

FIG.1

AUTOMATICALLY LOCATE VESSEL ADJACENT TO DOCK OR OBJECT
MARINE VESSEL AUTOMATIC DOCKING (MVAD)

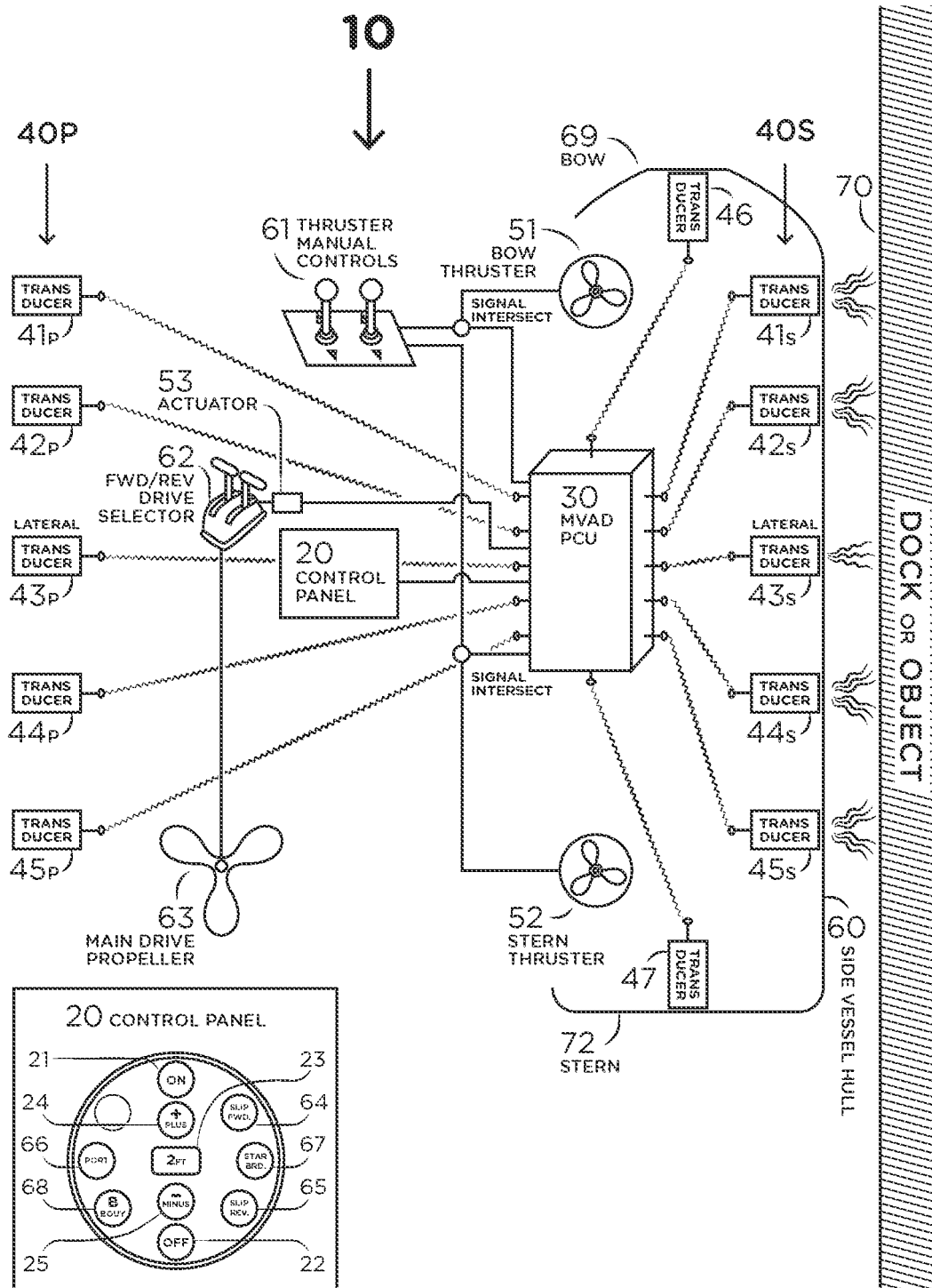


FIG.2

**AUTOMATIC ACCIDENT AVOIDANCE IN MARINAS AND DOCKING AREAS
MARINE VESSEL AUTOMATIC DOCKING (MVAD)**

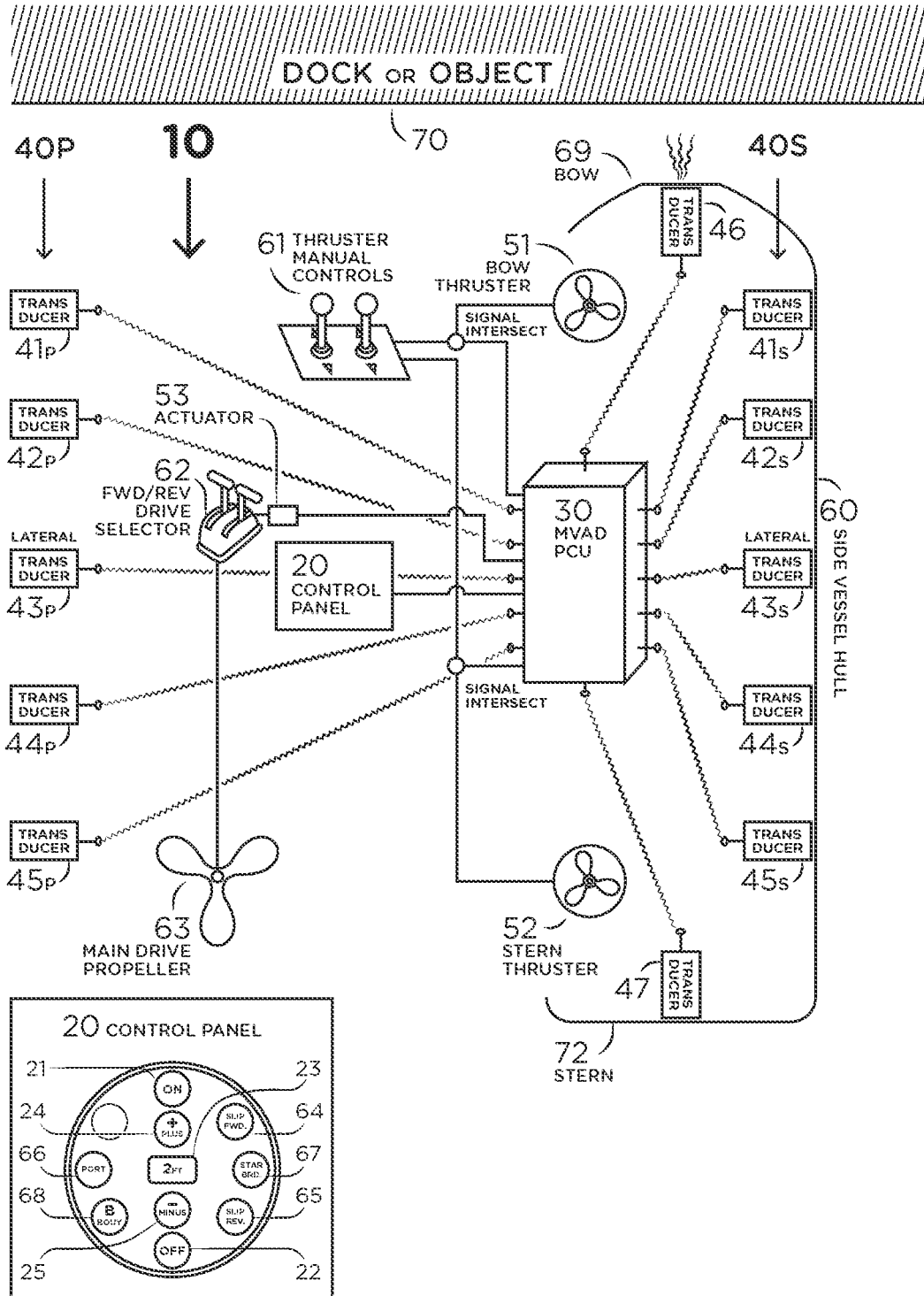


FIG. 3

PARKING VESSEL AUTOMATICALLY IN SLIP AREA
MARINE VESSEL AUTOMATIC DOCKING (MVAD)

