# Stud Gun

# Automatic Stud Gun EP-12, EP-15

## Operating instructions

(ID-No. 00035103)

assembled:

00100264 EP-12 ☐ Date: _____

00100265 EP-15 ☐ Name: _____

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# 1 Preface and general information

## 1.1 General

The operating instructions is used for safe operation of the Stud Guns (in the following referred to as “gun“) type Automatic Stud Gun EP-12 and EP-15 (ID-No. 100264, 100265)). The safety instructions included hereinafter must be observed.

The operating instructions must be available for anybody who is working with the gun and the included instructions must be carefully attended to.

The operating instructions must always be complete and perfectly readable.

## 1.2 Scope of supply

The delivery normally consists of a stud gun, the operating instruction and 1 separating finger for multi-flange studs fingers (only EP-8 and EP-9). The parts included in your delivery are stated in the accompanying papers.

These papers shall be checked for conformity, immediately after receipt of the goods. OKU GmbH does not provide any guarantee and/or accept any liability for defects complained belatedly.

Therefore:

- Contact the forwarder immediately to complain visible transit damages.
- Contact OKU GmbH immediately to complain visible defects and/or incompleteness of delivery.

## 1.3 Intended use

The gun is intended to be used only for the insertion of single and multi-flange spikes into tyres of trucks.

**Any other use shall be deemed to be inappropriate!**

## 1.4 Liability

The information, data and notes of this operating instruction were up-to-date when passing for press. The specifications, illustrations and descriptions included hereinafter do not apply for any previously supplied guns.

We do not accept liability for damages and operating troubles caused by:

- inappropriate use.
- unauthorized modification of gun.
- improper operation of the gun.
- operating errors.
- disregard of this operating instructions.

## 1.5 Warranty

Conditions of warranty: see Standard Terms and Conditions of OKU GmbH.

Assert warranty claims against OKU GmbH immediately after detection of the defect.

Warranty claims expire in each case in which liability claims cannot be made.

# 2 Safety information

## 2.1 Personnel responsible for safety

### 2.1.1 Operator

Operator is called any natural or legal person who is using the gun and/or on behalf of whom the gun is used.

The operator and/or his safety officer must ensure,

- observance of the relevant regulations, instructions and laws.
- only qualified personnel is working with the gun.
- personnel having the operating instructions available at any time.
- to prohibit non-qualified personnel from working with the gun.

### 2.1.2 Qualified personnel

As qualified personnel are to be considered persons who were authorised by the safety officer of the plant to perform the necessary activities and who are able to recognise and avoid potential hazards because of their education, experience, instructions and their knowledge about corresponding standards and rules for the prevention of accidents as well as operating conditions (see IEC 364, definition for qualified personnel).

## 2.2 General safety instructions

These safety instructions do not claim to be exhaustive. In case of any questions, please, contact OKU.

At the time of delivery the gun is state of the art and reliable.

The gun is a source of danger for persons, for the gun itself and for other material assets of the operator, if

- it is operated by unqualified personnel.
- it is used inappropriately.

Operate the gun only when it is in good condition.

Any upgrade, modification or redesign of the gun is basically prohibited. In this case, please confer with OKU.

## 2.3 Layout of the safety instructions

The safety instructions described hereinafter are arranged consistently.

**Beware of personal injury**

| Pictogram | Meaning | Signal words | Notes |
|---|---|---|---|
| | Warning for hazardous electrical voltage | **Danger!** | Warns of **imminent danger.**<br><br>Consequences of disregarding: Death or very severe injuries |
| | Warning for general danger | **Warning!** | Warns of a **potential, very hazardous situation.**<br>Consequences if disregarded: Death or very severe injuries |
| | Warning for a general danger | **Caution!** | Warns of a **potential hazardous situation.**<br>Consequences if disregarded: Light or minor injuries |

### Warning of material damage

| Icons used | Meaning | Signal words | Notes |
|---|---|---|---|
| | Warning of material damage | **Stop!** | Warns of **potential material damage.**<br>Consequences if disregarded:<br>Ambient damage or damage of the gun. |

