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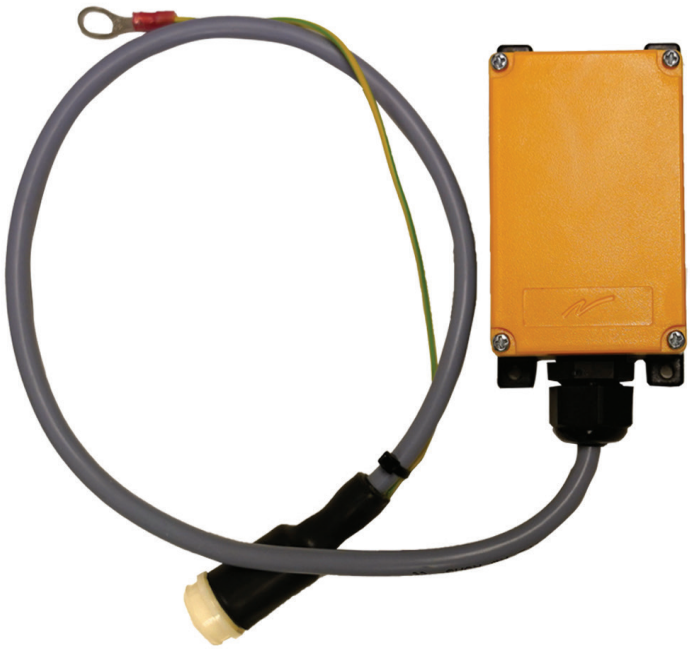
Operating instructions for

EF-7600A
EF-7700A

CE

ORIGINAL INSTRUCTIONS

EF-7600A - SINGLE ACTING WIRELESS REMOTE SYSTEM
EF-7700A - DOUBLE ACTING WIRELESS REMOTE SYSTEM



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SAFETY SYMBOLS AND DEFINITIONS

The safety signal word designates the degree or level of hazard seriousness.

⚠ DANGER: Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION: Used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

IMPORTANT: Important is used when action or lack of action can cause equipment failure, either immediate or over a long period of time.

SAFETY PRECAUTIONS

⚠ WARNING The following procedures must be performed by qualified, trained personnel who are familiar with assembling this equipment.

- **Operators/installers must read and understand all safety precautions and operating instructions included with the pump. If the operator cannot read these instructions, operating instructions and safety precautions must be read and discussed in the operator's/ installer's native language.**
- **These products are designed for general use in normal environments. These products are not designed for lifting and moving people, agri-food machinery, certain types of mobile machinery, or in special work environments such as: explosive, flammable, or corrosive. Only the user can decide the suitability of this product in these conditions or extreme environments. Power Team will supply information necessary to help make these decisions. Consult your nearest Power Team facility.**

- **Safety glasses must be worn at all times by the operator and anyone within sight of the unit. Additional personal protection equipment may include: face shield, goggles, gloves, apron, hard hat, safety shoes, and hearing protection.**
- **The owner of this tool must ensure that safety-related decals are installed, maintained, and replaced if they become hard to read.**
- **Disconnect the battery from the pump and relieve pressure before opening any connections in the system.**
- **The guide cannot cover every hazard or situation so always do the job with SAFETY FIRST.**

General

⚠WARNING **To reduce the risk of fire, personal injury, and product damage due to a short circuit, never immerse your tool, battery pack or charger in fluid or allow a fluid to flow inside them. Corrosive or conductive fluids, such as seawater, certain industrial chemicals, and bleach or bleach containing products, etc., can cause a short circuit.**

- **This unit is not suitable for use in explosive environments. Failure to comply may result in damage, injury, or death.**
- **Always wear eye protection whenever operating hydraulic equipment.**

- **Always wear hearing protection as required. Refer to the sound level (dB[A]) chart.**
- **Operation, repair, or maintenance of hydraulic equipment should be performed by a qualified person who understands the proper function of hydraulic equipment per local directives and standards.**

- **Hydraulic equipment must be assembled correctly and then checked for proper function before use. Use hydraulic components of the same hydraulic pressure ratings. An appropriate hydraulic pressure gauge is recommended to monitor pressure.**

