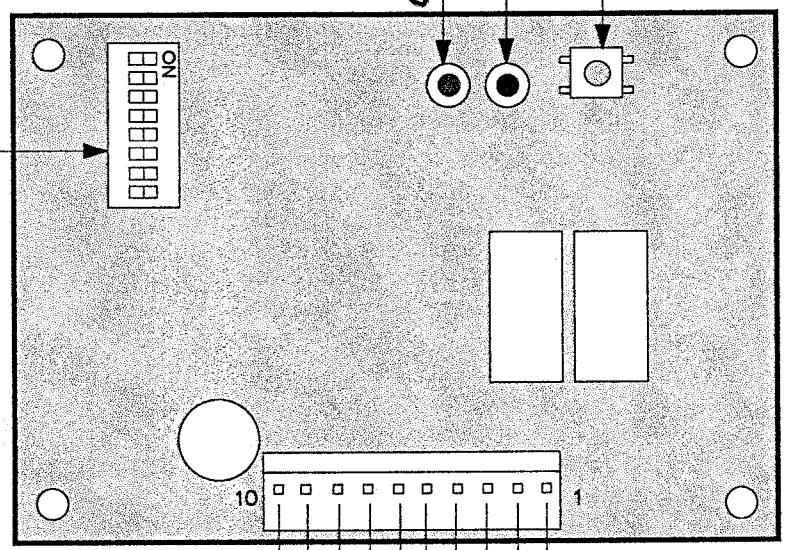
LED 2	
ON	OFF
Spira impegnata	Spira libera
Loop engaged	Loop free
Boucle engagée	Boucle degagée
Schleife belegt	Schleife frei
Espira empeñada	Espira libre

LED 1	
ON	OFF
Detector acceso	Detector spento
Power applied	No power
Detector allumé	Panne de courant
Detector ein	Detector aus
Detector encendido	Sin alimentación

MICROINTERRUTTORI
MICROSWITCHES
MICRO-INTERRUPTEURS
MIKROSCHALTER
MICROINTERRUPTORES

RESET - RAZ



SPIRA	CAVI VIOLA
LOOP	VIOLET CABLES
BOUCLE	FILS VIOLETS
SCHLEIFE	VIOLETTES KABEL
ESPIRA	CABLES VIOLETA

NEGATIVO Vcc	CAVO NERO
GND Vdc	BLACK CABLE
COMMUN Vcc	FIL NOIR
GND Vdc	SCHWARZES KABEL
COMUN Vcc	CABLE NEGRO

+24 Vcc	CAVO ROSSO
+24 Vdc	RED CABLE
+24 Vcc	FIL ROUGE
+24 Vdc	ROTES KABEL
+24 Vcc	CABLE ROJO

RESET	CAVO BLU
RESET	BLUE CABLE
RAZ	FIL BLEU
RESET	BLAU KABEL
RESET	CABLE AZUL

CAVO BIANCO	COMUNE CONTATTI DI PRESENZA
WHITE CABLE	COMMON PRESENCE CONTACTS
FIL BLANC	COMMUN CONTACTS DE PRESENCE
WEISSES KABEL	GEMEINSAMER KONTAKT ANWESENHEIT
CABLE BLANCO	COMUN CONTACTOS DE PRESENCIA

CAVO ROSA	CONTATTO N.C. DI PRESENZA
PINK CABLE	N.C. PRESENCE CONTACT
FIL ROSE	CONTACT N.F. DE PRESENCE
ROSA KABEL	RUHEKONTAKT ANWESENHEIT
CABLE ROSA	CONTACTO N.C. DE PRESENCIA

CAVO GIALLO	CONTATTO N.A. DI PRESENZA
YELLOW CABLE	N.O. PRESENCE CONTACT
FIL JAUNE	CONTACT N.O.DE PRESENCE
GELBES KABEL	ARBEITSKONTAKT ANWESENHEIT
CABLE AMARILLO	CONTACTO N.A. DE PRESENCIA

CAVO GRIGIO	COMUNE CONTATTO IMPULSIVO
GREY CABLE	COMMON IMPULSE CONTACT
FIL GRIS	COMMUN CONTACT IMPULSIF
GRAUES KABEL	GEMEINSAMER IMPULSKONTAKT
CABLE GRIS	COMUN CONTACTO IMPULSIVO

