

OPERATION MANUAL

Common for All models

Weft Sensor (Weft Break Detection)

AS - 35	
A - 35	
MSD10 - 24 (PNP/NPN)	

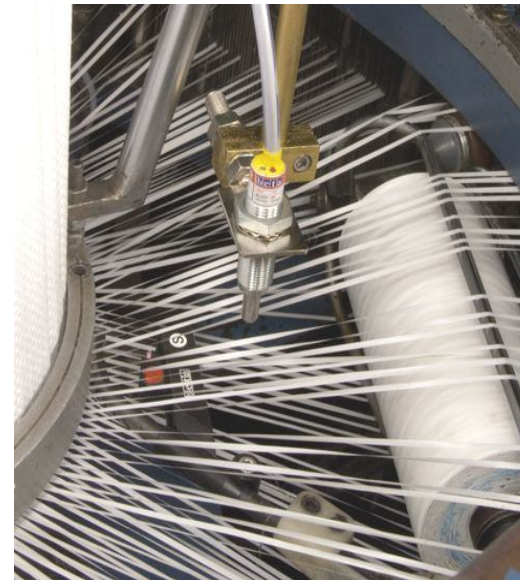


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OPERATION MANUAL FOR MAGNETIC SENSOR (WEFT BREAK DETECTION)

For Both Models: 1) AS - 35 and 2) MSD10-24(PNP / NPN)

Introduction: The Weft Sensor is highly sophisticated and reliable device to



sense the weft breakages, and uneven weft tension in Circular Loom. It operates on the principle of magnetism and hence does not malfunction due to effect of dust and ambient light which are invariably present on any loom. The sensor does not require any maintenance like cleaning, adjustment, setting etc. and will give years of trouble free service. Periodic checking of magnet holders is required.

Packing List : After receipt of material, check for all items as indicated in 'Packing List'.

Installation: The installation is very easy and can be done by anyone having fair knowledge of Loom. First fit the magnetic reflector assembly on shuttle boom pipe. If original reflector assemblies are already there then you may be able to use them. Ensure that these assemblies are at equal distance from ring and nearest to ring. Next, fix the sensor in the clamp provided. Put an universal joint on bolt of the clamp and mount the universal joint on pipe where a photo sensor may have used earlier.

Suggested connections of magnetic sensor to avoid gapping problem after weft Break: In mechanical loom, the Take-up Roller (Haul-off) rotates through mechanical link from main shaft rotation. When weft tape breaks, one tape goes missing from fabric and hence the take up must be stopped immediately after weft break. Because, after STOP signal is generated, the loom actually takes few rotations before stopping completely.



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So Clutch is used for this purpose. Normally clutch is engaged and the main shaft rotation is mechanically linked to take up Roller. When weft tape breaks, the Relay contacts of Relay PCB should be used to deactivate clutch to stop take up immediately. The fabric will be crammed to avoid gap in fabric.

Magnetic Sensor Models: For detect the weft break.

Universal Type 12V DC Model AS-35 with Relay PCB:

This combination can fit on all types of Looms.

Please refer to the wiring schematic for connecting 12V DC sensor (AS-35) to Relay PCB. Now mount the Relay PCB in Loom Control Panel and connect 24V AC to connectors marked as J3 for "24V AC". Connect the sensor to Relay PCB marked as J2 for 12V DC Sensor and finally connect the relay contacts to stop the Loom with cramping. You may Use NO or NC contact depending on circuit requirement. The relay contacts are marked as NC / COM / NO on J1 connector. Relay can also be connected as 24V DC PNP or NPN type output to the Loom Controller / PLC. For Electronic loom, cramping is done by Loom Controller / PLC.

Electrical connection for 12V DC Model AS-35:

PLEASE CHECK THE COLOUR CODE.

Connect sensor directly to Relay PCB as follows. Connect Relay contacts to STOP loom.

Sensor Model	Sensor connections as per the colour code				Drawing
12V DC Sensor AS - 35	Connection	- 0VDC	Signal	+12V DC	Refer to Connection Diagram of AS - 35
	Wire Colour code	Blue BU	Black BK	Brown BN	

Direct 24V DC Model MSD10-24 : This is suitable for Direct connection of sensor on specific looms : Relay PCB is avoided when this model is used.

