



# *Railtrac™ B42V*



## Instruction manual



## EU DECLARATION OF CONFORMITY

According to

The Machinery Directive 2006/42/EC, entering into force 29 December 2009

The EMC Directive 2014/30/EU, entering into force 20 April 2016

The RoHS Directive 2011/65/EU, entering into force 2 January 2013

**Type of equipment**

Welding carriage

**Type designation**

Railtrac B42V, from serial number 1638-xxx-xxxx (2016 w38)

**Brand name or trade mark**

ESAB

**Manufacturer or his authorised representative established within the EEA**

**Name, address, and telephone No:**

ESAB AB

Lindholmsallén 9, Box 8004, SE-402 77 Göteborg, Sweden

Phone: +46 31 50 90 00, Fax: +46 31 50 92 22

**The following harmonised standard in force within the EEA has been used in the design:**

Annex I - Machinery Directive 2006/42/EC – Risk Analysis

EN 60974-10:2014, Arc Welding Equipment – Part 10: Electromagnetic Compatibility (EMC) requirements

**Additional Information:**

Restrictive use, Class A equipment, intended for use in location other than residential

**By signing this document, the undersigned declares as manufacturer, or the manufacturer's authorised representative established within the EEA, that the equipment in question complies with the safety requirements stated above.**

Date

Signature

Position

Gothenburg

A handwritten signature in black ink, appearing to read "Stephen Argo".

Global Director Equipment

2016-10-31

Stephen Argo

**CE 2016**

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# 1 SAFETY

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## 1.1 Meaning of symbols

As used throughout this manual: Means Attention! Be Alert!



### DANGER!

Means immediate hazards which, if not avoided, will result in immediate, serious personal injury or loss of life.



### WARNING!

Means potential hazards which could result in personal injury or loss of life.



### CAUTION!

Means hazards which could result in minor personal injury.



### WARNING!

Before use, read and understand the instruction manual and follow all labels, employer's safety practices and Safety Data Sheets (SDSs).



### NOTE!

For product operation instructions please refer to the supplied USB memory stick.

## 1.2 Safety precautions

Users of ESAB equipment have the ultimate responsibility for ensuring that anyone who works on or near the equipment observes all the relevant safety precautions. Safety precautions must meet the requirements that apply to this type of equipment. The following recommendations should be observed in addition to the standard regulations that apply to the workplace.

All work must be carried out by trained personnel well-acquainted with the operation of the equipment. Incorrect operation of the equipment may lead to hazardous situations which can result in injury to the operator and damage to the equipment.

1. Anyone who uses the equipment must be familiar with:
  - its operation
  - location of emergency stops
  - its function
  - relevant safety precautions
  - welding and cutting or other applicable operation of the equipment
2. The operator must ensure that:
  - no unauthorised person is stationed within the working area of the equipment when it is started up
  - no-one is unprotected when the arc is struck or work is started with the equipment
3. The workplace must:
  - be suitable for the purpose
  - be free from drafts

4. Personal safety equipment:
  - Always wear recommended personal safety equipment, such as safety glasses, flame-proof clothing, safety gloves
  - Do not wear loose-fitting items, such as scarves, bracelets, rings, etc., which could become trapped or cause burns
5. General precautions:
  - Make sure the return cable is connected securely
  - Work on high voltage equipment **may only be carried out by a qualified electrician**
  - Appropriate fire extinguishing equipment must be clearly marked and close at hand
  - Lubrication and maintenance must **not** be carried out on the equipment during operation



#### **WARNING!**

Arc welding and cutting can be injurious to yourself and others. Take precautions when welding and cutting.



#### **ELECTRIC SHOCK - Can kill**

- Install and ground the unit in accordance with instruction manual.
- Do not touch live electrical parts or electrodes with bare skin, wet gloves or wet clothing.
- Insulate yourself from work and ground.
- Ensure your working position is safe



#### **ELECTRIC AND MAGNETIC FIELDS - Can be dangerous to health**

- Welders having pacemakers should consult their physician before welding. EMF may interfere with some pacemakers.
- Exposure to EMF may have other health effects which are unknown.
- Welders should use the following procedures to minimize exposure to EMF:
  - Route the electrode and work cables together on the same side of your body. Secure them with tape when possible. Do not place your body between the torch and work cables. Never coil the torch or work cable around your body. Keep welding power source and cables as far away from your body as possible.
  - Connect the work cable to the workpiece as close as possible to the area being welded.



#### **FUMES AND GASES - Can be dangerous to health**

- Keep your head out of the fumes.
- Use ventilation, extraction at the arc, or both, to take fumes and gases away from your breathing zone and the general area.



#### **ARC RAYS - Can injure eyes and burn skin**

- Protect your eyes and body. Use the correct welding screen and filter lens and wear protective clothing.
- Protect bystanders with suitable screens or curtains.



#### **NOISE - Excessive noise can damage hearing**

Protect your ears. Use earmuffs or other hearing protection.

### MOVING PARTS - Can cause injuries



- Keep all doors, panels and covers closed and securely in place. Have only qualified people remove covers for maintenance and troubleshooting as necessary. Reinstall panels or covers and close doors when service is finished and before starting engine.
- Stop engine before installing or connecting unit.
- Keep hands, hair, loose clothing and tools away from moving parts.



### FIRE HAZARD



- Sparks (spatter) can cause fire. Make sure that there are no inflammable materials nearby.
- Do not use on closed containers.

**MALFUNCTION - Call for expert assistance in the event of malfunction.**

**PROTECT YOURSELF AND OTHERS!**



#### CAUTION!

This product is solely intended for arc welding.



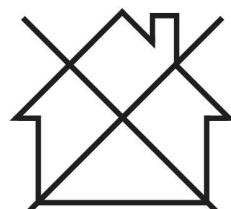
#### WARNING!

Do not use the power source for thawing frozen pipes.



