DIGIPAK

ENJOY SIMPLE SAILING

Looking like watertight cockpit repeaters, the instruments of the Digipak range provide the helmsman with all the basic information he needs.

In fact, this amazingly simple instrument features a highly sophisticated electronic technology which has made it possible to gather in such a small cabinet the many components needed to provide a wide variety of functions.

DIGIPAK L :
log
speedometer

- total log (0 to 9999 miles)
- trip log (0 to 999,9 miles)
- boat speed :
  in knots, 1/10th of a knot or km/h
- optional anemoter :
  in Beaufort scale, knots or m/s
- boat's score memorized
- speedometer calibration
- log alarm if paddle wheel becomes fouled

DIGIPAK S :
depth
sounder

- depth in metres (0,9 to 120 m)
- depth in feet (3 to 400 ft)
- ajustable alarm

DIGIPAK CA :
compact
alarm

- total log (0 to 9999 miles)
- trip log (0 to 999,9 miles)
- boat speed :
  in knots, 1/10th of a knot or km/h
- depth (0,9 to 120 m or 3 to 400 ft)
- alarms : deep/shallow alarm
  trip log

DIGIPAK CW :
compact
wind

- total log (0 to 9999 miles)
- trip log (0 to 999,9 miles)
- boat speed : in knots,
  1/10th of a knot or km/h
- depth (0,9 to 120 m or 3 to 400 ft)
- optional anemometer (Beaufort scale, knots or m/s)

Parts and accessories supplied with each instrument :

- Complete cockpit unit
- Depth sounder transducer + log underwater unit with thru-hull fittings and 7 m (23 ft) cables.
- Cable with plug (from the unit to the connecting box)
- Connecting box
- Alarm buzzer (on depth sounders S and CA)
- Lighting (permanent)
- Watertight seal (rear side of readout)
- Tightening nut (rear side of readout)

Extra accessories, not supplied with the instrument

- Power cable
  Use a standard 2-wire cable, 1 mm² section, of sufficient length to run from the electric panel or from battery to connecting box.
- Standard stainless steel screws for connecting box.
- Standard stainless steel screws for alarm buzzer on depth sounders S and CA.
- Switches (optional) on electric panel for :
  - power supply
  - alarm buzzer (S and CA)
  - lighting
- Additional length of cable for transducer and log underwater unit if required.
  In that case, use an extra 3 metre length (10 ft) of coaxial cable for the log underwater unit with a domino connecting block (ref. 65.12.37.3) and an extra 3 metre (10 ft) length for the sounder transducer with a cinch plug. (ref. 65.12.35.9).

A - INSTALLATION

1 - READOUT UNIT

1.1 Selecting the location.

MOUNTING ON CONSOLES IS RULED OUT.

The unit must be fixed on the cockpit bulkhead.

1.2 Mounting the readout unit.

For easier fitting, an adhesive template is supplied with the instrument.

- Position the adhesive template at the selected location, the mark for the 9 mm (3/8'') hole being on the top left hand side.
- Cut out the central hole (diameter 30 mm - 1 3/16''). The best method is to use a hole cutter fitted to an electric drill, but the hole can also be cut by using a hand drill.
- It is imperative to drill a 9 mm (3/8'') hole for the polarising key ; avoid if possible to drill a hole throughout.
- Stick the adhesive seal on the back of the instrument.
- Insert the instrument through the bulkhead.
- Handscrew the bolt and then tighten it with a spanner, but do not overtighten, so that the watertight sealring is not crushed.
- Do not cut the tube through which all cables run.

CAUTION

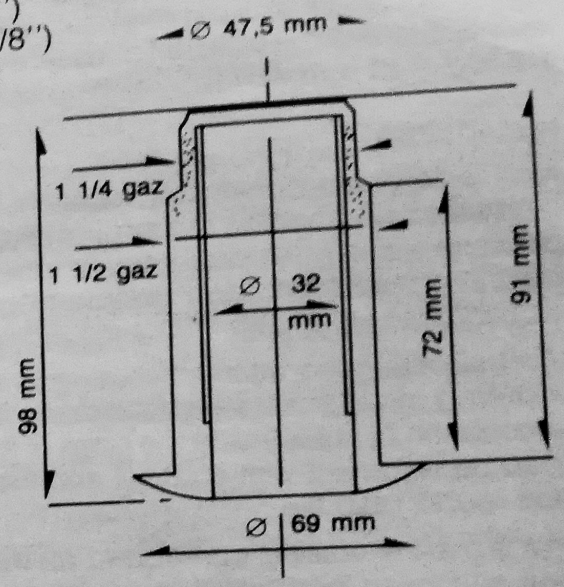
The back part of the readout unit is not designed to be watertight. Therefore, damage caused by water infiltrating through the back of the unit is not covered by the warranty. Besides ruling out the mounting of the unit on non-watertight consoles, we advise you to take great care of not letting water enter the unit through the backside tube, when installing it.

2. - THRU-HULL FITTINGS

The thru-hull fittings are made from heavy duty glass reinforced plastic (GRP) and are safe from any possible electrolytic action, especially on metal or aluminium hulls. The thru-hull fittings are standard and are used for both the log underwater unit and the sounder transducer.

When the underwater unit or the transducer are not in place, a sealing cap ensures adequate watertightness.

