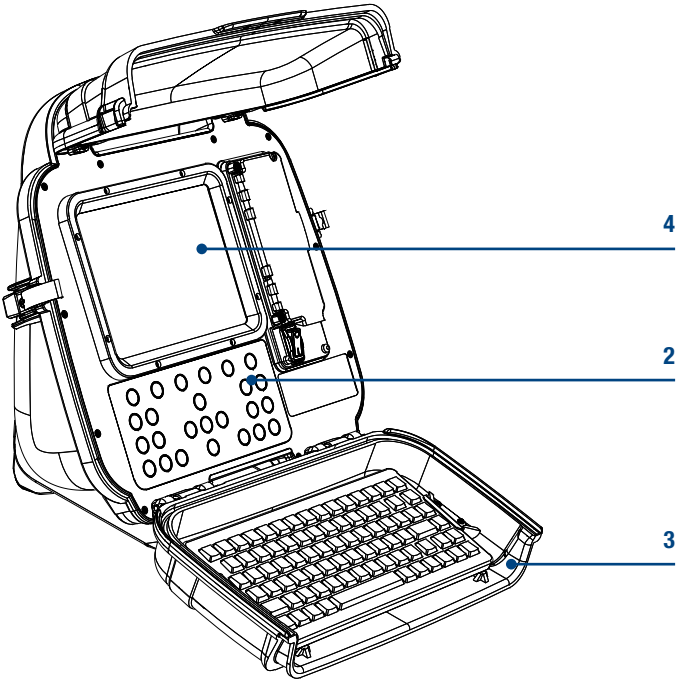
SPX®
WHERE IDEAS MEET INDUSTRY

P350 flexitrax™ system

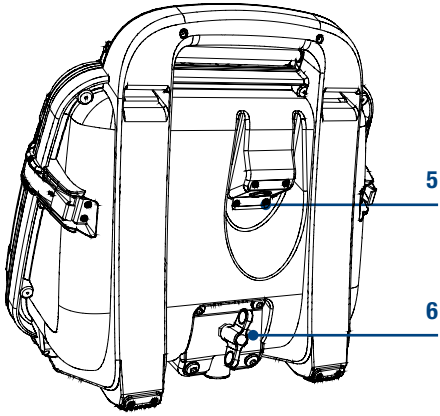


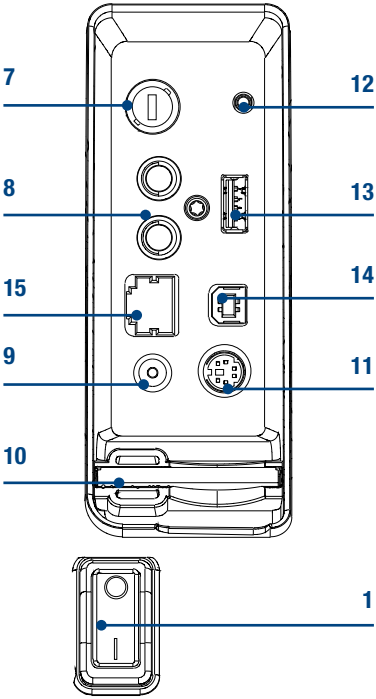
User Guide

Pearpoint®



P350 flexitrax command module





Section 1 – System Overview

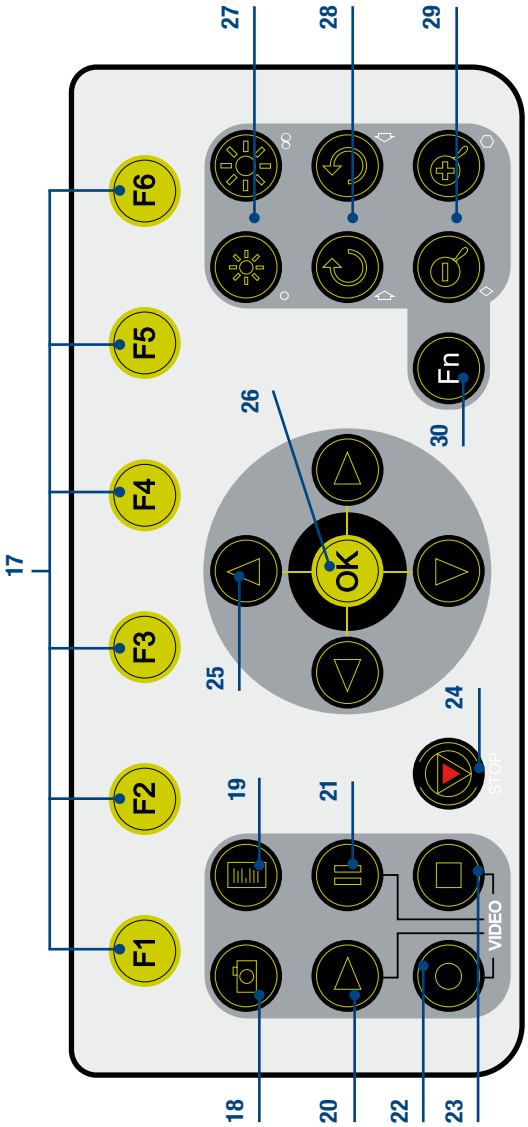
The P350 flexitrax is a modular system that is compatible with a variety of powered, manual and pushrod cable drums and reels. The flexitrax command module can drive any combination of drum, crawler and cameras and is compatible with the range of P330+ flexiprobe pushrod reels and cameras. The modularity of the system allows you to create your own solution for a wide range of deployment scenarios.

1.1 Command module

The command module acts as the controller and digital video recorder and playback device. Video is displayed on an 8" industrial LCD. Video, pictures and inspection reports are stored on a compatible high-speed Compact Flash card.

