MARTIN® TORSION ARM™ V-Plow

Installation instructions
M3177UK

1 Table of contents

Table of contents

2 Introduction

2.1 About these installation instructions

Non-compliance with these installation instructions can result in loss of compensation for damage and/or warranty claims.

2.1.1 Scope

These installation instructions apply solely for the product described herein and are intended for those persons who install this product, commission it, and monitor its usage.

2.1.2 Copyright

The technical standard at the time of delivery of the product and its technical documentation is decisive for as long as no other information is provided. The product and documentation are subject to technical changes without prior notification. Earlier documents then lose their validity. Martin Engineering's General Terms of Sales and Delivery shall apply.

2.1.3 Exclusion of liability

Martin Engineering guarantees the flawless function of its product in accordance with its advertising, the published product information, and its technical documentation. Martin Engineering shall assume no liability for efficiency and flawless function if the product is used for a purpose other than that described in the “Intended Use” section or for damage resulting from the use of accessories and/or spare parts which were not supplied and/or certified by Martin Engineering.

The Martin Engineering products are designed for a long service life. They conform to the state of the art in science and technology and were thoroughly inspected before shipment. In addition to this, Martin Engineering constantly performs product and market research for continuous product development.

Martin Engineering offers competent support whenever malfunctions and/or technical problems occur. Suitable actions are taken immediately. The warranty provisions of Martin Engineering apply and can be sent to you as needed.

2.1.4 Reference to additional documents

Reference is made in these installation instructions to the following documents:

- Installation instructions for the MARTIN® Inspection door, Publication no. M3127.

The following standards and directives were complied with in the preparation of these installation instructions:

- EU Machinery Directive (2006/42/EC)
- ISO/IEC Guide 37 “Installation instructions for products used by final consumers”, 1995 Edition
- DIN 1421 “Organisation and numbering in texts”, Edition 1983-01
- DIN/EN 12100 “Machine safety - basic definitions, general design guidelines”, Edition 2013-08
- DIN/ISO 16016 “Technical product documentation - Protection notices for restricting the use of documents and products“, Edition 2007-12
- DIN/EN 60204-1 “Safety of machines - Electrical Equipment of Machines, Part 1 General requirements”, Edition 2007-07
- DIN EN 82079-1 - Creation of user manuals - Structuring, content and presentation, Part 1 General principles and detailed requirements.

2.1.5 Classification of the hazards

DANGER!

Represents an immediately threatening danger which leads to serious bodily injuries or death if not avoided.

WARNING!

Represents a possibly hazardous situation which could lead to serious bodily injuries or death if not avoided.

CAUTION!

Represents a possibly hazardous situation which could lead to minor bodily injuries and/or property damage if not avoided.

NOTE

Contains comments about the installation and/or the product's usage to point out situations which cause neither personal injury nor property damage but include important information.

2.2 Intended usage

The MARTIN® TORSION ARM™ V-Plow is solely intended for usage in the return run of a conveyor system running in the opposite direction of the conveyor to protect a bend pulley or tail against carryback. The V-plow can be used at a belt speed of up to 4.6 m/s and for belt widths of 500 to 2400 mm.

The cleaner and its corresponding blades can be used in temperature ranges of -30 °C to +70 °C.

2.2.1 Conveyor systems with open transfer systems

These installation instructions describe the installation on conveyor systems with encapsulated transfer systems. Various MARTIN® Inline mount plates can be used on open transfer systems.

Martin Engineering or one of its representatives can assist with the position or with special solutions in cases where the installation conditions are complicated such as insurmountable static components or a head pulley as the tensioning station.

2.2.2 Usage in explosion-protected areas

This product can also be used in potentially explosive areas under certain conditions. Contact Martin Engineering for more information on usage in potentially explosive areas.

The cleaner must not be used in a higher equipment protection category or under other operating conditions than those specified by Martin Engineering unless such usage has been approved by Martin Engineering.

2.2.3 Restrictions on the use of the product

The product specified here may only be used within the scope of the specifications referred to above. Usage in a higher equipment protection category or under other operating conditions than those specified by Martin Engineering shall be deemed misuse and is only permitted if approved by Martin Engineering.

Operation of this product is only permitted if all parts are in a flawless state. In case of damage (cracks, rust, etc...) changes or other mechanical modifications, shut down this product immediately.

Martin Engineering or one of its representatives can assist you with the product configuration if you need to use this product for a different purpose.

2.3 Occupational safety

2.3.1 Safety information, occupational safety

These installation instructions must be read through in their entirety before work may be started on the product or on the conveyor system supplied by the customer.

The owner-operator must ensure that all installation, inspection and maintenance work is performed solely by trained specialists.

Work on conveyor systems and their accessories must always be performed during shut-down. The procedures described in the applicable installation instructions for shutting down the conveyor system must always be complied with.

All of the safety devices and safeguards must be reattached and/or made operational immediately following completion of the work.

The installation must be carried out to completion before the system is started up. The flawless execution of all operating steps must be tested before the conveyor system can be started up again. Please observe all information on the installation and start-up of the product.

2.3.2 Duties of the owner-operator

This product's owner-operator must ensure that this product is installed, serviced and used solely by those persons who

- know the rules regarding occupational safety and accident prevention,
- were trained on using this product and have read and understood these installation instructions.

2.3.3 Authorised personnel

Personnel are considered authorised when they have suitable training and technical experience, can demonstrate knowledge of the applicable standards and guidelines, and are able to evaluate tasks in order to recognise critical situations at an early stage.

Operating, maintenance and installation personnel

Personnel are considered authorised when they have been trained on using the product and have read and understood these operating instructions in their entirety.

3 Description of the product

3.1 Design and function

The Martin Engineering V-plow with its torsion arm suspension installed over the conveyor belt rises and falls with the changes in the belt tension and speed. The self-adjusting design guarantees effective cleaning during the entire blade wear time.

NOTE

An unfavourably or improperly installed product can disrupt the conveyor process or contaminate the bulk material to be transported.
The owner-operator is responsible for taking the required countermeasures.
In the case of applications with contaminants, Martin Engineering or one of its representatives can assist with the positioning or with special solutions.

4 Preparing for the installation

4.1 Before the installation

4.1.1 Required materials and tools

No special tools are required for the installation and maintenance of the MARTIN® TORSION ARM™ V-Plow.

4.1.2 Preparatory measures

NOTE

Perform the inspections described carefully and completely.
The shipping company is liable for any transport damage!
Please contact the shipper with any damage claims.

1. Inspect the delivery for the following conditions:
   - Is the delivery complete? Does the number of pallets/ crates/containers delivered match the number on the delivery note?
   - Do all of the transport packages appear to be undamaged? Does damage to the packaging exist which indicates damage to the product contained inside?

2. Always record any incompleteness or transport damage discovered in the delivery and have it confirmed by the shipper. All damaged products must be kept for inspection.
3. The delivery should include the following parts, depending on the scope of the order:
   - MARTIN® TORSION ARM™ V-Plow.
   - Two Conveyor Products Warning Labels Part No. 23395
4. Report any missing or damaged parts to Martin Engineering or one of its contracted dealers.

5 Installation

5.1 Safety information

WARNING! RISK OF INJURY!

Body parts and/or clothing may get caught and pulled in by rotating parts or by the moving conveyor belt.
Before any installation or maintenance work is carried out, ensure that all power sources to the conveyor belt system and its accessories are switched off and secured against inadvertent reactivation. Use warning signs!

WARNING! RISK OF EXPLOSION!

Increased risk when using a cutting torch or welding device in closed rooms!
Check the gas and dust content of the air before usage.

WARNING! RISK OF INJURY!

The secondary cleaner is heavy and can cause serious injuries if it is dropped during lifting or moving.
Always use a suitable lifting device or engage the help of several persons when lifting the secondary cleaner. Do not stand under hanging loads.

NOTE

The item numbers in the pictures correspond to the numbering in the parts list in Section 9.