Inside diameter : 32 mm (1 1/4'')
Drilling diameter :47,5 mm (1 7/8'')
Overall height : 98 mm (3 7/8'')
Useful height : 60 mm (2 3/8'')



Selecting the location.

The accurate performance of the log and the depth sounder depends entirely on the correct location and installation of the thru-hull fitting. For the log, the thru-hull fitting should be positioned as follows :

- in the forrard 1/3 water line section of the hull where the water flow is smooth.
- forrard of the keel if possible.
- close to the center line of the hull to keep the unit in the water when heeled.
- Away from electrical interferences.
- Or behind the keel for motor boats, which lift out of the water as they go faster, but away from the propeller's turbulences.

For the depth sounder, the following conditions should be respected :

- The thru-hull fitting must be installed vertically.
- Ultra-sonic beamwidth is 30 degree and the transducer should be located about 1/3 the distance from the keel to the water line.
- Avoid placing the transducer in the after sections, especially behind the keel or propeller as water turbulences will cause inconsistant readings.

The transducer should be located at least 10 cm (4'') away from the log underwater unit. The ideal solution is to place the sounder transducer on one side of the boat, and the log underwater unit on the other side.

The log paddle wheel assembly and the sounder transducer can be removed without slipping the boat, but height clearance must be allowed below the cabin sole for easy withdrawal : 160 mm (6 3/8'') for the log, 140 mm (5 1/2'') for the depth sounder.

Installation

After establishing a suitable location, a round 47,5 mm (1 7/8'') diameter hole must be cut through the hull. So that the hole does not coincide with a bulkhead or frame, drill a pilot hole from inside the boat first, and then work from outside to prevent gel coat chipping.

The best method is to use a hole cutter fitted to an electric drill, but the hole can also be cut by using a hand drill as follows : first mark a drilling circle from the pilot hole to the correct diameter and drill a succession of holes inside the edge of the drawn circle. The plug should then be removed with a chisel and the hole smoothed around with a half-round rasp file.

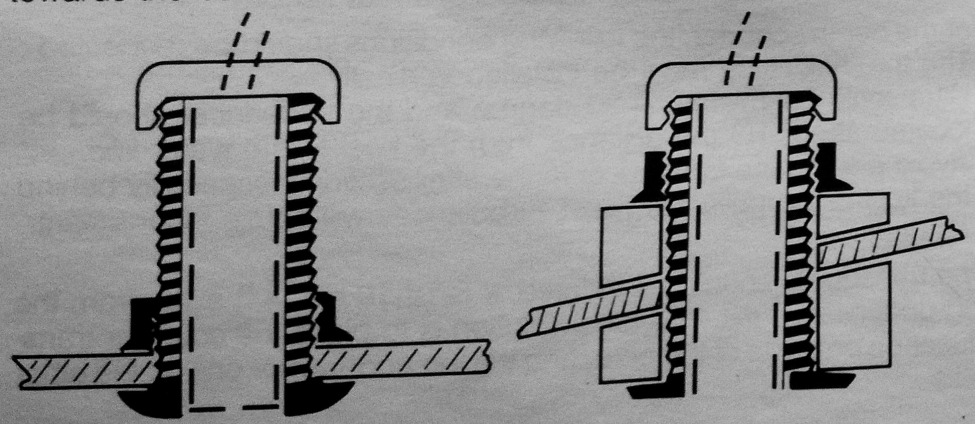
Put a marine sealing compound on the inside face of the thru-hull fitting and insert the fitting through the hole into the boat, pressing firmly.

Inside the boat, put additional sealing compound around the base of the fitting and hull. Fit locking nut and tighten by hand. Then with an adjustable wrench, tighten up and ensure that the fitting is firm but not too tight and that the sealing compound is bedded down.

The fitting routine is the same for wooden or metal hulls.

Insert immediately the sounder transducer or the log underwater unit into the thru-hull fitting and tighten down the end cap.

CAUTION : the arrow on the log underwater unit must be pointing towards the bow.



If it is impossible to fit the thru-hull fitting vertically through the hull, fairing blocks must be made for both the outside of the hull and the inside. The outside block should be streamlined to prevent water turbulence. The inside block helps screwing the nut on a flat surface.

Routing the cables.

The cable is fitted with a plug for connection to the rear part of the display unit. It must never be shortened, cut or crushed and care must be taken in routing this cable to the display unit. Avoid crushing the cable under cabin floorboards. If the cable is cut or damaged, the complete transducer unit and cable assembly has to be replaced.

Also route the cable away from engine and alternator interferences and try and test the unit working before finalising cable routing.

3 - MASTHEAD UNIT.

(Optional with Digipak L and Digipak CW)

Offer up the mounting bracket to the masthead crane, ensuring a horizontal surface of 70 × 30 mm (2 3/4'' × 1 3/16''). If unable to mount bracket securely on crane, make an angle bracket, drill two holes diameter 3,7 mm and tap them to 4 mm (5/32'').