- **Never place your hands or other body parts near a hydraulic fluid leak. Never use your hands or other body parts to check for a possible leak. High pressure fluid can be injected under your skin causing serious injury and/or infection.**
- **High pressure fluid is present throughout a hydraulic system. Always use caution when operating, repairing, or maintaining this equipment. Before beginning any work on any hydraulic system component, stop the equipment, disconnect from its power source, and relieve all pressure in all parts of the system. Do not tamper with the internal hydraulic relief valve settings.**
- **Avoid exposing hydraulic equipment (especially hoses) to extreme high or low temperatures. Damage to equipment or failure may result and cause loss of control or injury to the operator.**

- **Exercise caution to avoid the risk of fire.**
- **Do not drop any hydraulic system components. Damage to the equipment and/or injury may result.**
- **Avoid slipping or falling by cleaning up any oil spills.**
- **Avoid back injury by always lifting equipment carefully.**
- **It is strongly recommended to view the Power Team Hydraulic Safety video tape before using hydraulic equipment.**

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Power supply

- **Electrical Shock or Electrocution.**
- **Any electrical work must be done and tested by a qualified electrician per local directives and standards.**
- **Disconnect the battery from the pump and relieve pressure before removing the motor case cover or performing maintenance or repair.**
- **If wiring is exposed, replace or repair immediately.**
- **Do not attempt to increase the power capacity by replacing a fuse with another fuse of higher value. Overheating of the power supply and the possibility of a fire will result.**
- **Electric pumps should never be exposed to rain or water which could cause personal electrical hazard.**
- **Avoid conditions which can cause damage to the power supply such as abrasion, crushing, sharp cutting edges, or corrosive environment. Damage to the power supply can cause an electrical hazard.**

Hydraulic hoses and lines

- **Avoid straight line tubing connections in short runs. Straight line runs do not provide for expansion and contraction due to pressure and/or temperature changes. See diagrams in "Set-up Instructions" section of this form.**
- **Eliminate stress in the tube lines. Long tubing runs should be supported by brackets or clips. Tubes through bulkheads must have bulkhead fittings. This makes easy removal possible and helps support the tubing.**
- **Before operating the pump, all hose connections must be tightened with the proper tools. Do not overtighten. Connections should only be tightened securely and leak-free. Overtightening can cause premature thread failure or high pressure fittings to split at pressures lower than their rated capacities.**
- **Should a hydraulic hose ever rupture, burst, or need to be disconnected, immediately shut off the pump and release all pressure. Never attempt to grasp a leaking pressurized hose with your hands. The force of escaping hydraulic fluid could cause serious injury.**
- **Do not subject the hose to potential hazard such as fire, sharp surfaces, extreme heat or cold, or heavy impact. Do not allow the hose to kink, twist, curl, crush, cut, or bend so tightly that the fluid flow within the hose is blocked or reduced. Periodically inspect the hose for wear, because any of these conditions can damage the hose and possibly result in personal injury. Never repair with tape.**

- **Do not use the hose to move attached equipment. Stress can damage the hose and possibly cause personal injury.**
- **Hose material and coupler seals must be compatible with the hydraulic fluid used. Hoses also must not come in contact with corrosive materials such as creosote-impregnated objects and some paints. Hose deterioration due to corrosive materials can result in personal injury. Consult the manufacturer before painting a hose. Never paint a coupler.**

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Pump

- **Do not exceed the hydraulic pressure rating noted on the pump nameplate or tamper with the internal high pressure relief valve. Creating pressure beyond rated capacities can result in personal injury.**
- **Before replenishing the fluid level, retract the system to prevent overfilling the pump reservoir or bladder. An overfill can cause personal injury due to excess reservoir or bladder pressure created when accessories are retracted.**
- **Always shut off the motor and/or disconnect power supply and relieve pressure before breaking any connections in the system.**
- **The motor is the major part of the weight of the pump. Always take this into consideration when lifting or moving the pump.**

Hydraulic fluids

- **Properly dispose of all fluids, components, and assemblies at the end of their useful life.**
- **Hydraulic fluid should be compatible with all hydraulic components.**

PRODUCT DESCRIPTION FOR THE EF-7600A SINGLE ACTING WIRELESS REMOTE SYSTEM

IMPORTANT!

In order to get the best out of your system it is important you take the time to read through the manual before you start to install/program your equipment.

The system (EF-7600A) consists out of two parts: the transmitter (EF-7602A) and the receiver including wiring (EF-7601A).