5.2 Installation process

The MARTIN® TORSION ARM™ V-Plow must be installed upstream of the bend pulley in the return run. As a first step, the positions of the mainframes are determined where the MARTIN® TORSION ARM™ V-Plow will be installed in the conveyor system.

The MARTIN® TORSION ARM™ V-Plow is delivered together with mounting plates. These are not assembled in the delivery state and are installed together with the V-Plow during the general installation.

The installation of the MARTIN® TORSION ARM™ V-Plow and mounting plates is described in these installation instructions.

An overview of the installation steps follows:

No.	Installation step	Instructions
1	Determination of the installation position	M3177
2	Installing the mounting plates	M3177
3	Installing the V-Plow	M3177

Tab. 1: Installation steps

Various local conditions are possible for the installation. Please contact Martin Engineering or one of its representatives with any questions or problems you may have.

5.2.1 Determination of the installation position

1. Deactivate the conveyor system and all accessories before starting the installation work and secure them against inadvertent reactivation.

NOTE

The cleaner must be installed near a bend pulley (recommended distance at least 500 mm from the back side of the bend pulley), with the V-form being aligned opposite to the conveying direction.

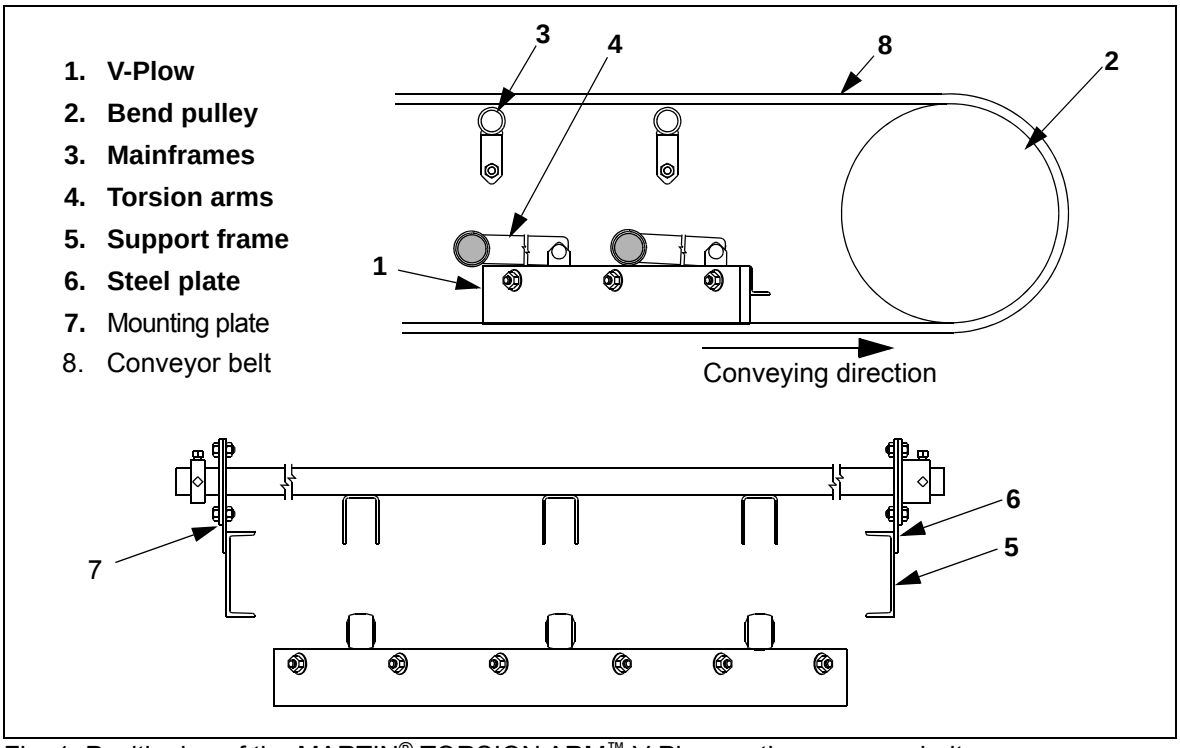

Fig. 1: Positioning of the MARTIN® TORSION ARM™ V-Plow on the conveyor belt

NOTE

Martin Engineering recommends installing a MARTIN® inspection door on closed transfer systems to improve accessibility for maintenance and repairs.

2. Position the mainframes (3, Fig.1) in accordance with Table (Tab. 3) and Figures 2 and 3.
   - Example: The main frames can be positioned between 240 mm (2, Fig.1) and 323 mm above the conveyor belt when the torsion arm (4, Fig.1) with an arm length of 165 mm is used.
3. Measure the distance between the mainframes after the mainframe position above the conveyor belt has been determined in accordance with the data in the table (Tab. 4). Then mark the position for the mainframes on the support frame.
4. Determine the installation length of the mainframes:
   - If the support frame (5, Fig.1) is too low to bring the mainframes into the suitable position, then screw or weld four steel plates with thicknesses of at least 10 mm (6, Fig.1) onto the support frame.
   - If the support frame is high enough to bring the mainframes into the suitable position, then screw or weld the mounting plates (7, Fig.1) for the mainframes directly onto the support frame.

Torsion arms Part no.	Position the mainframe between B and C for an arm length of A		
	A [mm]	B [mm] min.	C [mm] max.
28495-01	260	332	417
28495-02	152	226	310
28495-03	64	138	222
28495-04	127	201	286
28495-05	165	240	323
28495-06	203	276	360
28495-07	83	157	314
28495-08	289	360	445
28495-09	229	301	386

Tab. 2: Installation position of the mainframes

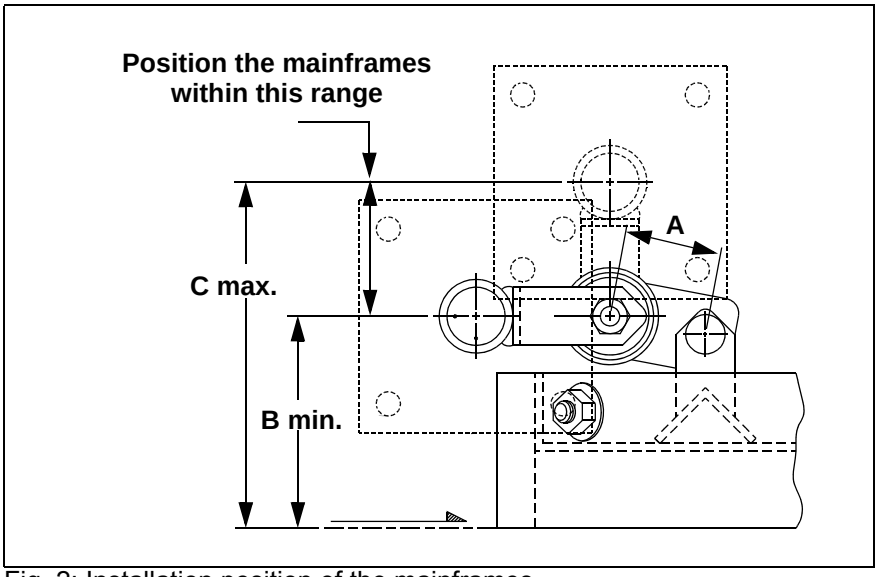

Fig. 2: Installation position of the mainframes

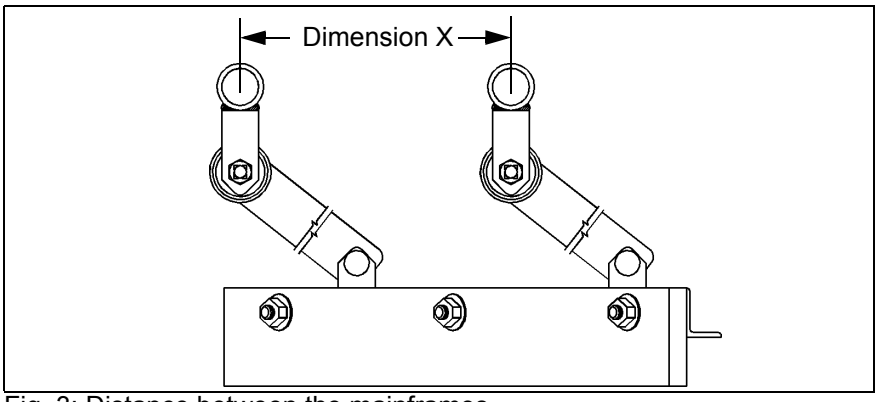

Fig. 3: Distance between the mainframes

Part number of the assembly	Dimension X (mm)
28488-18XX	79
28488-24XX	165
28488-30XX	203
28488-36XX	279
28488-42XX	356
28488-48XX	432
28488-54XX	508
28488-60XX	584
28488-72XX	737
28488-84XX	889
28488-96XX	1041

Tab. 3: Distance between the mainframes

5. Note Fig. 4. Mark the position of the mounting holes as follows:
   - Use the mounting flange (Part no. 30208+E) as a template for a 500 mm belt width and mark the hole positions for every mainframe on the support frame or steel plates on both sides of the conveyor belt.
   - Use the mounting flange (Part no. 16628+E) as a template for belt widths of 600 mm or wider and mark the hole positions for every mainframe on the support frame or steel plates on both sides of the conveyor belt.