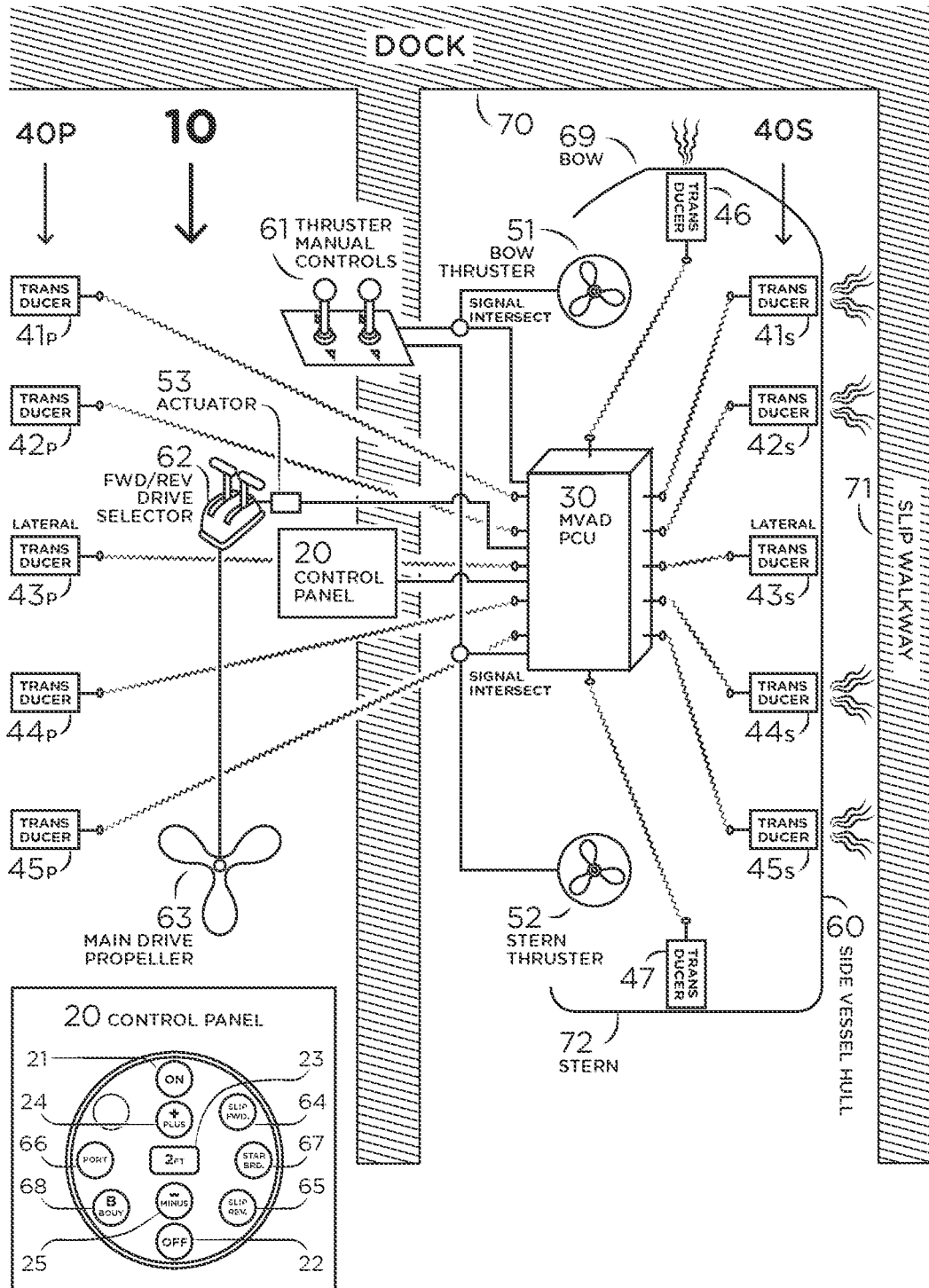
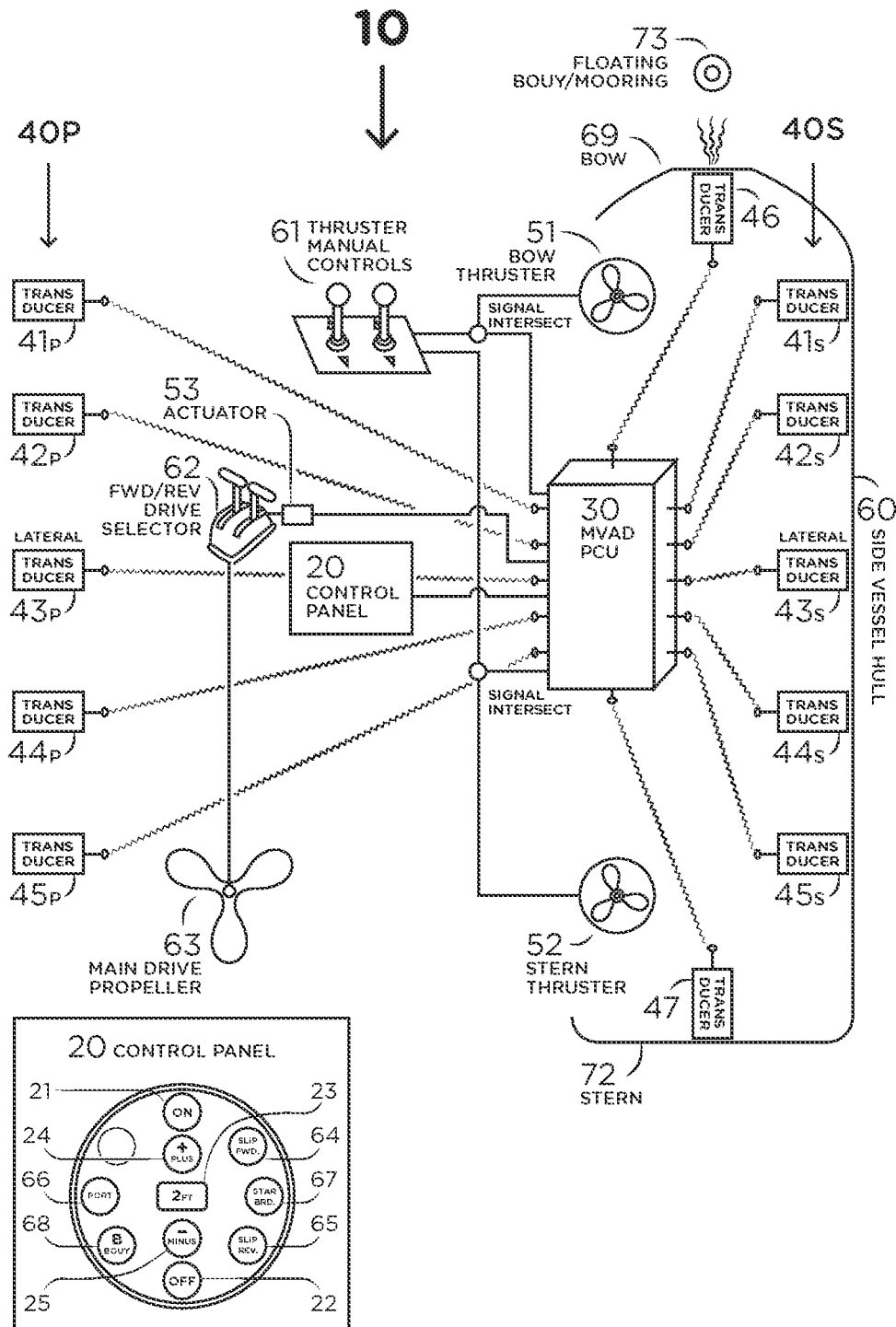