#### CAUTION!

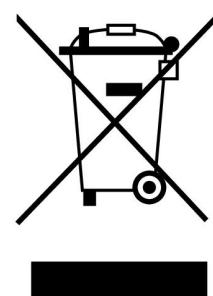
Class A equipment is not intended for use in residential locations where the electrical power is provided by the public low-voltage supply system. There may be potential difficulties in ensuring electromagnetic compatibility of class A equipment in those locations, due to conducted as well as radiated disturbances.



#### NOTE!

**Dispose of electronic equipment at the recycling facility!**

In observance of European Directive 2012/19/EC on Waste Electrical and Electronic Equipment and its implementation in accordance with national law, electrical and/or electronic equipment that has reached the end of its life must be disposed of at a recycling facility.



As the person responsible for the equipment, it is your responsibility to obtain information on approved collection stations.

For further information contact the nearest ESAB dealer.

**ESAB can provide you with all necessary welding protection and accessories.**

## 2 INTRODUCTION

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Railtrac™ B42V is a system of components that can be configured to create the optimal solution for your mechanized welding application. To minimise problems associated with harsh environments, most mechanical parts are constructed in aluminium or stainless steel. Railtrac™ B42V is designed for horizontal and vertical joints (up, and down, when applicable).

### Features Railtrac™ B42V

- 42 V AC or battery driven with standard Makita® 18 V system.
- High speed and low speed in one unit.
- Micro process controlled electronics package in a single onboard housing.
- Stepper motor both for drive and weaving function.
- Only one cable to the wire feeder (not needed if using the battery) and one cable to the remote control (if used) but can be run without any remote control.
- The unit can be programmed and run directly from the controls on the Railtrac™ machine if the remote control is lost-damaged or not preferred.
- Dual high-visibility screens for easy viewing in any orientation.
- The remote is programmable for weave patterns and travel speed and is capable of controlling voltage and wire feed speed in up to 5 standard programs.
- IP44 environmental rating on both the Railtrac™ and the remote control.
- Choose between welding on left side or right side for remote to correspond to carriage movement.

### Direct connection to all new modern ESAB wire feeders

Railtrac™ B42V can be easily connected to most ESAB wire feeders with no major modification. Remote adapters have to be mounted in wire feeders (Aristo® Feed 3004, Aristo® Feed 4804, Origo™ Feed 304, Origo™ Feed 484 and Warrior™ Feed 304).

### Five programs can easily be stored

As many as five different programs can be stored. Each program is individual and can be retrieved from the control on the main unit or the remote control.

### Remote control of welding parameters and immediate program shift

Both welding current (wire-feed speed) and voltage can be adjusted (in %) during welding. Stepping up or down between the alternative motion programs is also easy, depending on welding position.

### Resilient programming units with great potential

Straightforward, logically-designed programming units are used to set the values for five different programs. All speeds are calibrated in millimetre (mm), for the greatest possible precision and welding quality.

### Remote control for the harshest environments

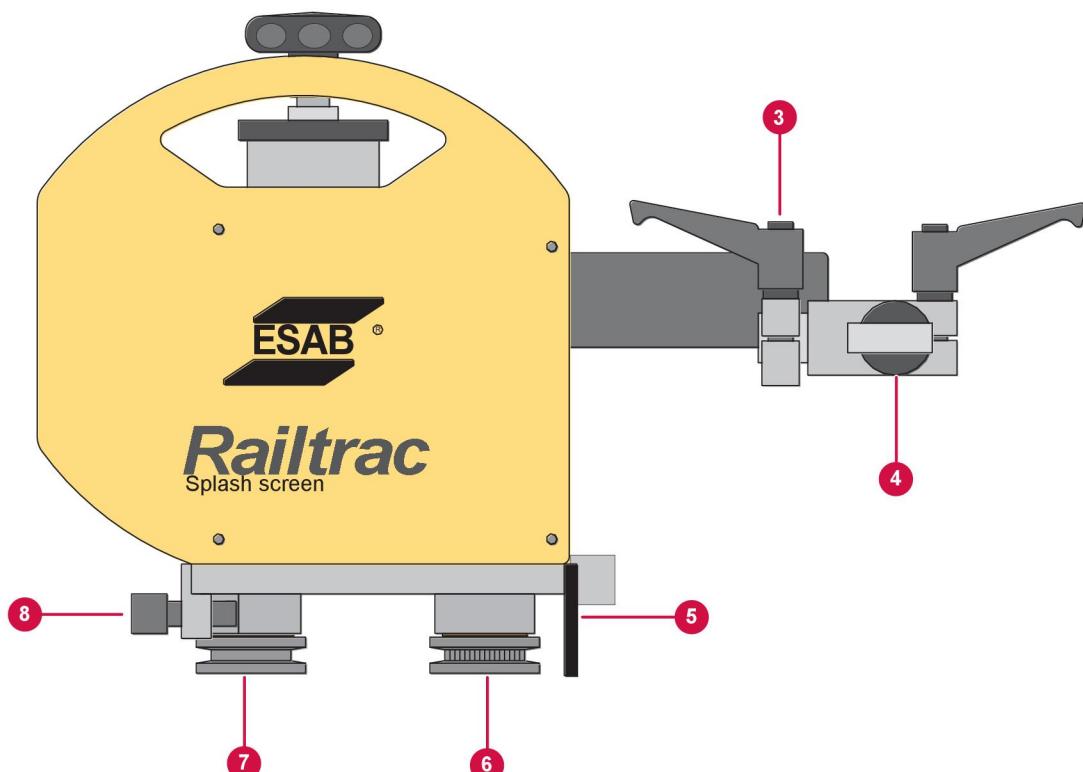
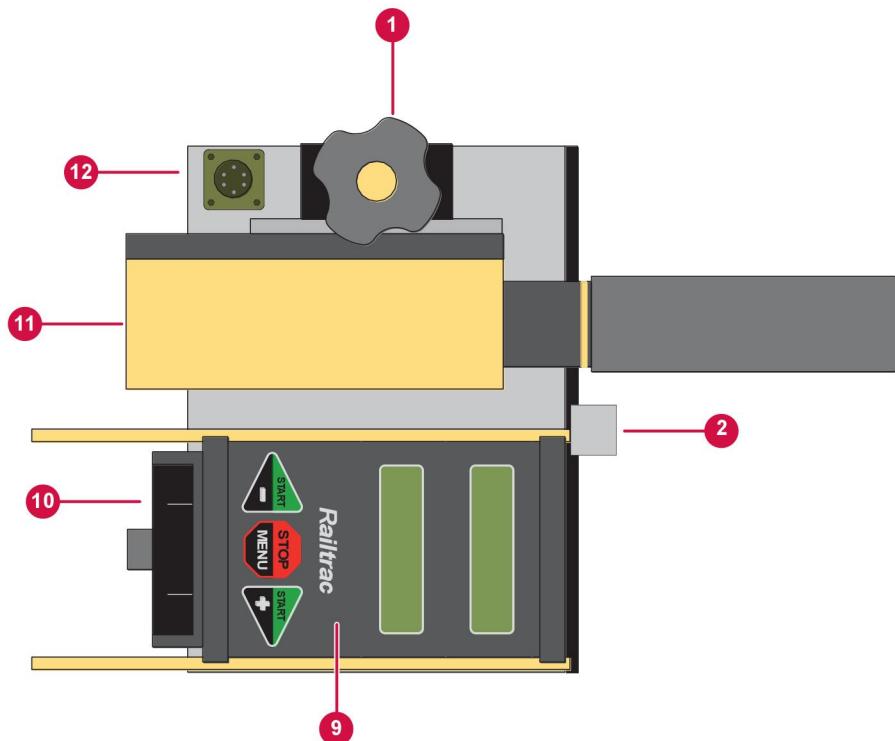
Using the robust and lightweight remote control that comes with the Railtrac™ B42V, the operator can access and control every function without lifting the welding visor. Individually shaped buttons for:

- Start and stop
- Shift program
- Travel or welding direction (cutting direction)
- Travel or welding speed (cutting speed)
- Weaving width
- Zero-line displacement

- Welding current (wire-feed speed)
- Welding voltage

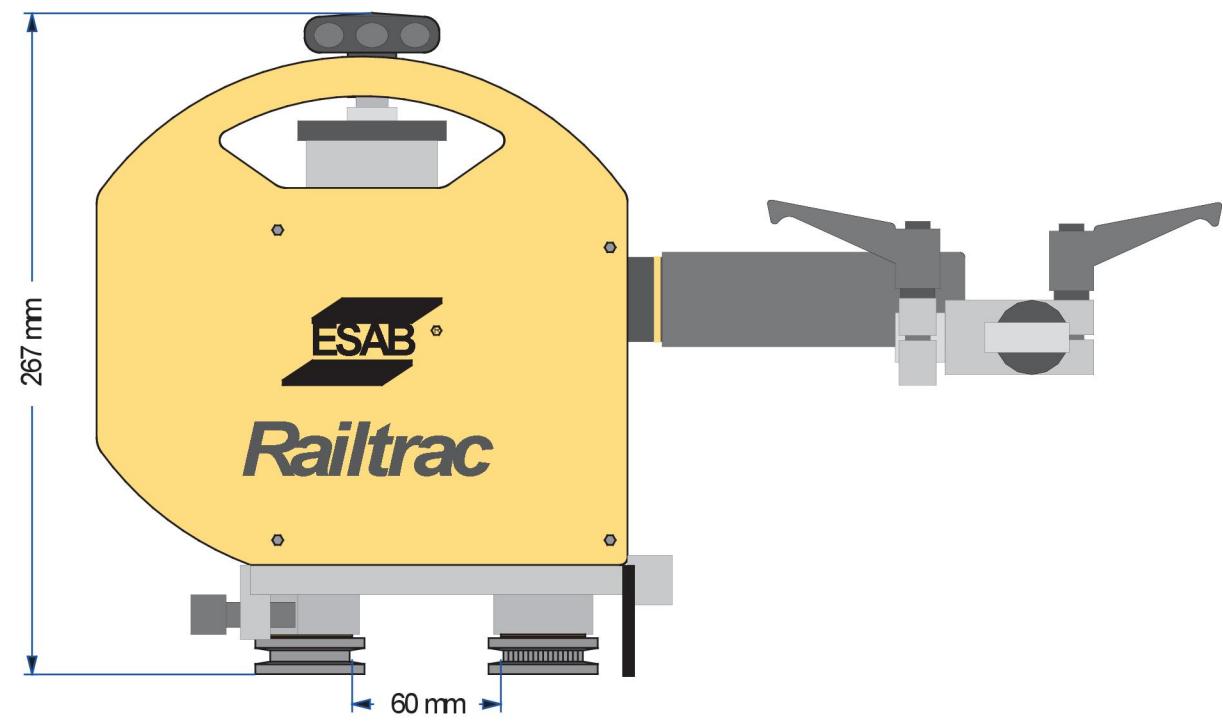
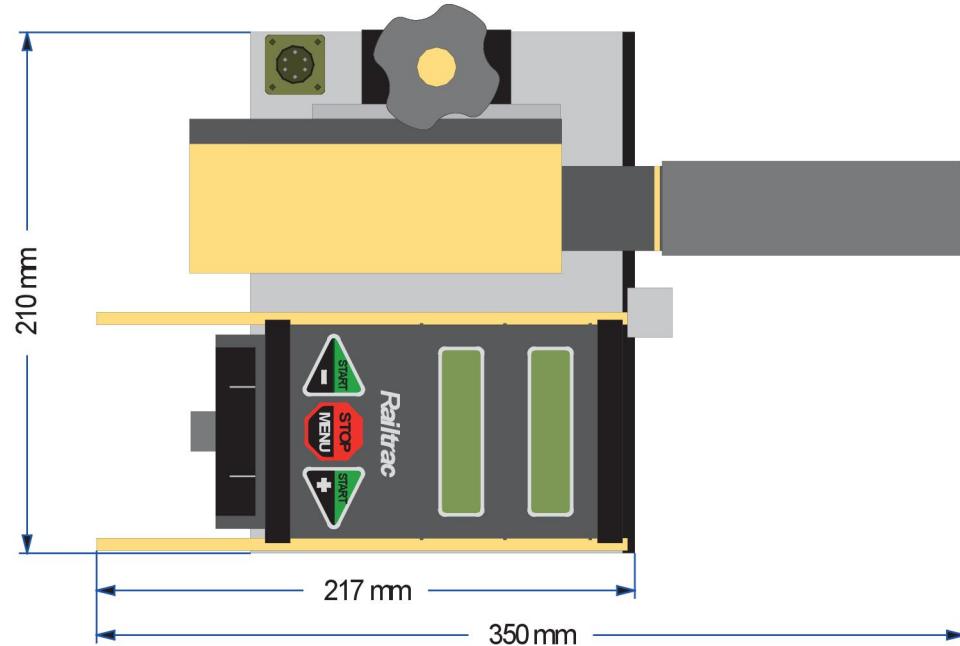
### **Joint rail system for stiff or flexible rail applications**