The transmitter and receiver are pre-set, and factory coded. This means that the system is ready for use. Every transmitter has a fixed, unique serial coding which has been programmed into the receiver, so that another transmitter cannot control the receiver.

APPLICATIONS

The receiver and transmitter of the System EF-7600A are pre-programmed. They are meant to control fixed or mobile single acting hydraulic equipment with a limited amount of functions.

SAFETY

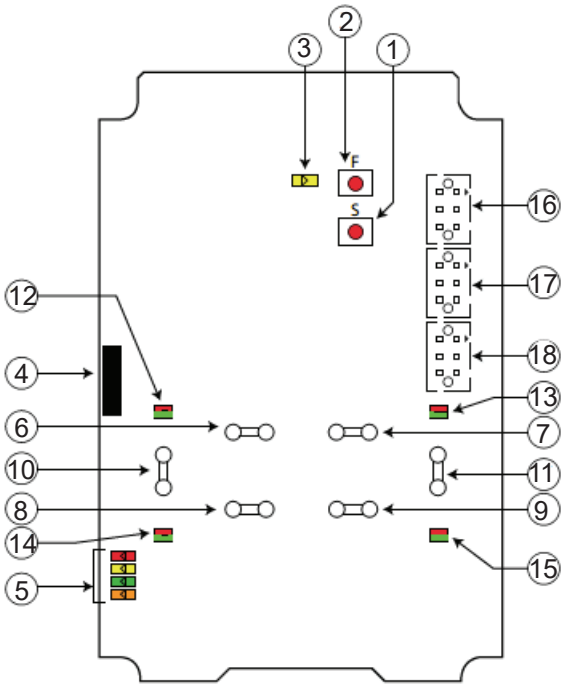
Ensure that:

- **Appropriate personnel receive a review of the systems' functions before it is used.**
- **Only appropriate personnel have access to the transmitter.**
- **The transmitter is not left unsupervised.**
- **The operator always has a complete view of the equipment when it is radio controlled.**
- **Be sure that your hydraulic lift application is shut off during transit.**

⚠CAUTION: tampering with the product, changing the settings or using the product in a fashion other than as set forth herein can lead to product malfunctions which in turn can lead to serious injuries or death. Any tampering, unauthorized change in the product, misuse or abuse will invalidate SPX Flow's warranty on the product.

RECEIVER EF-7601A

Operating voltage:	**12-24 V DC**
Power consumption:	**40 mA**
Dimensions:	**80 x 54 x 38 mm**
Protection:	**IP 65**
Climatic conditions:	**-20°C to +55°C**
Humidity:	**10%-90%**
Compatible transmitter:	**EF-7602A**
Operating mode:	**1**



1. **Select button (OK)**
2. **Function button (cancel)**
3. **Power LED (yellow)**
4. **Programming connector**
5. **Function LED's (5=red,6=yellow,7=green,8=orange)**
6. **Transistor output 1**
7. **Transistor output 2**
8. **Transistor output 3**
9. **Transistor output 4**
10. **Input power GND**
11. **Input power 12-24VDC**
12. **Status LED 1 for transistor output 1**
13. **Status LED 2 for transistor output 2**
14. **Status LED 2 for transistor output 3**
15. **Status LED 2 for transistor output 4**
16. **Connector for digital inputs (11)**
17. **Connector for digital inputs (9)**
18. **Connector for digital inputs (8)**

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TRANSMITTER EF-7602A

Function

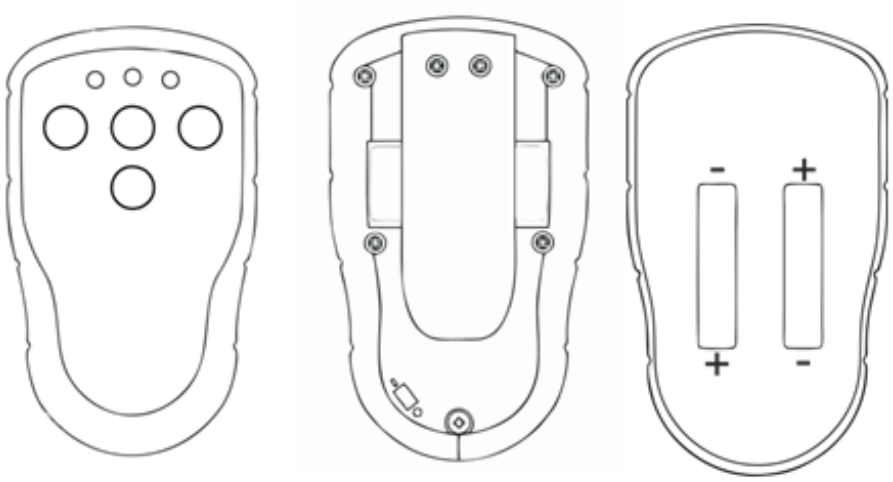
The transmitter must be activated by pushing the ON button. After that the UP ⬆ or DOWN ⬇ button can be used for operating the system. Transmitter can be deactivated by pushing the OFF button