1. On/Off Switch. This switch only works when the unit is powered by a DC source connected to the power socket.
2. Keypad and function keys: Allows the operator to control the system, select functions and edit text entries.
3. Keyboard: Provides enhanced text entry capabilities and shortcuts to access system functions.
4. Display: LCD Screen shows video, images and various on-screen system information.
5. Link Cable Socket: To connect the pushrod reel, powered drum or manual external PSU to the command module with a link cable.
6. Command module support clamp: To connect the command module to the powered or manual drum support stand or to the optional vehicle wall mounting kit.
7. Fuse holder: 5 x 20mm T3.15A 250V cartridge fuse.
8. RCA Video Jacks: Provide secondary input and output options for external composite video equipment.
9. Power Socket: DC power input from vehicle supply, battery box or mains adapter. For use with pushrod reels or as a standalone unit.
10. Compact Flash card slot: The command module uses a Compact Flash card to store video recordings, reports and pictures. Most stored files can be viewed or played on the command module or transferred to PC. Also used to store and upload firmware upgrades.
11. Keyboard Socket: Connects the keyboard.
12. Audio Socket: Connect the optional headset to record audio over videos.
13. USB-A socket: Reserved for future use.
14. USB-B socket. USB connection to transfer files to computers.
15. RJ-45 socket: Reserved for future use.
16. Optional Vehicle wall mount kit: to mount the command module to the side of your van (not shown).

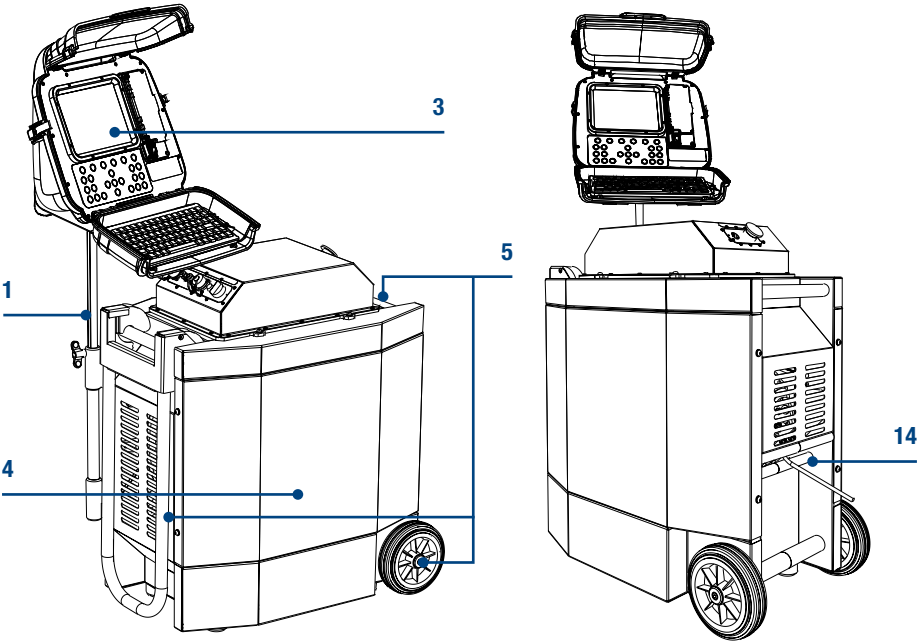
Command module keypad



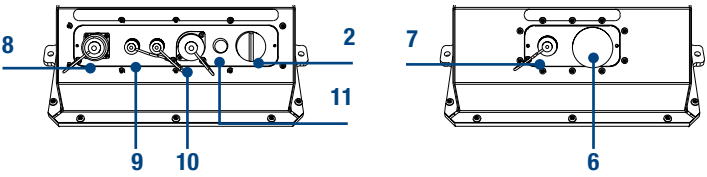
1.1.1 Keypad

17. Function keys: Use to select menu items or activate short cuts.
18. Camera key: Press to take screen captures.
19. Text key: Press to access the Text menu.
20. Play: Enters the card browser menu. Starts video playback of selected file.
21. Pause: Press to pause video playback or recording.
22. Record: Press to begin a new video recording.
23. Stop: Press to stop video playback or recording.
24. Crawler stop: Stops the crawler moving.
25. Arrow keys: Use for navigation and to select system parameters.
26. OK: Press to select or confirm choices in the menu system.
27. LED Brightness/Camera Focus keys: press to adjust LED brightness. Fn + Brightness to adjust camera focus.
28. Rotate/Pan keys: press to rotate the camera view. Fn + Rotate to pan left or right. Simultaneous press will recenter the view.
29. Zoom/Iris keys: press to zoom in or out of the camera's subject. Fn + Zoom to modify the Iris. Simultaneous press will reset the zoom to unity, Fn + simultaneous press will reset to automatic iris.
30. Function key: press and hold to activate different functions.

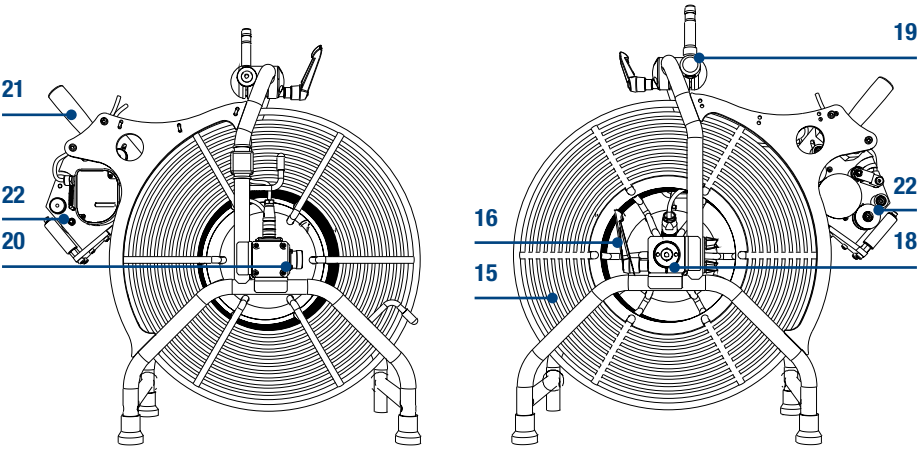
Powered drum with command module installed



Front and rear connection panels (Common to powered drum and external PSU)



Manual drum



1.2 Cable Drums

The system supports either a powered or manual drum that can accommodate cable lengths of 100m (330'), 150m (495') or 250m (820'). The powered drum contains an integral power supply whilst the manual drum requires an external power supply unit. Please refer to the Operation Manual for more information.