The extendable Railtrac™ combi-rail enables the same tractor to run on a flexible rail or the same rail stiffened with a stiffener bar. The stiffener-bar rail fits into the existing holes in the rail. This makes it possible to weld straight as well as curved surfaces (min 1600 mm in diameter). The combi-rail is clean, without a rack for driving the tractor. If longer rails are needed it is easy to joining several rails.



- 1. Slide height adjustment
- 2. Support wheel holder
- 3. Bracket for coarse adjustment in/out and height
- 4. Universal torch holder
- 5. Protection plate
- 6. Drive wheel x2
- 7. Locking wheel
- 8. Locking screw
- 9. Electronics
- 10. Battery holder
- 11. Weaving movement
- 12. Weaving movement connection

### Dimensions



## 2.1 Technical data

<b>Supply voltage</b>	24 - 70 V DC
	20 - 50 V AC
	18 V battery (optional)
<b>Power consumption</b>	max 50 W
<b>Battery running time</b>	3 - 4 h (5 Ah)
<b>Weight</b>	8 kg (17.63 lb.)
<b>Carriage measurements (L×W×H)</b>	210 × 360 × 270 mm (8.26 × 14.17 × 10.62 in.)
<b>Min bending diam. rail</b>	Ø 1600 mm (62.99 in.)
<b>Max temp. magnet/vacuum att.</b>	70 °C / 90 °C (158 °F / 194 °F)
<b>Max pay load</b>	10 kg (22.04 lb.)
<b>Max pay load with battery</b>	5 kg (11.02 lb.)
<b>High adjustment slide</b>	+/- 45 mm (± 1.77 in.)
<b>Speed carriage</b>	0.4 - 25 mm/s (0.01 - 0.98 in./s)
<b>Rapid speed carriage</b>	30 mm/s (1.18 in./s)
<b>Rapid speed battery</b>	25 mm/s (0.98 in./s)
<b>Welding length - auto return</b>	10 - 9999 mm. Tolerance ±1 mm (0.39 - 393.66 in. Tolerance ±0.04 in.)
<b>Weaving speed</b>	10 - 50 mm/s (0.39 - 1.97 in./s)
<b>Weaving pattern</b>	3
<b>Weaving width</b>	0 - 30 mm (0 - 1.18 in.)
<b>0-line adjustment</b>	± 30 mm (± 1.18 in.)
<b>Mechanical adj. in/out</b>	± 40 mm (± 1.57 in.)
<b>Tot. movement weaver</b>	80 mm (3.15 in.)
<b>Dwell time weaving</b>	0.0 - 5.0 s
<b>Programs</b>	5
<b>Remote control Wire Feed Speed and V</b> (separate adj. on each program)	ESAB 0 - 10 V
<b>Safety Class</b>	DIN40050
<b>Enclosure class</b>	IP44

## 3 INSTALLATION

The installation must be carried out by a professional.

### 3.1 Connections

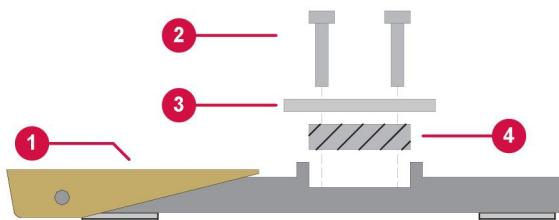
Information and drawings from ESAB.

### 3.2 Assembly

Follow these steps to assemble brackets, carriage, torch holder and for connection of the control box.

1. Assemble the magnet brackets on the aluminium rail.

Optional: Attach the stiffener bar.