The transmitter is active when the LED glows steadily.

Note: if the transmitter is not used within 3 mins, it turns off automatically. Pushing the ON activates the transmitter again.

Battery replacement

2 batteries, AAA 1,5 V.



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⚠CAUTION : 1. Assembly and installation

1. Select a suitable location for assembly of the receiver.
2. Connect the plug onto the start relay on the engine.
3. Connect the ground cable of the receiver to the negative terminal of the electrical motor of the hydraulic pack.
4. Place a fuse between the receiver and the battery to prevent damage from short circuits to the receiver.

2. Placement of the receiver

- Select a location, if possible, that is protected from the wind and weather. Place it with cable-glands facing downward.
- Avoid locations where the receiver may be exposed to abnormal moisture conditions, e.g. during high pressure washing.
- Avoid locations close to metal objects, electrical cables and antennas. Provide the receiver with a separate power supply.

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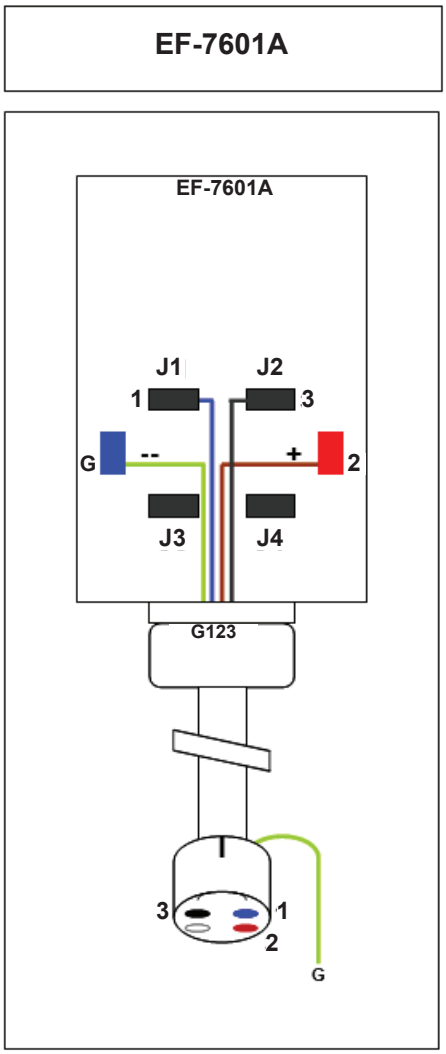
NOTE! Upon delivery the receiver will be pre-wired.

! The following instructions should only be used in case of reconnecting the wiring.



3. Rewiring the receiver EF-7601A:

Connect the right wiring to the terminals

- Brown (2) cable (+) and the yellow/green (-) cable according to the above drawing.

Connect the signal cabling to the terminals for the transistor outputs

- Black cable according to the above drawing on J2
- Blue cable according to the above drawing on J1

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STORING THE TRANSMITTER CODE

1. How to program the id-code of the transmitter?

See Page 9 for overview receiver.

1. Unscrew the 4 screws to open the receiver.
2. Press the receiver Function button. The function LED 5 lights (red).
3. Press the receiver Select button. All status LEDs light (red).
4. Activate the transmitter and hold button UP and button ON at the same time.
5. All function LEDs and status LEDs light. All function LEDs and status LEDs flash 2 times.
6. Release the transmitter buttons.

   All function LEDs and status LEDs flash 1 time. The transmitter is registered.

2. Stop instruction

If no transmitter is found within approximately 10 seconds, the receiver exits to normal operation.

3. Erasing the programmed transmitter

1. Press the receiver Function button once Function LED 5 lights (red).
2. Press the receiver Select button. Status LEDs 1–4 light.
3. Press the receiver Function button for about 4 seconds or until status LEDs 1–4 go off.