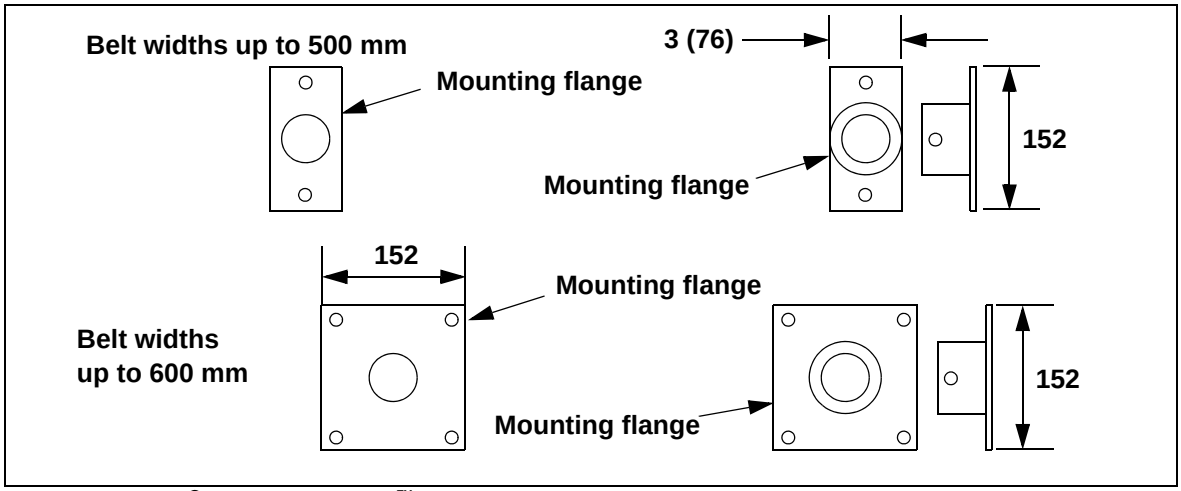

Fig. 4: MARTIN® TORSION ARM™ V-Plow mounting flange

NOTE

To simplify maintenance, Martin GmbH recommends screwing the mounting plates onto the support frame or steel plates instead of welding them.

5.2.2 Screwing or welding the mounting plates onto the support frame

Follow the steps below to screw or weld the mounting plates onto the support frame or steel plates:

1. Create four 64-mm diameter holes for the two mainframes.
2. Create 14-mm diameter holes for the mounting plates; this step is eliminated if the mounting plates are to be welded on.
3. Remove any burrs or sharp edges.
4. Screw or weld the mounting flange onto the support structure or a different structure on both sides of the conveyor.

5.2.3 Installing the cleaner

1. Insert the mainframes (1, Fig. 5) through the holes. Loosely screw the torsion arms onto the mainframes.

NOTE

Important! Do not tighten yet.

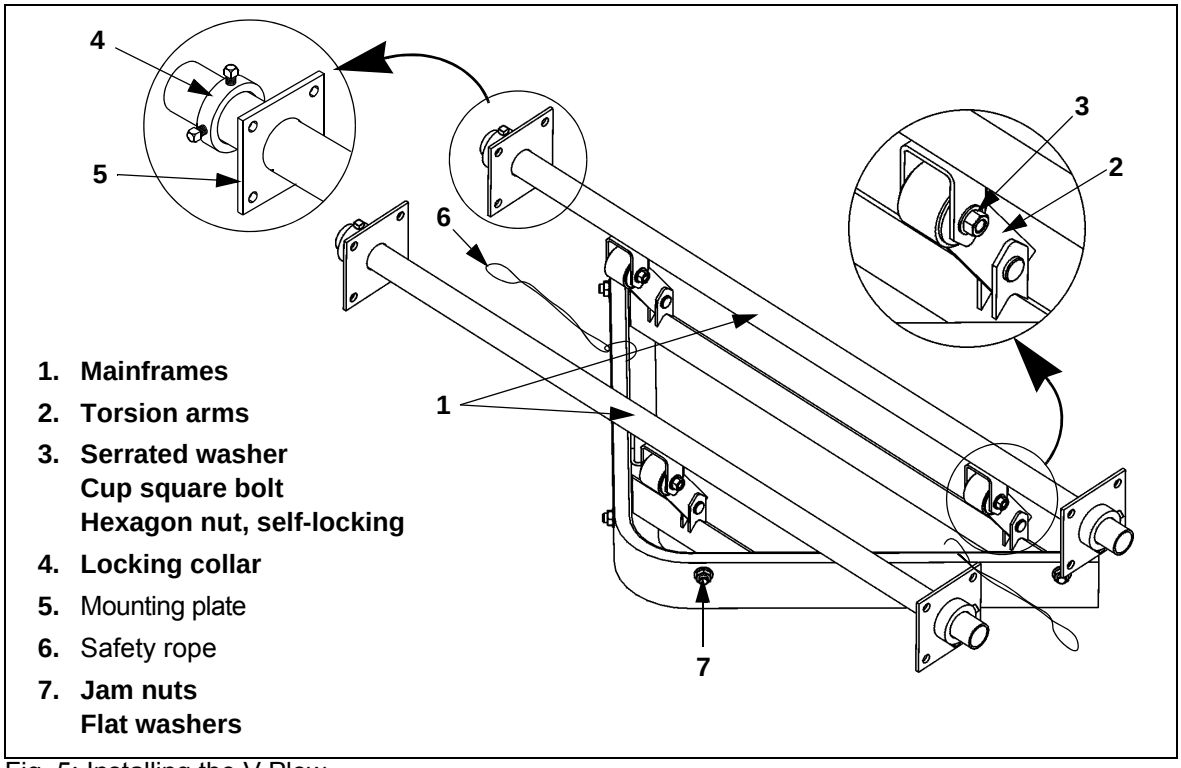

Fig. 5: Installing the V-Plow

2. Centre the blade on the conveyor belt. Slide a locking collar (4, Fig. 5) up to the mounting plate (5, fig. 5) on the far side of every mainframe. Tighten the two set screws on the locking collar.
3. Note Fig. 6. Push the blade away from the bend pulley until the flaps of the mainframe and the torsion arms are aligned in a straight line as shown. Tighten the hex nut crown elastic locks (3, Fig. 5) to 130 +/- 6 Nm.

4. Use a suitable tool to rotate the mainframes in the direction shown in Fig. 6 until the mainframe flaps are at a 90º angle to the conveyor belt and the blade is flush with the conveyor belt. Please ensure that the blade is completely flush with the conveyor belt.
5. Lock the mainframes in this position by tightening the two set screws in the locking collar (4, Fig. 5).