### Other information

| Icons used | Meaning | Signal words | Notes |
|---|---|---|---|
| | General note | **Note!** | Designates a general, useful note.<br>Adherence hereof will ease the use of the gun. |

# 3 Technical Data

## 3.1 Stud types

The gun can be used for the insertion of single-flange and multi-flange studs into car tires. Factory setting is for the insertion of single-flange studs.

| Type | ID.-No. | Stud sizes |
|---|---|---|
| EP-12 | 00100264 | Ø12, 15-25 mm length |
| EP-15 | 00100265 | Ø15, 18-25 mm length |

## 3.2 Dimensions and weight

The following values are valid for the gun without any accessories and can differ according to the respective extra equipment.

| | |
|---|---|
| Length | ca. 310 mm |
| Width | ca. 70 mm |
| Height | ca. 182 mm |
| Weight | ca. 2,6 kg |

## 3.3 Noise emission

The sound pressure level at the work station of the operator can reach up to 83 dB(A). Provide suitable ear protection for the operator.

## 3.4 Ambient conditions

Use the gun only in closed and dry rooms.

The permissible ambient temperature during operation is from 10 °C to 40 °C.

# 4 Commissioning

Precautions to be taken before start working with the gun

- Check gun for proper condition.
- Do never operate a damaged gun.

## 4.1 Pneumatic connection

**Attention!**

**The pneumatic connection is to be made by qualified personnel with extensive knowledge in handling of pneumatic systems.**

Screw provided coupling (1) onto the hand grip. Plug compressed air hose into coupling. The gun requires compressed air with approx. 7-8 bar working pressure. The maximum operating pressure amounts to 10 bar.

Coupling (1) for compressed air connection

# 5 Operation of the gun

## 5.1 Insertion of studs

**Without feeding unit**: fill the feeding pipe (13) with approx. 10 studs (flange leading).

**With feeding unit**: connect the gun with the feeding hose of the studs until feeding pipe (13) is filled with studs (flange leading).

Moisten tire with low surface tension water. To get this, mix normal tap water with some drops of usual dish liquid.

**Tip!**

**Use only less dish liquid to avoid that the inserted stud is pulled out again when extracting the gun.**

Insert spreader fingers (34) into one of the moistened tyre holes. Operate the trigger (17) and keep it pressed. The stud is pressed into the tire. Release trigger; the gun is now loosen from the tire and the stud is inserted.

**Tip!**

**Put some pressure onto the gun when inserting the studs. With some practice and skill you'll soon find the respective pressure which shall be applied to reach a steady result.**

## 5.2 Faults during insertion

### 5.2.1 Studs inserted to deep

Reduce the pressure applied on the gun during insertion.

### 5.2.2 Studs jut out off the tire

Put more pressure onto the gun when inserting the studs.

# 6 Faults and troubleshooting

**Caution!**

**When unscrewing the intermediate piece (21), it must be held tight, because of the strong compression spring which is in the gun. If not, it can be ejected and pose great danger.**

| No. | Cause | Trouble shooting |
|---|---|---|
| 6.1 | Deformed or dirty stud jammed in feeding pipe (13) or gun head. | Unscrew union nut (33) and take the head (25) off the gun. Now remove the jammed stud. |
| 6.2 | Stud in feeding pipe (13) in wrong position (with shank leading) | Remove feeding tube and shake out stud |
| 6.3 | Trigger (17) get caught | Remove O-Ring (19) and dowel pin (18) and then trigger (17). Clean and lubricate trigger slightly with oil.<br>Check if compression spring (3) broken, if so replace compression spring. |
| 6.4 | Worn spreader fingers (34) | Unscrew union nut (33) and take the head (25) off the gun. Remove O-Ring (31) and replace spreader finger (34) |
| 6.5 | Worn push rod (22) | Unscrew union nut (33) and take the head (25) off the gun. Unscrew both hexagon head cap screws (16) **(Caution!)**, press intermediate piece (21) against hand grip (back-pressure of inner springs). Remove intermediate part and circlip (15). Extract push rod (22) together with the springs (10, 11), retaining ring (14) piston disk (6) lip seal (7) and bushing (23). Unscrew hexagon nut (8) and replace worn push rod. Assemble the gun in reversed order and replace hexagon nut if necessary. |
| 6.6 | Worn centring finger (32) | Unscrew union nut (33) and take the head (25) off the gun. Remove O-Ring (31) and replace centring finger (32). |
| 6.7 | Worn separating pin (27) | Unscrew union nut (33) and take the head (25) off the gun. Remove separating flap (26) from dowel pin (29). The compression spring (28) may not jump out. The separating pin (27) is riveted with the separating flap (26). Grind off closing head and drive off separating pin with a drift punch. Replace and rivet separating pin. Assemble the gun in reversed order. |

