capacity during peak load periods.

DESIGN FEATURES

Sequence changing is accomplished with a B|W designed motor operated switch that has proved it's reliability on thousands of applications. This alternator provides momentary time delay to prevent false operation or rapid cycling, and it retains proper sequencing even after a power failure. In addition there are two B|W level detecting relays and all controls are wired to barrier type terminal blocks.

Enclosures are available to meet all indoor and outdoor location requirements. A complete easy to read system wiring diagram is provided showing all of the field connections so that installation is quick and easy.

EXTRA FEATURES

Models can quickly be furnished to meet special application requirements. Extra features include: selector switches, pilot lights, and additional control functions. Also, alternators can be combined with signals and alarms as described on page 4. Systems complete with motor starters are shown on pages 8 & 9.

OPTIONAL SEQUENCING ARRANGEMENTS

The standard B|W method of alternation automatically changes the sequence after each pumping operation after all pumps have stopped. Sometimes other methods of operation may be desirable and B|W offers a choice. When manual sequence selection is desired, a rotary selector switch is provided and it can be located either on the cover or on the backplate inside the enclosure.

Many systems have continuous flow, and multiple pumps are used to handle the varying load conditions. For these applications B|W has a rotating sequence alternator that will change the pumps in operation whenever there is a significant change in the reservoir level. The pump that has been idle the longest will be added to those running, or the pump that has been running the longest will be stopped. Systems are available for up to 10 pumps.

In addition, B|W alternators can be built to operate fewer pumps than the maximum design number — with provisions made for easy conversion in the field to add the additional pumps when the need arises.

Contact us for assistance to meet your special requirements.

Catalog Number Example

8040 – AU2I – X — L2 — N4 ——————————— 1500 — S8

ENCLOSURE		LIST PRICE ADDITION
OC	Open Chassis	None
N1	NEMA 1	[redacted]
N3R	NEMA 3R — Only for 2 Pump Alternators	[redacted]
N4	NEMA 4	[redacted]
N12	NEMA 12	[redacted]

LINE VOLTAGE		LIST PRICE ADDITION
L1	115 Volt 50/60 Hz	None
L2	208-230 Volt 50/60 Hz	[redacted]
L3	460 Volt 50/60 Hz	[redacted]
L4	575 Volt 50/60 Hz	[redacted]

OPTIONAL FEATURES		LIST PRICE ADDITION
X	None	None
HOA	Hand-off-Auto Switches, one for each pump mounted on cover with data plate	[redacted]
MA	Manual Alteration with sequence selector switch mounted on cover (specify detailed function of selector switch)	Consult Factory
ROT	Rotating Sequence Alternation. For 4 or more pumps to equalize flow.	Consult Factory
O	Other-Specify Details	Consult Factory

RELAY SENSITIVITY		LIST PRICE ADDITION
S1-S11	Select from Chart Sec. 1500 Pg. 9	None
LF1, HF2	Select from Chart Section 5200 Page 5	None
LV1-2 HV3-4-5	Select from Chart Section 5200 Page 5	[redacted]
V	Select from Chart Section 5300 Page 5	[redacted]
F1-F8		None

RELAY TYPE		LIST PRICE ADDITION
1500	Induction Type 1500	None
5200-L	Series 52-low sensitivity	[redacted]
5200-H	Series 52-high sensitivity	[redacted]
5300-S	Series 53-10 amp contacts	[redacted]
5300-P	Series 53-25 amp contacts	[redacted]

DISCOUNT SCHEDULE LL1
Prices Subject to Change Without Notice

STANDARD PUMP DOWN ALTERNATORS

	NUMBER OF PUMPS	NUMBER OF ELECTRODES[1]	CONTROL DESCRIPTION	LIST PRICE	STANDARD OPERATION
AS2C[2]	2	None	Operates from single pole control devices such as relays, pressure switches, etc. Power for motor starter coils comes from B|W control panel. (See Note[2])	[redacted]	Pumps are started one at a time on "rising" level and all are stopped simultaneously at the desired "low" level. The starting sequence is then changed for the next cycle of operation.
AD2C	2	4	Power for the starter coils comes from B|W control panel.	[redacted]	
AD2I	2	4	Has isolated load contacts which provide for standard two wire control of motor starters or remote control devices.	[redacted]	
AD3I	3	5	Same as AD2I except for number of pumps and electrodes.	[redacted]	
AD4I	4	6	Same as AD2I except for number of pumps and electrodes.	[redacted]	