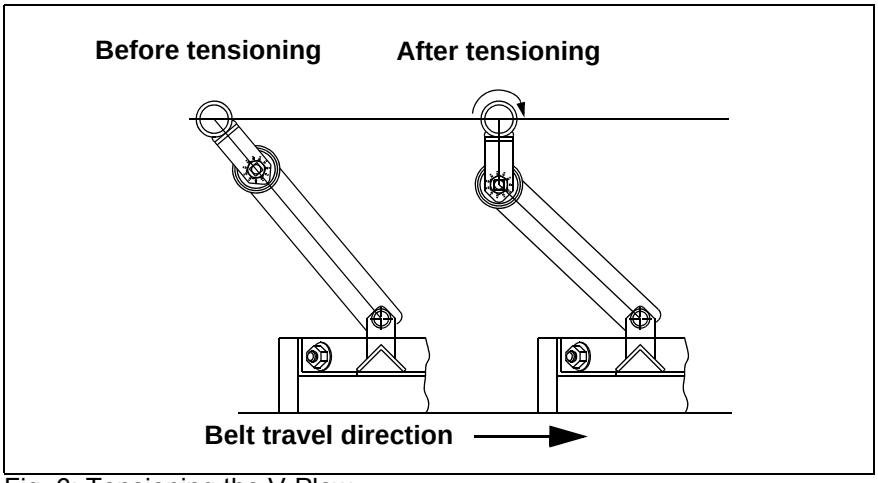

Fig. 6: Tensioning the V-Plow

CAUTION! RISK OF DAMAGE!

The V-plow, the bend pulley and the conveyor belt can suffer serious damage if the holding structure fails and the V-plow gets into the bend pulley.
The ropes must never be installed between V-plows and tails. Adhere to the minimum dimensions given in Table 4 for the rope position.
Install the safety ropes.

Note Fig. 7. Attach two safety ropes (6, Fig. 5) having the length given in Table 4 to the support structure or to another suitable structure. The ropes should not sag more than 50 mm.

Assembly part no.	Minimum clearance Y from the bend pulley (mm)
28488-18	787
28488-24	978
28488-30	1073
28488-36	1181
28488-42	1289
28488-48	1397
28488-54	1502
28488-60	1607
28488-72	1829
28488-84	2045
28488-96	2261

Tab. 4: Minimum safety rope clearance from the front of the bend pulley

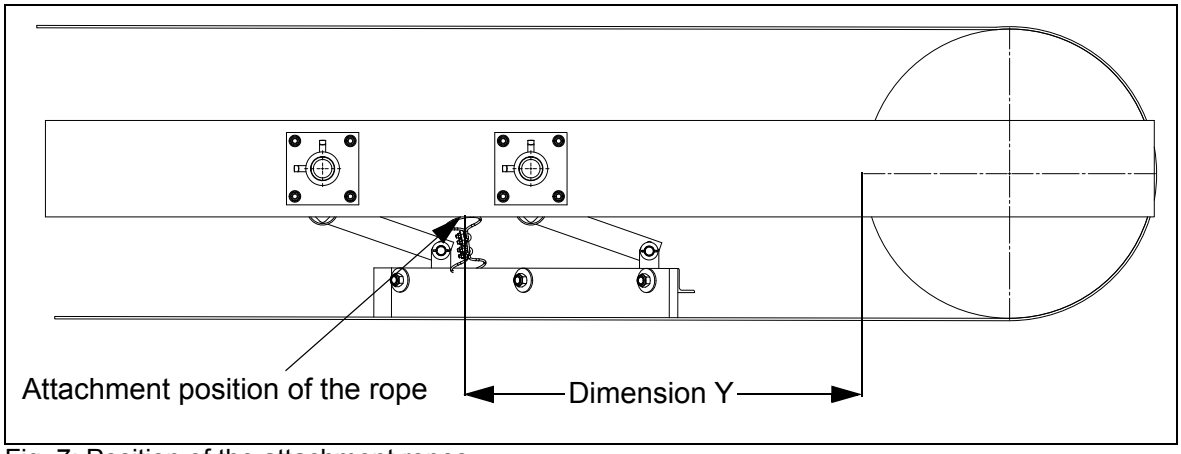

Fig. 7: Position of the attachment ropes

CAUTION! RISK OF DAMAGE!

Excess or uneven tightening of the belt cleaner on the conveyor belt can cause material damage.
Tighten the belt cleaners only in accordance with the specifications and ensure uniform tension.

5.3 Operation with loading

WARNING! RISK OF INJURY!

Body parts and/or clothing may get caught and pulled in by rotating parts or by the moving conveyor belt.
Shut off the power supply to the conveyor system and its accessories and secure it against unauthorised reactivation before performing any installation or maintenance work.
Use warning signs!

CAUTION! FLYING OBJECTS!

Forgotten tools or installation parts can fall off of the running conveyor belt and cause minor injuries and property damage.
Always remove any tools from the installation site and conveyor belt upon completion of the installation work before switching on the power supply.

1. Affix Conveyor Products Warning Labels (Part No. 23395) close to the product where they can be seen by the system operator.
2. Remove all tools and fire protection covers from the installation site and the conveyor belt.
3. Perform a 1-hour test run of the conveyor system.
4. Shut off the conveyor system after the 1-hour test run, shut off the power supply and secure it against inadvertent reactivation.
5. Check whether all of the fastening points are securely tightened. Tighten any loose connections.
6. Inspect the belt cleaner for the following conditions:
   - Wear: minor break-in wear is normal and stops as soon as the blades have adjusted to the shape of the conveyor belt.
   - Bulk material accumulation: No bulk material must accumulate between the blades and return side.
7. Readjust the torsion arms and tighten to the correct torque if the V-plow “jumps” on the conveyor belt.
8. Note the corresponding information in Section 7 “Troubleshooting” in cases of excess wear, bulk material accumulation or other problems.

5.4 Placement of the warning labels and warning trailers

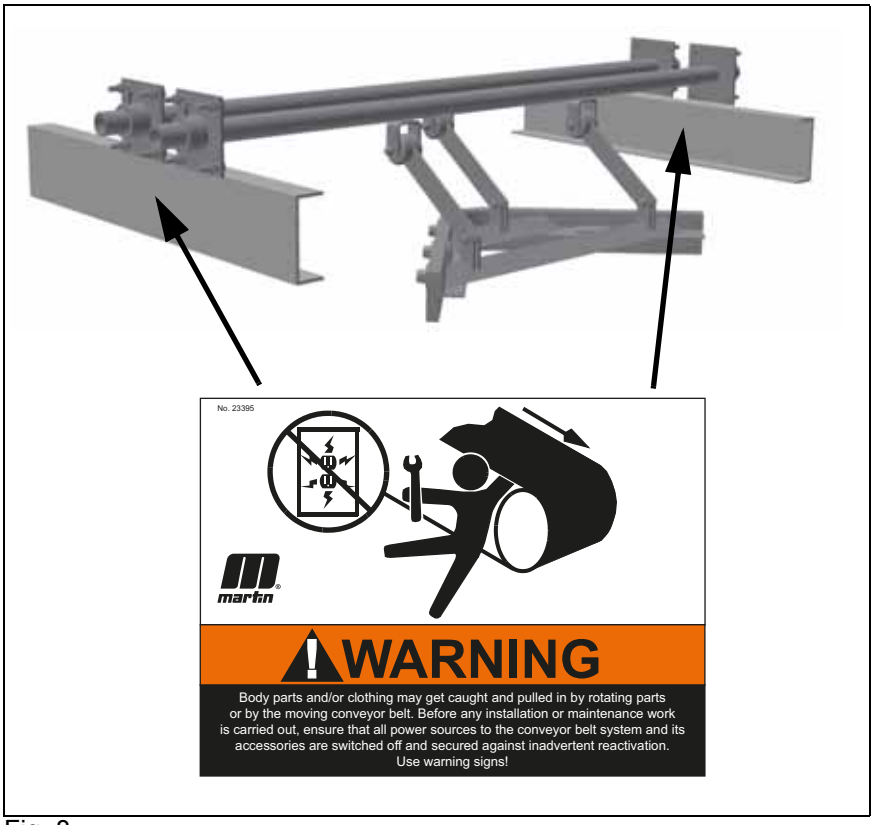

Fig. 8

6 Maintenance

6.1 Safety information

WARNING! RISK OF INJURY!