CAVO GRIGIO	CONTATTO N.A. IMPULSIVO
GREY CABLE	N.O. IMPULSE CONTACT
FIL GRIS	CONTACT N.O. IMPULSIF
GRAUES KABEL	IMPULSSCHLIESSER
CABLE GRIS	CONTACTO N.A. IMPULSIVO

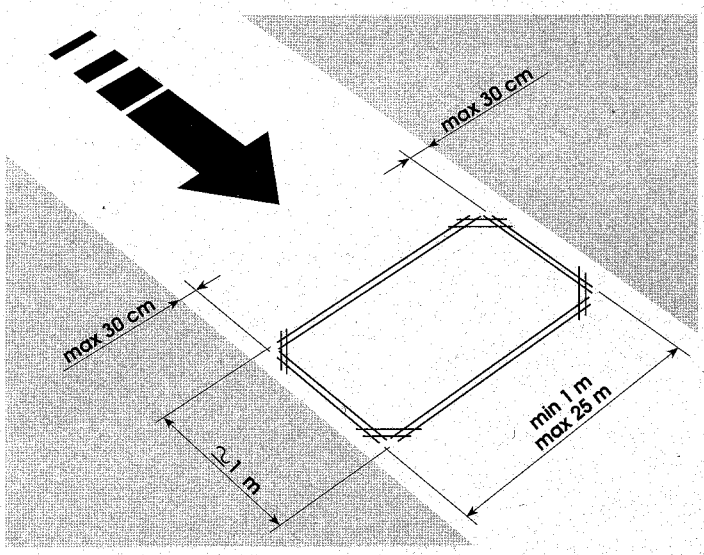


