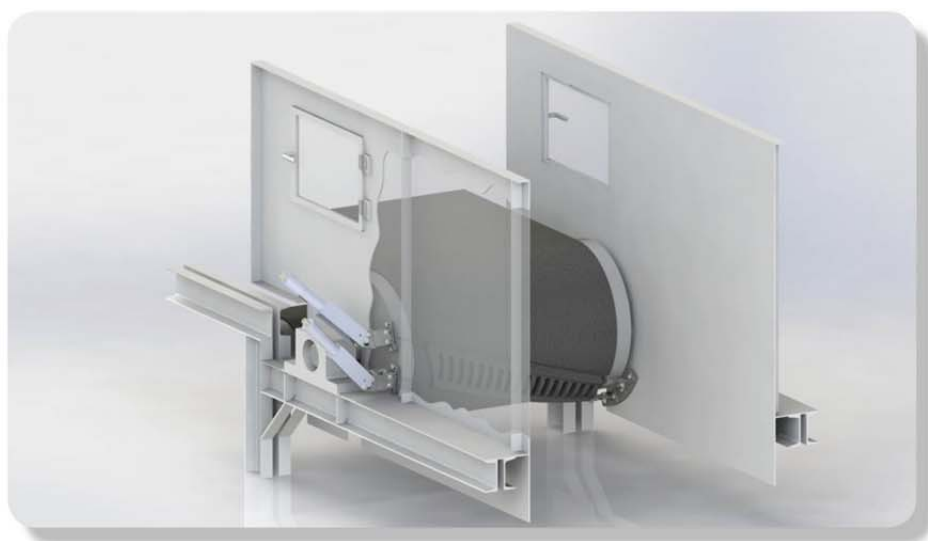


Inspection- and Installation Guide

Martin® CLEANSCRAPE Belt Cleaning System Type M/L



MARTIN ENGINEERING
a global company

CONTENTS

1.	Safety	3
1.1	Important information	3
1.2	Intended use	3
1.3	Changes to components	4
1.4	Hazard warnings	4
1.5	Safety measures during installation and maintenance work.....	4
2.	Components	5
2.1	Design	5
2.2	Function	5
2.3	Component overview	6
2.4	Carbide metal choice	8
3.	Assembly instructions.....	9
3.1	Martin® CLEANSCRAPE Type M.....	9
3.1.a	Drilling table for the ducts	9
3.1.b	Force diagram.....	10
3.2	Martin® CLEANSCRAPE Type L.....	11
3.2.a	Drilling table for the ducts	11
3.2.b	Force diagram.....	12
3.3	Defining the installation position	13
3.4	Drilling holes for the system tensioners	14
3.4.a	Option 1: 4 system tensioners	14
3.4.b	Option 2: Fixed point system	14
3.4.c	Option 3: Inside deflector	14
3.5	Fixing the welding plates.....	15
3.6	Fixing the roll holders.....	15
3.7	Fixing the system tensioners and fixed points	16
3.8	Lining up the scraper with the belt	16
3.9	Checking the installation	17
3.10	Test run.....	17
4.	Inspection and service	18
4.1	Initial inspection	18
4.2	Follow-up inspection	18
4.3	Maintenance	18

1. Safety

1.1 Important information

This guide helps you to operate the Martin® CLEANSRAPE product in a safe and effective way.

Familiarise yourself with the content of this guide before you install the product and start to use it. Pay particular attention to the warning instructions given in this guide. Failure to comply with these instructions entails a risk of serious personal injury and property damage.

Do not attempt to commission the device if you do not understand the safety instructions provided.

Inform your superior or your safety inspector.

The scraper may be used for its intended purpose only to avoid damage and injuries.

All necessary measures must be implemented by trained staff only. The operating company is responsible for compliance with applicable regulations and instructions at the location of use.

The following pre-requirements are to be accomplished:



1. Professional configuration of the device in line with its use.
2. Installation of the device according to the assembly and operation manual.
3. Operation of the device in the scope of the approved conditions of use.
4. Use the scraper in chutes with fill level monitoring or overfilling protection only.
5. Regular visual checks in line with the manufacturer's instructions.

1.2 Intended use

General use

The **Martin® CLEANSRAPE Type M / L** front-end drum scraper cleans conveyor belts by removing bulk material adhering to them immediately at the discharge drum. It must be installed on the front edge of the discharge drum as a helical curve (helix). The ideal installation angle is **17** degrees; angles from approx. 10 to 22 degrees are permissible (see: Section 3. Assembly instructions). As a matter of principal, the scraper should be assembled so deeply that it avoids any contact to the material stream!