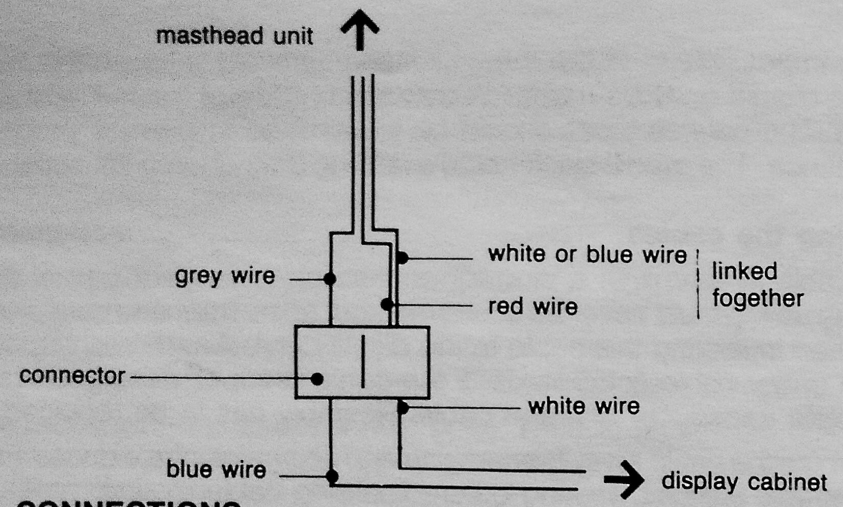
Fix the masthead unit.

The set of cables is composed of :

- One 17 m (55' 9 1/4'') cable, composed of 3 wires ; the grey wire is separated, the white & red wires are linked together.
- One 10 m (33') cable, composed of 2 wires (white & blue) ; this cable is used to connect the masthead unit cable to the connecting box.

These 2 wires can be connected regardless of polarity.

Cut the 17 m cable, allowing 1 m (3') length at least protruding from base (minimum length between deck outlet and connector). Then connect this cable to the other cable running from the display unit, by means of the connector.



4 - CONNECTIONS

4.1 Mouting the connecting box

The cable length is 1 m (3') ; the connecting box must therefore be placed within 1 m of the readout unit, in a safe and remote place, but still accessible. Caution : the connecting box is not watertight.

You will find it easier to fix the connecting box once the connections have been completed.

4.2 Wires and cables to connecting box

- Power cable
- Cable cluster
- Sensors : sounder transducer and log underwater unit
- Accessories

Cut the power cable, long enough to route it from electric panel or battery to connecting box.

Strip this cable. The other cables are supplied already stripped.

Follow carefully the connection diagram on following pages.

For better contact, it is recommended to insert the small plates under the heads of the screws. (12 plates supplied in a small separate sachet).

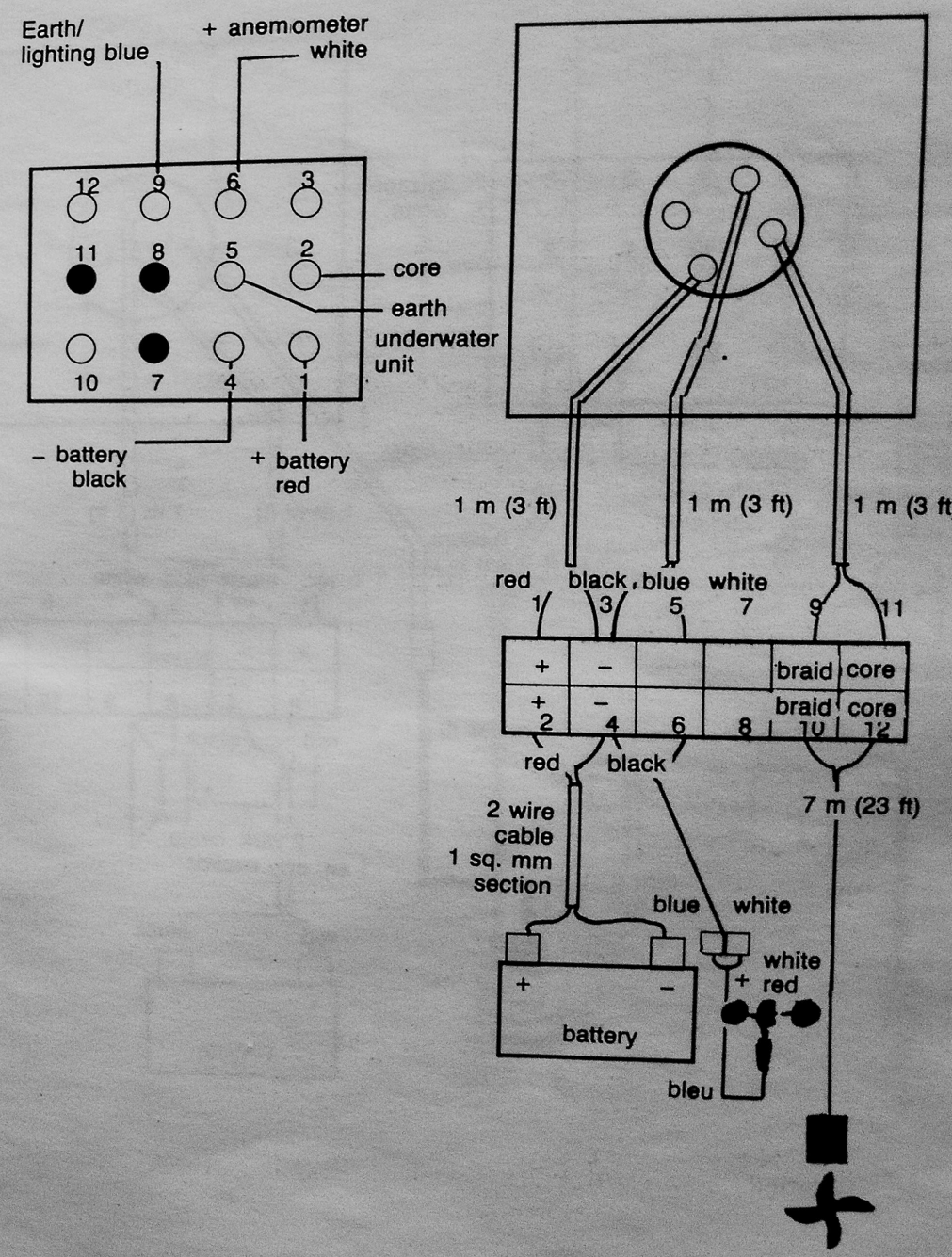
If the sensors cables are too short :