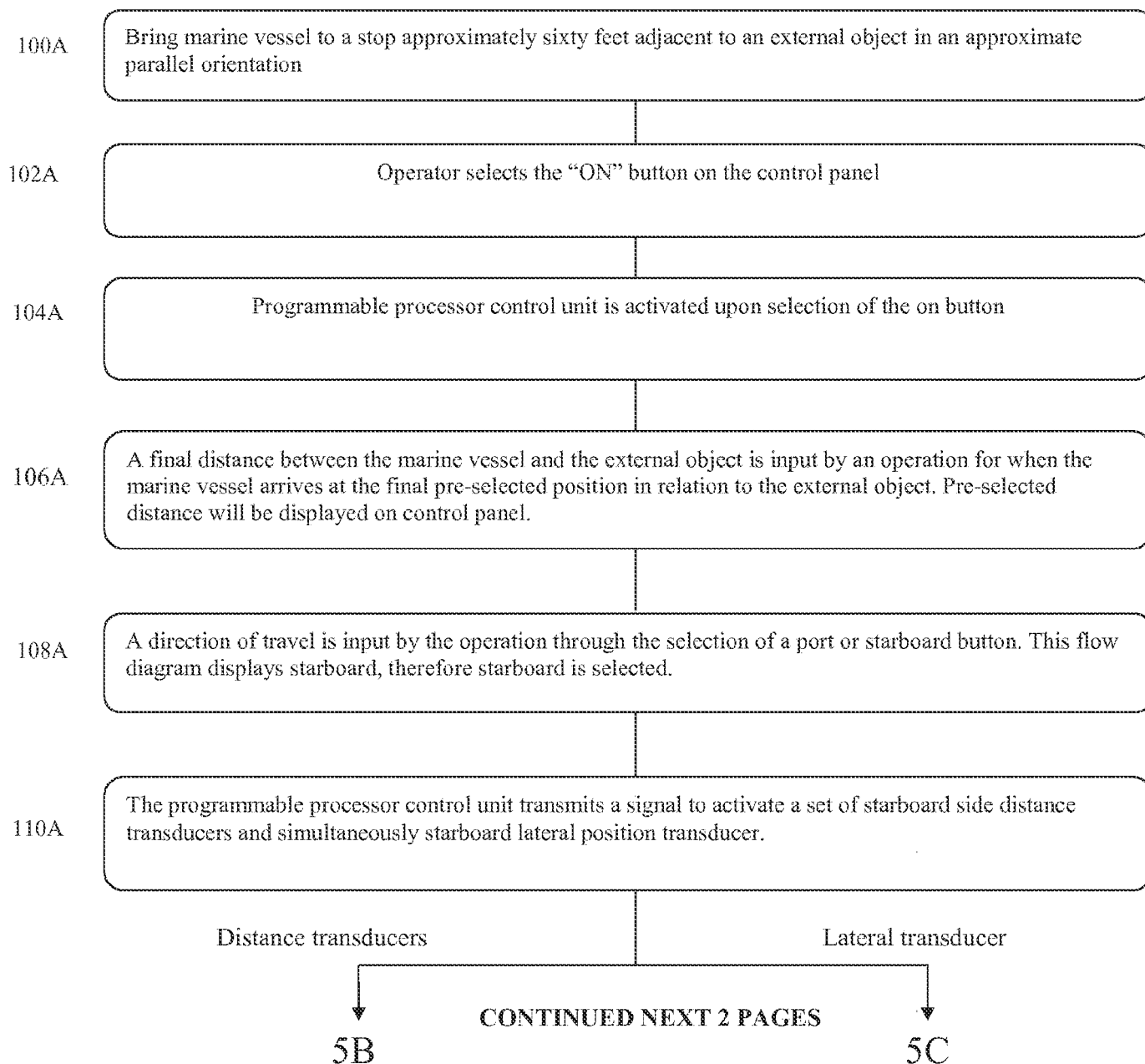