General operational conditions

Drum diameter Martin® CLEANSRAPE Type M from 550 mm to 900 mm and Martin® CLEANSRAPE Type L from 900 mm to 1250 mm

Belt widths up to a ratio of max. 3 : 1 to the drum diameter

Belt speed up to 8 m/s

Conveyor belt type: rubber or PVC with smooth cover plate.

Recommended hardness > 80 Shore A

Belt connection: vulcanised with a hardness difference of less than 5 Shore A (measured according to DIN 53505)

Connect using any commercially available belt connectors (hook seams)

(For belt speeds > 4 m/ s please consult **Martin Engineering**)

Ambient temperature: from -20° C up to +80° C

Direction of belt travel: suitable for normal and reversing operation

You can use the factory standard product in areas with a risk of explosion (ATEX).

Optional operational conditions

In case of deviating operating conditions, please consult **Martin Engineering**. Commissioning the product outside of the permissible operating conditions can cause serious personal injury and property damage.

For special designs, please contact **Martin Engineering**.

1.3 Changes to components



Modifications to components and deviating configurations, installations, operation and maintenance are subject to written approval by **Martin Engineering**. Failure to observe these instructions entails risk of serious personal injury and property damage.

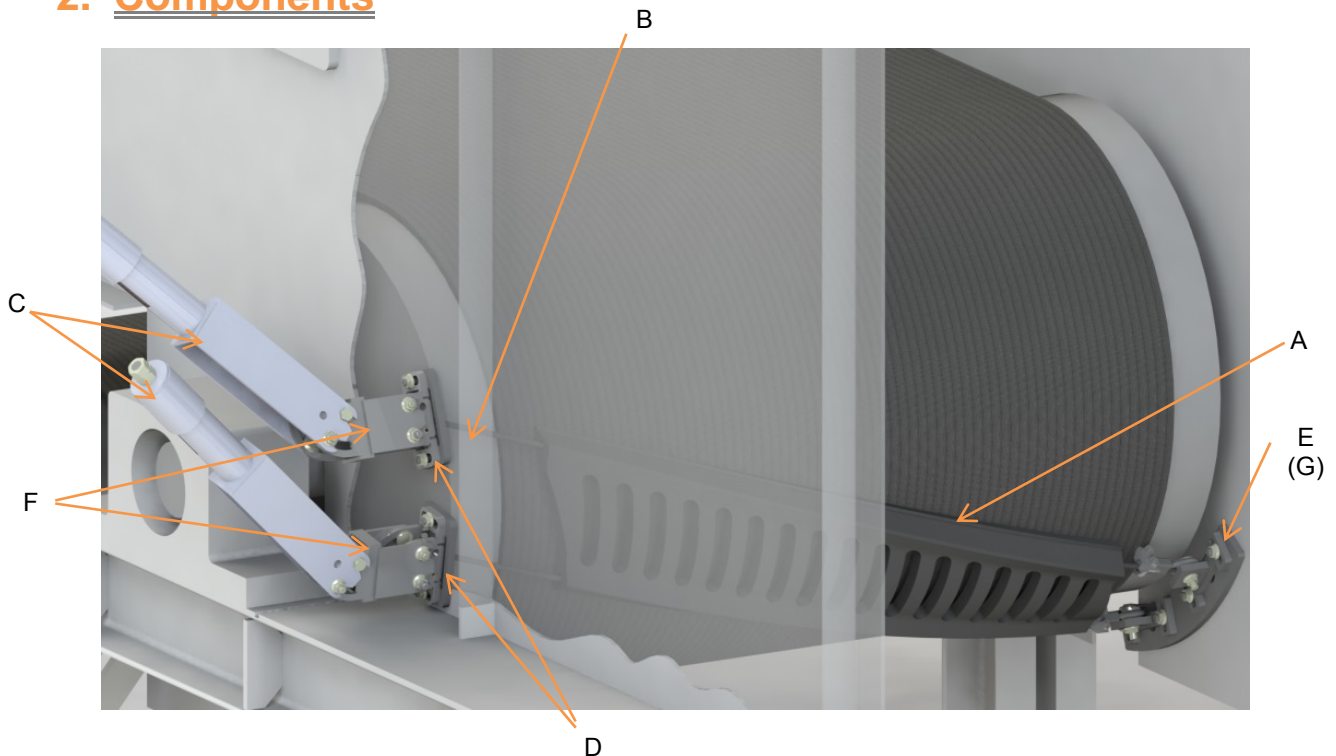
1.4 Hazard warnings

- During operation unpredictable evasive movements may occur. There is danger of crushing. The operating company must take appropriate safety measures (safety fencing, warning signs).
- Wear on the scraper can cause sharp burrs and edges. There is risk of injury during disassembly or maintenance work.
- In operation, the scraper can heat up considerably due to friction while running. Touching it immediately after stopping the conveyor system can cause burns.
- Mineral or metal parts can adhere to the surface of the belt. When they run over the scraper edge sparks can occur in exceptional cases.
- If the structure of parts exposed to wear weakens, there is danger of fractures. To ensure safety of persons and equipment, these parts must be replaced with new parts.