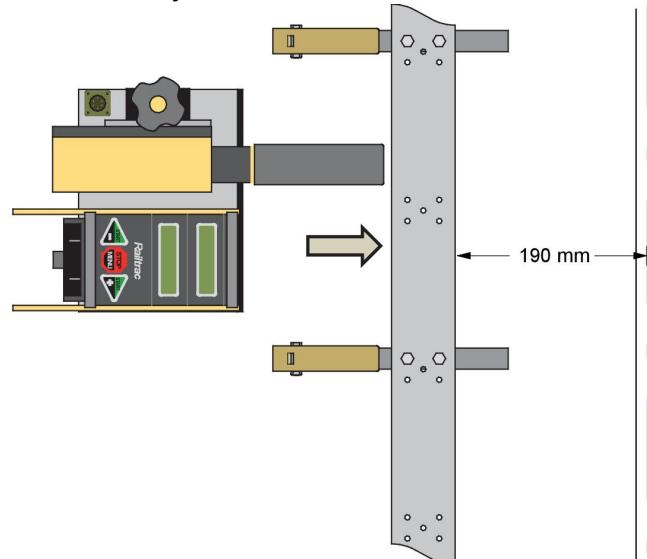
1. Flip magnet

2. Assembly screws

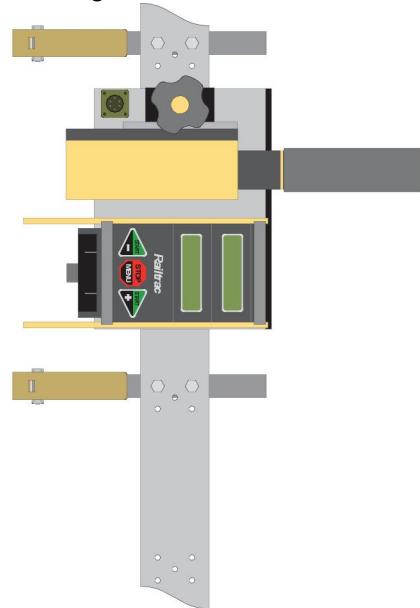
3. Flex rail

4. Stiffener (optional)

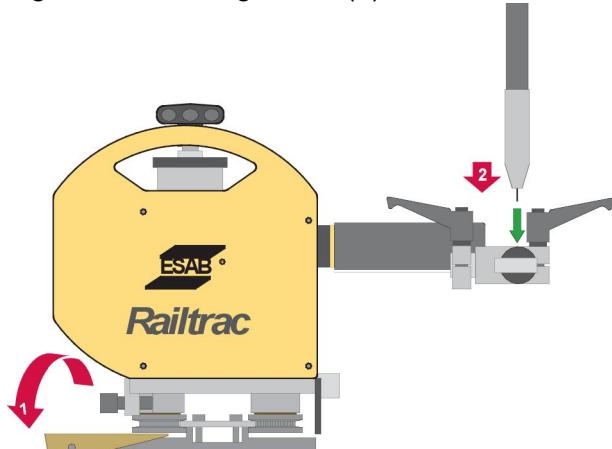
2. Adjust the rail parallel to the joint.



3. Put the carriage on the rail.



4. Tighten the locking screw (1).



5. Connect the remote control to the carriage and the control cable to ESAB wire feeder. Use the battery when not using ESAB wire feeder.
6. Mount the torch and adjust for correct position (2).
7. Secure the rail from falling down by way of a wire or the like.

## 4 OPERATION

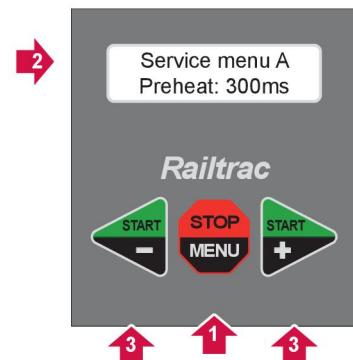
General safety regulations for handling the equipment can be found in the "SAFETY" chapter of this manual. Read it through before you start using the equipment!

### 4.1 Preheat

The first menu in service is *Preheat*. Start delay carriage after start welding.

#### WFS = Wire Feed Speed

1. Press **Stop** for 6 seconds for access to service menu A.
2. Release **Stop** when the display shows *Service Menu A*.
3. The default setting is 300 ms.  
Press + or - to adjust the setting.



### 4.2 Remote control for digital wire feeder

It is possible to adjust the maximum value on the remote control output (0-10 V) both for wire feed speed and volt. The maximum value is 0.5 V lower than  $V_{in}$  (10 V) due to the voltage drop in the opto driver.

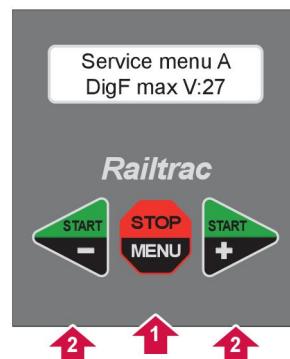
#### Set Wire Feed Speed (WFS)

1. Press **Menu** once.  
The display shows: *DigF max WFS*
2. Press + or - to adjust the setting.  
Scale value: 1 - 40  
Higher value gives higher output.



#### Set Voltage (V)

1. Press **Menu** until *DigF max V* is shown in the display.
2. Press + or - to adjust.  
Scale value: 1 - 40  
Higher value gives higher output.



