INSTALLATION OF
AP GOLD SERIES AUTOPILOT ON
ARNESON SURFACE PROPELLERS

Rel.1.2

ARNESONgoldE.DOC

Navicontrol s.r.l.

Viareggio – August 2004

Foreword

All crafts fitted with Arneson surface propellers have cylinders that drive the propeller axles, mounted in outboard position.
The position of the propeller axles (drive system) is measured by a transducer (multi-rev potentiometer) installed in a special box and connected to the drive cylinder by means of a flexible cable.
A special spring keeps the cable always taut, avoiding any slack on the drive of the transducer.
The AP103gold, AP303gold and AP3003gold Navicontrol Autopilots have an interface that can receive this type of sensor. NOTE: the AP203gold autopilot has NOT this interface and it cannot be mounted with these boats.
Moreover, Arneson Europe provides a hydraulic kit complete with electrovalves for connection to the Autopilot; the kit also includes a flow regulator so that the propeller shifting speed can be varied.

Installation and connection to the Arneson Transducer-Box

Ensure that the Arneson Transducer-Box is correctly installed according to the manufacturer' s instructions.
Connect the wiring correctly according to the enclosed diagram, then check as follows:

A) Disconnect the two leads on the terminal board of the Transducer-Box and connect them to an ohm-meter (the digital type is best).

B) Turn the rudder wheel in order to set the propellers in central position, verifying that the readable resistance value is about **200** Ohm. If not, turn the axial clutch of the potentiometer in order to reach that value (see drawing n. 1). A better precision in the adjustment of the zero value can only be reached after the execution of a trial at sea.
Turn the rudder from side to side and verify that the minimum value is of about **130** Ohm and the maximum is about **270** Ohm.

C) Make the electrical connection to the electrovalves supplied by Arneson for use with the Autopilots shown in the diagram. If there is a by-pass electrovalve, connect it too.

D) Open the Processor Box of the Autopilot, then connect the Feedback cable to the terminal board **TB6**. Connect the right and left electrovalves to the terminal board **TB11**.
Connect the by-pass electrovalve, if provided, to the terminal board **TB11**.

After connecting all the wiring of the Autopilot (Processor Box, Control Units, Remote Controls, Compass, etc.), switch on the motors and the Autopilot and press **STBY**.

For the AP3003gold and AP303gold autopilots

Start the installing procedures by pressing simultaneously for at least 2 seconds the keys **STBY** and **SET**. Release the two keys and press the **SET** key untill visualizes the **FEEDBACK** function. By pressing the arrow keys, select the type **POTn** and verify that the direction of the rudder rotation is identical to the one visualized on the bar-graph display. If it is inverted, press again the arrow keys and select the type **POTr**. Press **STBY** in order to end up the installing procedures.

For the AP103gold autopilot

Start the installing procedures by pressing ☼ for 5 seconds at least,. Release the key and press the ☼ key untill visualizes the **F/B TYPE** function. By pressing the arrow keys, select the type **PTn** and verify that the direction of the rudder rotation is identical to the one visualized on the bar-graph display. If it is inverted, press again the arrow keys and select the type **PTr**. Press **STBY** in order to end up the installing procedures.

Check that, when the steering wheel is turned to right and left, the rudder angle indicator works correctly; at the end of the run there must be a reading of about 18÷20 degrees.
NOTE: Perform this setting with TRIM angle (Arneson) in intermediate position.

