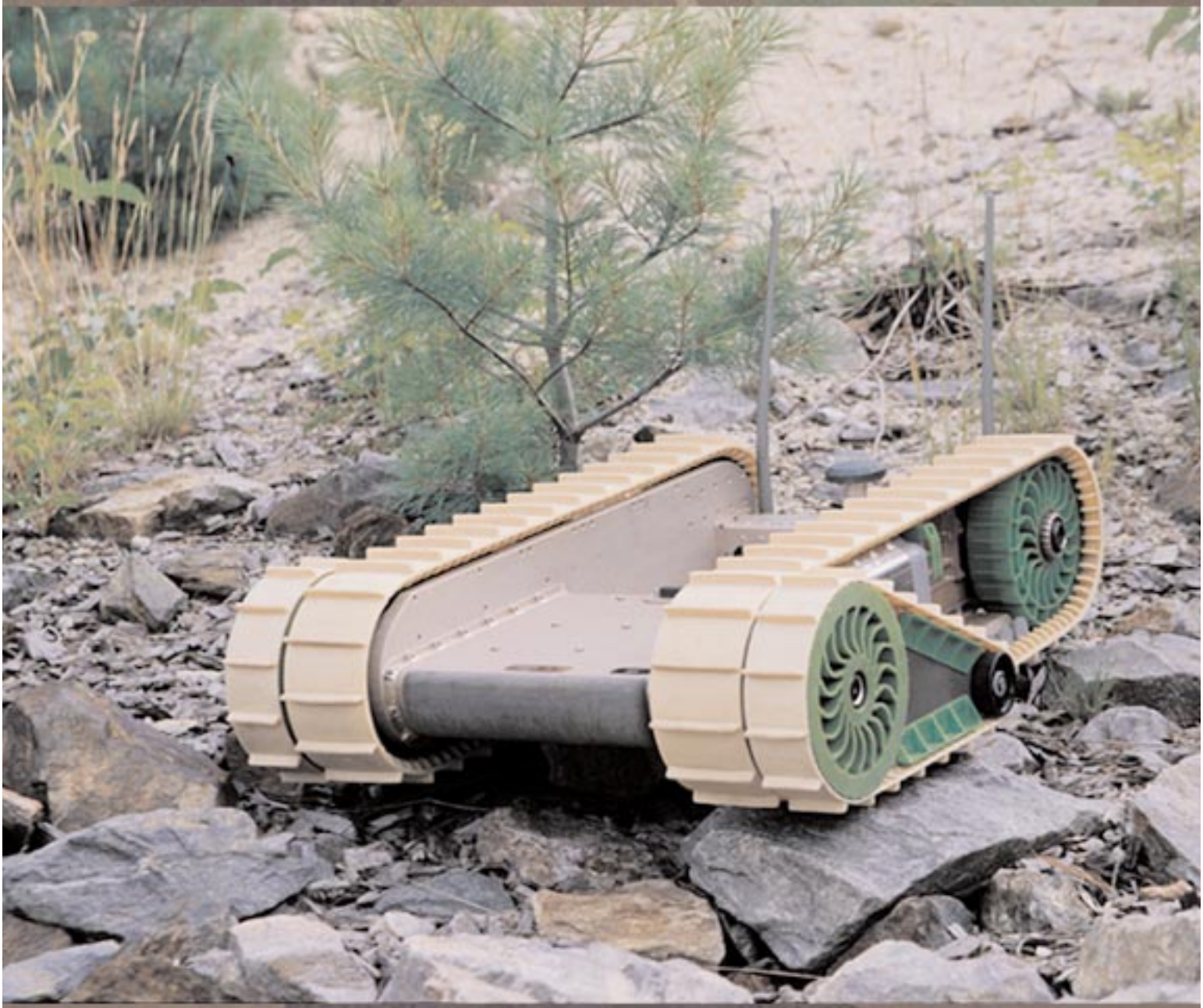
# PackBot



iRobot

## *MECHANICAL*

**CHASSIS -** Aluminum main chassis with injection molded tracks, polymer wheels and bogies

### DIMENSIONS

**HEIGHT -** 7.14” ground to top of cleat

**WIDTH -** 16” main track to track

**LENGTH -** 27” with flippers stowed
34.5” with flippers fully extended

### SPECIFICATIONS

**WEIGHT -** ~40 pounds

**MAX SHOCK -** 400G’s

**WATERPROOF -** up to 3 meters depth

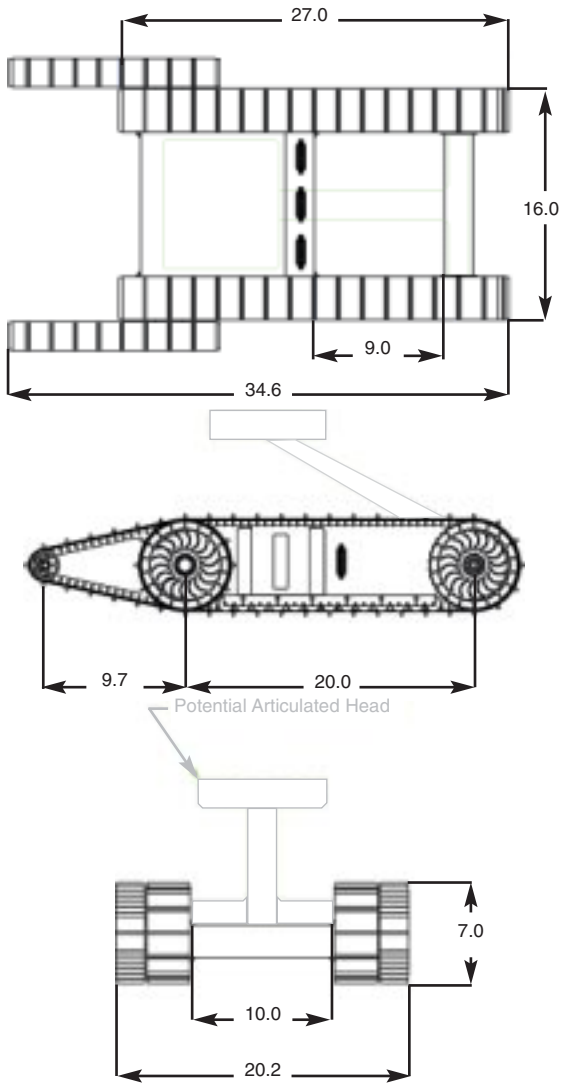
**SPEED -** Nominal 2.2 meters per second
Up to 3.7 m/s in high speed mode

**FLIPPER VELOCITY -** 100°/sec

### FEATURES

Quick change batteries
Quick release flippers
Self-Rightable with flippers
Fixed Rear Flipper Attachment Points

**IMPORTANT NOTE:**
This product is currently under design and specifications are subject to change. Please contact iRobot Corp. to obtain the latest design specifications.




## *COMPUTER*

**PROCESSOR -** Mobile Pentium III 700MHz core, 100MHz bus

**MEMORY -** 256MB 100MHz SDRAM

**STORAGE -** Two Compact Flash sockets, One IDE Laptop Connector

**Options -** Compact Flash 192MB, up to 300MB available (solid-state, 2000G shock, 15G vibration)

IBM MicroDrive 340MB or 1G (Spinning Disk, 175G shock, 0.67 vibration)

2.5” IDE Laptop Drive
**The addition of any non solid-state drive will reduce the total system shock rating.**

**EXPANSION -** Two PC Card/CardBus slots, one for Radio, one available

**ETHERNET -** 10/100 full duplex switched Ethernet to onboard processor and each payload connector

**RADIO -** 2.4GHz 802.11 device

**VIDEO -** Two video digitizers fed by up to 12 analog video sources (dynamically selectable)

**IMPORTANT NOTE:**
The electronics area is configured and sealed during production. Any extra expansion items or drives must be specified before production on the robot begins.

## ELECTRICAL

**SYSTEM MANAGEMENT -** Onboard microcontroller monitors power and installed payloads

### POWER REQUIREMENTS

**VOLTAGES -** Nominal 24V; max 30V, min 18V

**HOTEL LOAD -** Variable. With PC live and most systems off, ~20W.

**MOTOR POWER CONSUMPTION -** 41W/(m/s) *without* flippers on level ground

58W(m/s) *with* flippers on level ground