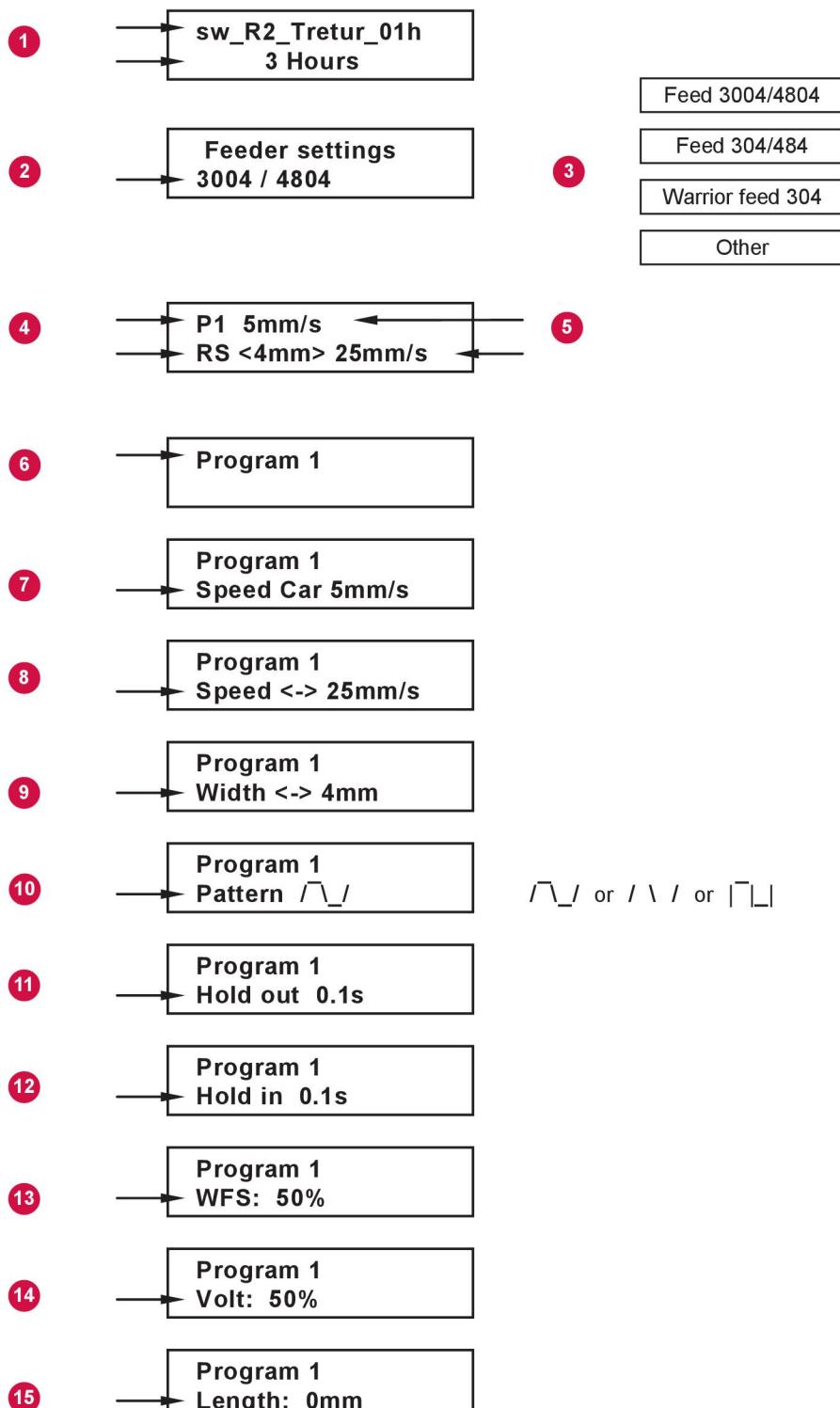
General safety regulations for handling the equipment can be found in the "SAFETY" chapter of this manual. Read it through before you start using the equipment!

## 4.3 Electronic – Carriage

	<b>1 Start left</b>	One press: Start left without welding Double press: Start left with welding Press 2 seconds: Start with fast move left One press after start: Speed carriage -
	<b>2 Menu/Stop</b>	Before start: Selector for programming parameters. Blinking display indicates programming modus. Adjust parameters with the buttons + and -. After start: Stop carriage and welding. If function <b>Length</b> : Press for 3 seconds to set start position. Display shows <b>0</b> .
	<b>3 Start right</b>	One press: Start right without welding Double press: Start right with welding Press 2 seconds: Start with fast move right One press after start: Speed carriage +

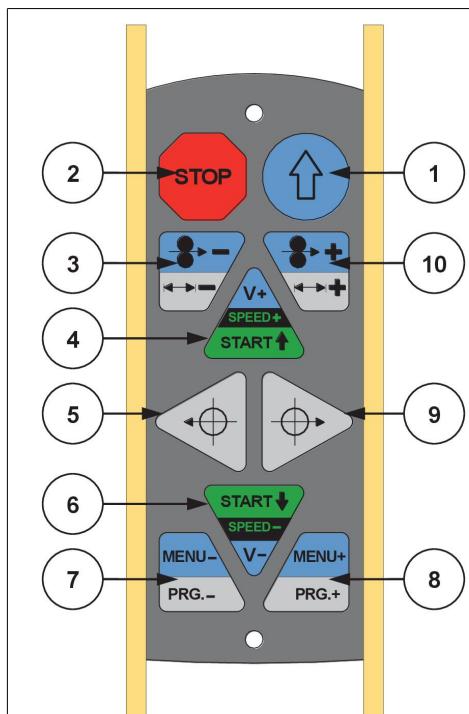
### Menus

<b>Program</b>	P1 to P5 Railtrac™ can store 5 different programs.
<b>Speed Carriage</b>	0.4 – 25 mm/s (0.01 - 0.98 in./s)
<b>Speed weaving</b>	10 – 50 mm/s (0.39 - 1.97 in./s)
<b>Weaving width</b>	0 – 30 mm (0 - 1.18 in.)
<b>Pattern</b>	3
<b>Hold time out</b>	0.0 – 5.0 s
<b>Hold time in</b>	0.0 – 5.0 s
<b>WFS</b>	Wire Feed Speed 1 – 99% (Only for ESAB wire feeders)
<b>Volt</b>	1 – 99% (Only for ESAB wire feeders)
<b>Length</b>	10 – 10000 mm (0.39 - 393.70 in.) – Set welding length. At the end the carriage make a return with rapid speed back to start pos. 0 mm (0 in.) = function off.



1. Software version / Running hours
2. Connected wire feeder
3. 4 settings. Use button **Start right** to select
4. Default: Program number / RS = welding on right side
5. Default: Speed Carriage / Weaving width, Weaving speed
6. Menu 1: Program number
7. Menu 2: Speed carriage
8. Menu 3: Speed weaving
9. Menu 4: Weaving width
10. Menu 5: Weaving pattern
11. Menu 6: Weaving hold time (hold out)
12. Menu 7: Weaving hold time (hold in)
13. Menu 8: Wire feed speed
14. Menu 9: Volt
15. Menu 10: Welding length. 0 mm > length/auto return off