STANDARD PUMP UP ALTERNATORS

	NUMBER OF PUMPS	NUMBER OF ELECTRODES[1]	CONTROL DESCRIPTION	LIST PRICE	STANDARD OPERATION
AS2C[2]	2	None	Operates from single pole control devices such as relays, pressure switches, etc. Power for motor starter coils comes from B|W control panel. (See Note[2])	[redacted]	Pumps are started one at a time on "falling" level and all are stoppepd simultaneously at the desired "high" level. The starting sequence is then changed for the next cycle of operation.
AU2C	2	4	Power for the starter coils comes from B|W control panel.	[redacted]	
AU2I	2	4	Has isolated load contacts which provide for standard two wire control of motor starters or remote control devices Designed for use with either standard or Ice Free electrode assemblies. Also, for hydropneumatic tank control as well as ordinary pump up systems.	[redacted]	
AU3I	3	5	Has isolated load contacts which provide for standard two wire control of motor starters or remote control devices.	[redacted]	
AU4I	4	6	Same as AU3I except for number of pumps and electrodes.	[redacted]	

Note[1]: All alternators listed above are designed for use with one electrode to *start each pump* and one electrode to *stop all pumps*. A common electrode is included and it may be omitted if a dependable ground return connection to the liquid is provided by other means.

Note[2]: No "Relay Type" or "Relay Sensitivity" option available.

PANELS

Typical Model C1B Control
In Nema 1 General Purpose Enclosure

FEATURES AND ADVANTAGES

Quick, Easy Installation — All controls assembled in compact enclosures for fast, low-cost installation.

Greater Operator Safety — Operating handles are interlocked with cover and incorporate provisions for padlocks. Handles must be in the OFF position before the control panel can be opened.

Accurate, Reliable Operation — Based on original B|W concept of using the conductivity of liquids as a means of achieving reliable level control.

Minimum Maintenance — All components are conservatively rated, factory tested and performance proved.

STANDARD DUPLEX SYSTEMS

B|W has developed a number of basic controls for automatic operation of two pumps. The components include a B|W alternator and two B|W relays suitable for the application. Two across the line magnetic starters with 3 pole fixed-trip thermal overload devices are provided along with HOA selector switches on the cover.

As shown on page 9 there is a choice of thermal magnetic trip circuit breakers, or fusible disconnect switches for motor short circuit protection.

A complete system wiring diagram with description of operation is provided so that field installation and servicing is easily accomplished.

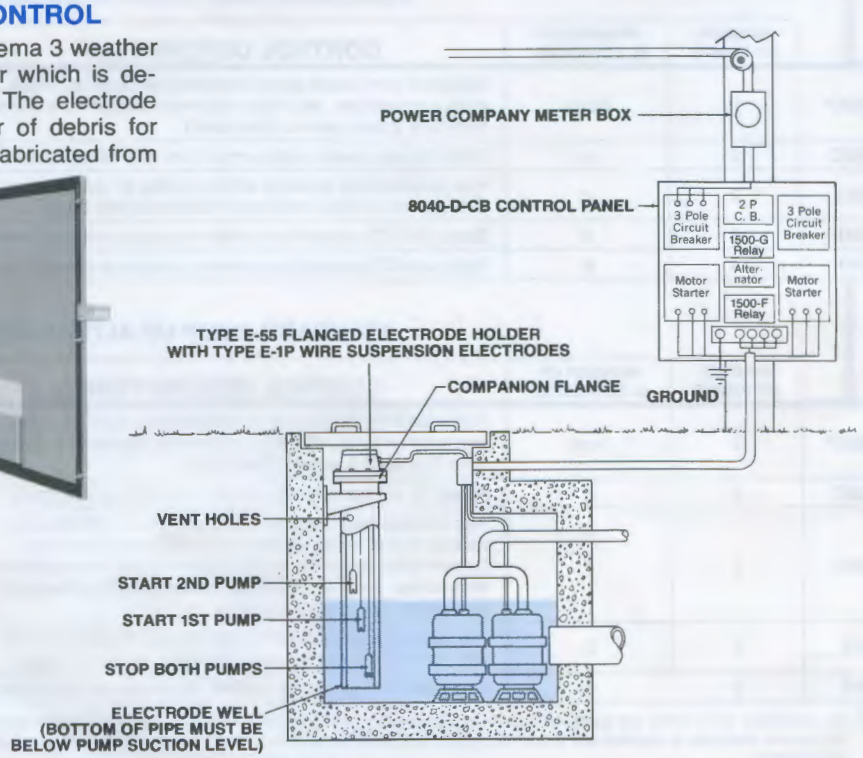
SPECIAL CONTROL SYSTEMS

Basic duplex systems can be equipped with a variety of signals, alarms, meters, remote control or other control accessories. Also, instead of our standard automatic alternation, special sequencing or interlocking arrangements are available. Systems for more than two pumps can quickly be designed and provided.