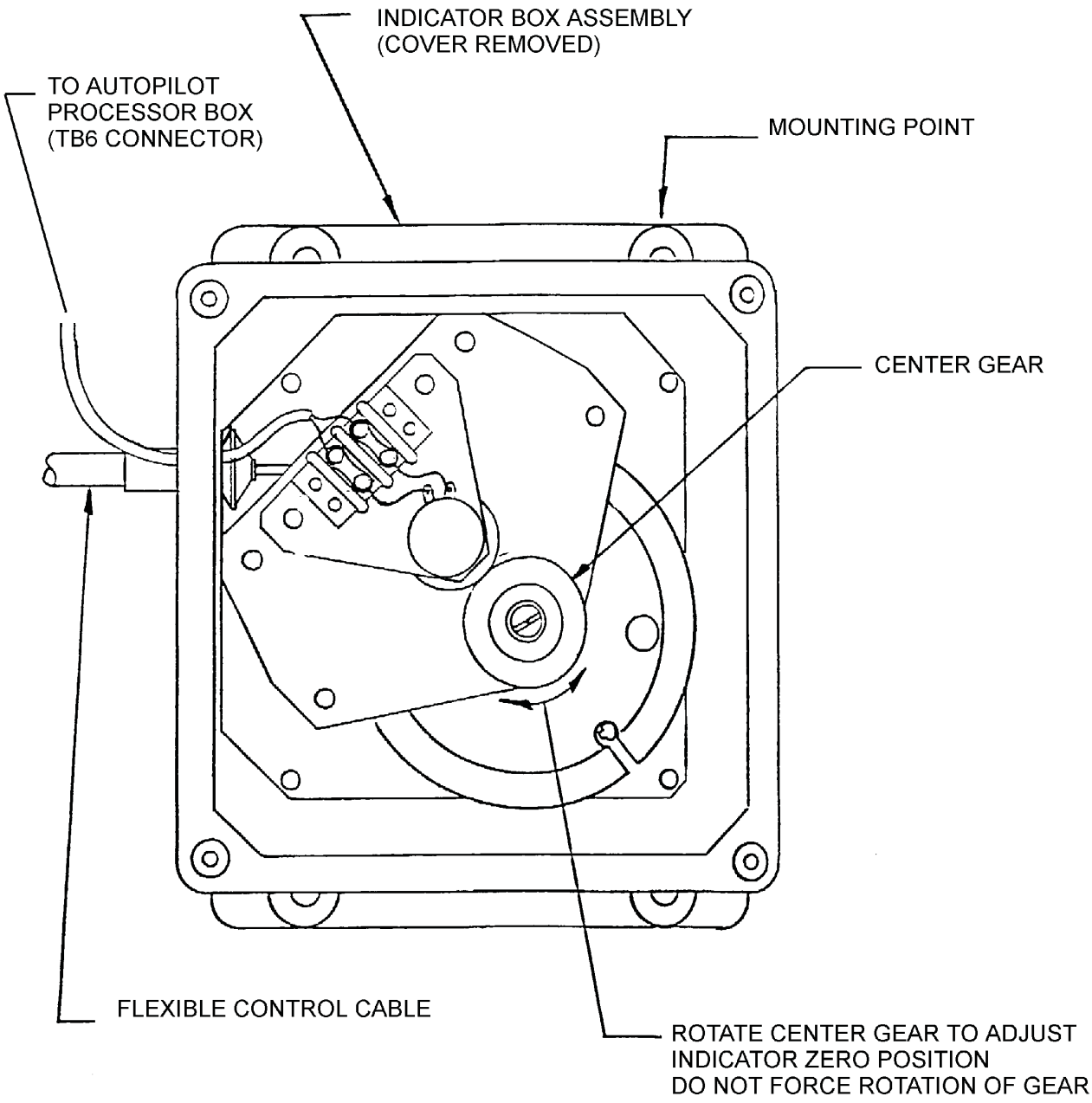
At this stage, enter again the installing procedures and adjust the electronic stroke (function **RUDDER LIM**) to an appropriate value (at least, 2 degrees under the maximum run). Usually, in this type of propellers, the axles do not exceed the 18÷20 degrees maximum of run par side.

E) Press the key **AUTO**.
Using the COURSE control, set a course of about 10 degrees to the right and check that the Rudder Angle also displays this shift in the usual direction; if this is not the case, invert the wires of the electrovalves (left for right and viceversa).
NOTE: Pay attention because, when the TRIM angle is shifted, this also changes the angle of the propeller axles and therefore the Rudder Angle value.

Before proceeding with the navigation tests it is necessary to adjust the flow regulator (Arneson propeller system) to set the axle shifting speed at about 3 degrees/second, corresponding to hardover-to-hardover time of about 12 seconds at the cruising speed. Normally, you will do this operation with the engines at lower rotation rate in the harbour, so you have to set it to about 16 seconds.
If it is not possible, the correct functioning of the autopilot is not guaranteed.

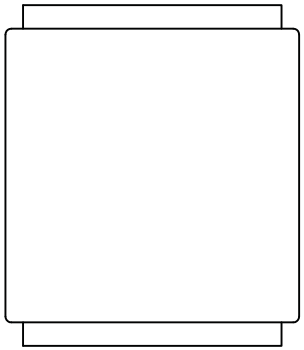
For any problems with the hydraulic part, apply directly to Arneson.

DRAWING #1


INDICATOR BOX ASSEMBLY
(COVER REMOVED)
TO AUTOPILOT
PROCESSOR BOX
(TB6 CONNECTOR)
MOUNTING POINT
CENTER GEAR
FLEXIBLE CONTROL CABLE
ROTATE CENTER GEAR TO ADJUST
INDICATOR ZERO POSITION
DO NOT FORCE ROTATION OF GEAR

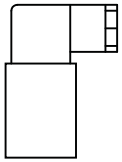
ARNESON SURFACE DRIVES
wiring diagram

ARNESON
TRANSDUCER BOX

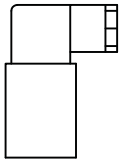


WHITE
BROWN

LEFT
SOLENOID



RIGHT
SOLENOID



LEFT +
LEFT –

RIGHT +
RIGHT –

TB6

WHITE	1
BROWN	2
SHIELD	3

TB11

LEFT +	1
LEFT –	2
RIGHT +	3
RIGHT –	4
	5
	6

NAVICONTROL
PROCESSOR BOX
GOLD SERIE