# 7 Lubrication and maintenance

## 7.1 Lubrication

**Stop!**

**Observe the effective directions for the use and safety of the applied lubricants!**

### 7.1.1 Lubricating oil

| Distinguishing mark acc. to DIN 51502 | Designation | ISO-Viscosity Index DIN 51519 | Manufacturer |
|---|---|---|---|
| AN 22 | Normal lubricating oil | ISO VG 22 | AVIA (AVILUB RS 22)<br>BP (BP Energol CS 22)<br>ESSO (Coray 22)<br>SHELL (SHELL Carnea Oel 22) |

### 7.1.2 Lubricating grease

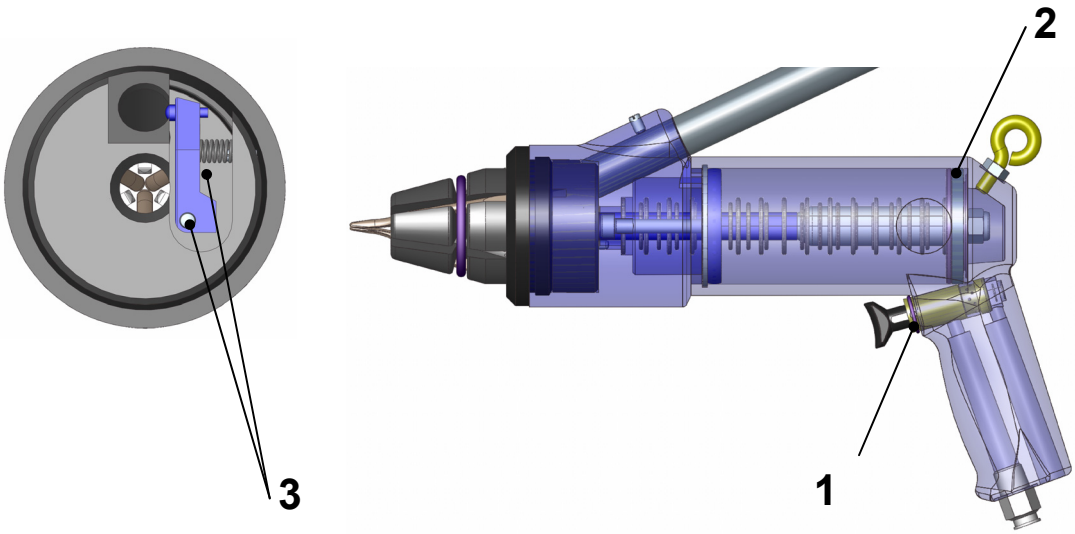
| Designation acc. to DIN 51825 | Designation | Consistency Index NLGI Class as per DIN 51818 | Worked penetration as per DIN ISO 2137 | Manufacturer |
|---|---|---|---|---|
| KP2K-20 | Lubricating grease for bearing | NLGI-2 | 265-295 | AVIA (AVIALITH 2)<br>BP (Energrease L2)<br>ESSO (Beacon 2)<br>KLÜBER (CENTOPLEX 2 EP)<br>MOBIL (Mobilux 2)<br>SHELL (Alvania R 2) |

## 7.2 Greasing points

The following points of the gun need to be greased regularly. You will find a maintenance-set including grease and corrosion preventive-oil-spray in the spare parts list in chapter 9.6.