1.2.1 Powered Drum

1. Command module support stand.
2. On/Off switch. Switches the system on or off.
3. Command module.
4. Reel compartment: Houses up to 250m (820') of cable wound onto the drum cassette.
5. Removable handle, handle bars and wheels: Allow you to manoeuvre the system easily into position.
6. Emergency stop: Instantly shuts off system power. When initiated, the system must be reset.
7. Pendant connector: For connecting the optional pendant controller.
8. Command module connector: To connect the command module link cable.
9. BNC Video Jacks: Provide secondary input and output options for external composite video equipment.
10. Power supply socket: To connect mains power.
11. Fuse holder: 5 x 20mm T12A 250V cartridge fuse.
12. Crank handle: Will allow the manual retrieval of the deployed cable. (Not shown).
13. Optional vehicle mounting rails: To secure the system in your van. (Not shown).
14. Cable rollers.

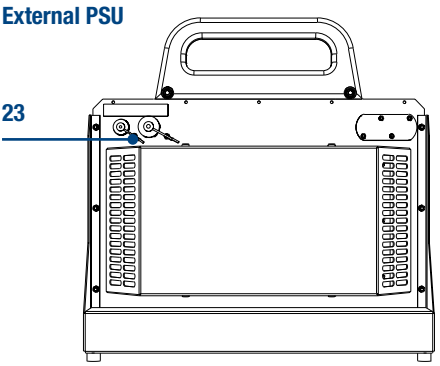
1.2.2 Manual drum

15. Cable drum: Houses up to 250m (820') of cable.
16. Cable brake.
17. Crawler connection terminal (Not shown).
18. Crank handle socket.
19. Command module support clamp.
20. PSU link cable socket.
21. Manual layering handle: To assist with laying cable evenly on the drum.
22. Cable rollers.

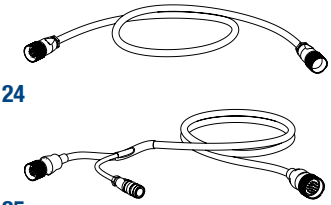
1.2.3 External PSU (manual system only)

2. On/Off switch. Switches the system on or off.
6. Emergency stop: Instantly shuts off system power. When initiated, the system must be reset.

External PSU



Link cables



7. Pendant connector: To connect the optional pendant controller.
8. Command module connector: To connect the command module link cable.
9. BNC Video Jacks: Provide secondary input and output options for external composite video equipment.
10. Power supply socket: To connect mains power.
11. Fuse holder: 5 x 20mm T12A 250V cartridge fuse.
23. Link cable connection for manual drum.

1.2.4 Link cables

24. Command module link cable.
25. Manual drum link cable.

1.3 Crawlers and Crawler cameras

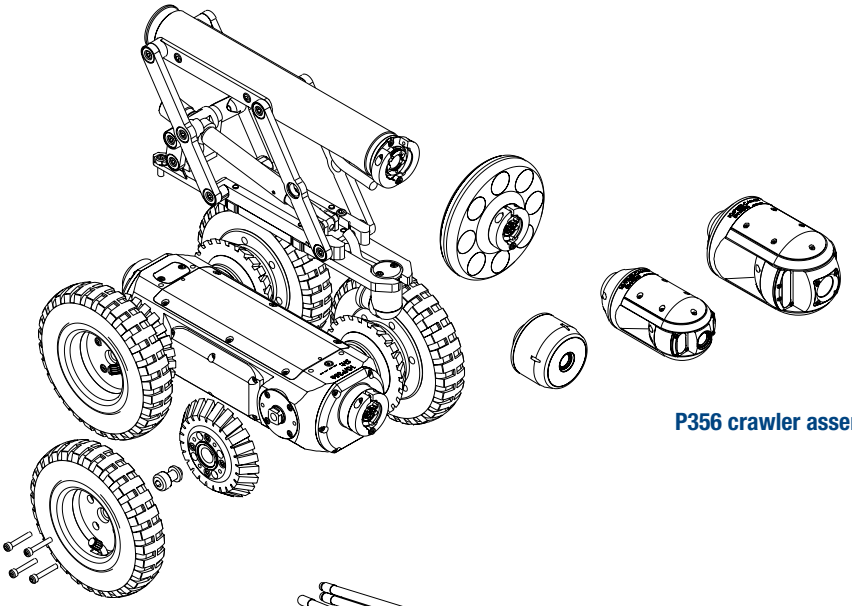
The system is compatible with the P354 (100mm/4") and P356 (150mm/6") crawlers. Both the P354 and P356 crawlers are fully compatible with three interchangeable cameras. The P350-CAM-FW is a fixed, forward view camera. The P350-CAM-PT offers pan and tilt capabilities and the P350-CAM-PTZ offers pan, tilt and 10x optical zoom.

1.4 Pushrod reels and cameras

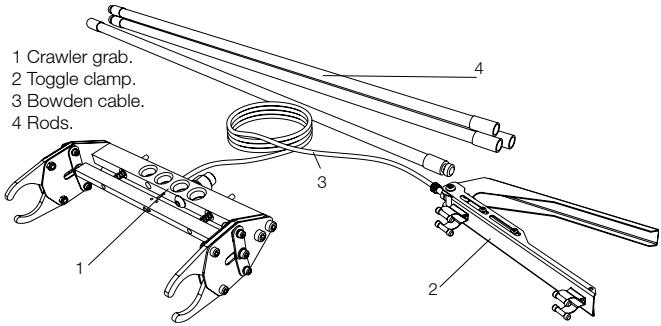
The command module is compatible with the full range of P330+ flexiprobe pushrod reels and cameras. When used with a pushrod system, the command module must be connected directly to the cable reel. Power is supplied by a mains or vehicle adapter, which connects to the DC socket in the command module's I/O panel (item 9 on page 2). When a pushrod system is connected, the command module's power switch will turn the system on and off. For more information, refer to your P330+ flexiprobe user documentation.