24V DC sensor MSD10 - 24 (PNP or NPN) is directly connected to loom controller or PLC Please refer to wiring schematic. The output gets activated when Stop Signal is sent by sensor. The loom controller or PLC will STOP the loom on receiving this signal from the sensor. For Electronic loom, cramping is done by Loom Controller / PLC.

Electrical connection for 24V DC Model:

PLEASE CHECK THE COLOUR CODE.

MSD10-24 (PNP OR NPN): Provide 24V DC Supply to sensor as follows. The Signal is directly connected to Loom Controller / PLC which will then STOP the loom.

Sensor Model	Sensor connections as per the colour code				Drawing
24V DC Sensor MSD10-24 PNP OR NPN	Connection	- 0V DC	Signal	+24V DC	Refer to Connection Diagram of MSD10-24 (PNP/ NPN)
	Wire Colour code	Blue BU	Black BK	Brown BN	

Note: Connect Supply wires and output in correct Polarity. Otherwise sensor will not work. Consider change in color code.

Use Cable ties or thread to fix the cable on support rod. Do not leave the cable loosely hanging on loom. Cable should not get stretched. Avoid sharp bending of cable coming out of sensor. Provide sufficient bending curve. Please dress up the cable properly to avoid any damage to cable.

Alignment / setting of Sensor and Reflectors: Rotate the loom and bring one magnetic reflector assembly under the sensor. Rotate the reflector assembly and bring the magnet to the position where it will be after weft breakage (about 180 degree rotation). The LED on sensor should light up. Set the vertical distance between center of sensor bottom point and magnet to about 35 mm and at an horizontal offset of 10mm away from magnet. This is important; otherwise magnetic field from the normal position may trigger the sensor and a malfunction i.e. false tripping would occur.

Now bring all magnets one by one under the sensor and check for Magnet reflector alignment as explained above. The LED on sensor should light up. Adjust the height of sensor or level of reflector assembly as required till LED on the sensor lights up for all the reflector assemblies uniformly.

(Red LED for 12V DC & White LED for 24V DC)

Now remove one tape from the reflector assembly and run the Loom at normal speed. The LED on top of sensor should light up continuously. If it does not light, check the alignment and then refer to trouble shooting Section.

Now your sensor is ready and can be put to normal operation. Run the loom at normal speed and when the weft tape breaks or if there is uneven tension in shuttle bobbin tape, the loom will stop instantly (poor winding on bobbin or shuttle brake is loose or if the bobbin is empty). The sensor does not require any maintenance as it is dust proof, but periodic checking will help in long way. Maintenance and alignment / setting of magnet reflectors are required to be done periodically.

Precautions: Following precautions will help in getting maximum advantage from sensor.

a. The sensor will trigger even if the weft tension is low. Ensure that a proper spring is put in shuttle brake. The weft tension is reduced when the bobbin diameter is reduced. If sensor triggers at small diameter, then reverse the bobbin direction to get more tension in weft.

b. The magnet reflector assembly must be tight on boom pipe. The location of all the assemblies should be same for all the shuttles. Further, these should be in perfect horizontal position. The gap between sensor tip and magnet should be around 35 mm and horizontal offset of 10 mm from magnet is desirable to avoid false tripping.

c. For 12V DC Sensor: Do not connect output of sensor to any other PCB. This may damage electronics inside the sensor. Our sensor is designed for our relay board only. In case you wish to use any other card, please take prior permission from our service department.

d. For 24V DC Sensor: The Sensor output is PNP type or NPN type. While ordering, you have to order as per your requirement. This PNP or NPN output is designed for connecting to loom controller or PLC as digital input only.

e. We have supplied two / three red colour and two / three blue colour magnet holders with this set. Please mount these alternately on the loom to avoid Magnetization of sensors in long run.

f. It is highly recommended that yarn path from shuttle bobbin to magnetic holder and ceramic eyelet on boom pipe should be as straight as possible by selecting the proper boom pipe size. This will reduce the wear and tear on boom reflector assembly and give a longer life to it.