### POWER CONTROL

**POWER CONSERVATION -** Payloads can command the main robot power on/off and may continue to draw power from the batteries if needed. Conversely, the main power to the whole robot may be shut off and only standby power (mW) provided to the payloads. Selected subsystems may also be powered off as needed (ie. Ethernet, video).

### DRIVE SYSTEM

**MOTORS -** 3 powerful coreless DC motors:
2 used for left and right drive
1 used for flipper operation
Optional speed boost function

**ENCODER -** Encoder feedback is provided for three motors. A special absolute encoder systems is provided for flipper position.

**BATTERIES -** Nominally 2 packs mounted on robot.
Each pack consists of 2 banks of 20 Sub-C format cells.
Using 2400 mAh Nicad cells: 115 W-hr per pack
Using 3000 mAh NiMH cells: 135 W-hr per pack

**ADDITIONAL SENSORS -** Attitude package with compass and BAE Systems Superstar 12 channel GPS contained in Tail Tube.

### CONNECTORS

**SYSTEM CONSOLE-** Serial console, Ethernet tether, power and status LEDs and power switch (covered by access panel)

**PAYLOAD -** 3 primary payload (in main payload bay)
4 auxiliary (2 in each side-pod)

**Primary -** 10/100 full/half duplex Ethernet
FARnet
2 video channels, differential analog
2 general purpose digital pins (serial if needed)
USB
Payload/battery identification and control
Power and ground
Standby voltage
Power enable

**Auxiliary -** The two forward side payloads are intended for batteries and do not support video or Ethernet. The two rear side pay load support all signals with some limitations on video multiplexing capability.

## ACCESSORIES

### HEAD/NECK

**SPECIFICATIONS -** Currently in development
16 environmentally sealed sonar
1 2-DOF manipulator
GPS Antenna
Comms Antenna
Superbrite and/or IR LED array

## SOFTWARE

### SPECIFICATIONS

**OPERATING SYSTEM -** Linux

**SOFTWARE SYSTEM -** Mobility 2

**BEHAVIORS -** Teleop Assist
GPS Waypoint
Further behaviors under development

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