Catalog Section 8044 shows our ability to provide custom panels. Just tell us what you want to accomplish and B|W will provide the control system.

TYPICAL STORM DRAIN SUMP CONTROL

Model D-C3B control panel is shown in the Nema 3 weather tight enclosure with internal dead front cover which is designed for unattended outdoor installations. The electrode well serves to keep the liquid surface clear of debris for proper contact with the electrodes, and it is fabricated from standard pipe and fittings.



PANELS

Catalog Number Example

8040-U–C1B2–HOA–L4–N12————————————1500——S7

DISCOUNT SCHEDULE LL1
Prices Subject to Change Without Notice

	ENCLOSURE	LIST PRICE ADDITION
N1	Nema 1	None
N3	Nema 3 with Internal Deadfront	[redacted]
N4	Nema 4	[redacted]
N12	Nema 12	[redacted]

	3 PHASE LINE VOLTAGE
L2	208-230 Volt 50/60 Hz
L3	460 Volt 50-60 Hz
L4	575 Volt 50/60 Hz

	RELAY SENSITIVITY	LIST PRICE ADDITION
S1-S11	Select from Chart Sec. 1500 pg. 9	None
LF1, HF2	Select from Chart Section 5200 Page 5	None
LV1-2 HV3-4-5	Select from Chart Section 5200 Page 5	[redacted]
V	Select from Chart Section 5300 Page 5	[redacted]
F1-F8		None

	OPTIONAL FEATURES	LIST PRICE ADDITION
X	None	None
HOA	[1]Hand-Off Auto Switches Furnished as Standard Equipment	None
PRL	[1]Pump Running Lights	[redacted]
RTM	[1]Running Time Meters	[redacted]
O	Other-Specify Details	Consult Factory

NOTE[1]. One can be furnished for each pump Mounted on cover complete with engraved data plate

	RELAY TYPE	LIST PRICE ADDITION
1500	Induction Type 1500	None
5200-L	Series 52-low sensitivity	[redacted]
5200-H	Series 52-high sensitivity	[redacted]
5300-S	Series 53-10 amp contacts	[redacted]
5300-P	Series 53-25 amp contacts	[redacted]

	TYPE OF CONTROL
D	Pump Down for 2 Pumps
U	Pump Up for 2 Pumps
H	Hydropneumatic Tank with 2 Pumps

	NEMA SIZE	LINE VOLTAGE	MAX. H.P. RATING	CIRCUIT BREAKER Frame Size	CIRCUIT BREAKER Max. Amp[2]	LIST PRICE
C1B2	1	208-230 460 550-600	7½ 10 10	EA EH FA	40 30 20	[redacted]
C2B2	2	208-230 460 550-600	15 25 25	EA FA FA	70 50 50	[redacted]
C3B2	3	208-230 208-230 460 550-600	25 30 50 50	FA JA FA FA	100 125 100 100	[redacted]
C4B2	4	208-230 460 550-600	50 100 100	JA JA JA	200 200 175	Consult Factory

	NEMA SIZE	LINE VOLTAGE	MAX. H.P. RATING	DISCONNECT SWITCH FUSE CLIP SIZE[3]	LIST PRICE
C1F2	1	208-230 460 550-600	7½ 10 10	31-60 ampere 31-60 ampere 31-60 ampere	[redacted]
C2F2	2	208-230 460 550-600	15 25 25	61-200 ampere 61-100 ampere 61-100 ampere	[redacted]
C3F2	3	208-230 208-230 460 550-600	25 30 50 50	61-100 ampere 101-200 ampere 101-200 ampere 101-200 ampere	[redacted]
C4F2	4	208-230 460 550-600	50 100 100	201-400 ampere 201-400 ampere 201-400 ampere	Consult Factory

ORDERING INFORMATION

In addition to the complete Catalog Number, furnish details on the pump to be controlled including horsepower, voltage and full load current rating.

PANELS WITH CIRCUIT BREAKERS

NOTE[2]. The actual H.P. rating of the motors must be specified so that properly sized circuit breakers can be provided.

4 ELECTRODES REQUIRED

These standard controls are based on two pump start electrodes and one pump stop electrode. A common electrode is included and it may be omitted if a dependable ground return connection to the liquid is provided by other means.

PANELS WITH FUSIBLE DISCONNECT SWITCHES

NOTE[3]. Fuses are not included. Proper fuses must be provided at time of installation in accordance with N.E.C. requirements.

PANELS