LED Indicators:

SELF TEST: A feature is added to check tripping circuit of Weft Break sensor and LEDs. On every power ON to Weft Break sensor, the LED will flash. This flashing on power ON indicates that sensor is working and while the LED is on sensor is ON for a short time, in effect the input on loom controller / PLC will be also ON at that moment **OR** the Relay on Relay PCB will be also ON at that moment. This is the '**self test**' by Weft Break sensor where it checks the LED on sensor, and the output connection of sensor up to Relay PCB OR the loom controller / PLC is ok.

For 12V DC Sensor Model AS - 35:

The Sensor has one LED and its function is as under:

a. Red LED - Magnetic field sensed by sensor (Tape break condition)

b. The Relay PCB has two LEDs and their functions are as under:

i. Red LED - Relay ON. (Relay gets ON when tape breaks.)

ii. Green LED - Power ON (Always ON when Power supply is ON)

For 24V DC Sensor:

The Sensor has one LED and its function is as under:

White LED - Magnetic field sensed by sensor (Tape break condition)

Trouble shooting: (Fault finding)

Your sensor has been thoroughly tested at our works, however in case it does not work properly, follow the trouble shooting guide lines as under :

A. LED on sensor does not light up even if Weft tape is broken :

- Check for vertical distance (around 35mm) between magnet holder and sensor.
- Check for horizontal offset (10 mm approx.) between magnet holder's 180° rotated position and sensor.
- Check supply connections to sensor.

B. Loom stops even if weft tape is not broken. LED on sensor lights up.

- Shuttle bobbin tension is loose.
- Brake spring is weak.
- Increase horizontal offset between magnet and sensor. This is to avoid false tripping.
- Increase vertical distance between magnet and sensor (around 35mm).

C. Loom stops when bobbin diameter is reduced :

- Low tension in brake spring.
- Change brake spring.
- Rotate the axis of shuttle bobbin to increase weft tension (Reverse the shuttle direction).

For 12V DC Sensor.

a. Red LED on relay PCB does not light up :

- Check for 22 - 26V AC Input on PCB.
- Check for 14 - 17V AC on transformer secondary.
- Check for 17 - 22V DC on electrolytic capacitor.
- Check for 12V DC on PCB connector J2.

b. Red LED on sensor light up but loom does not stop :

- Check for connection on Relay PCB (marked as signal)
- Check if Relay operates when weft is broken.
- Check Relay connection in panel wiring for stopping the loom.
- Check Relay contacts on Relay PCB.

For 24V DC Sensor.

White LED on sensor lights up but Loom does not stop:

- Check for connection on Loom controller or PLC side.
- Check cable connection from sensor to loom controller or PLC. Specifically check voltage on Signal output wire, when white LED on sensor lights up. (For PNP: around 22V DC and for NPN: around 0VDC).
Check if loom controller or PLC input is working ok.

This should hopefully help you to correct the problem. But in case further help is required. Please feel free to contact us.

Note:

1) It is recommended to fix N and S type reflectors alternately in each boom pipe.

2) While ordering, please mention the model number or type as per your actual requirement. Sensor comes with other accessories like sensor clamp etc. Check which items you want along with sensor.

Watch Magnetic Sensor Videos on: www.youtube.com/user/wovensack

For more details please contact us on
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For emergency services please call on

Mobile: + 91 9763711367

Technical Specifications of Weft Sensor Models And other accessories:

SENSOR	AS - 35	MSD10-24 PNP/NPN
Outer Diameter	19mm	19mm
Length	85mm	85mm
Weight	210gm	180gm
Operating Voltage	12V DC	24V DC
Output type	PNP	PNP/NPN as required.
Current	9.5mA	5.2mA
Cable length	2 meter with connector	
Type of Sensing	Magnetism	
Magnet Orientation	Alternately North & South	
Sensing Distance	More than 33mm	
Magnet Holder	Suitable Magnet Reflector Assembly	
Maximum PPM	1200 PPM	
Minimum PPM	300 PPM	
Loom Type Supported	4, 6, 8, 10 & 12 Shuttle	
Operating Temperature	50°C Maximum	