Fig. 1

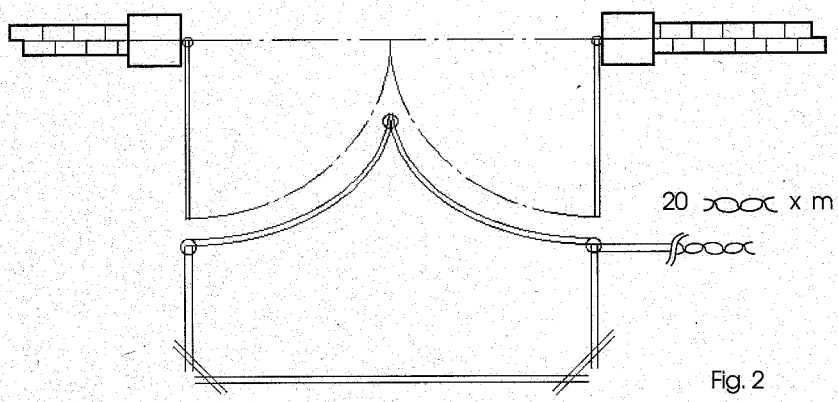


Fig. 2

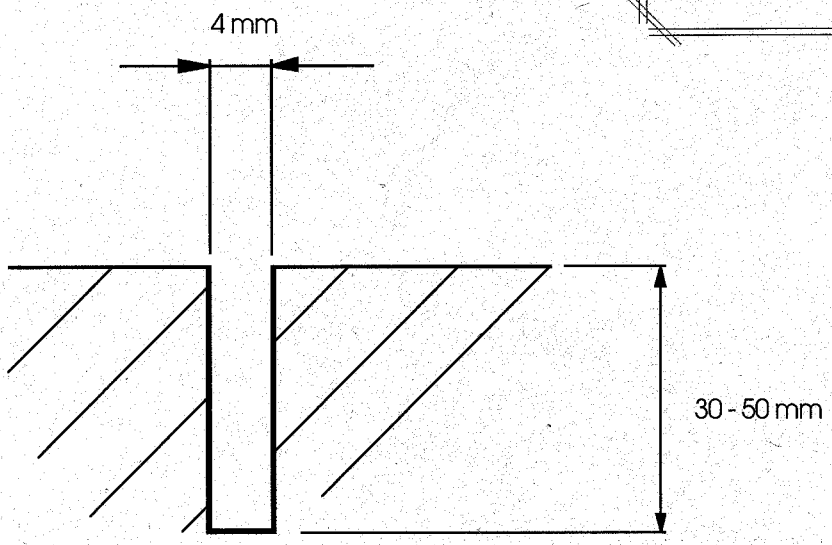


Fig. 3

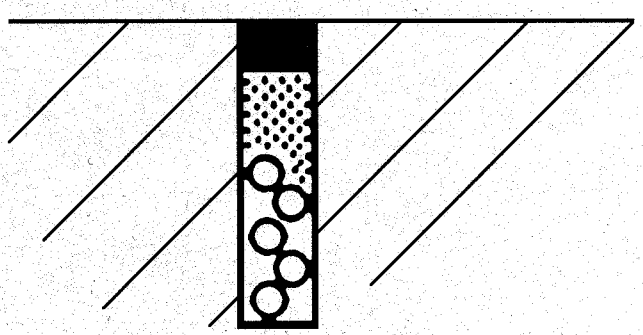
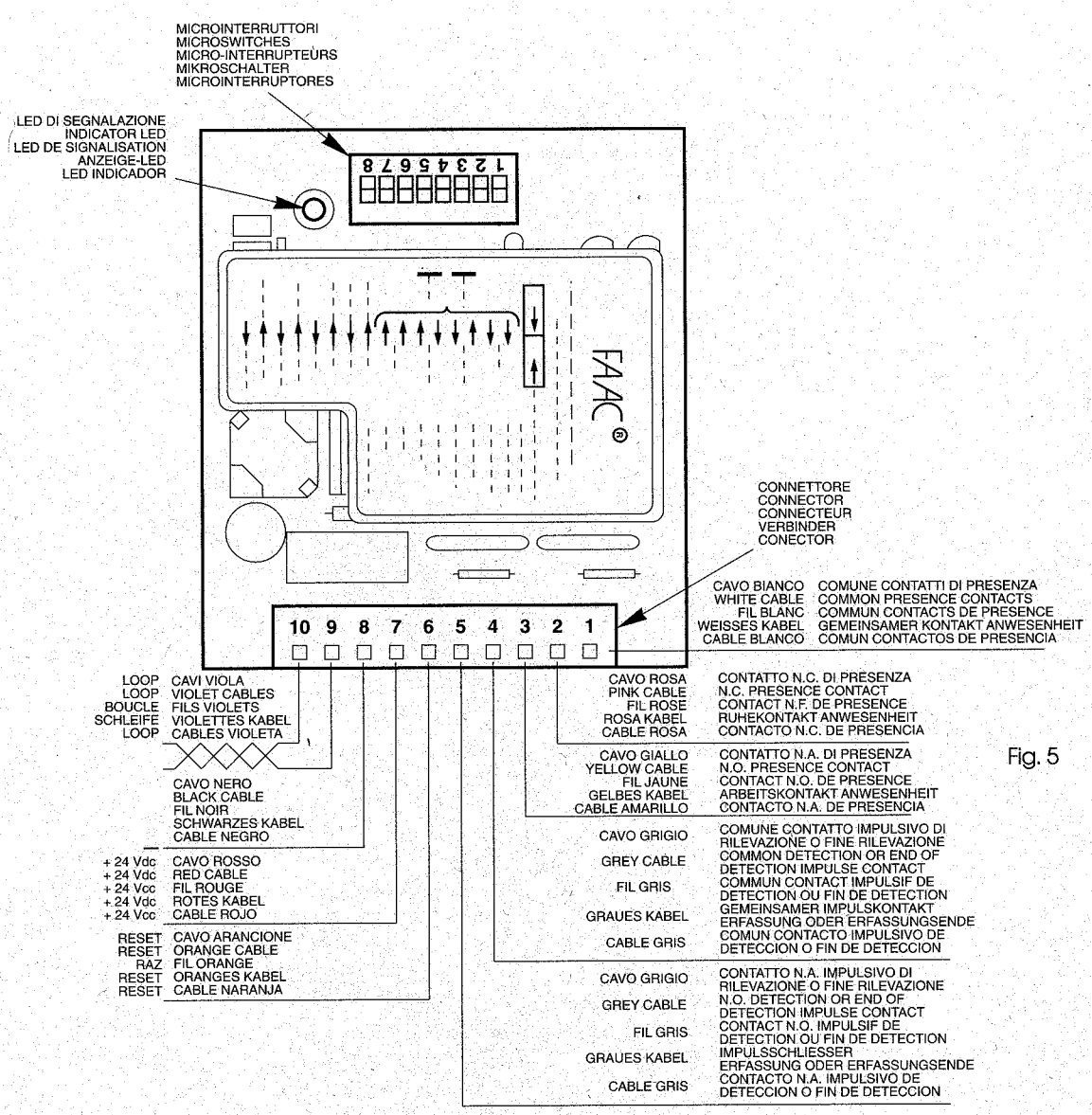