   All the registered transmitters have been erased. The receiver returns to normal operation.

4. Trouble shooting:

If the equipment does not work like it should, please check the points here under.

Fatal errors are indicated by function LEDS 5-8, which are all flashing at the same time. Each fatal error is identified by a code indicated by status LEDS 1-4.

 red LED is lit  red LED is off

Status LED 1	Status LED 2	Status LED 3	Status LED 4	Indicates
○	○	○	●	Reading of production data failed
○	○	●	○	Radio modulestart-up failed
○	○	●	●	Function block error
○	●	○	○	Invalid operating mode selected
○	●	○	●	Receiver not locked on channel II when using batteryless button (BLB)

Please contact your supplier if you have tried out all solutions, but your system still does not work properly.

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6. Recycling, scrapping

EF-7600A-systems and any accessories and spare parts no longer in use should be scrapped and recycled according to local environmental regulations.

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PRODUCT DESCRIPTION FOR THE EF-7700A DOUBLE ACTING WIRELESS REMOTE SYSTEM

IMPORTANT!

In order to get the best out of your system it is important you take the time to read through the manual before you start to install/program your equipment.

The system (EF-7700A) consists out of two parts: the transmitter (EF-7602A) and the receiver including wiring (EF-7701A).

The transmitter and receiver are pre-set, and factory coded. This means that the system is ready for use. Every transmitter has a fixed, unique serial coding which has been programmed into the receiver, so that another transmitter cannot control the receiver.

APPLICATIONS

The receiver and transmitter of the System EF-7700A are pre-programmed. They are meant to control fixed or mobile double acting hydraulic equipment, with a limited amount of functions.

SAFETY

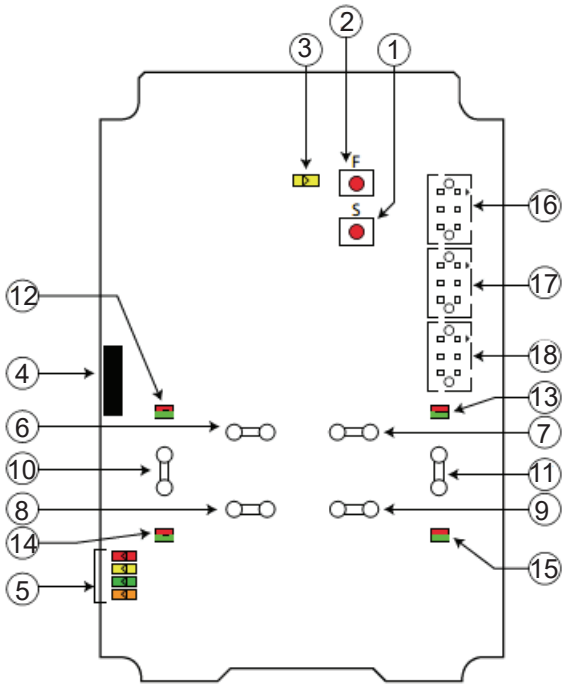
Ensure that:

- **Appropriate personnel receive a review of the systems' functions before it is used.**
- **Only appropriate personnel have access to the transmitter.**
- **The transmitter is not left unsupervised.**
- **The operator always has a complete view of the equipment when it is radio controlled.**
- **Be sure that your hydraulic lift application is shut off during transit.**

⚠CAUTION: tampering with the product, changing the settings or using the product in a fashion other than as set forth herein can lead to product malfunctions which in turn can lead to serious injuries or death. Any tampering, unauthorized change in the product, misuse or abuse will invalidate SPX Flow's warranty on the product.