1.5 Safety measures during installation and maintenance work

- Installation and maintenance work on the scraper must only be performed when the conveyor belt system is stopped and locked. Cordon off the work area. The work must be approved by the responsible work manager.
- Always use appropriate work and protective clothes, in particular, safety shoes, gloves, hard hat and safety goggles.
- In case of any welding or cutting work, the permission of the operating company is to be obtained.
- If there is risk of falling, appropriate safety devices must be installed; for example, scaffolding, railings, safety nets and safety belts. This equipment must be inspected and approved for the relevant work.
- Before commissioning a scraper, always ensure that the construction site is completely clear. All parts, such as scaffolding, hoisting devices and tools must be removed from the area in which the conveyor system is started up. Any safety systems previously removed (hoods, coverings, etc.) must be refitted.
- Check if all screw connections are securely tightened following any maintenance work or commissioning. Do not reuse fasteners (chain locks, lock nuts, shackles), but replace them with new parts. In case of mechanical damage, including corrosion, always use new parts.
- **Use original spare parts only!**

2. Components



- | | | | |
|---|--|---|-----------------------------|
| A | Scraper body | E | System fixed point |
| B | Tensioning ropes with tensioning chain | F | Deflect adapter |
| C | System tensioners less/medium/heavy duty | G | (Optional) system tensioner |
| D | Roll holders with welding plates | | |

2.1 Design

The **Martin® CLEANS CRAPE Type M / L** front-end drum scraper is a robust, stand-alone, flexibly adjustable device for cleaning the header drum of conveyor belts. The single-row, overlapping scraper module is fitted with carbide metal scraper edges. The carbide metal runners for applying the force are integrated into the scraper module.

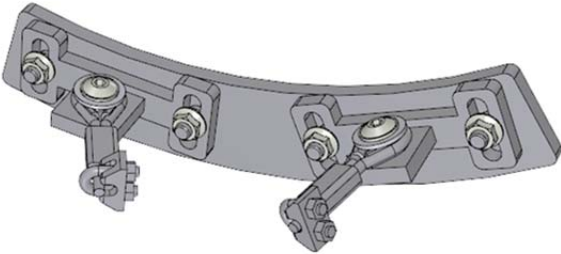
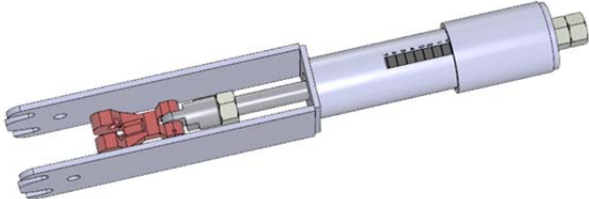
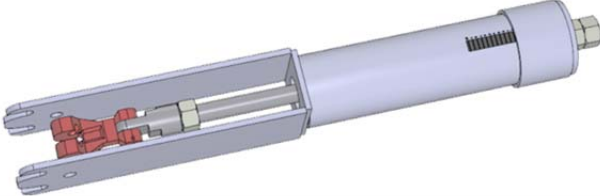
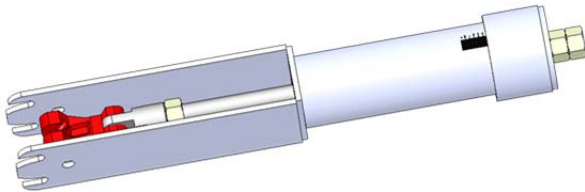