1.5 Other accessories

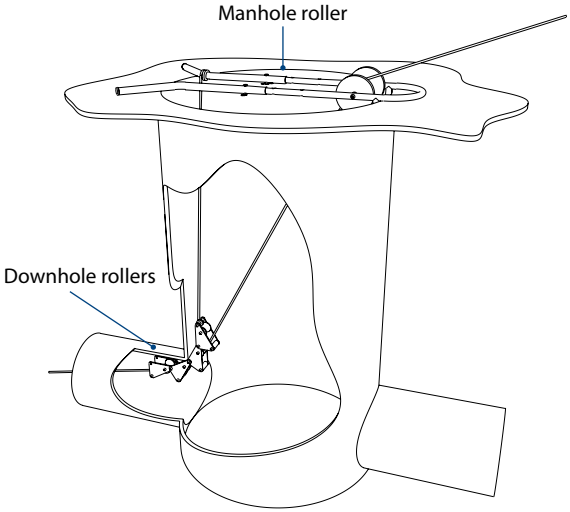
The P350 flexitrax system features a range of accessories that expand its functionality and range of applications. Please refer to the P350 flexitrax Operation Manual, for a description of available accessories. Also visit www.radiodetection.com for a complete list of available accessories.



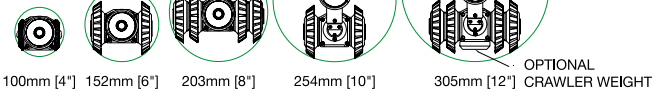
P356 crawler assembly



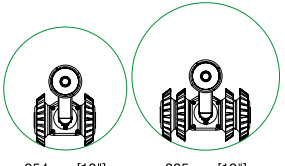
Crawler grab kit



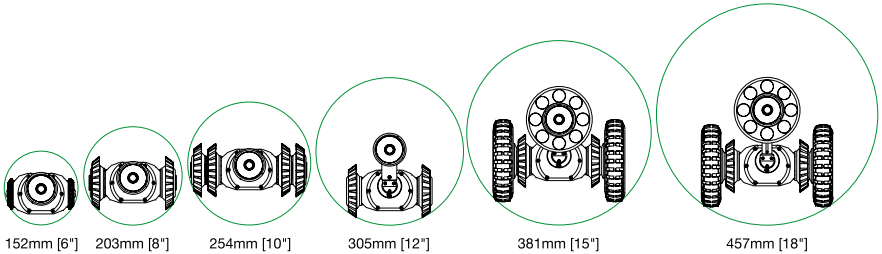
Cable deployment rollers



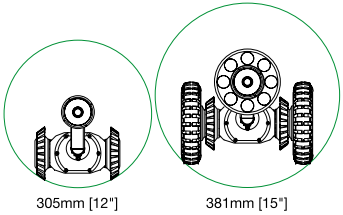
P354 CRAWLER (ADJUSTABLE ELEVATOR) CONFIGURATIONS
(100mm [4"] - 305mm [12"] PIPE)



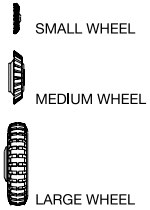
P354 CRAWLER (FIXED ELEVATOR) CONFIGURATIONS
(254mm [10"] - 305mm [12"] PIPE)

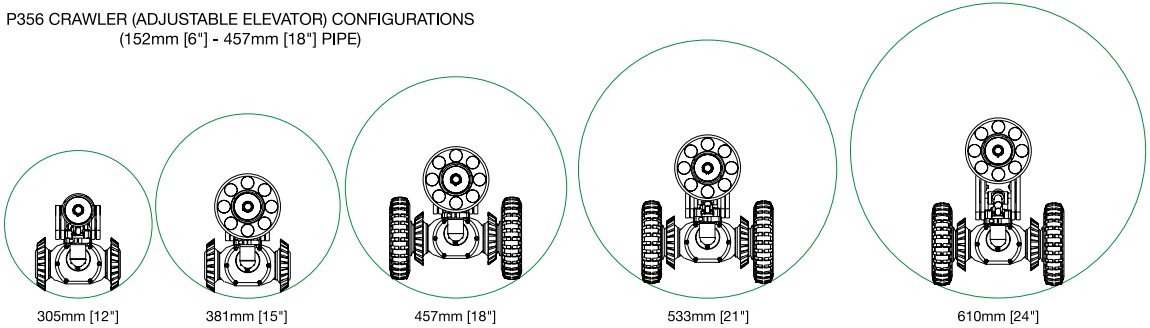


P356 CRAWLER (ADJUSTABLE ELEVATOR) CONFIGURATIONS
(152mm [6"] - 457mm [18"] PIPE)



P356 CRAWLER (FIXED ELEVATOR) CONFIGURATIONS
(305mm [12"] - 381mm [15"] PIPE)





P356 CRAWLER (LARGE ADJUSTABLE ELEVATOR) CONFIGURATIONS
(305mm [12"] - 610mm [24"] PIPE)

Section 2 – Setup

The P350 flexitrax allows you to configure the system in a number of ways, depending on which components you have purchased. This section provides an overview of the setup procedure using the Powered and Manual Drums. For pushrod instructions, please refer to the P330+ Operation Manual.

WARNING! Before attempting to assemble the system, ensure that the Powered Drum or the Manual PSU are switched off.

2.1 Assembly

2.1.1 Crawler

You can configure the crawlers with a variety of wheels, cameras and elevators to suit a wide range of pipes.

Wheels

The P354 is compatible with the 62mm (2.5") and 110mm (4.3") wheel sets, which can be connected in singular or tandem configurations for deployment in pipes from 110mm (4") up to 380mm (15") in diameter.

The P356 is compatible with the 62mm (2.5 "), 110mm (4.3") and 170mm (6.7") wheels, which can be connected in singular or tandem configurations for deployment in pipes from 150mm (6") to 610mm (24") in diameter.

NOTE: Make sure you affix the wheel screws firmly to the crawler body.

Cameras

The cameras are simple to attach as they can only be fitted in one way. A single Allen-head bolt is used to secure the camera's collar to the crawler's body.

Elevator

The elevator is used to elevate the camera to help center it in the pipe or conduit you wish to survey. The elevator is installed between the crawler and camera. The crawlers are compatible with three elevators:

- **10/P350-ELV-F fixed elevator.** To deploy the P354 in pipes up to 300mm (12") and the P356 in pipes up to 381mm (15").
- **10/P350-ELV-A adjustable elevator.** To deploy the P354 in pipes up to 381mm (15") and the P356 in pipes up to 458mm (18").
- **10/P350-ELV-LAM large adjustable elevator (P356 only).** To deploy the P356 in pipes from 305mm to 600mm (12 to 24").

Lighthead

The accessory lighthead provides the camera with more light. With more light you can deploy the crawler in larger pipes or in pipes made from absorbent material that would otherwise reduce visibility when inspected with the standard cameras' LEDs.