Fig. 4


MICROINTERRUTTORI
MICROSWITCHES
MICRO-INTERRUPTEURS
MIKROSCHALTER
MICROINTERRUPTORES
LED DI SEGNALAZIONE
INDICATOR LED
LED DE SIGNALISATION
ANZEIGE-LED
LED INDICADOR
1 2 3 4 5 6 7 8
FAAC
CONNETTORE
CONNECTOR
CONNECTEUR
VERBINDER
CONECTOR
10 9 8 7 6 5 4 3 2 1
CAVO BIANCO COMUNE CONTATTI DI PRESENZA
WHITE CABLE COMMON PRESENCE CONTACTS
FIL BLANC COMMUN CONTACTS DE PRESENCE
WEISSES KABEL GEMEINSAMER KONTAKT ANWESENHEIT
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LOOP CAVI VIOLA
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BOUCLE FILS VIOLETS
SCHLEIFE VIOLETTES KABEL
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+ 24 Vdc CAVO ROSSO
+ 24 Vdc RED CABLE
+ 24 Vcc FIL ROUGE
+ 24 Vdc ROTES KABEL
+ 24 Vcc CABLE ROJO
RESET CAVO ARANCIONE
RESET ORANGE CABLE
RAZ FIL ORANGE
RESET ORANGES KABEL
RESET CABLE NARANJA
CAVO ROSA CONTATTO N.C. DI PRESENZA
PINK CABLE N.C. PRESENCE CONTACT
FIL ROSE CONTACT N.F. DE PRESENCE
ROSA KABEL RUHEKONTAKT ANWESENHEIT
CABLE ROSA CONTACTO N.C. DE PRESENCIA
CAVO GIALLO CONTATTO N.A. DI PRESENZA
YELLOW CABLE N.O. PRESENCE CONTACT
FIL JAUNE CONTACT N.O. DE PRESENCE
GELBES KABEL ARBEITSKONTAKT ANWESENHEIT
CABLE AMARILLO CONTACTO N.A. DE PRESENCIA
CAVO GRIGIO COMUNE CONTATTO IMPULSIVO DI RILEVAZIONE O FINE RILEVAZIONE
GREY CABLE COMMON DETECTION OR END OF DETECTION IMPULSE CONTACT
FIL GRIS COMMUN CONTACT IMPULSIF DE DETECTION OU FIN DE DETECTION
GRAUES KABEL GEMEINSAMER IMPULSKONTAKT ERFASSUNG ODER ERFASSUNGSENDE
CABLE GRIS COMUN CONTACTO IMPULSIVO DE DETECCION O FIN DE DETECCION
CAVO GRIGIO CONTATTO N.A. IMPULSIVO DI RILEVAZIONE O FINE RILEVAZIONE
GREY CABLE N.O. DETECTION OR END OF DETECTION IMPULSE CONTACT
FIL GRIS CONTACT N.O. IMPULSIF DE DETECTION OU FIN DE DETECTION
GRAUES KABEL IMPULSSCHLIESSER ERFASSUNG ODER ERFASSUNGSENDE
CABLE GRIS CONTACTO N.A. IMPULSIVO DE DETECCION O FIN DE DETECCION