RECEIVER EF-7701A

Operating voltage:	**12-24 V DC**
Power consumption:	**40 mA**
Dimensions:	**80 x 54 x 38 mm**
Protection:	**IP 65**
Climatic conditions:	**-20°C to +55°C**
Humidity:	**10%-90%**
Compatible transmitter:	**EF-7602A**
Operating mode:	**2**



1. Select button (OK)

2. Function button (cancel)

3. Power LED (yellow)

4. Programming connector

5. Function LED's (5=red,6=yellow,7=green,8=orange)

6. Transistor output 1

7. Transistor output 2

8. Transistor output 3

9. Transistor output 4

10. Input power GND

11. Input power 12-24VDC

12. Status LED 1 for transistor output 1

13. Status LED 2 for transistor output 2

14. Status LED 2 for transistor output 3

15. Status LED 2 for transistor output 4

16. Connector for digital inputs (11)

17. Connector for digital inputs (9)

18. Connector for digital inputs (8)

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TRANSMITTER EF-7602A

Function

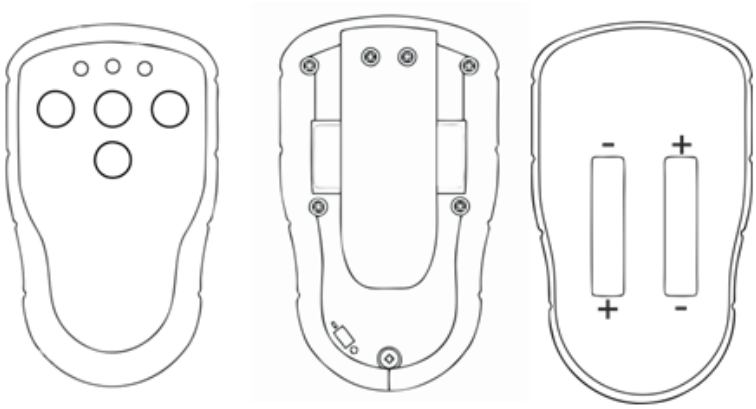
The transmitter must be activated by pushing the ON button. After that, the UP ⬆ or DOWN ⬇ button can be used for operating the system. Transmitter can be deactivated by pushing the OFF button

The transmitter is active when the LED glows steadily.

Note: if the transmitter is not used within 3 mins, it turns off automatically. Pushing the ON activates the transmitter again.

Battery replacement

2 batteries, AAA 1,5 V.



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⚠CAUTION : 1. Assembly and installation

1. Select a suitable location for assembly of the receiver.
2. Connect the plug onto the start of the first solenoid.
3. Connect the ground cable (Yellow/Green) to the earth terminal of the motor in the hydraulic pack.
4. Connect the extra black cable (Grey) of the receiver to the second coil in the hydraulic pack.
5. Place a fuse between the receiver and the battery to prevent damage from short circuits to the receiver.

2. Placement of the receiver

- Select a location, if possible, that is protected from the wind and weather. Place it with cable-glands facing downward.
- Avoid locations where the receiver may be exposed to abnormal moisture conditions, e.g. during highpressure washing.
- Avoid locations close to metal objects, electrical cables and antennas. Provide the receiver with a separate power supply.

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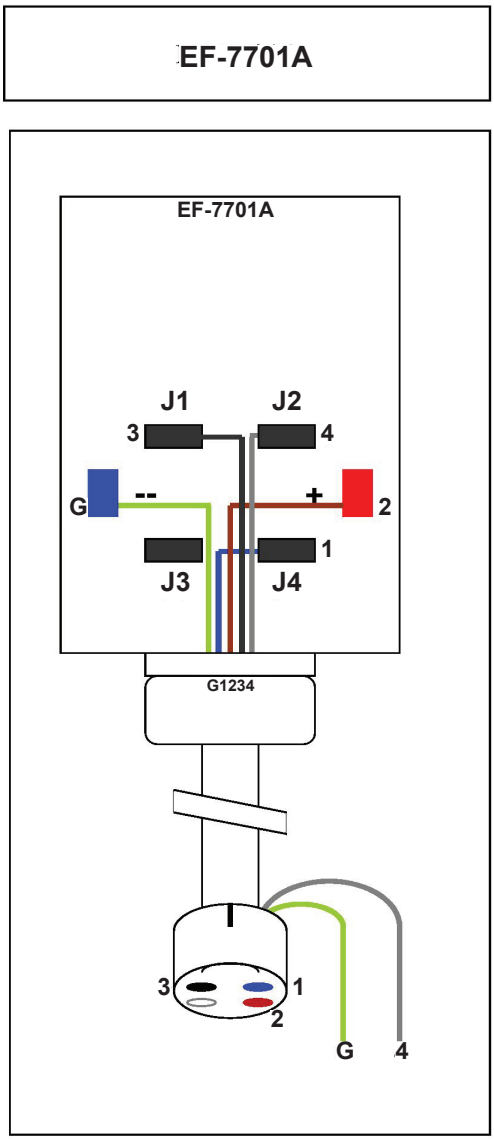
NOTE! Upon delivery the receiver will be pre-wired.