The lighthead is fitted between the camera and the crawler or between the camera and the elevator.

Once you have assembled the crawler, connect it to the cable using the termination socket at the rear of the crawler's body.

2.2 Manual Drum and External PSU

The Manual Drum is a light-weight system that can house up to 250m of cable. The Manual PSU connects to the Manual Drum (item20 on page 6) using the link cable (item 25 on page 8). The single end connects to the Manual Drum and the split end terminals connect to the Manual Drum connection panel on the rear side of the PSU's handle (item 23 on page 8).

WARNING! Do not connect the command module to the Manual Drum terminals directly as this will damage the system.

2.3 Powered Drum

The Powered Drum features a motorized cable reel compartment that can house up to 250 meters of cable.

NOTE: The drum is capable of retrieving deployed cable, however it is not designed to retrieve the crawler without the crawler's added assistance.

2.4 Command module

2.4.1 Mounting

You can mount the command module to the powered drum using the support stand. The stand is fitted to the drum chassis and the command module fits on top. Once fitted to the drum, you can adjust the height of the command module to suit your preferences of working environment.

If using a manual drum you can mount the command module to the support stand, which is clamped to the drum carrying handle.

2.4.2 Power, data and video

When using the Manual or Powered Drum, a single link cable supplies the command module with power, data and video. The link cable socket is located on the rear side of the command module (Item 5 on page 2).

Mount the command module and connect the link cable to the controller terminal on the Powered Drum or External PSU (Item 8 on page 6).

If using the command module with a pushrod system or as a standalone unit, you must connect the command module to a suitable DC source using the power socket located on the front connection panel in the command modules' front panel (Item 9 on page 2).

2.5 Starting the system

When the system is correctly assembled, switch it on using the On/Off switch on the Powered Drum or External PSU (Item 2 on page 6).

If you are using a pushrod system or the command module as a standalone unit, use the On/Off switch on the command module's I/O panel (Item 1 on page 2).

The command module will display a welcome screen with important information. Note it and press OK to continue.

NOTE: When you power off the system, wait at least 5 seconds before switching it on again. Failure to do so may cause the command module to lock up.

2.6 On-screen menu

You can interact with the command module using the intuitive on-screen menu.

To navigate the menus use the function and arrow keys. The ◁ key is used to return to the previous screen. Where a selection is required use the △ or ▽ keys to select the various options. Use the OK key to confirm the selected choice and return to the previous menu. You can also use the keyboard's Function, ESC, Enter and cursor keys to navigate and select options in the menu

For a complete description of the menu system, please refer to the Operation Manual.

2.7 Getting help

The command module has a built in, context sensitive help screen. To access the help page press **Fn** + **F1** simultaneously on the keypad or **Shift** + **F1** on the keyboard.

You can also view a list of shortcuts. Shortcuts help make operation of the system more efficient by saving you time. To see a list of shortcuts press **Fn** + **F2** simultaneously or press **Shift** + **F2** on the keyboard.

For more detailed instructions, please read the Operation Manual, which is included on the FlexiSight CD.

2.8 Configuration

2.8.1 First use

When first using the system, be sure to set or check the following settings:

NOTE: The system will store your preferences, cable length and wheels when it is switched off. If you reset the system to factory default, these settings are lost. To perform a factory reset, please refer to the Operation Manual.

Date and time

If required, enter the correct date and time and choose your preferred format. Setting this is important as it is used to time stamp video recordings and other important files.

Go to **SETUP->DEVCE->CONTR** and choose **TIME** or **DATE**, as required, using the menu system.

Units of measurement

The P350 system supports metric and imperial (US customary) units.

To select your preferred unit of measurement system, go to **SETUP->DEVCE-> REEL** and choose between **METR** or **IMP**.

Language

The system supports several languages.

To set your preferred language, go to **SETUP->DEVCE->CNTR->LANG** using the menu system.

Cable length and drum type

Setting the correct cable length is important to help improve video quality and calculate crawler and drum speeds. You must check this setting, and change if required, every time you replace or change the cable reel or switch between pushrod and crawler-based configurations.

To set the cable length and drum type, go to **SETUP->DEVCE->REEL->RSIZE** using the menu system.

Crawler wheel size

You must specify the size of the currently installed wheels as the system uses this information to calculate the crawler's speed.

WARNING! Incorrectly setting the wheel size may compromize the retrieval process and result in jamming the crawler's wheel on the cable.

To set the wheel size, go to **DRIVE->SETUP->TRACT->WHEEL** using the menu system.

Numeric inclinometer

The crawler features an integrated precision inclinometer that provides a real time numeric reading of the crawler's body inclination.

The P350 inclinometer supports two units of measurement: Degrees or Gradients. You should zero the inclinometer when the crawler is leveled prior to deployment.

To zero the inclinometer or setup the preferred units, go to **DRIVE->SETUP->TRACT->NPITCH** using the menu system.

- Press **ZERO** to zero the inclinometer.
- Press **DEG** to select Degrees.
- Press **GRAD** to select Gradients.

NOTE: The inclinometer is affected by a number of factors including tire wear and tear and pressure (pneumatic tires only).

OSD layouts

The P350 System offers a choice of 3 different layouts for the position of Date, Time, Counter and Pitch; these layouts are: normal, TV and custom.

To choose a layout or to customize the position or visibility of the OSD information fields go to the Layout menu **SETUP->OSD->L'OUT**.

Press **P'SET** to enter the **OSD** layout presets menu.

1. Use the △ and ▽ keys to select your desired layout.
2. Press OK to confirm your choice and return to the Layout menu.

Normal layout: This is the standard layout optimised to make use of the entire screen.

Custom Layout: This layout is customisable. The position of the 4 OSD information fields can be moved anywhere on the screen.

TV layout: This layout is optimised for a DVD Recorder/TV screen.

Refer to the Operational Manual for more information.

Section 3 – Deploying the crawler

Once the system is correctly installed, you can deploy the crawler in the pipe or conduit you wish to survey. Care must be taken when deploying the crawler, particularly if it is being deployed in deep conduits and cisterns.

WARNING! Do not attempt to lift the crawler by the cable. Do not drop the crawler as it may damage the camera and the system's electronics.