FIG. 4**AUTOMATIC LOCATION OF FLOATING BOUY/MOORING
MARINE VESSEL AUTOMATIC DOCKING (MVAD)**

DOCKING SYSTEM FLOW DIAGRAM Fig. 5

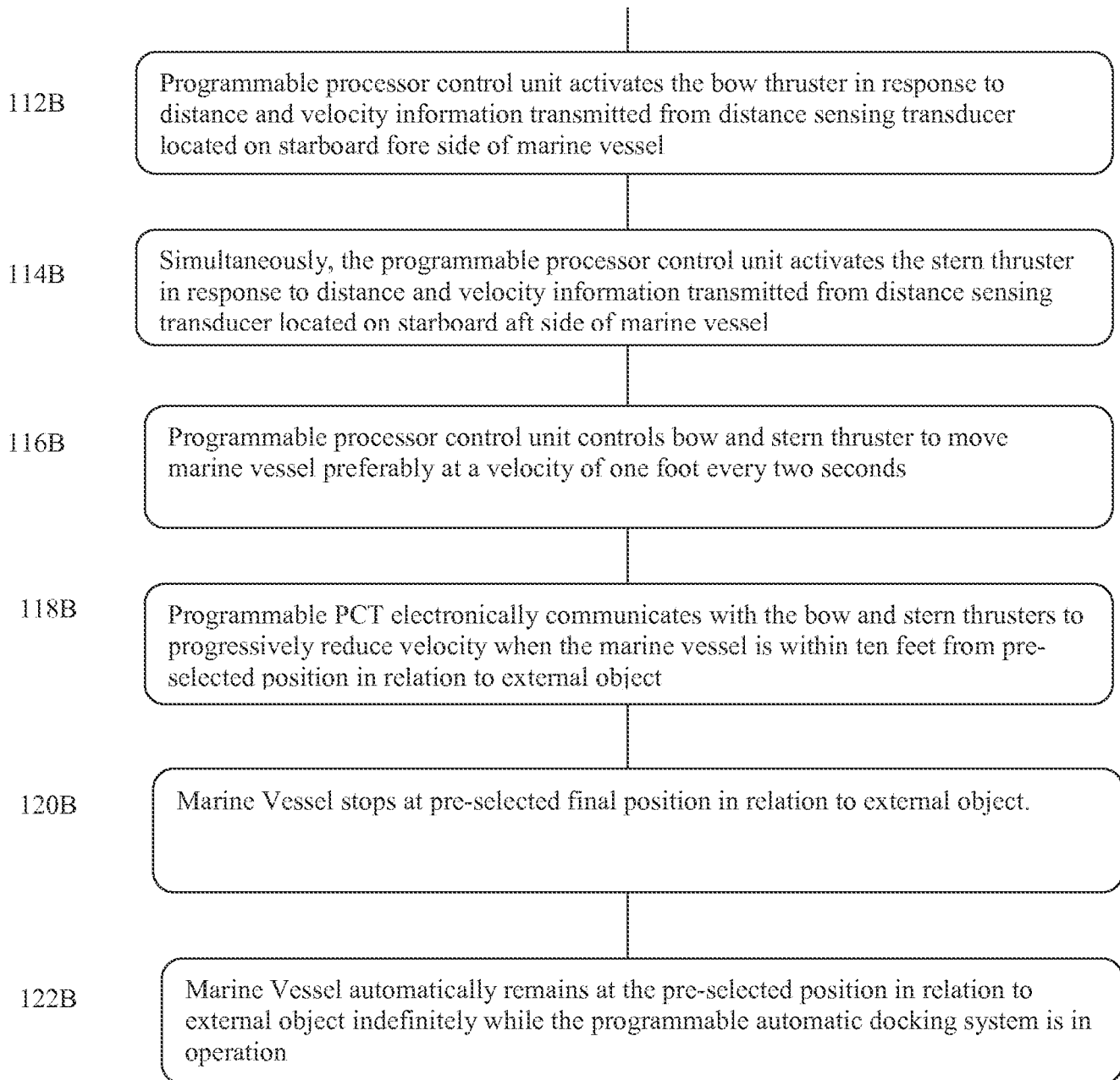
The following diagram is starboard selection as displayed in patent application Fig. 1.
For example purposes: docking a marine vessel to a starboard side external object.