Body parts and/or clothing may get caught and pulled in by rotating parts or by the moving conveyor belt.
Shut off the power supply to the conveyor system and its accessories and secure it against unauthorised reactivation before performing any maintenance work.
Use warning signs!

NOTE

Maintenance inspections must be performed at least once a month. Shorter maintenance intervals may be required depending on the operating conditions.

NOTE

The item numbers in the pictures correspond to the numbering in the parts list in Section 9.

6.2 Monthly maintenance

1. Shut off the power supplies of the conveyor belt and any additional equipment and secure them against unauthorised reactivation.
2. Check whether all of the fastening points are securely tightened. Tighten if necessary.
3. Check whether the blade is still completely flush with the conveyor belt. Readjust the tension in the torsion arms if the blade “hops” on the conveyor belt.
4. Inspect the blade for wear. Replace in the following manner if it is worn out almost up to the support bracket:
   - Remove the jam nuts and flat washers (7, Fig. 5), which are used to fasten the blade to the support bracket.
   - Remove the old blade.
   - Install a new blade and fasten it with the flat washers and jam nuts.
5. Inspect the safety ropes for wear. Check whether the ropes are securely attached to the support structure.

NOTE

Take the corresponding parts out of service if any indications of functional disturbances are noticed. Contact Martin Engineering or one of its representatives for support. Do NOT start up the conveyor system until the cause of the problems has been recognised and eliminated.

CAUTION! RISK OF DAMAGE!

Blades must not be worn out beyond the wear line; this can cause serious material damage.
Inspect the blades regularly and replace them in a timely manner!

6. Clean all of the warning labels. Replace illegible warning labels immediately. Warning labels can be purchased from Martin Engineering or a contracted dealer.

CAUTION! FLYING OBJECTS!

Forgotten tools or installation parts can fall off of the running conveyor belt and cause minor injuries and property damage.
Always remove any tools from the work site and conveyor belt upon completion of work before switching on the power supply.

7. Remove all tools from the work area.
8. Switch on the conveyor system.

WARNING! RISK OF INJURY!

Body parts and/or clothing may get caught and pulled in by rotating parts or by the moving conveyor belt.
Do not touch or reach into the conveyor system or its accessories during operation.

CAUTION! RISK OF DAMAGE!

Never operate the belt cleaner for longer than 15 minutes on the running unloaded conveyor belt. A risk of damage due to overheating exists for the belt cleaner and/or the conveyor belt.
Never operate the belt cleaner unless the conveyor belt is running.

9. Observe the cleaner and check its cleaning performance.

7 Troubleshooting

7.1 Safety information

NOTE

The product is exposed to highly diverse bulk materials and is often used under extreme operating and environmental conditions. Malfunctions other than those listed below can therefore occur.
In this case, either Martin Engineering or one of its representatives can assist with the positioning or with special solutions. Do not start up the conveyor system again until the fault has been recognised and cleared.

7.2 Troubleshooting

Check the following items if excessively high wear on the blades and/or unsatisfactory cleaning performance are/is noticed following installation:

Symptom	Cause	Remedy
High wear on the blades.	The blade is too tightly tensed on the cleaner.	Reduce the tension. Tension values (Sec. 5.2.8 Tab.6 or Tab.8),
Insufficient cleaning performance and bulk material accumulation.	The blade is not tensed enough or is tensed much too tightly on the conveyor belt.	Increase or reduce the tension.
	The blades are worn.	Inspect the blades and replace if necessary. (See “Weekly maintenance”).
Unusual pattern of wear or damage to the blade.	Damaged conveyor belt or connection points.	Inspect the conveyor belt's connection points and repair or replace as needed.
	Different tension values of the Inline-Reversing tensioner.	Check the tension values and possibly retighten.
Noises or vibrations.	Cleaner on the conveyor belt too loose of too tightly tensed.	Correct the tension if necessary.
	The blade's urethane is possibly not suitable for the application.	Contact Martin Engineering or one of its representatives.
	Blade not correctly aligned with the conveyor belt.	Align the blade (Sec. 5.2.4 ff).

Tab. 5: Troubleshooting

Symptom	Cause	Remedy
Corrosion or chemical decomposition.	The blade's urethane is possibly not suitable for the application.	Contact Martin Engineering or one of its representatives.
Deflection of the mainframe.	Extremely high tension.	Reduce the tension on the blades to the highest recommended value specified in the installation instructions. (A slight deflection is to be seen as normal. Contact Martin Engineering if very strong deflection occurs.)
The blades are pushed out of the tracks.	The blade is too strongly tensed.	Reduce air pressure or spring tension.

Tab. 5: Troubleshooting

8 Storage, deinstallation, disposal

8.1 Packing and transportation

The products described here are packed and shipped by Martin Engineering.

The products may be transported solely in the Martin Engineering packaging.

The logistics company in charge of the shipment shall be responsible for any damage and/or loss.

8.2 Storage

To ensure optimal function of the product, Martin Engineering recommends storing its components in a dry place at room temperature where they are protected against direct sunlight.

The best storage conditions are at +0 °C to +30 °C and 60% relative humidity.

Martin Engineering guarantees that the stored products will remain fully functional for at least 2 years under the storage conditions specified here.

8.3 Deinstallation

The deinstallation is carried out in the reverse order of the installation (see Section 5.2.2).

8.4 Disposal

Assemblies and/or single parts of the Martin Engineering products must be professionally disposed of after usage as follows.

- Complete assemblies must be dismantled, sorted by material type, and separately disposed of.

Comply with all nationally and internationally applicable disposal regulations when disposing of the product.

9 Part numbers

This section lists the product designations with their associated part numbers for the MARTIN® TORSION ARM™ V-Plow and its accessories.

Please always indicate the part numbers in every order.

9.1 Explanation of part numbers

MARTIN® TORSION ARM™ V-Plow

28488-aabb+E		
a		**Belt width in inches**
b		**Blade material**
	R:	Rubber
	U:	Urethane

9.2 Martin® Inspection Doors

With standard rubber door, up to 177° C:

- 229 x 305 mm: Part no. CYAR-0912.
- 305 x 356 mm: Part no. CYAR-1214.
- 305 x 457 mm: Part no. CYAR-1218.
- 457 x 610 mm: Part no. CYAR-1824.
- 610 x 610 mm: Part No. CYAR-2424.

With steel door (dust-proof):

- 229 x 305 mm: Part no. CYA-0912.
- 305 x 356 mm: Part no. CYA-1214.
- 305 x 457 mm: Part no. CYA-1218.
- 457 x 610 mm: Part no. CYA-1824.
- 610 x 610 mm: Part no. CYA-2424.