Fig. 5

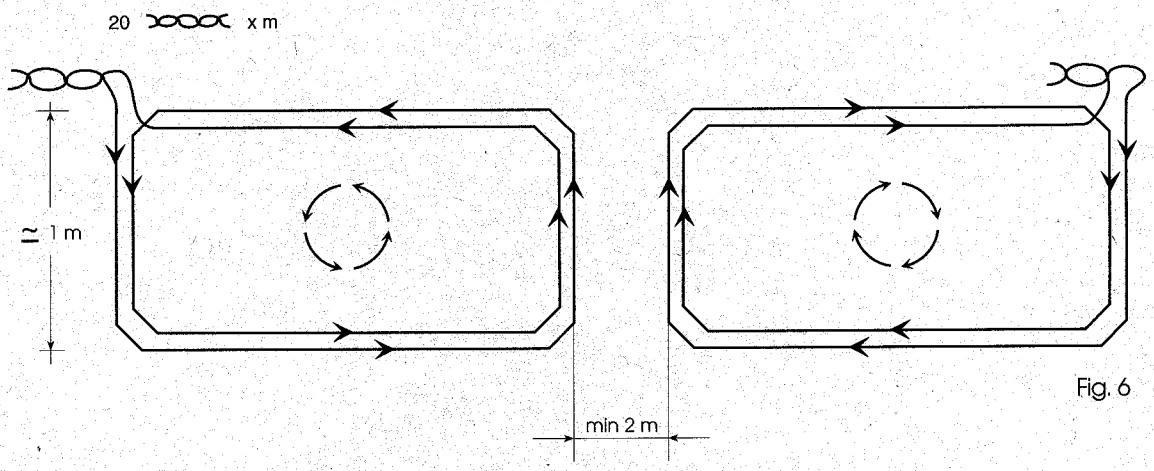

20 x m
≃ 1 m
min 2 m

Fig. 6

FAAC F4 DETECTOR

ENGLISH

The function of the FAAC F4 Detector is to detect vehicle presence by means of an inductance change caused by the vehicle passing over a wire loop buried under the road surface.
The unit is programmable and different operating modes can be selected.

TECHNICAL CHARACTERISTICS

POWER SUPPLY (Vdc)	24 ± 15%
CURRENT CONSUMPTION (mA)	50
INDUCTANCE RANGE (µH)	20 - 1500
SENSITIVITY LEVELS (n°)	4
FREQUENCIES (n°)	4
VEHICLE DETECTION TIME (msec)	100
OPERATING TEMPERATURE (°C)	- 40 / + 80
SELF-CALIBRATION TIME (sec)	2
DETECTION RELAY	FAIL SAFE
CONTACT RATING	1 A to 230 Vac
BOOST	available
RESET BUTTONS	external (between pins 6 and 8)
INDICATOR LED	multi-function
DIMENSIONS (mm)	59 x 68 x 22 (h)

1. INSTALLATION OF THE LOOP

IMPORTANT: The optimum performance of the detector is dependent on the position and the correct installation of the loop.

1.1 CABLE SPECIFICATION

The wire loop consists of a single core electrical cable, wound around a slot cut into the road or buried in protective conduit beneath road surface.
The cable which FAAC recommend is high temperature and abrasive resistant and can be sealed in the slot using epoxy resin or hot bitumen.
Recommended cables:

- BUTILE cable with double teflon insulation
- Teflon insulated cable
- 1.5 mm² cable with reinforced polyethylene insulation
- Pirelli FA 8544
- CEAT HO7RNF
- CEAT UG5R/0.6 1kV

1.2 LOOP SHAPE

Wherever possible the loop must follow a rectangular shape with the long sides of the figure at 90° with respect to the traffic flow (Fig.1). The ideal distance between the long sides is 1 m.
The length of the loop depends on the type of passage to be controlled; it is recommended that the loop be installed no more than 30 cm from the sides of the access road (Fig. 1)
The length of the loop must be no less than 1 m and no more than 25 m. If a triangular shape is used (e.g.: application for swing gates), sensitivity will be reduced, particularly in correspondence with the three angles (Fig. 2).

1.3 CUTTING THE CHANNEL

N.B. Only one loop may be connected to each DETECTOR.

1) Mark on the road surface the shape of loop and feeder required. Careful attention should be paid to the following:
   a) allow at least 15 cm between the loop and any fixed metallic masses;
   b) allow at least 1 metre between the loop and any moving metallic masses (e.g. gates);
   c) the length of the feeder cable should not exceed 100 metres.
2) Cut the channel with a masonry disc or diamond cutter.

N.B.: The channel should be cut to a depth of 30 mm to 50 mm and a 4 mm width (Fig. 1-2).
The corner of the rectangle should be crosscut at 45°.
This will help prevent damage to the insulation when installing the cable (Fig. 3).

1.4 LAYING THE CABLE

3) Calculate the length of the loop cable on the basis of the following factors:
   a) the number of windings in the loop depends on the perimeter distance in accordance with the contents of Table 1.

TABLE 1

NUMBER OF LOOP WINDINGS	
PERIMETER	**WINDINGS**
more than 10 m	2
from 10 to 6 m	3
less than 6 m	4

N.B.: If the road substrate contains steel reinforcements, these will reduce the inductance of the loop. In this case increase the number of windings by two.

   b) the loop and the feeder must consist of a single, continuous conductor cable.