WARNING: The crawlers are heavy! Observe proper lifting procedures when handling, deploying and retrieving the crawler. Never lower tractors or other heavy equipment into manholes while personnel are working in the manhole.

3.1 Crawler deployment tool

The crawler deployment grab tools for the P354 and P356 crawlers are optional accessories that allow an operator to safely deploy and retrieve a crawler into manholes, culverts and other access points. The grab tool can deploy and retrieve the crawler in conduits up to five meters (16.5 feet) deep. Using the crawler grab tool is highly recommended.

Refer to the Operation Manual for a detailed guide on how to setup and use the crawler deployment tools.

3.2 Cable deployment rollers

The optional cable deployment rollers help protect the cable from scoring on concrete and other abrasive materials. Pearpoint recommends that you always use cable deployment rollers.

3.3 Activating the sonde

The crawler features an integrated, multi-frequency sonde. This allows you to locate the crawler's position using a Radiodetection cable and pipe locator.

To activate the sonde press **Fn** + **F5**.

Refer to the Operation Manual for instructions on how to vary the transmitting frequency.

Section 4 – Camera controls

The P350 cameras have a range of features to help you locate faults in more demanding conditions.

4.1 Lights

All cameras feature LED floodlights to help illuminate pipes and conduits. LED brightness is controlled using the brightness controls on the keypad. Press ❄ to reduce or ☼ to increase brightness.

If no auxiliary lighthead is used, press the brightness keys simultaneously to toggle the lights off or switch them on to their previous level.

4.1.1 Auxiliary lighthead

The camera's LEDs and the auxiliary lighthead can be operated simultaneously or independently. If a lighthead is connected, simultaneously pressing the brightness keys will toggle the light controls between the following modes:

- Light control: ALL. Adjust both the camera and lighthead in series.
- Light Control: AUX. Adjust the lighthead only.
- Light control: CAMERA. Adjust the camera only.

When selected, the light control mode will flash on-screen and fade. Use the brightness keys to adjust the lighting level.

NOTE: When a lighthead is connected you cannot toggle the lights on and off using a simultaneous press of the brightness keys as this will change the control mode. To switch of the lights when a lighthead is connected, press the button until the lights are switched off.

WARNING! The camera and lighthead LEDs are very powerful. Do not look directly at the LEDs or point them at other people.

4.2 Focus

You can manually adjust the focus of P350 cameras.

To focus in or out of the FW and PT camera's subject, press **Fn** key and ❄ or ☼.

The P350-CAM-PTZ camera features automatic focus. You can adjust the focus manually using the **Fn** and ❄ or ☼. To resume automatic focus mode press **Fn**, ❄ and ☼ simultaneously.

NOTE: the P350-CAM-FW and P350-CAM-PT have a focus range of 10mm (½") to infinity. The P350-CAM-PTZ has a focus range of 10mm (½") (WIDE) to infinity.

4.3 Pan

When using the P350-CAM-FW camera you can use the pan function to digitally pan a zoomed-in picture on screen.

To pan left or right, press **Fn** and or once to pan a fixed step in that direction.

Press simultaneously **Fn**, and to reset the digital pan.

When using the P350-CAM-PT and P350-CAM-PTZ cameras you can pan from side to side, giving a wide field of vision without having to manoeuvre the whole crawler.

To pan left or right, press **Fn** and or once to start panning in that direction. Press either key again to stop the camera panning.

4.4 Tilt or rotate

When using the P350-CAM-FW camera you can use the rotate function to digitally rotate the picture on screen.

Press or once to digitally rotate of a fixed step the picture clockwise or anti-clockwise.

Press simultaneously and to reset the digital rotation.

The P350-CAM-PT and P350-CAM-PTZ cameras can rotate. When combined with the pan function, you can survey objects above and below the crawler.

To start to tilt/rotate the video on-screen clockwise press .

To start to tilt/rotate the video on-screen anti-clockwise press .

To stop rotating press either key again.

4.5 Center

When using the P350-CAM-PT and P350-CAM-PTZ you can return the camera to the forward view, leveled position, by pressing and simultaneously.

4.6 Zoom

The P350 system offers digital zoom capabilities when used with the P350-CAM-FW and P350-Cam-PT.

The P350-CAM-PTZ camera features a 10x optical zoom. The digital zoom is disabled when this camera is used.

To zoom in on the camera's subject press .

To zoom out from the camera's subject press .

To reset the zoom to x1 magnification press and simultaneously.

Section 5 – Driving the crawler

This section provides instructions for driving and retrieving the P350 crawlers when used with the manual or powered drum. Although the principle is the same, the powered drum offers several automated features that make it easy to retrieve the crawler automatically.

WARNING! Make sure you have set the correct wheel size before you attempt to drive the crawler.

5.1 Emergency stop

The Emergency Stop button located on the PSU (item 6 on page 6) will completely shut down the command module and all system components when pressed. As a fail-safe, the system must be reset before you can switch on the system again. Do not reset the system until it is safe to do so. To reset the system ensure the power is switched off at the main switch (item 2 on page 6), rotate the Emergency Stop button clockwise and then switch the power back on.

NOTE: Initiating an Emergency Stop may result in loss of data on the Compact Flash card, particularly if a recording or playback was in progress.

5.2 System stop

You can stop the drive system, including the crawler and the powered drum at any time by pressing the spacebar, **Ctrl** + **C** or .

NOTE: When using the keyboard the spacebar will only work in drive mode. Press **Ctrl** + **C** or  to stop the crawler under all circumstances.

When stopped the crawler will be in Brake mode. Press the spacebar, **Ctrl** + **C** or  to toggle the Brake.

⚠ **CAUTION! System stop is not a substitute for making an Emergency Stop. If there is any emergency use the Emergency Stop button located on the PSU. Please refer to Section 5.1 for more information.**

5.3 Drive mode and OSD

To drive a crawler, you must be in drive mode. You can access drive mode by selecting the DRIVE option from the main menu.