9.3 Warning labels / Warning trailers

- Conveyor Products Warning Label:
  Part no. 23395

9.4 MARTIN® TORSION ARM™ V-Plow

- Part no. 28488-XXXX+E

9.5 Rubber replacement blade

- Part no. 28496-XX. XX denotes the belt width in inches

9.6 Urethane replacement blade

- Part no. 28812-XX. XX denotes the belt width in inches

9.7 Operating instructions

- Martin® Inspection Door: Publication no. M3127

9.8 MARTIN® TORSION ARM™ V-Plow 28488-18XX+E

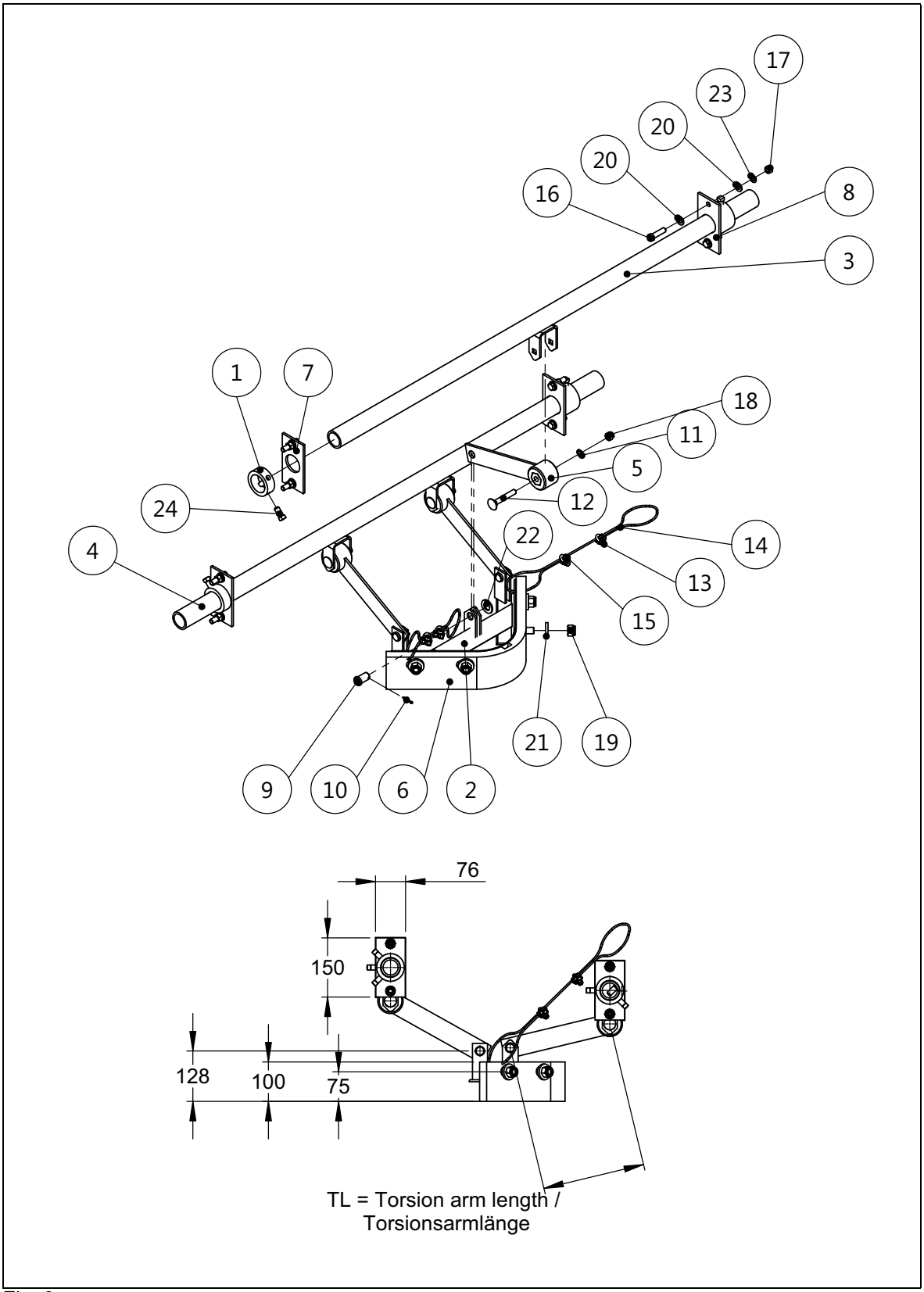

Fig. 9

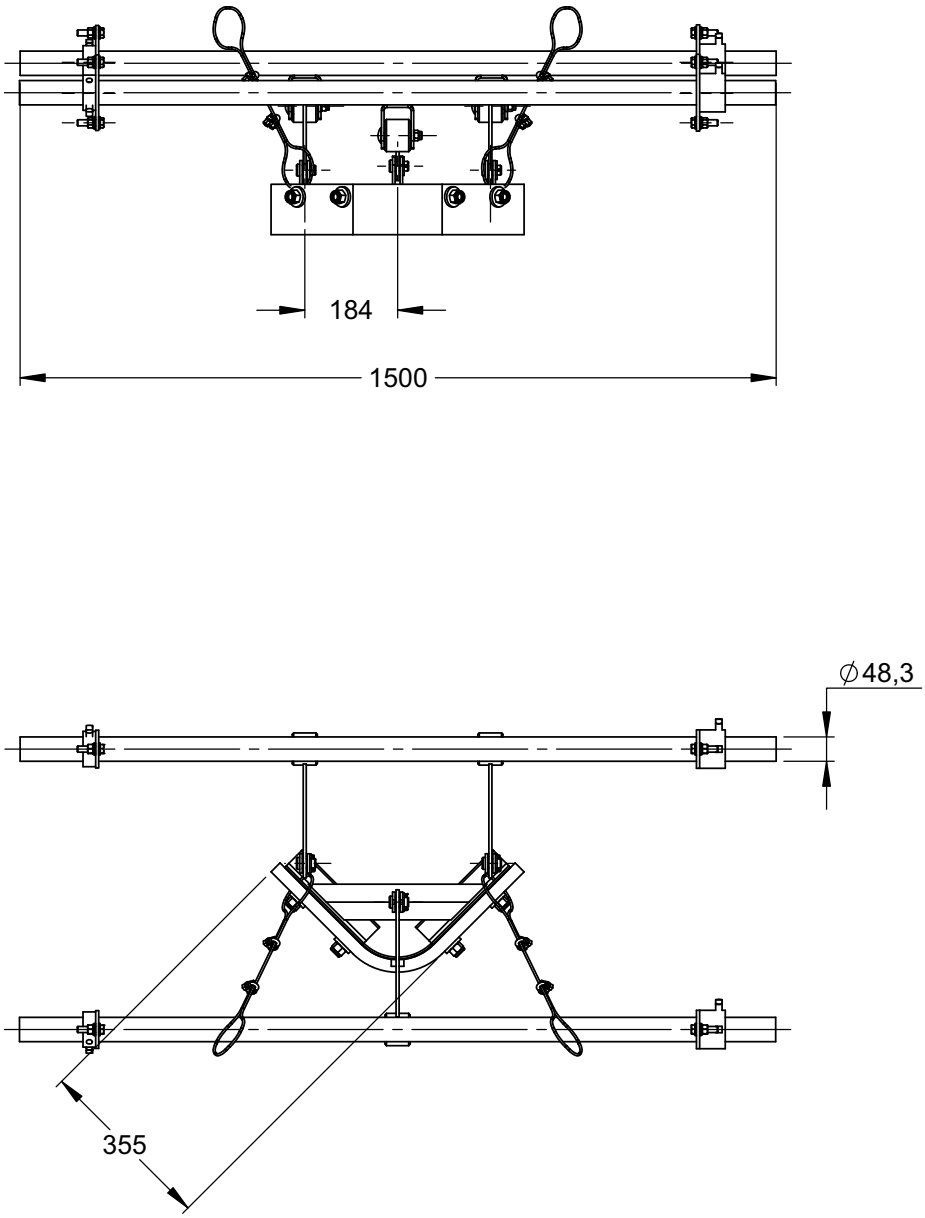

Fig. 10

ND	Item / Pos.	Qty. / Anz.	Description / Beschreibung	P/N / Teile-Nr.
	1	2	Locking collar / Sicherungsring	16845+E
	2	1	Schweissrahmen V-Plow	25658-18+E
	3	1	Torsion Arm V-Plow front axle / Frontachse	28493-18+E
	4	1	Torsion Arm V-Plow back axle / Hinterachse	28494-18+E
	5	3	Torsion Arm V-Plow Torsionarm / Torsionsarm	s.C. / s.T.
	6	1	Torsion Arm V-Plow blade / Abstreifblatt f/Torsion Arm Pflugabstreifer	s.C. / s.T.
	7	2	Flange mount plate f/standard V-Plow / Flanschmontageplatte	30208+E
	8	2	Mounting plate f/-18 torsion arm plow / Montageplatte f/-18 Torsion Arm Pflugabstreifer	30209+E
	9	3	Pin Clevis 3/4 x 1-1/4 ZP / Bolzen mit Kopf - verzinkt	29066
	10	3	Cotter pin 1/8" x 1-3/4" / Splint	16578
	11	3	Serrated washer 1/2" (M12) / Fächerscheibe	21569
	12	3	Cup square bolt M12x80 DIN 603 / Flachrundschraube mit Vierkantansatz	32139-01+E
	13	4	Steel rope clamp 4mm / Sicherheitsklemme 4mm	40238
	14	2	Cable 4 mm - Length: 1 meter / Kabel	40377
	15	4	End splice 10x15 / Aderendhülse	40377-1015
	16	8	HHC screw M12 x 45 - DIN 933, (1.0032) galv. / Sechskantschraube	41081-12045BZP88
	17	8	Hex nut M12 - DIN 934, (1.0032) galv. / Sechskantmutter	41086-12BZP
	18	3	Hex nut crown elastic lock M12 - DIN 985 (1.0032) galv. / Selbstsichernde Sechskantmutter	41086-12EZP
	19	4	Hexagon nut M16, DIN 985 / Sechskantmutter, Selbstsichernd	41086-16EZP
	20	16	Washer flat M12 - DIN 125 A, (1.0032) galv. / Unterlegscheibe	41088-12AZP
	21	4	Washer flat M16 x 40 x 6 - (DIN522) galv. steel / Karosseriescheibe	41088-16LZP
	22	3	Washer flat M20 - DIN 125 A, (1.0032) galv. / Unterlegscheibe	41088-20AZP
	23	8	Washer spring M12 - DIN 127, (1.0032) galv. / Federring	41090-12AZP
	24	8	Screw Sq M12x25 (DIN 479) / Vierkantschraube	41444-12025BZP

Part number / Teilenummer	DIM	P/N Item Teile-Nr. Pos.
	TL	5
28488-18X+E	260	28495-01+E
28488-18X1+E	64	28495-03+E
28488-18X2+E	152	28495-02+E
28488-18X3+E	228	28495-09+E
28488-18X4+E	127	28495-04+E
28488-18X5+E	165	28495-05+E
28488-18X6+E	203	28495-06+E
28488-18X7+E	289	28495-08+E

Part number / Teilenummer	Blattwerkstoff/ Blade material	P/N Item Teile-Nr. Pos.
		6
28488-18RX+E	Rubber / Gummi	28496-18+E
28488-18UX+E	Urethane / Urethan	28812-18+E
28488-18X+E	------	-----