IMPORTANT: for reliable detector performance use a continuous cable; if connections in the winding and in the power supply cables are unavoidable, they must be properly soldered and protected inside a waterproof box.

   c) the two loop power supply cables must be twisted with at least 20 turns per metre length to avoid sensitivity losses.
4) Lay the cable in the power supply channel and leave a sufficient length above ground for connection to the Detector.
5) Lay the required number of windings in the loop channel and then route the cable back through the power supply branch, twisting it together with the cable already installed.

N.B.: If the cables on the power supply line are installed in a channel together with other electrical cables, they must be suitable screened. The screen must be connected to earth at the end nearest the Detector only.
6) Secure the cable at the bottom of the channel and seal the loop, making sure that no parts of the cable remain exposed (Fig. 4).

2. ELECTRICAL CONNECTIONS

The Detector is supplied with a quick connector complete with connection cables.
The pins and relative wires are listed in Fig. 5.
Connections to be made to FAAC electrical apparatus are shown in Table 2.

TABLE 2

CONNECTION	PINS AND DETECTOR CABLES	ELECTRICAL APPARATUS TERMINALS				
		401 MPS	402 MPS	624 MPS	746 SD1	826 MPS
POWER SUPPLY	8 (black)	9	5	6	3	6
	7 (red)	10	6	7	4	7
IMPULSE GENERATOR MODE (*)	5 (grey)	2	1	1	6	2
	4 (grey)	1	3	5	3	1
SAFETY DEVICE MODE (*)	2 (pink)	8	2	2	5	5
	1 (white)	9	3	5	3	1

(*) You can use the Detector as an pulse generator and safety device at the same time if you make both sets of connections.

2.1 FEEDER LINE

Pins 9 and 10 (violet cable) must be connected to the loop power supply wires.
Connect the wires by soldering them. Insulate the soldering using self-binding adhesive tape or a shrink fit sheath.

2.2 AUXILIARY SERVICE COMMAND

There is a N.O. contact available between pin 1 (white wire) and pin 3 (yellow wire); this is closed when the detector signals the presence of a metallic mass over the loop.
The capacity of the contact is 1A 230 Vac and it can be used to control any auxiliary device that must be activated during the engaged status of the loop.

2.3 RESET BUTTON

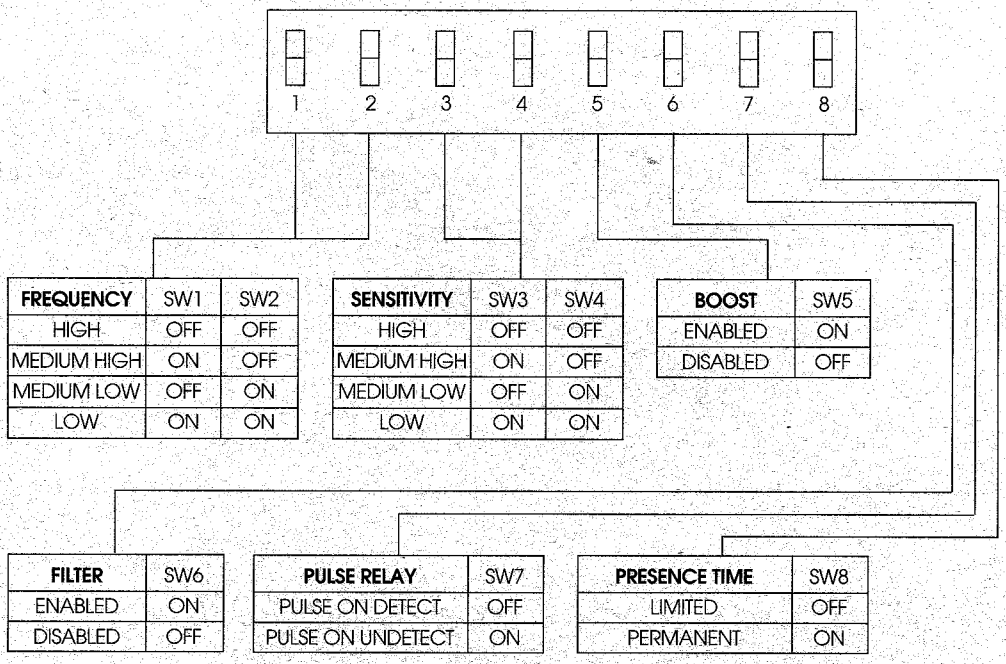
It is recommended to connect a N.O. RESET button between pins 6 (orange wire) and 8 (black wire). The RESET button must be pressed in the following circumstances:

- re-calibration of the system
- re-programming of the system
- to restore normal operation of the system after an operating anomaly

3. SETTING THE DIP-SWITCHES

N.B.: Press the **RESET** button whenever the dip-switch settings are altered

ENGLISH



FREQUENCY	SW1	SW2
HIGH	OFF	OFF
MEDIUM HIGH	ON	OFF
MEDIUM LOW	OFF	ON
LOW	ON	ON

SENSITIVITY	SW3	SW4
HIGH	OFF	OFF
MEDIUM HIGH	ON	OFF
MEDIUM LOW	OFF	ON
LOW	ON	ON

BOOST	SW5
ENABLED	ON
DISABLED	OFF

FILTER	SW6
ENABLED	ON
DISABLED	OFF

PULSE RELAY	SW7
PULSE ON DETECT	OFF
PULSE ON UNDETECT	ON

PRESENCE TIME	SW8
LIMITED	OFF
PERMANENT	ON

3.1 FREQUENCY

The frequency is determined by the size of the loop, the frequency dip-switches provide only a slight range of adjustment.
To avoid interference between Detectors located in proximity to one another, use different frequencies for each system.
In normal practice the Detector connected to the loop with the higher inductance value (greater number of windings) should be set to the lower frequency, and vice versa.

3.2 SENSITIVITY

The sensitivity of the detector allows the detector to be selective as to the change of inductance necessary to produce a detect (e.g. the detection of small unwanted objects such as bicycles and trolleys).

3.3 BOOST

This function makes it possible to increase sensitivity at the time of detection.
Sensitivity returns to the normal level when the vehicle has departed from the loop area.
This system means that the detect contact will remain engaged also in the case of vehicles with particularly high ground clearance or vehicles towing trailers.

3.4 FILTER

The filter serves to discriminate between brief passages over the loop (e.g.: during manoeuvring).
When a vehicle passes over the loop, the filter function generates a 2 second delay before the system responds.

3.5 PULSE RELAY

The pulse relay may be made to operate on detect (entry) or on undetect (exit) of a vehicle.
The pulse relay outputs a pulse of 250 msec duration.

3.6 PRESENCE TIME

The presence time may be set to permanent presence or to limited presence.
In permanent presence mode the detector will continuously compensate for all environmental changes whilst there is a vehicle present over the loop.
In the presence mode the detector will give a continuous output during the presence of a vehicle over the inductive loop. As the detector is designed with the permanent presence feature, the detector will indicate vehicle presence for an unlimited period of time. If the permanent presence is not selected, then the detect time will be dependent on the change in inductance. The presence time on the limited presence setting will be approximately 1 hour for 3% Δ L/L.

4. DETECTOR TUNING

Tuning of the detector is fully automatic. When power is applied to the detector upon installation of the system, or when a reset is initiated, the detector will automatically tune itself to the loop to which it is connected. The detector will tune to any loop in the inductance range 20 to 1500 microhenries.
Once tuned, any slow environmental change in loop inductance is fed to a compensating circuit within the detector which keeps the detector correctly tuned.
Automatic tuning can be immediately triggered by pressing the RESET button at any time.
While the detector is tuning, the detect LED will glow momentarily, and extinguish when the system is tuned. Thereafter, the LED will flash at a rate of 1 Hz.
This is used to indicate the frequency of the loop to the user. Every flash of the LED is equivalent to 10 kHz. It will stop when the operating frequency is reached.
This operation is also performed whenever the reset button is depressed.
The LED will momentarily turn on every 2 seconds to indicate that the unit is functional.

5. MULTI-FUNCTION LED INDICATIONS

In addition to the self-tuning (see previous paragraph) the led also indicates the status of the loop as shown in Table 3:

TABLE 3

LED STATUS	LOOP STATUS
FLASHING (2 second intervals)	FREE
STEADY	ENGAGED
FLASHING (2 Hz)	FAULT (*)

(*) You can check for permanent faults by pressing the RESET button to see if the led starts flashing again.

6. MAINTENANCE

No maintenance is needed.