- for the sounder transducer : use a 3 m (10 ft) extra length of cable with a cinch-plug - reference 65.12.35.9.
- for the log underwater unit : use a 3 m (10 ft) length coaxial cable with connecting block - reference 65.12.37.3.

CAUTION :
THE SOUNDER TRANSDUCER CABLE MUST NEVER BE CUT.

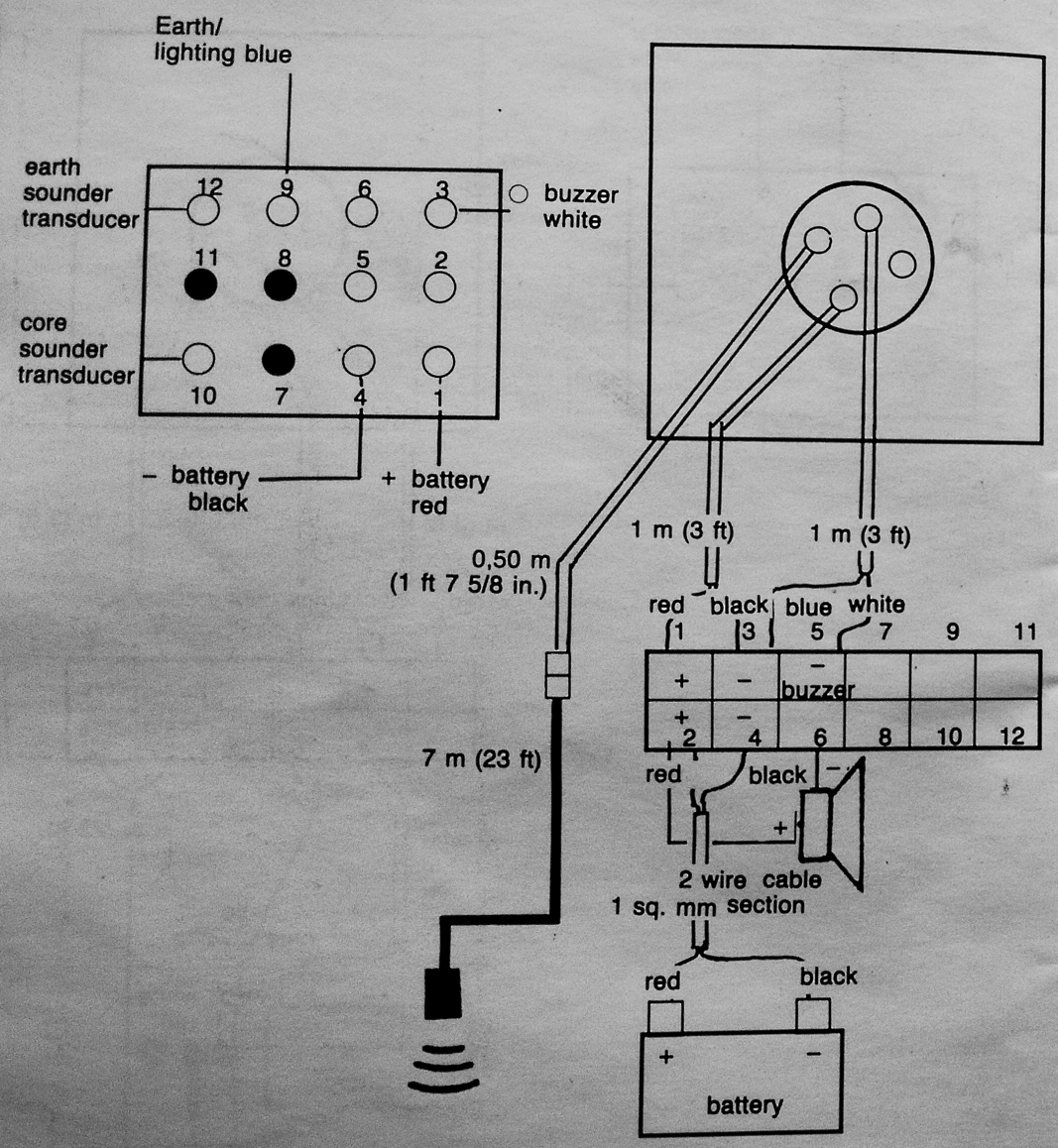
Connection diagram DIGIPAK-L

Rear side of display unit



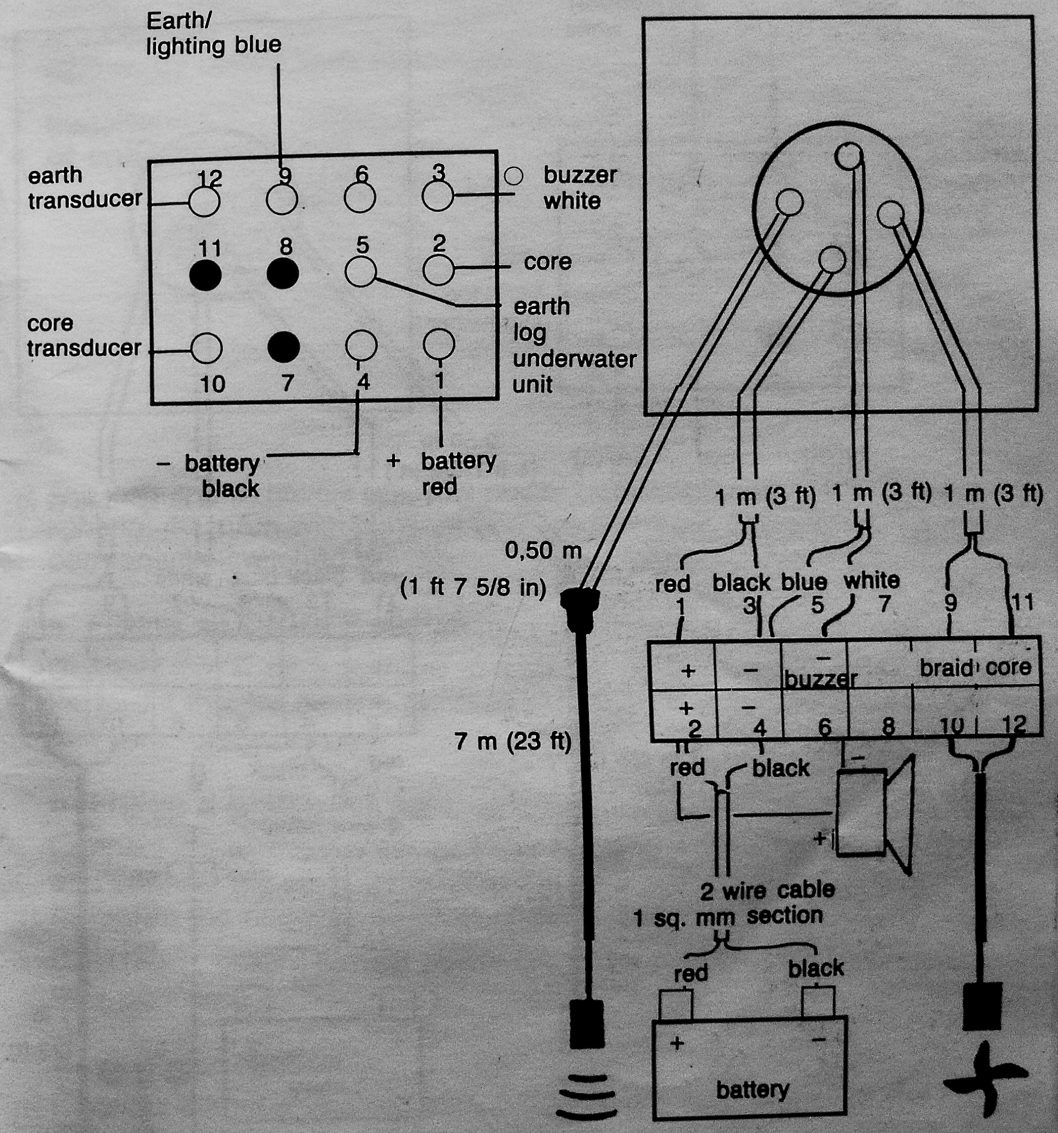
Connection diagram DIGIPAK-S

Rear side of display unit



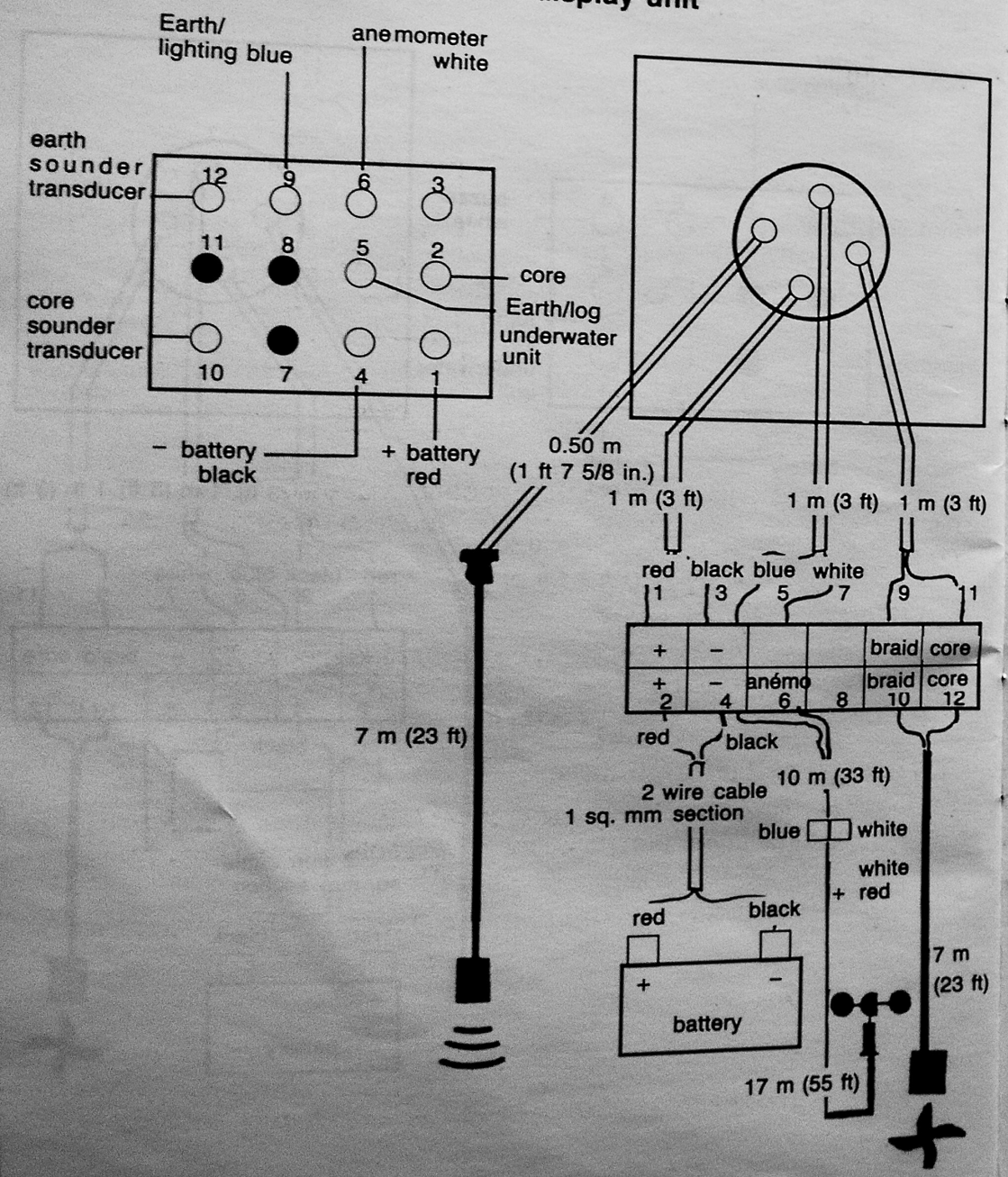
Connection diagram DIGIPAK-CA

Rear side of display unit



Connection diagram DIGIPAK-CW

Rear side of display unit



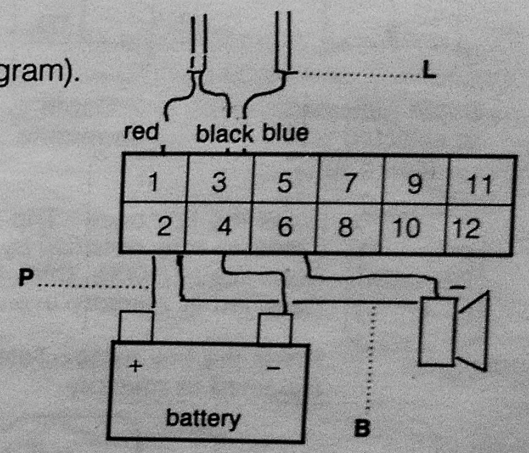
When the connections have been made according to the diagram, fix the connecting box with four stainless steel screws.

For Digipak S or CA, fix the buzzer near the connecting box, so that it can be heard from outside.