RELAY PCB	AS - 35	MSD10-24 PNP/NPN
PCB	12V DC Model	NOT REQUIRED
Input Voltage (SMPS)	24V AC / DC	-----
Input Voltage (X'mer)	24V AC, 50Hz	-----
Input Current (SMPS)	65mA	-----
Input Current (X'mer)	235mA	-----



**RELAY PCB SINGLE
SMPS TYPE**



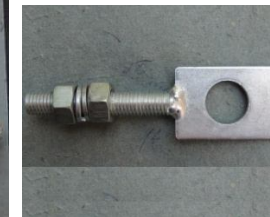
AS - 35



**RELAY PCB SINGLE
TRANSFORMER TYPE**



L' CLAMP SET(3 PIECE)



**CLAMP FOR
WEFT SENSOR**



TYPES OF REFLECTOR



MSD10-24(PNP OR NPN)

FOR MORE INFORMATION PLEASE CONTACT



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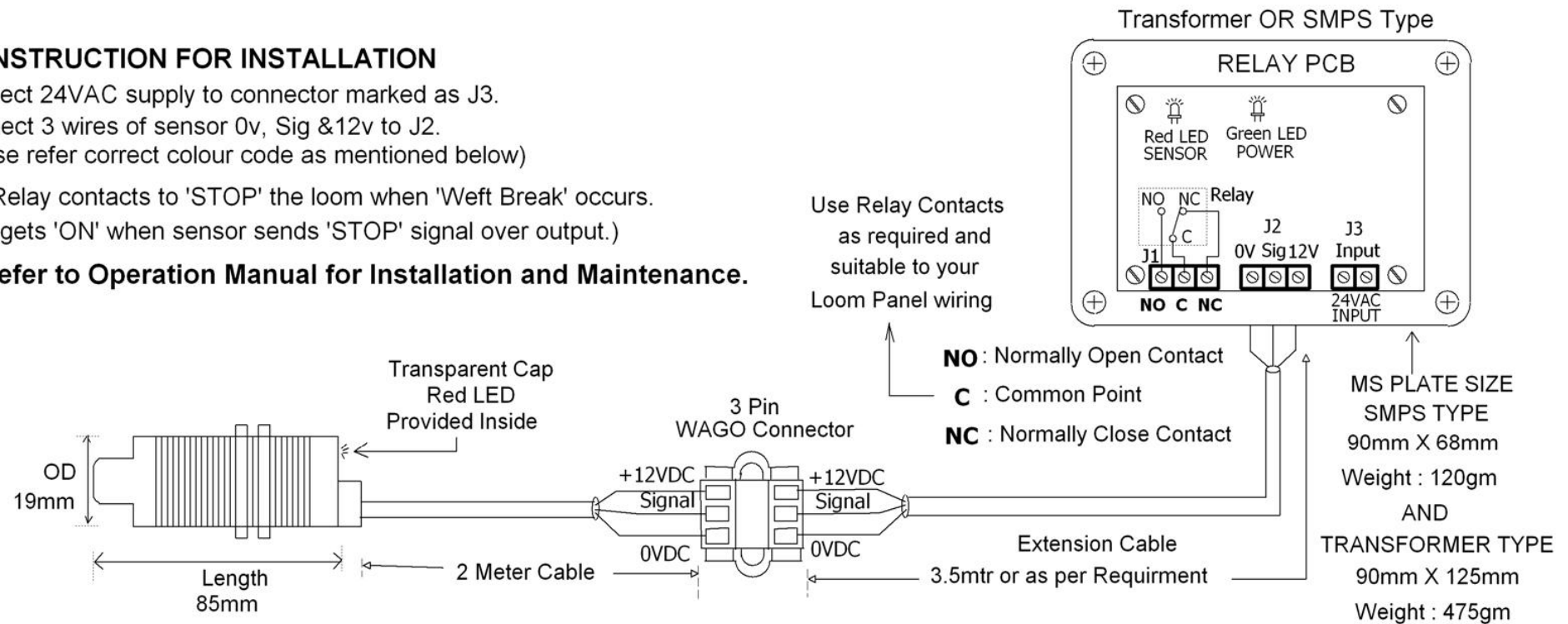
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CONNECTION DIAGRAM FOR WEFT BREAK DETECTION (MAGNETIC) SENSOR: (12V DC SENSOR WITH RELAY PCB)
Option 1 : Universal Type : 12V DC Sensor with Relay PCB "Any combination is possible with Relay PCB"

INSTRUCTION FOR INSTALLATION

1. Connect 24VAC supply to connector marked as J3.
2. Connect 3 wires of sensor 0v, Sig & 12v to J2.
(Please refer correct colour code as mentioned below)
3. Use Relay contacts to 'STOP' the loom when 'Weft Break' occurs.
(relay gets 'ON' when sensor sends 'STOP' signal over output.)