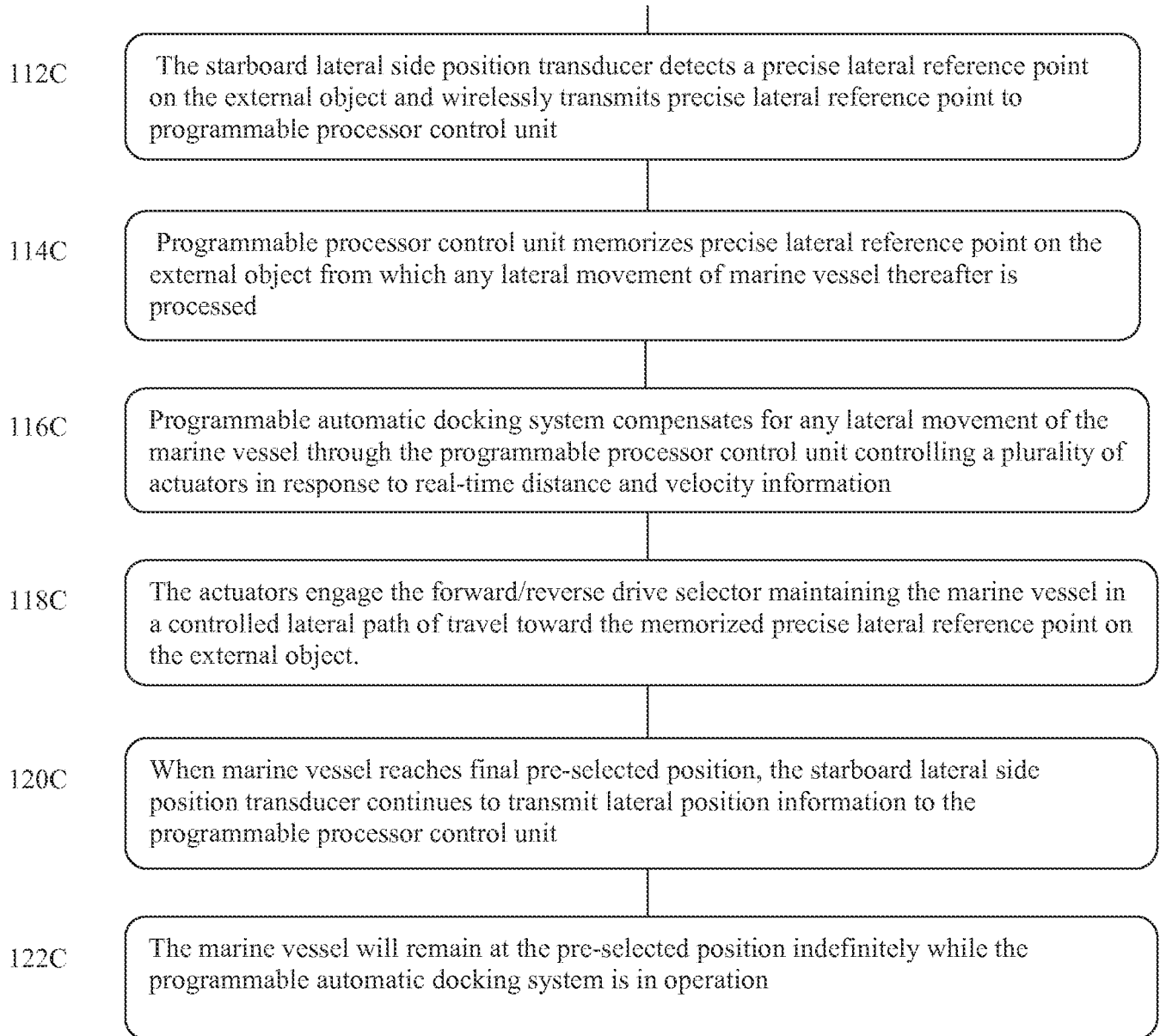
FIG. 5A



Starboard Transducer Operation

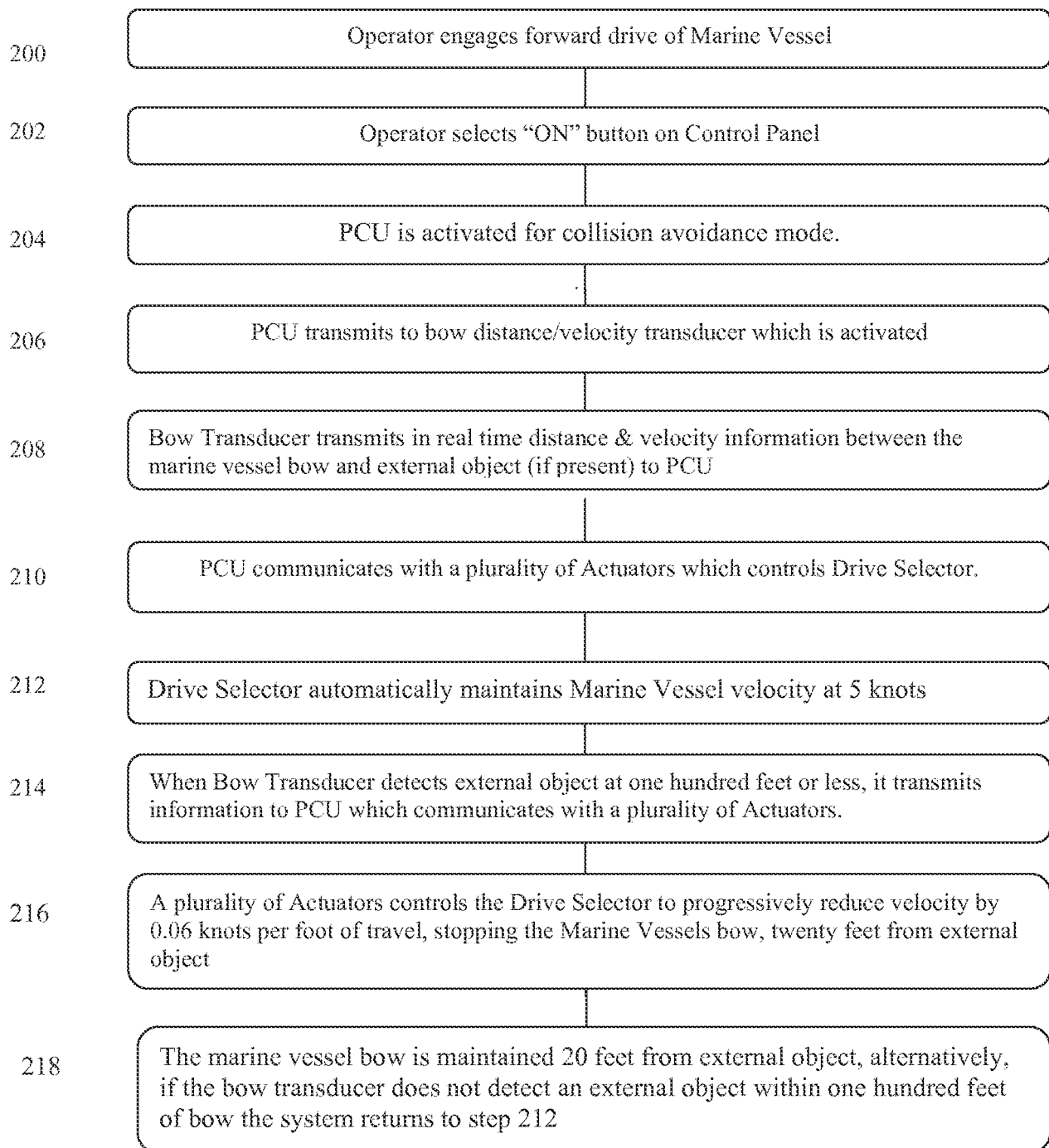
Fig. 5B



Lateral transducer operation**FIG. 5C**

AUTOMATIC COLLISION AVOIDANCE

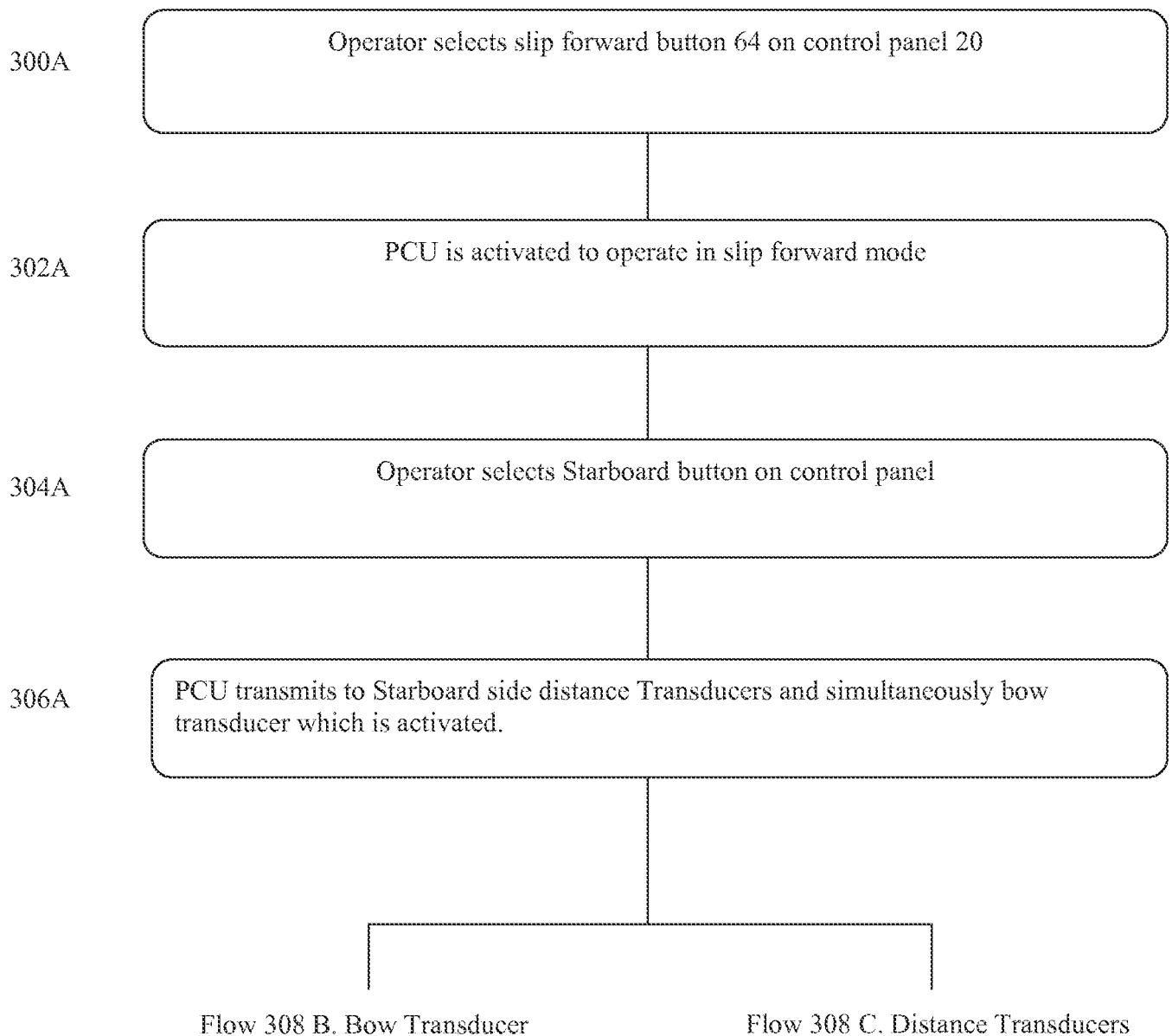
FIG 6



Docking System Flow Diagram FIG.7A

Automatic Maneuvering a Marine Vessel into a Slip

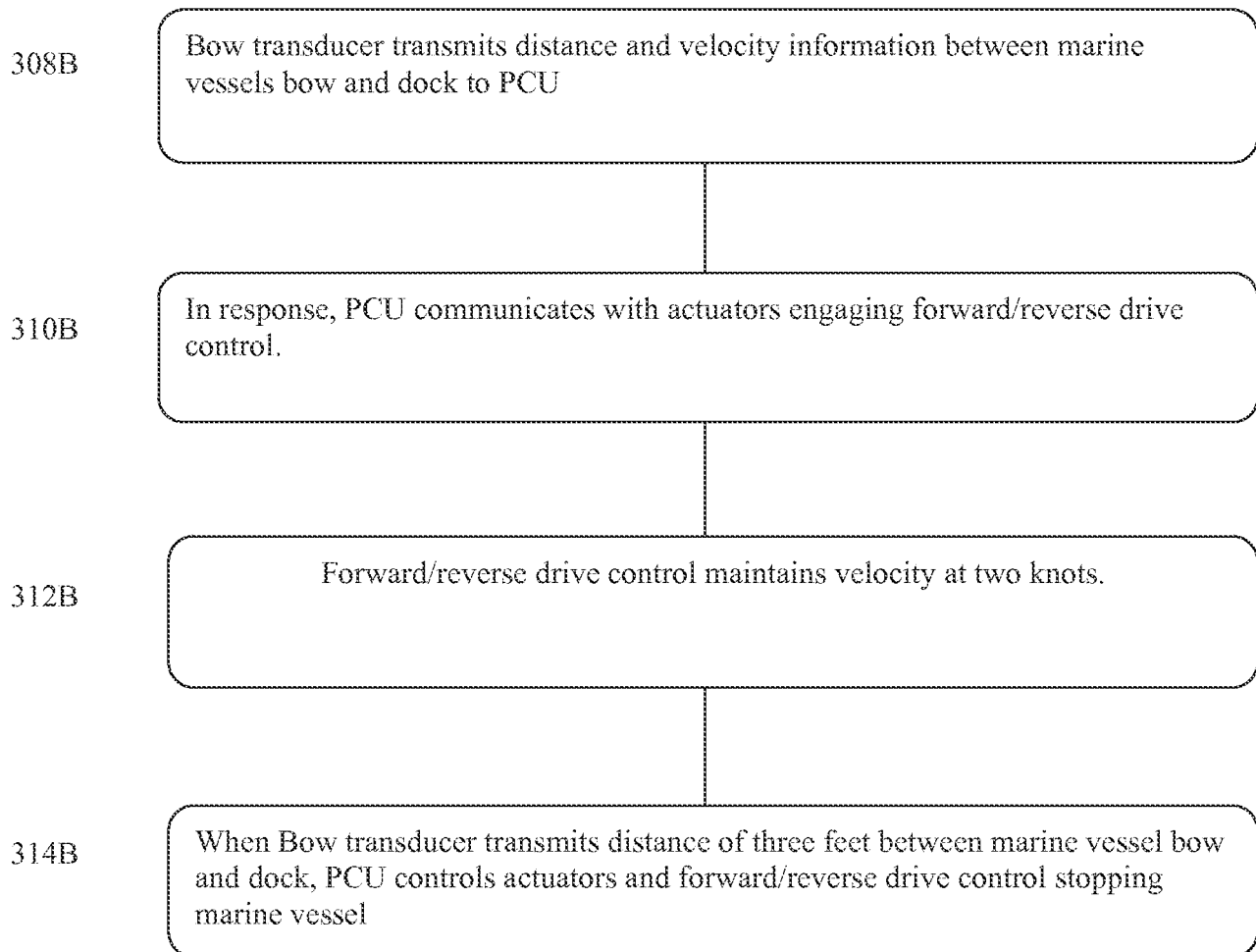