4.3 Options
(shown by dotted lines on diagram).

Installation of optional switches

for power supply : P
lighting : L
buzzer : B



The instruments have a very low power consumption (20 mA/h without lighting, 40 mA/h with lighting) and are therefore designed to be left permanently switched on.

a. Fitting an ON/OFF switch

Connect the + n° 2 terminal to a switch on the electric panel or, in the event that no electric panel is available, fit a separate switch on that wire.

b. Fitting a switch for lighting

Connect the blue wire of the cluster cable to a terminal of the switch and connect the other terminal to the n° 3 contact of the connecting box or to the negative terminal of the battery.

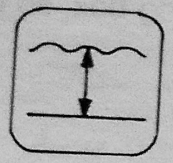
CAUTION : Before turning power on, make sure that the sensors are duly connected.

5. Final connection

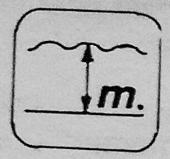
Connect the plug into the back of the display unit. Allow for the polarising key to set in place. Check that the plug is completed and correctly in place : it is recommended to use a tool such as a screwdriver.

B - OPERATION

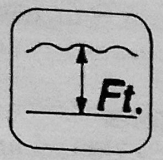
1. Meaning of symbols and comments.



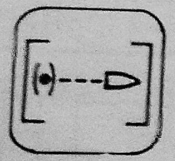
Depth indicated in selected unit (see § 2)



Depth in meters

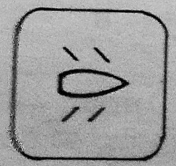


Depth in feet

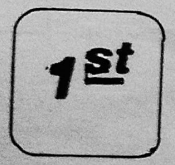


Press the key once : Trip log from a starting point of from a reset-to-zero, obtained by depressing the key for 3 seconds.
Accuracy : 1/100th, then 1/10th of a mile.
Retained in memory even when power is shut down.

Press the key twice : Total log, in mile units.
Retained in memory.