9.9 MARTIN® TORSION ARM™ V-Plow 28488-XXXX+E

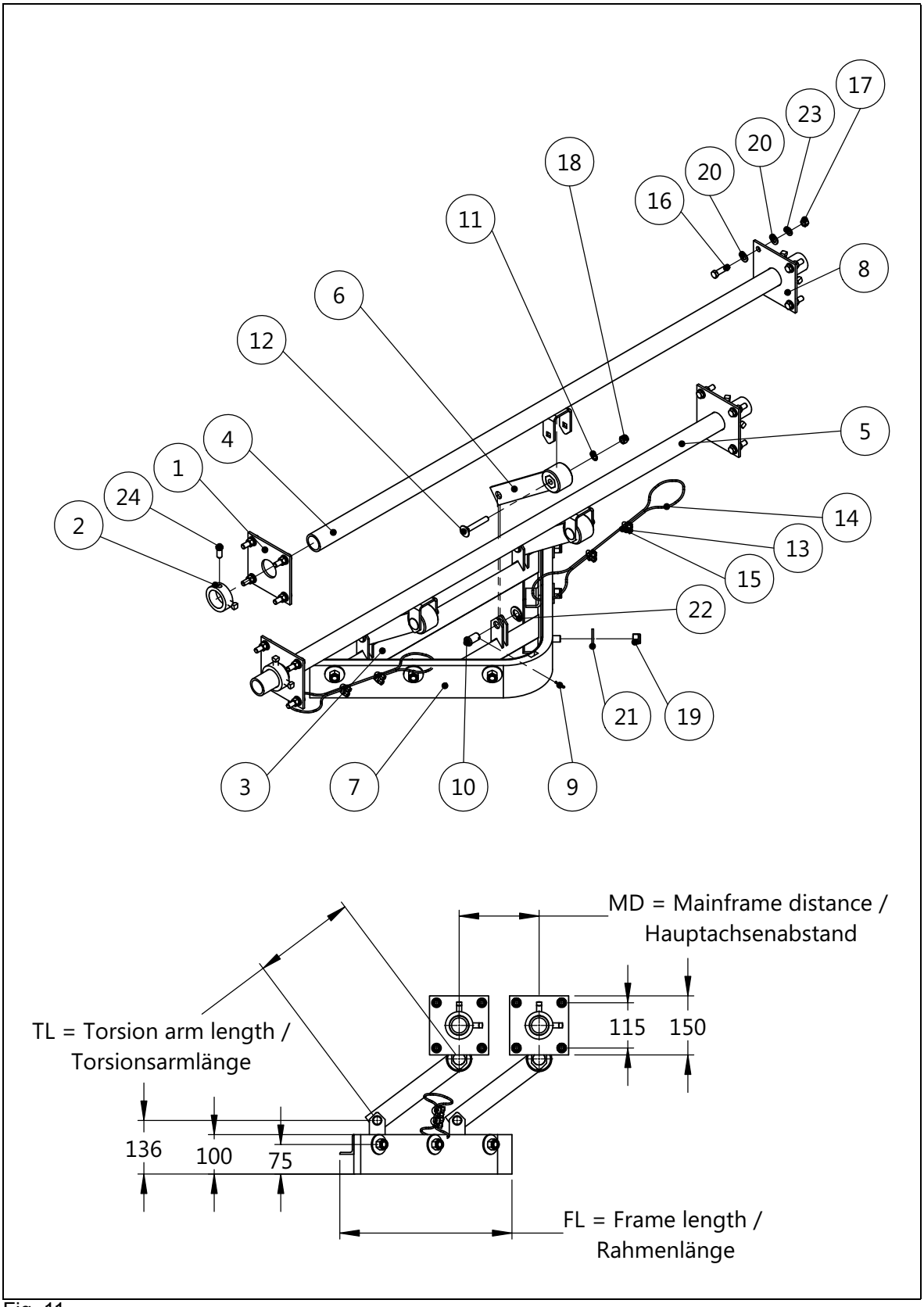

Fig. 11

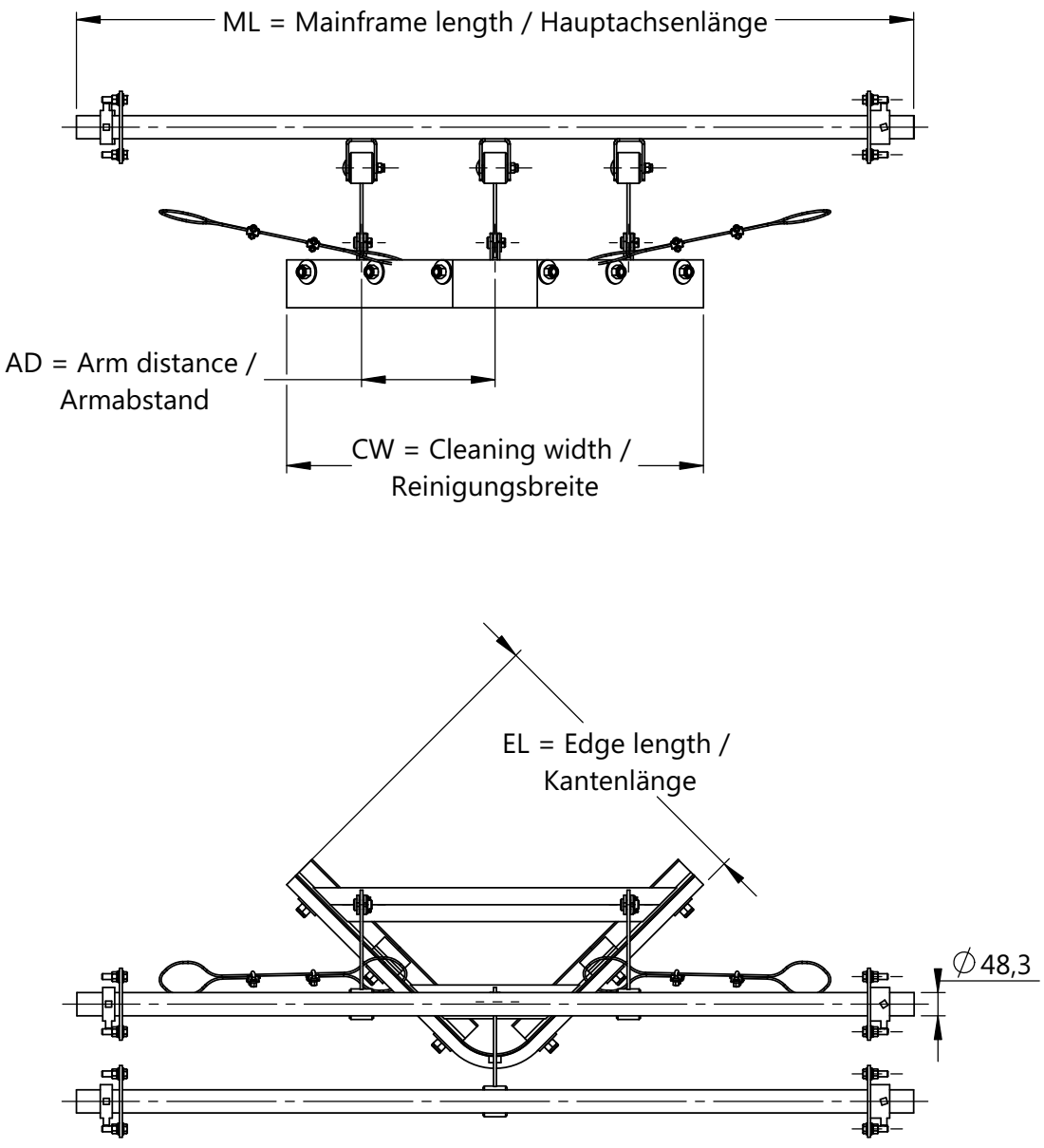
ML = Mainframe length / Hauptachsenlänge
AD = Arm distance / Armabstand
CW = Cleaning width / Reinigungsbreite
EL = Edge length / Kantenlänge
∅48,3

Fig. 12

ND	Item / Pos.	Qty. / Anz.	Description / Beschreibung	P/N / Teile-Nr.
	1	2	Flange mounting plate / Montageplatte	16628+E
	2	2	Locking collar / Sicherungsring	16845+E
	3	1	Schweissrahmen V-Plow	s.C. / s.T.
	4	1	Rohr DIN 10220 - Ø48,3x5 - S235JR	s.C. / s.T.
	5	1	Torsion Arm V-Plow back axle / Hinterachse	s.C. / s.T.
	6	3	Torsion Arm V-Plow Torsionarm / Torsionsarm	s.C. / s.T.
	7	1	Torsion Arm V-Plow blade / Abstreifblatt f/Torsion Arm Pflugabstreifer	28496-30+E
	8	2	Torsion Arm V-Plow hub mount / Rohrflansch	28623+E
	9	3	Cotter pin 1/8" x 1-3/4" / Splint	16578
	10	3	Pin Clevis 3/4 x 1-1/4 ZP / Bolzen mit Kopf - verzinkt	29066
	11	3	Serrated washer 1/2" (M12) / Fächerscheibe	21569
	12	3	Cup square bolt M12x80 DIN 603 / Flachrundschraube mit Vierkantansatz	32139-01+E
	13	4	Steel rope clamp 4mm / Sicherheitsklemme 4mm	40238
	14	2	Cable 4 mm - Length: 1 meter / Kabel	40377
	15	4	End splice 10x15 / Aderendhülse	40377-1015
	16	16	HHC screw M12 x 45 - DIN 933, (1.0032) galv. / Sechskantschraube	41081-12045BZP88
	17	16	Hex nut M12 - DIN 934, (1.0032) galv. / Sechskantmutter	41086-12BZP
	18	3	Hex nut crown elastic lock M12 - DIN 985 (1.0032) galv. / Selbstsichernde Sechskantmutter	41086-12EZP
	19	6	Hexagon nut M16, DIN 985 / Sechskantmutter, Selbstsichernd	41086-16EZP
	20	32	Washer flat M12 - DIN 125 A, (1.0032) galv. / Unterlegscheibe	41088-12AZP
	21	6	Washer flat M16 - DIN 522, (1.0032) galv. / Karrosseriescheibe	41088-16LZP
	22	3	Washer flat M20 - DIN 125 A, (1.0032) galv. / Unterlegscheibe	41088-20AZP
	23	16	Washer spring M12 - DIN 127, (1.0032) galv. / Federring	41090-12AZP
	24	8	Screw Sq M12x25 (DIN 479) / Vierkantschraube	41444-12025BZP

Part number / Teilenummer	DIM						P/N Item Teile-Nr. Pos.			Qty. Item Anz. Pos.
	CW	AD	MD	EL	ML	FL	3	4	5	19, 21
28488-24XX+E	735	245	165	521	1524	352	25658-24+E	28493-24+E	28494-24+E	4
28488-30XX+E	872	279	203	616	1727	418	25658-30+E	28493-36+E	28494-30+E	6
28488-36XX+E	1024	356	279	724	1727	494	25658-36+E	28493-36+E	28494-36+E	6