Flow diagram for example demonstrates forward movement with starboard selection



Flow Diagram FIG.7 B

Automatic maneuvering of a Marine vessel into a slip

Bow Transducer Operation



Docking System Flow Diagram FIG.7 C

Automatic Maneuvering a Marine Vessel into a Slip

Distance Transducer Operation

308C

Distance Transducers transmit real time distance information between marine vessel and slip walkway to PCU

310C

PCU engages bow thruster in response to starboard fore side transducer information.

312C

PCU engages stern thruster in response to starboard aft side transducer information.

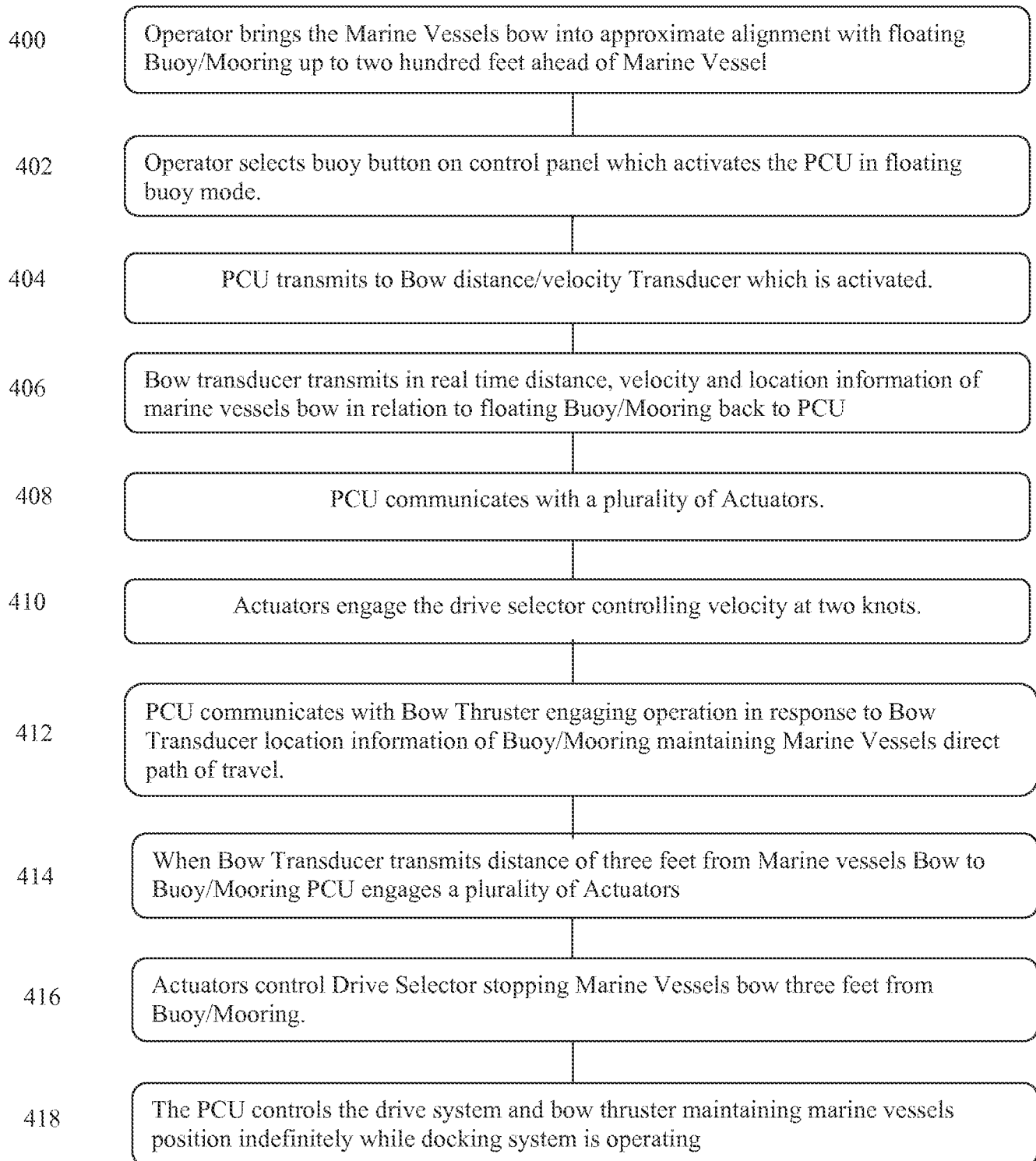
314C

PCU controls bow and stern thrusters to maintain a two feet default distance between starboard side of marine vessel and slip walkway.