2.2 Function

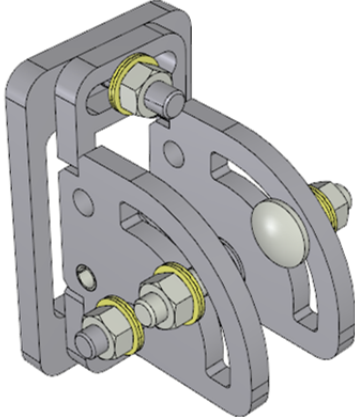
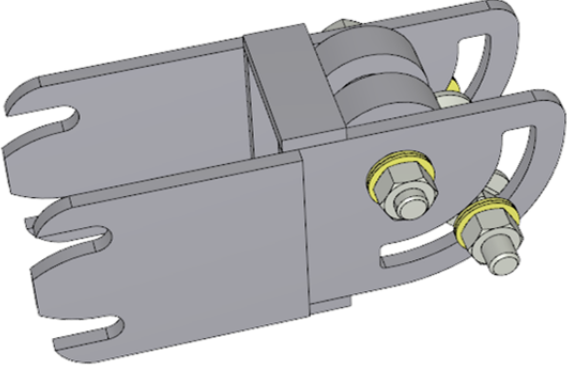
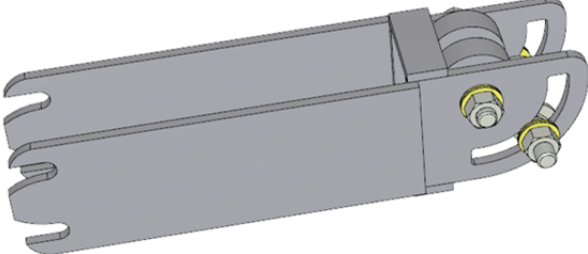
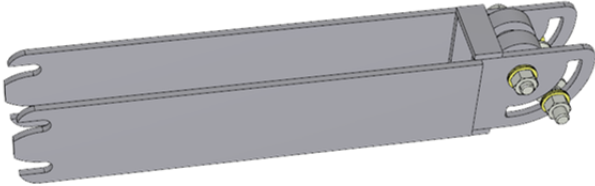
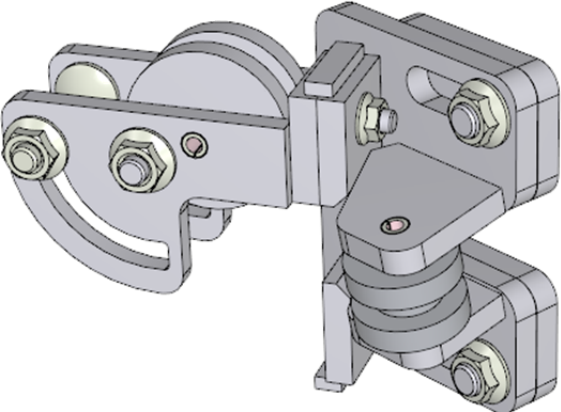
The **Martin® CLEANS CRAPE Type M / L** front-end drum scraper is comprised of 3 main assemblies, the fixed point bearing system, system tensioners and scraper module. It can be extended to include deflect adapters and system tensioners fitted on both sides, as well as an inside deflector if necessary.

The scraper module has several overlapping scraper edges made of carbide metal; they are pressed against the belt by the steel rope and system tensioners and tensioned helically to remove the bulk material adhering to the belt. The cleaning side with the carbide metal edges is exposed to single-sided wear in operation. The scraper module is thus implemented as an easily replaceable wear part. The module has a cleaning side and a running side, which are connected via torsion bars to allow controlled evasion in case of continuous uneven surface of the belt running through it. The system tensioners holding tensioning chains comprise multiple parts. The scraper module is fastened to the system tensioners by means of chains. This fixture type allows tailored adjustment of the module with respect to the belt. The system fixed points connect the tensioning ropes and system tensioners. The installation position of the tensioning elements can be on the upper or lower rope deflector. The system fixed points are welded or bolted onto the opposite of the system tensioners on the inside of the chute.

The scraper is mounted using ropes and chains with fixed points and system tensioners onto the chute walls. The displacement system has 2 slotted holes on the roll holder that allow the scraper to be moved into or away from the belt. The threaded spindles on the system tensioners allow the setting of the scraper module pre-tensioning force. If needed, extensions and angle brackets can be mounted on the system tensioners. This allows variable fixing of the scraper on the chute walls.