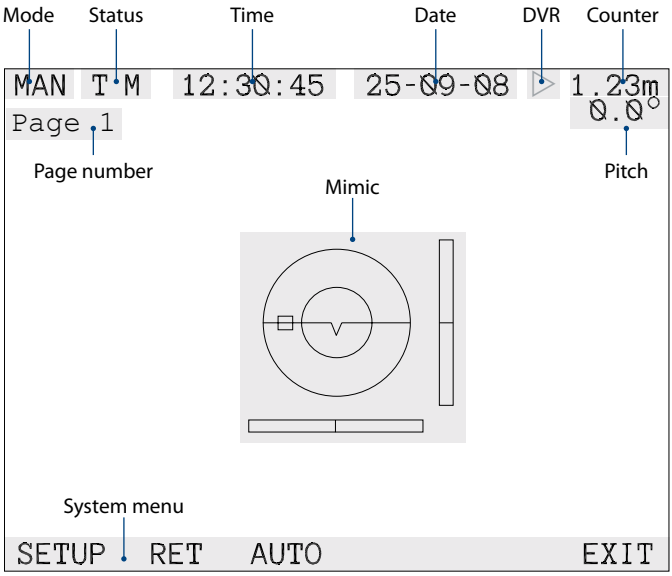
NOTE: If you have selected a Pushrod the DRIVE menu will be locked and ROD will be displayed by the OSD.

In the DRIVE menu, the command module's onscreen display (OSD) will provide you with critical information, navigation and telemetry assistance as well as pan and tilt camera controls (if available) using mimic.

The driving OSD includes the following information:

- Mode.
- Status.
- Time.
- Date.
- DVR status.
- Distance counter.
- Page.
- Numeric inclinometer.
- Mimic.

Some information displayed on this screen can be hidden or moved. Refer to the operational manual for more information.



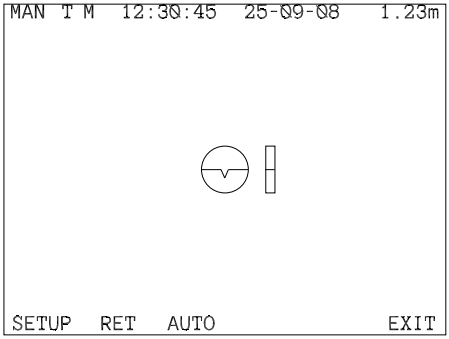
Driving mode OSD

5.4 Mimic

Mimic is an intuitive on-screen feature that helps you control the movements of the crawler and the position of the camera's viewing angle (PT and PTZ cameras only).

5.4.1 Basic mimic

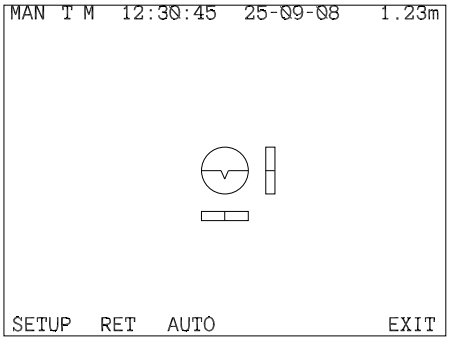
The basic mimic display appears by default or when a P354 crawler is connected to the system. Basic mimic features an artificial horizon and a speed indicator that shows the crawler's forward and reverse speed.



Basic mimic

5.4.2 Steering mimic

Steering mimic is displayed when a P356 crawler is connected to the system. In addition to the features of the basic mimic, steering mimic features a steering bar that indicates when the crawler is turning, steering left or right and the speed at which it is moving.



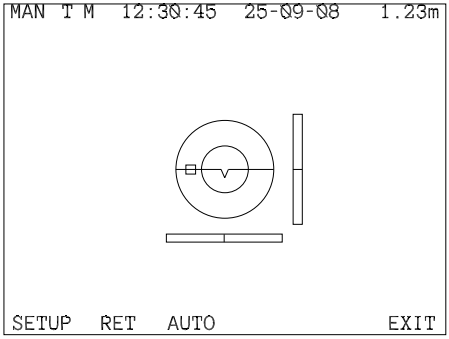
Steering mimic

5.4.3 Pan and tilt camera mimic

Pan and tilt camera mimic is displayed when a pan and tilt camera is connected to the system. Pan and tilt camera mimic provides a two dimensional representation of a pan and tilt camera's three dimensional range of movements. The mimic cursor, represented by the square box, acts as a target, which can be positioned using the following keys on the keyboard:

- **W** (up).
- **A** (left).
- **S** (go to).
- **D** (right).
- **X** (down).

Once you have positioned the cursor on the desired position, press the S key and the camera will automatically move itself to look at the target.



Pan and tilt mimic with steering bar

5.5 Manual system

Moving forward

NOTE: There is no difference in operation between the Manual or Automatic mode when moving the crawler forwards.

Press △ to move the crawler forward. Increase the speed by holding or pressing △. Decrease the speed by holding or pressing ▽.

NOTE: If you continue to press ▽ when the crawler has stopped, it will move in reverse. The crawler will automatically stop when the cable counter reaches 0.0.

Reversing

⚠ CAUTION! When reversing or retrieving the crawler ensure that the cable is retrieved at the same or higher speed than the crawler. Failure to do so may cause the crawler to get tangled in the cable and stall.

Use the crank handle to retrieve the cable. Use the manual wind layering handle to ensure the cable is laid evenly in the drum.

You can reverse the crawler in Manual (**MAN**) or Automatic (**AUT**). Press **F3** to toggle between Automatic and Manual driving modes.

Manual mode

In **MAN** mode, the crawler will start moving backwards as soon as it is driven. Press ▽ to reverse the crawler. Increase the speed by holding or pressing ▽. Decrease the speed by holding or pressing △.

Automatic mode

In **AUT** mode the crawler will not move backwards until it detects that the cable is being retrieved. Automatic mode is recommended for most situations.

To enable the crawler ensure to be in Automatic mode and press ▽ once.

NOTE: The mimic speed bar is disabled in automatic mode. The crawler's speed is automatically set to match the retrieval speed of the cable.

The crawler will stop moving if the cable is not longer retrieved.

5.6 Powered drum

Moving forward

NOTE: There is no difference in operation between the Manual or Automatic mode when moving the crawler forwards.

Press △ to move the crawler forward. Increase the speed by holding or pressing △. Decrease the speed by holding or pressing ▽.

NOTE: If you continue to press ▽ when the crawler has stopped, it will move in reverse.

Reversing

NOTE: The crawler will automatically stop when the cable counter reaches 0.0. However, the crawler's momentum may cause it to roll a short distance beyond the 0.0 position. Please allow for this when you deploy the camera and zero the distance counter.