316C

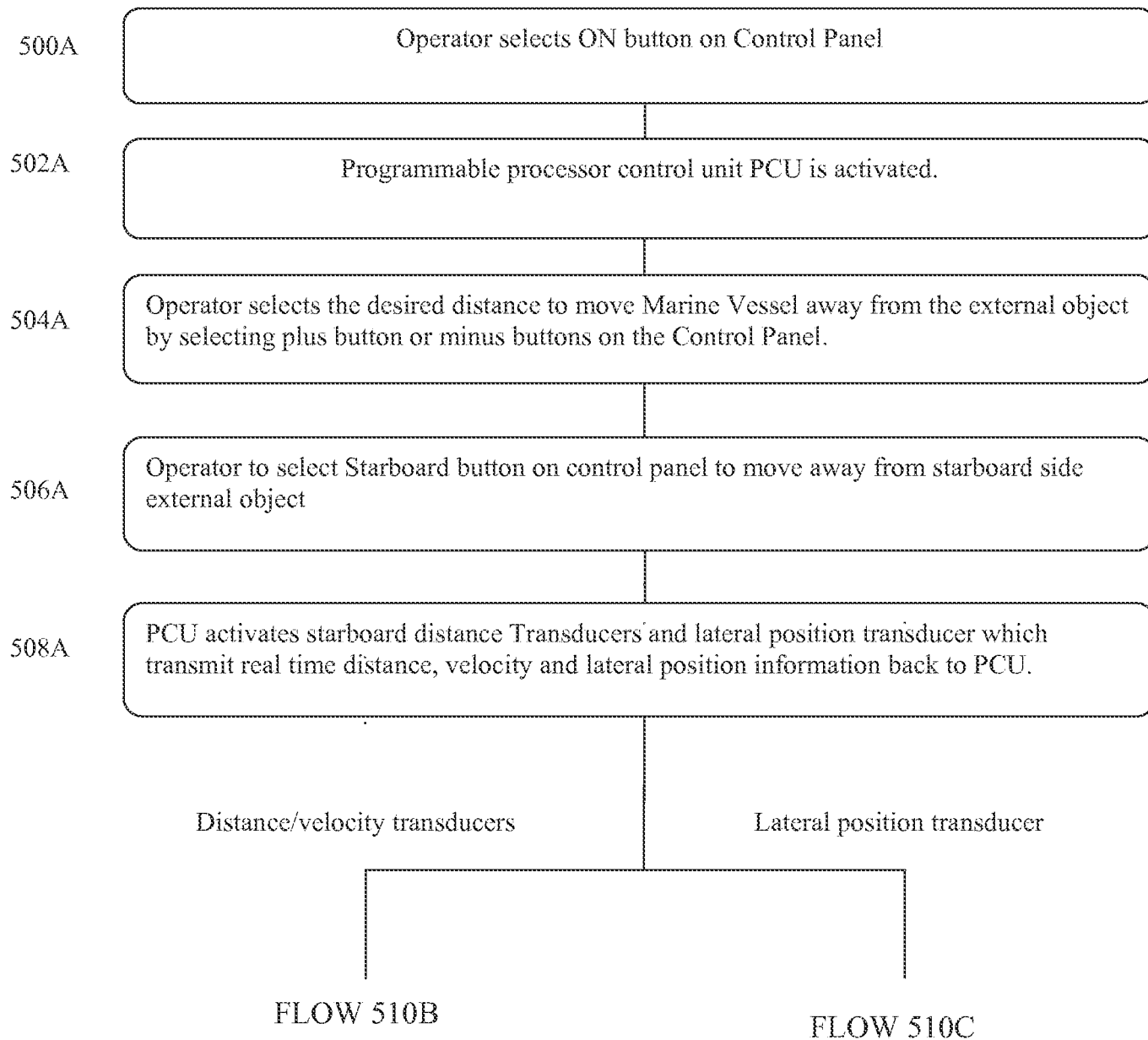
PCU maintains control of bow thruster, stern thruster and drive system to maintain marine vessels position indefinitely while automatic docking system is operating.

FLOATING BUOY/MOORING OPERATION Fig.8



DOCKING DEPARTURE SYSTEM FLOW DRAWING Fig. 9A

For this example we will select operation for departure from a starboard side external object



CONTINUED ON PAGE 2

Docking Departure from External Object FIG.9B

Starboard Distance Transducer Operation

510B

The PCU responding to information from Distance Transducers activates bow thrusters moving Marine Vessel toward pre-selected position away from external object.

512B

The PCU responding to information from Distance Transducers activate stern thruster moving marine vessel toward pre-selected position away from external object

514B

Bow and Stern Thrusters engage, moving Marine Vessel toward pre-selected position at a velocity of one foot every two seconds departing away from external object

516B

When Marine Vessel is within ten feet of pre-selected position away from external object, the PCU communicates with Bow & Stern Thrusters reducing velocity by 0.03 knots per foot of travel.

518B

PCU controls Bow and Stern Thrusters stopping marine vessel at pre-selected position in relation to external object

520B

Marine vessel will automatically remain at the pre-selected position in relation to external object while the Automatic Docking System is operating regardless of wind or water currents.

DOCKING SYSTEM DEPARTURE FROM EXTERNAL OBJECT

Following example: marine vessel departing starboard external object.

Fig.9C flow diagram

Lateral position transducer operation