To grease the gun it must be partially dismounted (see hereto chapter 6 “Faults and trouble shooting”. We recommend taking the opportunity and greasing the gun when replacing the wear parts.

| No. | Designation | Service to be done | Consumables Measured values | Frequency | Notes |
|---|---|---|---|---|---|
| 1 | Trigger | Lubricate with oil | Lubricating oil DIN 51501-L-AN 22 | quarterly | Oil trigger slightly |
| 2 | Piston disk Lip seal | Lubricate with grease | Lubricating grease DIN 51825-KP2K-20 | yearly | Grease piston surface slightly |
| 3 | Separating flap | Lubricate with grease | Lubricating grease DIN 51825-KP2K-20 | quarterly | Grease dowel pin and frontal contact surface of head gun slightly |




## 7.3 Maintenance

We are working with water to insert the studs, therefore the head of the gun shall be sprayed regularly with anticorrosive material to avoid corrosion and extend lifetime of the gun.

# 8 Shutdown and dismounting

OKU takes back your gun. We recommend you have OKU professionally dismantle the gun and dispose of it.

**Tip!**

**Be part of the environmental protection by recycling valuable materials.**

| What? | | Where? |
|---|---|---|
| Transport material | Pallets | Return to the manufacturer or forwarder |
| | Packing material | Cardboard boxes to waste paper<br>plastic to plastic recycling or waste material<br>reuse wood-wool or waste material |
| Lubricants | Oil, grease | Dispose according to the valid regulations |
| Components | Used materials:<br>aluminium<br>aluminium cast<br>grey cast iron<br>steel<br>brass<br>plastic | Separate valuable substances and dispose |

# 9 Spear and wear parts

## 9.1 Requirements

**Stop!**

**Spare and wear parts must be in accordance with the technical requirements stipulated by the manufacturer.**

## 9.2 Handling of order

To ensure punctual handling of orders, please state always the **OKU-ID.-No.** of the spare part you need when ordering. You'll find the **OKU-Id.-No.** on the drawing of the gun and the spare parts list.

## 9.3 Explanation of spare parts list

The numbers on the exploded drawing correspond to the item numbers of the spare parts list.