2.3 Component overview

Component	Description	Drawing number	AMS number
	Fixed point, medium scraper	100.02.03.00	040036
	low duty tensioner (up to 2.850 N)	100.02.11.00	104522
	medium duty tensioner (up to 4.200 N)	100.02.12.00	10449
	heavy duty tensioner (up to 6.600 N)	100.02.13.00	108572
	Fixed point, large scraper	100.03.03.00	040687

Component	Description	Drawing number	AMS number
	Roll holder	100.08.00.00	042746
	Short deflect adapter	100.09.01.00	039882
	Medium deflect adapter	100.09.02.00	039888
	Long deflect adapter	100.09.03.00	101977
	Inside deflector	100.14.00.00	104432

2.4 Carbide metal choice

CLEANSRAPE is available in 4 degrees of hardness and one of chemically resistant carbide metal variants:

- TU01 – standard version, suitable for all less abrasive materials and low belt speed and/or allowed for all mechanical belt connectors.
- TU02 – version for moderately abrasive materials and medium belt speeds. Applicable with mechanical belt connectors (assembling instructions for belt connectors must be complied with!)
- TU03 – version for highly abrasive materials and high belt speeds. Not to be used with mechanical belt connectors.
- TU04 – version for extremely abrasive materials and highest speeds. Not to be used with mechanical belt connectors.
- TU05 – version in degree of hardness between TU01 and TU02 with chemical resistance.

Classification of different materials

Less abrasive materials: limestone, salt, sugar, brown coal (lignite), anthracite coal

Moderately abrasive materials: gravel, clinker, sandstone, recycling waste

Highly abrasive materials: sand, glass, ore

Extremely abrasive materials: quartz sand, glass ash, kaolin, ore

Correlation of the degree of hardness to the material

Belt speed	Low abrasive material	Moderately abrasive material	Highly abrasive material	Extremely abrasive material	Chemical resistance
0,5 m/s	TU01	TU01	TU02	TU03	TU05
1,0 m/s	TU01	TU01	TU02	TU03	TU05
1,5 m/s	TU01	TU02	TU02	TU03	TU05
2,0 m/s	TU01	TU02	TU02	TU03	TU05
2,5 m/s	TU01	TU02	TU02	TU03	TU05
3,0 m/s	TU01	TU02	TU02	TU03	TU05
3,5 m/s	TU02	TU02	TU02	TU03	TU05
4,0 m/s	TU02	TU02	TU02	TU03	TU05
4,5 m/s	TU02	TU02	TU03	TU03	
5,0 m/s	TU02	TU02	TU03	TU03	
5,5 m/s	TU02	TU03	TU03	TU03	
6,0 m/s	TU02	TU03	TU03	TU04	
6,5 m/s	TU03	TU03	TU03	TU04	
7,0 m/s	TU03	TU03	TU03	TU04	