! The following instructions should only be used in case of reconnecting the wiring.



3. Rewiring the receiver EF-7701A:

Connect the right wiring to the terminals

- Brown (2) cable (+) and the yellow/green (-) cable according to the above drawing.

Connect the signal cabling to the terminals for the transistor outputs:

- Black cable according to the above drawing on J1
- Blue cable according to the above drawing on J4
- Grey cable according to the above drawing on J2

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STORING THE TRANSMITTER CODE

1. How to program the id-code of the transmitter?

See Page 12 for overview receiver.

1. Unscrew the 4 screws to open the receiver.
2. Press the receiver Function button. The function LED 5 lights (red).
3. Press the receiver Select button. All status LEDs light (red).
4. Activate the transmitter and hold button UP and button ON at the same time.
5. All function LEDs and status LEDs light. All function LEDs and status LEDs flash 2 times.
6. Release the transmitter buttons.

   All function LEDs and status LEDs flash 1 time. The transmitter is registered.

2. Stop instruction

If no transmitter is found within approximately 10 seconds, the receiver exits to normal operation.

3. Erasing the programmed transmitter

1. Press the receiver Function button once Function LED 5 lights (red).
2. Press the receiver Select button. Status LEDs 1–4 light.
3. Press the receiver Function button for about 4 seconds or until status LEDs 1–4 go off.

   All the registered transmitters have been erased. The receiver returns to normal operation.

4. Trouble shooting:

If the equipment does not work like it should, please check the points here under.

Fatal errors are indicated by function LEDS 5-8, which are all flashing at the same time. Each fatal error is identified by a code indicated by status LEDS 1-4.

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Status LED 1	Status LED 2	Status LED 3	Status LED 4	Indicates
○	○	○	●	Reading of production data failed
○	○	●	○	Radio modulestart-up failed
○	○	●	●	Function block error
○	●	○	○	Invalid operating mode selected
○	●	○	●	Receiver not locked on channel II when using batteryless button (BLB)

Please contact your supplier if you have tried out all solutions, but your system still does not work properly.

5. Recycling, Scrapping

EF-7700A-systems and any accessories and spare parts no longer in use should be scrapped and recycled according to local environmental regulations.

CE 0682 ⓘ

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www.spxflow.com

SPX Flow Powerteam Customer Service:
(800) 541-1418

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Rev. 1 November 2020

English Original

EC DECLARATION OF CONFORMITY

We declare under our sole responsibility that our Handheld Wireless Remote Control Model:

*** EF-7600A** & **EF-7700A**

to which this declaration relates are in conformity with the following:

EN, EN-ISO, ISO standards	**Title**
Per the provisions of the Machinery Safety Directive	**2006/42 EC**
EN_ISO 12100	Safety of machinery, basic concepts, general principles for design, risk assessment & risk reduction
EN 4413	Hydraulic Fluid Power – general rules and safety requirements for systems & their components
Per the provisions of the EMC Directive	**2014/30 EU**
EN 60950-1	Information technology equipment - Safety - Part 1: General requirements
EN 301489-1	ERM & EMC standard for radio equipment and services; part 1: common technical requirements
EN 301489-3	ERM & EMC standard for radio equipment and services; part 3: specific conditions for Short Range Devices (SRD) operating at frequencies between 9 kHz and 40 GHz
EN 300220-1	ERM; SRD; Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW; Part 1: Technical characteristics and test methods
EN 300220-1	ERM; SRD; Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW; Part 3: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive
Per the provisions of the RoHS Directive	**2015/863 EU**
	Restriction of the use of certain hazardous substances in electrical and electronic equipment

SPX Hydraulic Technologies
5885 11th Street
Rockford, IL 61109-3699
United States of America

We hereby declare that the equipment specified under * conforms to the above quoted European Community Directive(s) and Standard(s) as per the currently valid revision. SPX Hydraulic Technologies is certified and registered to ISO 9001: 2015.

SPX Hydraulic Technologies
Andreas J. Klemm
SPX Hydraulic Technologies
Albert Thijsstraat 12
NL-6471 WX Eygelshoven
The Netherlands

The Netherlands July 02nd, 2020

Andreas J. Klemm, PhD