The powered drum supports two driving modes: Automatic and Manual. The main difference is that when reversing in manual mode, the crawler and powered drum operate independently. Manual driving gives you more control over the crawler and drum but can increase the risk of jamming the crawler wheels on the cable, particularly if the crawler reverses over the cable. Press **F3** to toggle between **AUT** and **MAN** driving modes.

Press ▽ to reverse the crawler. Increase the speed by holding or pressing ▽. Decrease the speed by holding or pressing △ .

In **AUT** mode, the powered drum will automatically retrieve the cable as the crawler reverses. To avoid the risk of jamming the wheels in the cable, the crawler will reverse at a slower speed than the cable.

In **MAN** mode however, the drum will not retrieve the cable and you must synchronize the speed of the crawler and the cable.

To rewind the cable in manual mode, hold the **Fn** key and press ▽ on the keypad. Hold this key combination to accelerate the rewind speed.

Decrease the speed by holding or pressing **Fn** + △.

⚠ CAUTION! In manual mode, make sure the cable is retrieved faster than the crawler speed. This will help to avoid the risk of jamming the cable in the crawler wheels.

Automatic retrieval

The powered drum features an automatic retrieval function. This function is designed to retrieve the crawler at a constant, optimal speed. This speed cannot be altered.

To use automatic retrieval you must set the 0.0m/ft position before you start the survey. To set the 0.0 position press △ and ▽ simultaneously when the crawler is in the position you wish to retrieve it to.

NOTE: Automatic retrieval does not work when the counter is displaying a negative or zero measurement.

To retrieve the crawler, select the **RET** option from the drive menu. The system will ask you to confirm the currently selected wheel size. Make sure this matches the wheel set installed on the crawler and press OK to continue.

1. Press **GO** to begin retrieving the crawler. The crawler will automatically stop once the cable counter reaches the 0.0 position.
2. Press **CANCL** to cancel the operation and return to the drive menu.

Manual retrieval with the crank handle

If necessary, you can retrieve the crawler using the crank handle to manually wind the cable back into the drum.

Refer to the Operational Manual for more information.

5.7 Steering (P356 crawler only)

NOTE: Steering the P356 crawler is identical for both the powered and manual system.

You can steer the P356 crawler left and right, allowing you to navigate pipes with ease. The crawler steers by changing the speed on the left or right motor.

You can steer the crawler when it is moving forwards, backwards or when it is stationary. Steering whilst reversing is possible in manual driving mode only.

Note: Steering whilst moving is proportional to the crawler speed: the faster the crawler moves the bigger the steer.

When the crawler is stationary, it will turn on its own axis. Be careful when turning in this fashion as the crawler may become entangled in the cable.

To steer right, press ▷. Hold the key to turn faster.

To steer left, press ◁. Hold the key to turn faster.

You can stop the crawler steering at any time by pressing △ if stationary or moving forward or ▽ when reversing in manual mode. If the crawler is moving it will stop steering and continue to move in the same direction.

To stop turning the crawler when it is stationary you can also press ◎ or the spacebar.

Section 6 – Video and images

6.1 Recording video

The P350 features an integrated digital video recorder that captures video feed from the camera and stores video as MPEG4 files on the Compact Flash card.

You can start and stop a video at any time using the video controls on the keypad.

Press ◯ to begin recording.

Press ▯▯ to pause recording; press ▯▯ or ◯ to resume recording.

Press □ to stop recording.

For more information about video recording and playback, including advanced quality settings, please refer to the Operation Manual.

6.2 Audio commentary

You can easily add audio commentary to your videos. To record commentary, simply attach the optional headset to the connection socket in the command module's I/O panel. Start recording and speak into the microphone.

6.3 Capturing pictures

You can capture still pictures at any time, during operation, including when you are recording or playing video files. Captured pictures are stored as JPEG files on the Compact Flash card.

To take a picture, press  at any time.

Section 7 – Text and reports

The P350 allows you to add text pages. These pages can be saved and reviewed later or they can be embedded in video recordings.

Additionally, the P350 features an integrated report writer that allows you to document your survey with text and pictures. Reports are created as HTML files and are stored on the Compact Flash card.

Text and reports can be created, edited or deleted using the **TEXT** menu, which you can access by pressing .

For more information, please refer to the Operation Manual.

Section 8 – Connectivity

8.1 USB

You can connect the command module to your PC using the supplied USB cable to transfer video files. USB transfer is the recommended method for transferring reports and large video files to your desktop computer.

For more information, please refer to the Operation Manual.

8.2 Bluetooth®*

The P350 features an integrated *Bluetooth®* module that allows you to send small files to any compatible device. *Bluetooth®* has limited bandwidth so it not recommended for sending video files.

For more information, please refer to the Operation Manual.

* The Bluetooth word mark and logos are owned by the Bluetooth SIG, Inc. and any use of such mark by Radiodetection is under licence.

Section 9 – Care and maintenance

Warning: clean and sanitize the P350 flexitrax system at regular intervals to help prevent the risk of biological contaminations from foul water sources.

Do not dismantle component parts, unless directed by the manual.

9.1 Terminals

WARNING! Do not use damaged, dirty or corroded components, including all terminal connections, cables and O-rings.

Ensure that all terminals and connection points are clean and free of corrosion and debris before you attempt to use this equipment.

Check that any O-rings are clean, greased and not damaged. Use a silicon based grease such as "Super Lube".

Pearpoint recommends protecting all terminals with plastic protection caps when the system is not in use.

If possible, only assemble or disassemble system components in a dry and clean environment.

9.2 Cleaning the system

Warning: foul water systems can be a source of biological hazards; ensure you clean all equipment with a suitable disinfectant after use.

NOTE: Do not use high-pressure hoses to clean this system.

9.2.1 Command Module

- Clean the case with mild soapy water.
- Use lint-free cloth to clean the TFT screen.

9.2.2 Camera, Crawler, Elevator and Lighthead

- Clean by washing with water and a disinfectant as required.
- Clean the lens with a lint-free cloth.

9.2.3 Cable and Drum

- Use a cloth moistened with a suitable disinfectant.

9.3 Storing the system

The P350 flexitrax is a precision system. Always store the system, including all components and accessories in clean and dry environment.

Notes

Notes

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