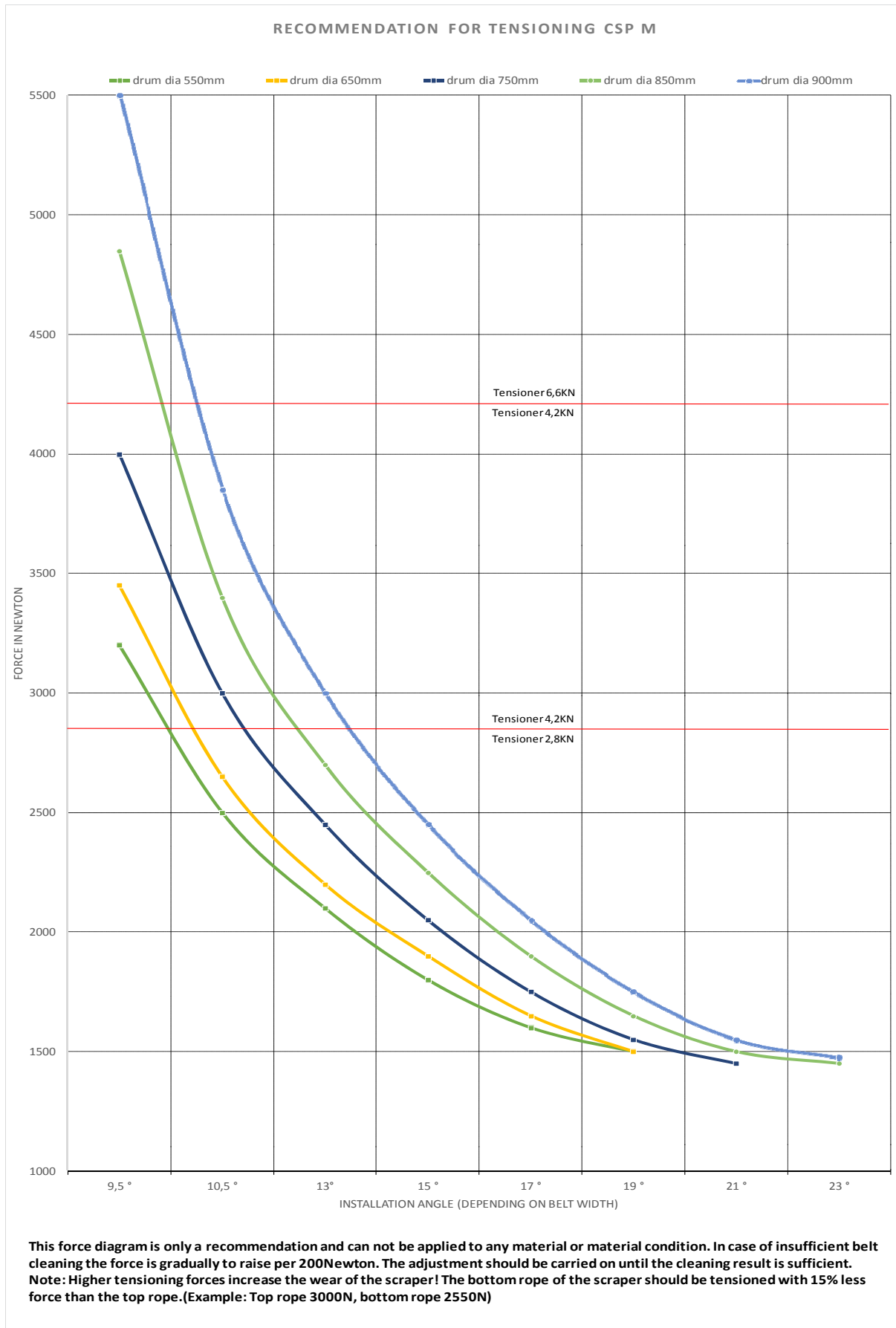
3. Assembly instructions

3.1 Martin® CLEANSRAPE Type M

3.1.a Drilling table for the ducts

chute width approximately 1,2*belt width												
drum dia	belt width	600mm	700mm	800mm	900mm	1000mm	1100mm	1200mm	1300mm	1400mm	1500mm	1600mm
550mm	X1.1	305,6	307,6	308,5	309,4	310,2	311,1	312				
	Y1.1	-26,7	0	0	0	0	0	0				
	X2.1	235,7	253	254,1	255,1	256,2	257,2	258,3				
	Y2.1	-196,3	-175	-175	-175	-175	-175	-175				
	X1.2	185,7	180,9	183,1	183,1	191,4	192,2	181,3				
	Y1.2	-244,1	-248,8	-248,3	-249,3	-244,1	-244,6	-253,9				
	X2.2	13,3	7,2	10	10	20,4	21,3	7,7				
	Y2.2	-306,5	-307,5	-308,3	-309,2	-309,6	-310,4	-311,9				
	angle	-17,5	-16,5	-14,5	13	-11,5	-10,5	-10				
600mm	X1.1	326,7	332,6	333,5	334,4	335,2	336,1	337	337,9			
	Y1.1	-57,6	0	0	0	0	0	0	0			
	X2.1	247,2	282,9	283,9	284,9	285,9	287	288	189			
	Y2.1	-221,3	-175	-175	-175	-175	-175	-175	-175			
	X1.2	191	190,1	188,3	183,8	188,8	185,1	187,7	196,2			
	Y1.2	-271,2	-272,9	-275,3	-279,3	-277	-180,6	-279,9	-275,1			
	X2.2	19,2	18,1	15,8	10,5	16,4	11,9	15	25,4			
	Y2.2	-331,2	-332,1	-333,1	-334,2	-334,8	-335,9	-336,7	-336,9			
	angle	-18	-18	-16,5	14,5	13	-12	-11	-10			
650mm	X1.1	351,3	356,3	358,5	359,4	360,2	361,1	362	362,9	363,7		
	Y1.1	61,9	-31,2	0	0	0	0	0	0	0		
	X2.1	275,8	295,4	312,9	313,9	314,9	315,9	316,9	317,9	318,9		
	Y2.1	-226,3	-201,5	-175	-175	-175	-175	-175	-175	-175		
	X1.2	224,6	206,4	192,1	182,3	182,9	193,8	193,3	199,3	188		
	Y1.2	-277,2	-292	-302,7	-309,7	-310,3	-304,7	-306,1	-303,2	-311,4		
	X2.2	59,8	37,1	19,9	8,4	9,2	21,8	21,2	28,4	15,1		
	Y2.2	-351,7	-355,7	-357,9	-359,3	-360,1	-360,5	-361,4	-361,8	-363,4		
	angle	-18	-18	-17,5	-16	-14,5	-13	-12	-11	-10,5		
700mm	X1.1	375,9	376,8	382	384,4	385,2	386,1	387	387,9	388,7	389,6	
	Y1.1	-66,3	-66,4	-33,4	0	0	0	0	0	0	0	
	X2.1	303,7	304,7	324,7	342,2	343,2	344,2	345,2	346,2	347,1	348,1	
	Y2.1	-231,3	-231,4	-204,1	-175	-175	-175	-175	-175	-175	-175	