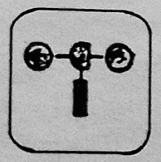


Boat speed indicated in the selected unit

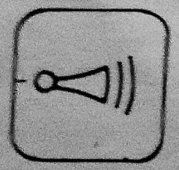


Boat's score
Boat's best performance indicated in the selected speed unit

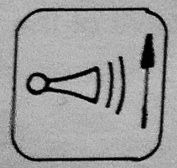
retained in memory even when power is shut down.
Reset : depress key for 3 seconds.

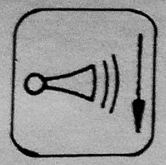


Anemometer :
- figures to the left : Beaufort scale (up to Force 9)
- figures to the right : speed in the selected unit



Alarm
Visual indication of the alarm threshold of last function used (cf § 5 : - log
- depth sounder (shallow or deep water alarm)





Alarm adjustement :
Visual indication of depth sounder alarm threshold and : increase/decrease

2. General principle

The operation procedure of the Digipak range is extremely simple :

ONE KEY = ONE FUNCTION.

The keys are differentiated by symbols which allow an easy and quick recognition of the function being used. During operation, the function currently selected is clearly indicated by a dash appearing on the display, just above the corresponding key.

3. Selecting the units

The various instruments of the Digipak range feature different functions (see page 28).

Whatever the model, a choice of units is proposed for each function (miles/km/metre/feet).

To switch from one unit to another, depress the appropriate key for 5 seconds.

The selected unit will be indicated on the display ; equally, the selected unit in one particular function will be displayed every time you come back to that same function. Display will show as follows :

FUNCTION	UNITS	DISPLAY
Speedometer	- knots	Knot
	- Km/h	Km.h
Depth sounder	- Metres	m
	- Feet	FEET
Anemoter	- Knots	Knot
	- Metres/second	m S

4. Accuracy of information and capacity

Functions	Units	Capacity	Accuracy
Depth sounder	- Metres	O,9 to 120 m	(1/10th up to 10 m) (1 unit beyond 10 m)
	- Feet	3 to 400 ft	1 unit
Alarm	- Metres - Feet	0,9 to 120 m 3 to 400 ft	(1/10th, then unit) 1 unit
Speedo-meter	- Knots - Km/h	30 55	1/10th 1 unit
Trip log	- Miles	0 to 99,99 up to 999,9	1/100th 1/10th
Total log	- Miles	O to 9999	1 unit
Anemoter	- Beaufort - Knots m/s	9 99	1 unit 1 unit

5. Detailed adjustment procedures

5.1 Setting the depth sounder alarm (Digipak S or CA)

Select the depth sounder function :

Then press key or or , to obtain a visual indication of the alarm threshold. The dash comes below that key, indicating that you are in the process of adjusting the alarm ; the two other dashes flash : one to increment, the other to decrement.

When the instrument is first used, the threshold is adjusted on « **OFF** ».

For Digipak CA, this depth sounder alarm can be a shallow water or deep water alarm. The shallow water alarm is indicated by « **SHAL** » appearing quickly on the display, while the key is depressed. The deep water alarm is indicated by « **DEEP** » appearing on the display.

To switch from one the other, maintain this key depressed for 5 seconds.

One has to select one or the other, but cannot program both at the same time.

To increment, push key on Digipak S or key on Digipak CA ; to decrement, push key on Digipak S or key on Digipak CA.

Incrementation range : from 0,90 to 120 m or from 3 to 400 feet, according to the selected unit.

Note : the shallow water alarm will sound when depth becomes inferior to the programmed threshold.

The deep water alarm will sound when depth becomes superior to the programmed threshold.

To cancel an alarm set at a certain value, one must decrement down to « OFF ».

Decrementation range : down to 0,9 m minimum, or 3 feet, and then « OFF ».

Incrementing & decrementing are activated and displayed as follows :

Successive depressions :

- in 0,1m steps, from 0 to 10 m ;
  then in 1 m steps beyond 10 m.
- in 1 foot steps from 3 to 30 feet ;
  then in 3 feet steps beyond 30 feet.

Prolonged depression :

- in 1 m steps, from 0 to 10 m ;
  then in 10 m steps beyond 10 m.
- in 3 feet steps from 3 to 30 feet ;
  then in 30 feet steps beyond 30 feet.

5.2 Setting the trip log alarm (Digipak CA).

Select the trip log function. Press the key once : log information is displayed with a 1/100th of a mile accuracy.

Then press key to obtain a visual indication of the alarm threshold and proceed with adjustment.

- Increment : key
- Decrement : key

Incrementing and decrementing are activated and displayed as follows :

- Successive depressions :
  in steps of 0,1 mile (from 0 to 20 miles)
  then in 1 mile steps (beyond 20 miles)
- Prolonged depression :
  in 1 mile steps (from 0 to 20 miles)
  then in steps of 10 miles (beyond 20 miles)

To cancel the alarm, decrement down to « OFF ».

Note on alarms

As soon as one alarm sounds, the display automatically switches to the function corresponding to that alarm, to allow the reading of the exact value.

If, with Digipak CA, the depth sounder alarm is programmed at the same time as the log alarm, and in the event that both alarms should be activated at the same time, then priority is systematically given to the depth sounder alarm.

5.3 Adjustment of log and speedometer.

Keys are numbered

1	2	3	4

Logs are carefully calibrated before leaving our factory but, as hull shapes and suitable installations vary from boat to boat, the instrument must be adjusted for maximum accuracy.We recommend to make a test to make sure the adjustment is correct.