28488-42XX+E	1176	432	356	832	2083	572	25658-42+E	28493-48+E	28494-42+E	6
28488-48XX+E	1332	508	432	940	2083	648	25658-48+E	28493-48+E	28494-48+E	6
28488-54XX+E	1478	584	508	1070	2261	721	25658-54+E	28493-54+E	28494-54+E	8
28488-60XX+E	1624	660	584	1149	2438	794	25658-60+E	28493-60+E	28494-60+E	8
28488-66XX+E	1783	737	660	1238	2591	873	25658-66+E	28493-66+E	28494-66+E	8
28488-72XX+E	1942	813	737	1372	2794	953	25658-72+E	28493-72+E	28494-72+E	10
28488-84XX+E	2246	965	889	1588	3048	1105	25658-84+E	28493-84+E	28494-84+E	12
28488-96XX+E	2551	1118	1041	1803	3429	1257	25658-96+E	28493-96+E	28494-96+E	14

Part number / Teilenummer	DIM	P/N Item / Teile-Nr. Pos.
	TL	6
28488-XXX+E	260	28495-01+E
28488-XXX1+E	64	28495-03+E
28488-XXX2+E	152	28495-02+E
28488-XXX3+E	228	28495-09+E
28488-XXX4+E	127	28495-04+E
28488-XXX5+E	165	28495-05+E
28488-XXX6+E	203	28495-06+E
28488-XXX7+E	289	28495-08+E

Part number / Teilenummer	Blattwerkstoff/ Blade material	P/N Item / Teile-Nr. Pos.
		7
28488-XXRX+E	Rubber / Gummi	28496-XX+E
28488-XXUX+E	Urethane / Urethan	28812-XX+E
28488-XXX+E	------	-----

10 Declaration of incorporation

Declaration of incorporation in accordance with Machinery Directive (2006/42/EG) Annex II B for the installation of an incomplete machine

We, Martin Engineering,

In der Rehbach 14 Tel.: +49 6123-97820
D-65396 Walluf Fax: +49 6123-75533

herewith declare that the product named in the following

Product designation:

Belt cleaner

of make / type:

MARTIN® TORSION ARM™ V-Plow

with serial number:

not required

meets the following requirements:

EC - Machinery Directive 2006/42/EC

DIN EN 618 - Equipment and systems for bulk materials

The following harmonised standards were particularly applied:

DIN EN ISO 12100 Safety of Machinery

Notified authority:

not required

The installation instructions belonging to the product and the technical documentation are enclosed with the product in their original version.

The commissioning of this product is prohibited until it has been determined that the system in which it is to be installed meets the requirements of versions 98/37/EC and 2006/42/EC of the EC Directive.

Date: 21/01/2010

Manufacturer's signature Managing director, Michael Hengl

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Subject to technical modifications
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