## 4.4 Remote control



The diagram shows a remote control unit with a central grey faceplate and two vertical yellow side panels. On the faceplate, there are several buttons and indicators: a red 'STOP' button at the top left, a blue 'UP' arrow button above it, a 'V+' button with a left arrow, a 'SPEED+' button with a green arrow, a green 'START' button with an upward arrow, a 'V-' button with a right arrow, a 'SPEED-' button with a red arrow, a blue 'DOWN' arrow button below the green 'START' button, a 'MENU-' button with a left arrow, a 'PRG.-' button below it, a 'V+' button with a left arrow, a 'MENU+' button with a green arrow, a 'PRG.+' button below it, and a blue 'DOWN' arrow button below the 'V+' button. There are also two small white circular buttons on the left and right sides of the faceplate. Numbered circles 1 through 10 are placed around the unit, pointing to specific buttons: 1 points to the blue 'UP' button, 2 points to the red 'STOP' button, 3 points to the 'V+' button with a left arrow, 4 points to the green 'START' button, 5 points to the 'V-' button with a right arrow, 6 points to the 'SPEED-' button with a red arrow, 7 points to the 'MENU-' button, 8 points to the 'V+' button with a left arrow, 9 points to the 'PRG.+' button, and 10 points to the blue 'DOWN' arrow button.

<b>1</b>		Shift
<b>2</b>	Stop	
<b>3</b>	Weaving width -	WFS-
<b>4</b>	One press: Start up Double press: Start up with arc Press 2 seconds: Start with fast move up One press after start: Speed +	Volt +
<b>5</b>	0-line in	
<b>6</b>	One press: start down Double press: Start down with arc Press 2 seconds: Start with fast move down One press after start: Speed -	Volt -
<b>7</b>	Program -	Menu -
<b>8</b>	Program +	Menu +
<b>9</b>	0-line out	
<b>10</b>	Weaving width +	WFS+

## 5 MAINTENANCE

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### NOTE!

All warranty undertakings given by the supplier cease to apply if the customer attempts to rectify any faults on the machine during the warranty period.

#### Daily

- Check that all cables and plugs are intact.
- Clean the magnet, vacuum cups and air hoses and check for damage.
- Check that the rail is not damaged.
- Clean the carriage and the torch holder.

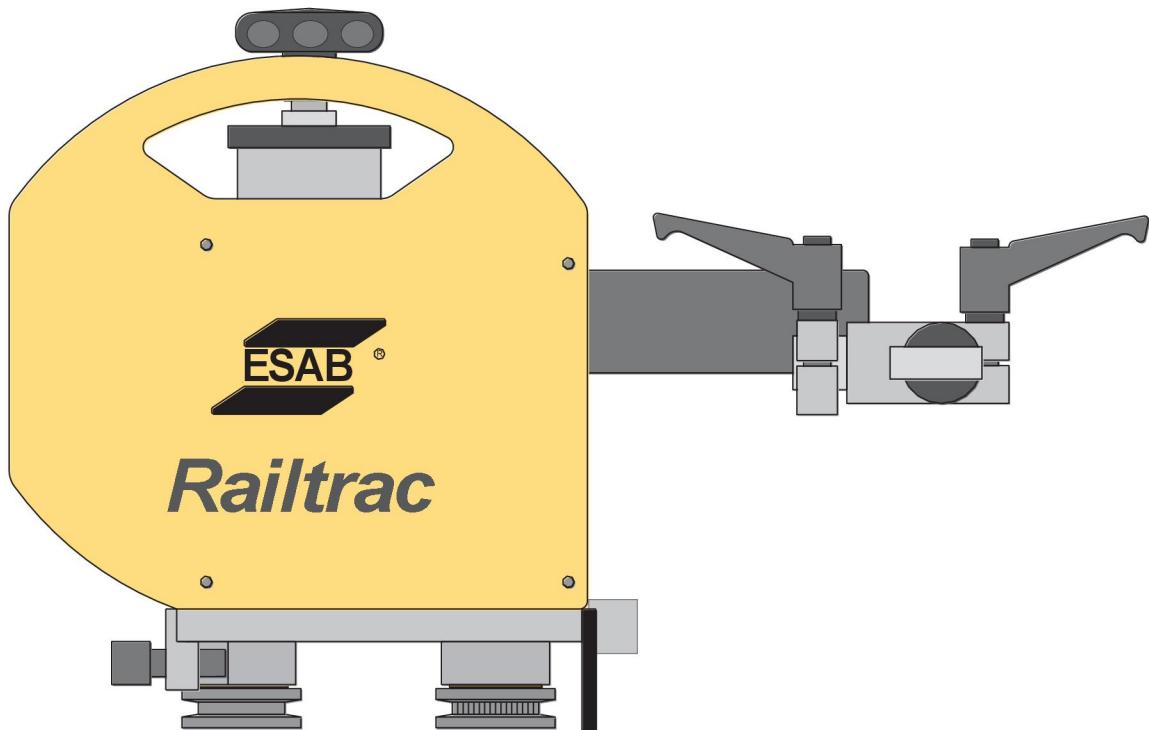
## **6 SPARE PARTS**

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Spare parts may be ordered through your nearest ESAB dealer, see the back cover of this document. When ordering, please state product type, serial number, denominations and ordering numbers according to the spare parts list. This facilitates dispatch and ensures correct delivery.

Maintenance and repair work should be performed by an experienced person, and electrical work only by a trained electrician. Use only recommended spare parts.