	X1.2	256,5	216,7	208,2	196,8	194,1	201,9	198,1	201,2	185,2	201,3	
	Y1.2	-282,8	-315,4	-322,1	-330,2	-332,8	-329,1	-332,5	-331,6	-341,8	-333,6	
	X2.2	98,3	48,5	38,3	24,9	21,7	30,8	26,4	30	11,5	30	
	Y2.2	-368,9	-379,5	-381,6	-383,6	384,6	-384,9	-386,1	-386,7	-388,6	-388,5	
	angle	-18	-18	-17,5	-17	-15,5	-14	-13	-12	-11,5	-10,5	
750mm	X1.1		401,4	402,3	407,8	410,2	411,1	412	412,9	413,7	414,6	415,5
	Y1.1		-70,8	-70,9	-35,7	0	0	0	0	0	0	0
	X2.1		332,2	333,1	353,4	371,1	372	373	374	374,9	375,9	376,8
	Y2.1		-236,3	-236,4	-206,6	-175	-175	-175	-175	-175	-175	-175
	X1.2		250,8	205,6	196,7	183,6	187,1	202,1	201,9	209	194,4	182,6
	Y1.2		-321,4	-353	-359	-366,9	-366,1	-359	-360,2	357,1	-366,2	-373,2
	X2.2		88,5	34,6	24,3	9,6	13,5	30,4	30,2	38,3	21,7	8,4
	Y2.2		-397,9	-407	-408,7	-410,1	-410,9	-410,9	-411,8	-412	-414,1	-415,4
	angle		-18	-18	-17,5	-17	-15,5	-14	-13	-12	-11,5	-11
800mm	X1.1		426,1	426,9	427,8	435,2	436,1	437	437,9	438,7	439,6	440,5
	Y1.1		-75,1	-75,3	-75,4	0	0	0	0	0	0	0
	X2.1		359,3	360,2	361,1	398,5	399,5	400,4	401,4	402,3	403,3	404,2
	Y2.1		-241	-241,2	-241,4	-175	-175	-175	-175	-175	-175	-175
	X1.2		283,2	242,3	191,2	215,1	193,2	205,2	201,1	205,1	184,5	203,6
	Y1.2		-327,1	-359,5	-390	-378,4	-391	-385,8	-389	-387,9	-399,1	-390,6
	X2.2		126,7	76,6	17,8	44,9	20,1	33,5	28,9	33,4	10,4	31,6
	Y2.2		-413,7	-426,7	-434	-432,9	-435,7	-435,7	-436,9	-437,5	-439,5	-439,4
	angle		-18	-18	-18	-1725	-16,5	-15	-14	-13	-12,5	-11,5
850mm	X1.1			451,5	452,4	453,3	461,1	462	462,9	463,7	464,6	465,5
	Y1.1			-79,6	-79,8	-79,9	0	0	0	0	0	0
	X2.1			387	387,9	388,8	426,6	427,6	428,5	429,5	430,4	431,4
	Y2.1			-245,9	-246,1	-246,3	-175	-175	-175	-175	-175	-175
	X1.2			276,8	231	192,4	198,5	207,2	198,8	199	207,8	188,4
	Y1.2			-365,5	-397,1	-418,1	-416,2	-412,9	-418	-418,9	-415,6	-425,7
	X2.2			116,3	62,3	18,9	25,7	35,4	26	26,2	36	14,6
	Y2.2			-443,5	-455,1	-459,9	-460,4	-460,6	-462,1	-463	-463,2	-465,3
	angle			-18	-18	-17,5	-17,5	-16	-15	-14	-13	-12,5