Please refer to Operation Manual for Installation and Maintenance.



Weft Break Sensor (12VDC Model)
 Model : AS - 35

NOTE -

- 1) Input supply to SMPS type Relay PCB can be 24V DC also.
- 2) For machanical loom, connect the Relay contacts such that when 'Weft Break' occurs, the loom gets stopped & clutch gets disconnected to stop take - up immediately till the loom actually stops rotating completely.
- 3) For electronic loom with loom controller or PLC, the Relay can be wired up to generate PNP or NPN signals of 24V DC or as required.

Sensor wire colour code

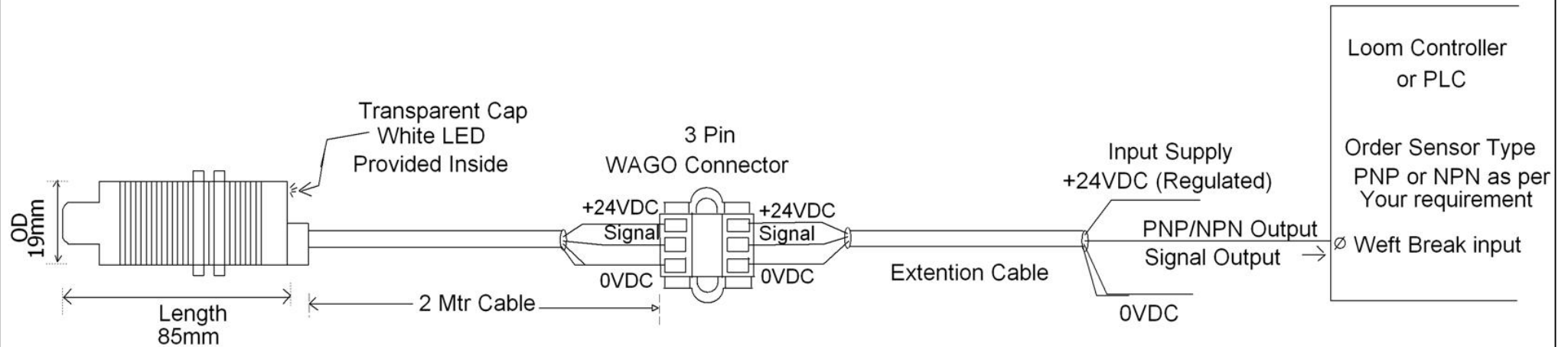
Connection	- 0 VDC	Signal	+ 12V DC
Wire	Blue	Black	Brown
Colour code	BU	BK	BN

WB4

Revision Date : 05/04/2017

CONNECTION DIAGRAM OF WEFT BREAK (MAGNETIC) SENSOR (24V DC)

Option 2 : 24V DC Sensor for direct connectivity : PNP or NPN Output (Relay PCB not required.)



Weft Break Sensor (24VDC Model)

Model : MSD10-24-NPN

OR

Model : MSD10-24-PNP

OD: 19mm

Length: 85mm

Sensor wire colour code

Connection	- 0 VDC	Signal	+ 12V DC
Wire	Blue	Black	Brown
Colour code	BU	BK	BN

Note : -

- 1) NPN or PNP type to be mentioned while ordering.
- 2) MSD10-24(NPN) : 24VDC Sensor with NPN Output (Current Sink),
Maximum Current 20mA
- 3) MSD10-24 (PNP) : 24VDC Sensor with PNP Output (Current Source),
Maximum Current 20mA

Please refer to Operation Manual for Installation and maintenance

WB2

Revision Date : 05/04/2017