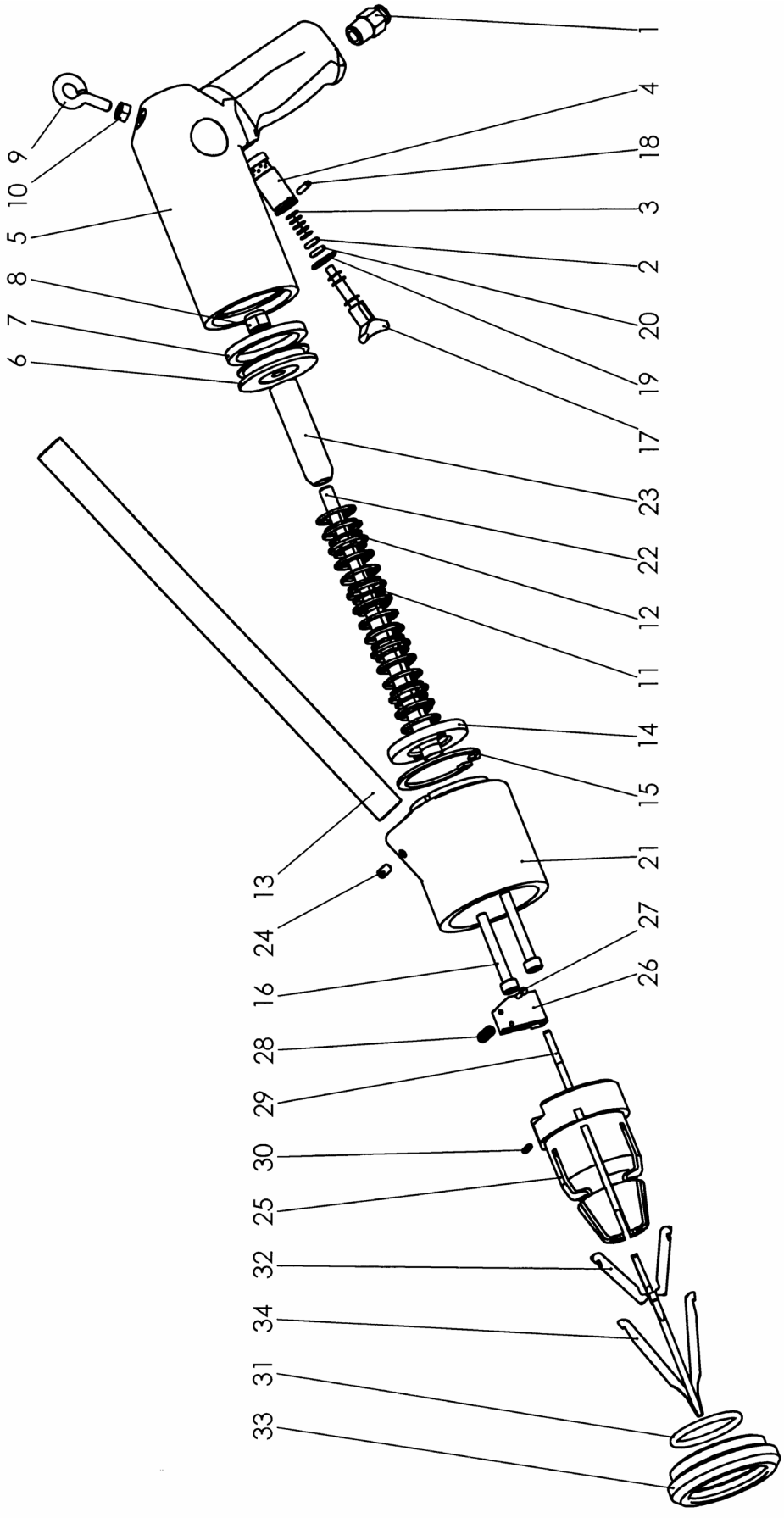
## 9.4 Spare parts-set

To the gun there is available a spare parts-set including the most important wear parts. It contains all in the spare parts list with * marked parts inclusive grease and corrosion preventive-oil-spray.

OKU-Id.-No. spare parts-set **EP-12**: **20015508**

OKU-Id.-No. spare parts-set **EP-15**: **20015509**

## 9.5 Exploded drawing EP-12, EP-15



## 9.6 Spare parts list EP-12, EP-15

| Item | OKU part No. | Qty | Designation |
|---|---|---|---|
| 1 | 00031539 | 1 | Coupling |
| 2 | 00003463 | 1 | O-Ring |
| 3 | 00350297 | 1 | Compression spring |
| 4 | 00350728 | 1 | Bushing |
| 5 | 00470942 | 1 | Hand grip |
| 6 | 00350664 | 1 | Piston disk |
| 7 | 00003507 | 1 | Lip seal |
| 8 | 00004082 | 1 | Hexagon nut M8 |
| 9 | 00000613 | 1 | Eyebolt |
| 10 | 00000627 | 1 | Hexagon nut M6 |
| 11 | 00350670 | 1 | Compression spring, inner |
| 12 | 00350669 | 1 | Compression spring, outer |
| 13 | 00350659 | 1 | Feeding pipe 12 |
| | 00350660 | 1 | Feeding pipe 15 |
| 14 | 00350666 | 1 | Retaining ring |
| 15 | 00000796 | 1 | Circlip |
| 16 | 00004099 | 2 | Hexagon socket head cup screw |
| 17 | 00470092 | 1 | Trigger |