Basis for adjustment

- Check to determine if the paddle wheel is following the direct centre line of the boat and the arrow is pointing forward. Angle of paddle wheel to centre line can be varied by up to 10°.
- Make sure that calibration is set at 100, by pressing keys 1 and 3.
- Select on a chart a distance between two buoys or landmarks. Preferred distance is about 2 or 3 miles, but not much longer as tidal streams may possibly change during tests.

- Tests should be made in good weather, calm sea and under power at a constant speed.
- Run the distance twice to average the effect of tide and note log mileage at the start and end of each run.
- Ratio of true chart distance to log distance gives percentage of error which will have to be taken into account for calculations of distance run.

Example :

Chart distance indicates 3,3 miles between landmarks.

Motor on a straight course at a constant speed of 5 knots and return noting the time taken and actual mileage shown on the counters.

Outward leg counter indicates 2,9 miles

Return leg counter indicates 3,1 miles

Therefore, the average is $\frac{2{,}9 + 3{,}1}{2} = 3$ miles

As the true distance is 3,3 miles, actual error is 0,3 mile, i.e – 10 %.

Therefore, 10 % must be added to the initial speed indication, which was 100 and becomes 110.

Adjustment procedure :

Adjustment is made by unit increments or decrements from 70 to 160.

- Increment : press keys 2 and 4 simultaneously.
- Decrement : press keys 1 and 3 simultaneously.

Then, return to previous function.

Carry out outward and return leg runs again, noting time and distance to ensure that adjustment is correct.

6. Visual alarms

The Digipak instruments provide the helmsman with essential information for safe and easy sailing.

3 visual alarms appearing on the display, make this information even more accurate, and thus, sailing even safer :

- Battery alarm : « batt » on display, when the battery power is insufficient.

- Log alarm : « lock » on display, every 8 second, when the paddle wheel is fouled and cannot turn (whatever the function currently being used).
- Lost echo alarm : the value will flash on the display, then « Sond » will flash when the echo is being lost.

  This can happen in the following circumstances :

  - a lot of non-relevant echoes (eddy, seaweed etc...)
  - muddy seabed
  - etc...

However, this will occur in extremely rare occasions, thanks to the highly sophisticated programme of the depth sounder.

Note : When the depth sounder function is activated, the indication « Sond » appearing on the display will flash, until the instrument has found the actual depth.

7. Note on lighting

To simplify the design and the installation of the instrument, no lighting switch has originally been designed.

It is however possible to fit an external switch for the lighting, as described in chapter 4.3.b.

A lighting with automatic timer is included as standard in each instrument : every time one presses a key, lighting is activated and stays on for 8 minutes ; it then turns off in order to avoid an extra power consumption.

8. Updating of the information

The displayed information is calculated and updated over a period of 2 seconds, except for speed. In speedometer and anemoter functions, updating occurs every 2 seconds, but calculation is made over a period of 4 seconds to avoid « jumps ».

9. Memory

When power is turned on, the following information is memorized :

- Total log
- Trip log
- Boat's best performance
- Alarms
- Speedometer calibration rate
- Programmed units.

10. Maintenance and winter storage

The Digipak instruments are robust, and require only minimal maintenance :

- Periodically smear the log underwater unit or the sounder transducer with a light grease and ensure that the unit moves freely up and down in the thru-hull fitting. This is essential because both parts can become fouled with sea life concretions causing severe stiffness.
- Do not paint the log paddle wheel with antifouling, as this may unbalance the wheel and cause inaccurate readings. The same applies to the sounder transducer : never paint the transducer face with antifouling as this causes interferences with accoustic signals.
- Carefully clean weed, slime and barnacles from paddle wheel to avoid loosing sensitivity and balance. Never grease the paddle wheel axis.
- Regularly retract sounder transducer and clean its face with a piece of wood ; never use a metallic tool. Never knock the piezo-electric crystal which is very fragile.
- Before winter storage, remove paddle wheel from thru-hull fitting and smear it with suitable grease. Give plugs and sockets a touch of silicone grease.

11. Trouble - shooting

Problems	Causes and solutions
No indication is displayed when instrument is switched on.	Reversed polarity.
Sounder transducer/ log paddle wheel cannot be removed from thru-hull fitting.	The sounder transducer/log paddle wheel was not regularly serviced with a touch of grease. Try to pull it by turning the ring or by drawing it with a rope. If still firm, the boat will have to be slipped and the transducer/paddle wheel driven out from outside the hull. This generally damages the unit beyond repair and is not covered by our warranty.
Depth sounder function	
Unsteady display	Transducer or transducer cable are too near a source of electrical interference.
Digital reading gets lost	Transducer face is fouled with marine growth.
« sond » flashes permanently on display.	Transducer cable is damaged or cut ; transducer plug is disconnected.

In any doubtful case, do not hesitate to call our After-Sales Service Department.

12. Technical specifications

Supply voltage . . . . . 12 Vcc
Power consumption . . . . . without lighting 20mA
with lighting40mA

13. References

Digipak L 65.12.31.1
Digipak S 65.12.30.4
Digipak CA 65.12.32.8
Digipak CW 65.12.33.5
Masthead unit for Digipak CW 65.12.34.2
3 m (10 ft) extra cable length for
sounder transducer 65.12.35.9
3 m (10ft) extra cable length for
log underwater unit 65.12.37.3