## ORDERING NUMBERS

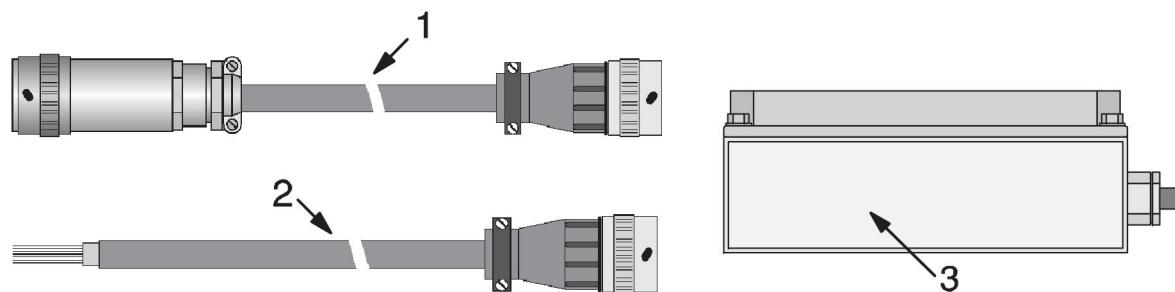


Ordering no.	Denomination	Product	Notes
0398 146 016	Welding tractor	Railtrac™ B42V	
0463 467 001	Spare parts list	Railtrac™ B42V	

Technical documentation is available on the Internet at: [www.esab.com](http://www.esab.com)

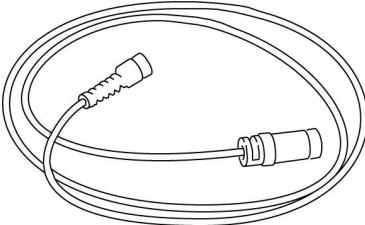
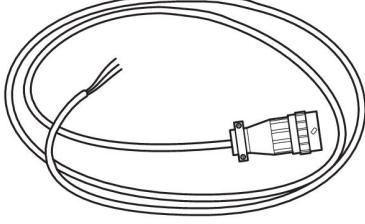
## ACCESSORIES

1.	0457 360 880	Control cable (12p- 23p) Railtrac™ - MEK	
2.	0457 360 886	Universal connection cable 12-pin plug	
3.	0457 467 880	Transformer 230/36 V AC with 12-pin plug	
	0457 467 882	Transformer 115 V AC	



The work piece tractor is mounted on the rail. The light flexible aluminium rail can be used on objects that are flat, curved or round and can be fitted to the surface in different ways. It is supplied in standard 2.5 metre lengths and can be extended to any required length. The rail can be mounted permanently on the work object or temporarily fixed with magnets or vacuum fixtures. It may also be attached to the outside or inside of a tube. A stiffener bar may be used to stiffen the flexible rail. Rails for tubes can be purchased at ESAB distributors.

0398 146 115	<b>Flexible alu rail</b> 2.5 metres	
0398 146 119	<b>Flexible alu rail</b> 5 metres	
0398 146 112	<b>Flexible alu rail</b> 2.5 metres with 8 magnets (FlipMag)	
0398 146 113	<b>Flexible alu rail</b> 2.5 metres with vacuum attachments	
0398 146 116	<b>Stiffener bar</b> 2.5 metres	
0398 146 100	<b>Flip magnetic attachment</b> at least 8 pcs per 2.5 metres	
0398 146 104	<b>Vacuum attachment</b> 90°, at least 4 pcs per 2.5 metres	
0398 146 105	<b>Vacuum attachment</b> 200°, at least 4 pcs per 2.5 metres	
0398 146 114	<b>Screw attachment for stiffened rail</b> at least 8 pcs per 2.5 metres	

0398 145 211	<p><b>Floating welding head</b>  A floating welding head holds the torch of the welding or cutting equipment at a constant height above the surface during the work.  To enable correct weaving motions even in troublesome positions the weaving unit can be fitted with supports for turning and tilting.</p>	
0398 145 106	<p><b>Torch holder</b> universal Ø15-30 mm  System features different torch holders for different torches and applications. Railtrac™ B42V comes with a universal torch holder (Ø10-22 mm) and adjusters as standard.</p>	
0398 145 101	<b>Torch holder</b> for ESAB PSF torches	
0398 145 202	<p><b>Tilt bracket Railtrac™ B42V</b>  The tilt bracket enables the Railtrac™ to weave when welding fillet joints. It is mounted between drive and weaving unit. The weaving unit can be tilted from 0 to 60 degrees.</p>	Release in November 2016
0398 145 203	<p><b>Turning bracket B42</b>  The turning bracket is used to change the angle of the weaving unit at ±22 degrees from travel direction.</p>	Release in November 2016
0398 145 211	<p><b>Floating head</b>  This component helps maintain constant stick-out at the welding torch or cutting torch.</p>	
0457 467 880	<b>Transformer</b> 230 V AC	
0457 467 882	<b>Transformer</b> 115 V AC	
0457 360 880	<b>Connection cable</b> ESAB, 12 + 23-pin	
0457 360 886	<b>Connection cable</b> universal, for start/stop wire feeder, only with 12-pin	
0398 146 120	<p><b>Quick-extension bracket for flexible rail</b>  The quick-extension bracket facilitates rapid mounting and dismounting when using two rails.</p>	

0457 468 074	<b>Battery</b> 18 V / 5 Ah Makita®	
0457 468 072	<b>Battery charger</b> 230 VAC Makita®	

**For local purchase at hardware store Makita®**

196673-6	<b>BL1850</b> 18 V 18 V 5.0 Ah Li-ion.	
195585-0	<b>DC18RC</b> 14,4 V - 18 V Charger for 14,4 V - 18 V batteries.	

## Cable key function diagram

Cable key and function diagram for Railtrac B42V								Functions controlled by Railtrac B42V			
Feeder unit	Brand	0457 360 880	0457 360 886	0457 468 074	0465 451 881	0459 681 880	0457 467 880	0457 467 882	Voltage	WierFeed Speed	Weld On/Off
Feed 304, 848; M12	ESAB	X							-	X	X
Feed 304, 484; M13	ESAB	X							X	X	X
Feed 3004,4804; MA 23,MA24,MA 25, U6	ESAB	X				X			X	X	X
Warrior™ Feed 304	ESAB	X		X					X	X	X
Universal Feeder	?		X	X Alt 1		X Alt 2	X Alt 3	-	-	-	X
Description of Accessories		Cable 23 pins for Railtrac B42V	Control cable Universal	Battery 5h	Remote adapter kit Railtrac/Miggytrac	Remote adapter kit RA 23 Can for Railtrac/miggytrac	Transformer 230 VAC	Transformer 115 VAC			





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