| Item | OKU part No. | Qty | Designation |
|---|---|---|---|
| 18 | 00000536 | 1 | Dowel pin |
| 19 | 00003464 | 1 | O-Ring * |
| 20 | 00003404 | 1 | O-Ring |
| 21 | 00470238 | 1 | Intermediate piece |
| 22 | 00250053 | 1 | Push rod 12 * |
| | 00250049 | 1 | Push rod 15 * |
| 23 | 00350710 | 1 | Sleeve |
| 24 | 00000300 | 1 | Set screw |
| 25 | 00470221 | 1 | Gun head EP-12 |
| | 00470222 | 1 | Gun head EP-15 |
| 26 | 00350991 | 1 | Separating flap |
| 27 | 00403148 | 1 | Separating pin EP-12 |
| | 00403147 | 1 | Separating pin EP-15 |
| 28 | 00350665 | 1 | Compression spring |
| 29 | 00350806 | 1 | Dowel pin |
| 30 | 00004083 | 1 | Spring dowel pin |
| 31 | 00003467 | 1 | O-ring * |
| 32 | 00353731 | 3 | Centering finger * |
| 33 | 00350923 | 1 | Union nut |
| 34 | 00470946 | 3 | Spreader finger for truck * |

| | | |
|---|---|---|
| 00885027 | 1 | corrosion preventive-oil, aerosol can 100 ml (single) * |
| 00885028 | 1 | grease, tube 20 g (single) * |
| 20015510 | 1 | 1 aerosol can corrosion preventive-oil (100 ml) and 1 tube grease (20 g) as maintenance-set |

* = included in the spare parts-set

# 10 Appendix

## 10.1 CE-Declaration of Conformity

OKU GmbH
Assembly and Feeding Systems
Postfach 11 20
73643 WINTERBACH
GERMANY

Delivery address:
Rosenstraße 15
73650 WINTERBACH
GERMANY

Phone +49 7181 707-0
Fax +49 7181 707-170
E-Mail info@oku.de
Internet http://www.oku.de

### CE Declaration of Conformity

(CE Machine Directive 2006/42/EC, Appendix II A)

The manufacturer: OKU GmbH
Assembly and Feeding Systems
Rosenstr. 15
73650 WINTERBACH, GERMANY

herewith declares that the machine

designation: **Studding gun, models: AS-8, AS-9, EP-8, EP-9, EP-10, EP-12, EP-15, EPK-6,5, EPK-8**

as delivered complies all the relevant regulations of the CE Machine Directive 2006/42/EC.

Harmonized standards applied:

| | |
|---|---|
| EN ISO 12100-1/A1 | Safety of machinery – Basic concepts, general principles for design – Part 1: Basic terminology, methodology |
| EN ISO 12100-2/A1 | Safety of machinery – Basic concepts, general principles for design – Part 2: Technical principles |

Authorized person to compile the relevant technical documentation:

Armin Layher, Rosenstr. 15, 73650 Winterbach

Winterbach, 01.01.2010

**OKU** GmbH
Assembly and feeding Systems

Hans-Joachim Kurz
CEO

Spikes-Pistole-EG-Konformitaet-GB-01-2010

**Legal form**
Gesellschaft mit beschränkter Haftung, domicile Winterbach
Registration court Stuttgart HRB 280319
**CEO** Dipl.-Ing. Hans-Joachim Kurz

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## 10.3 Manufacturer and contact person

OKU GmbH
Assembly and Feeding Systems
Rosenstraße 15
73650 WINTERBACH
GERMANY

Postfach 11 20
73643 WINTERBACH
GERMANY

Phone: +49 7181 707-0
Fax: +49 7181 707-170
Internet: http://www.oku.de

**Your contact person is:**

Sales Department Studs
Phone: +49 7181 707-0
Fax: +49 7181 707-170
E-Mail: spikes@oku.de

# Representant för OKU i Sverige

Inprotec Automation AB
Flöjelbergsgatan 8B
431 37 Mölndal

Telefon: 031-761 67 00
www.inprotec.se

Kontaktpersoner försäljning och reservdelar

Peter Fellsner
Telefon: 031-761 01 10
Mobil: 0707- 80 28 40

John Carlson
Telefon: 031-761 01 20
Mobil: 0707- 80 28 20