3.1.b Force diagram

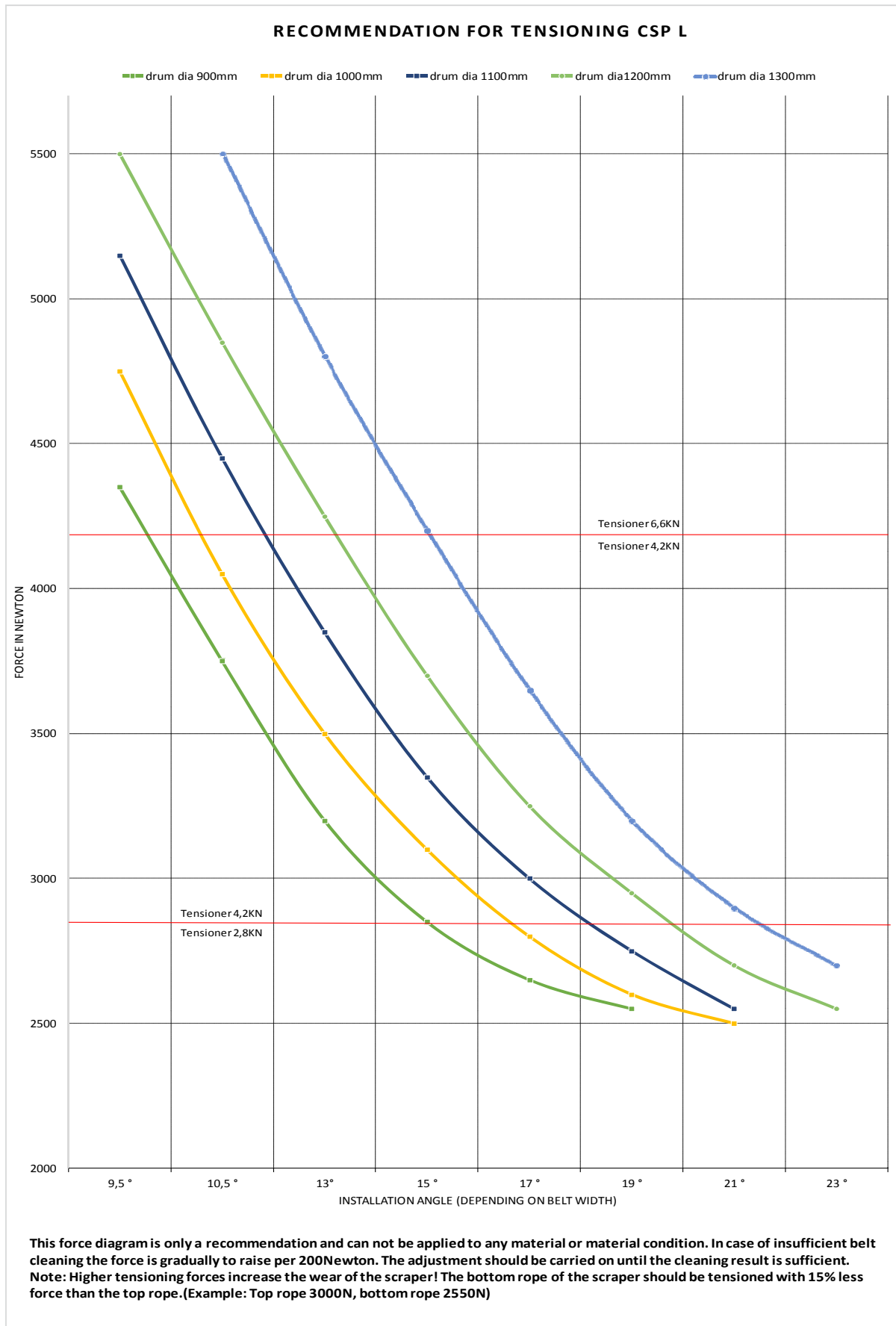


3.2 Martin® CLEANSRAPE Type L

3.2.a Drilling table for the ducts

chute width approximately 1,2*belt width												
drum dia	belt width	800mm	900mm	1000mm	1100mm	1200mm	1400mm	1600mm	1800mm	2000mm	2200mm	2400mm
900mm	X1.1	488,5	495	497,7	498,6	499,5	501,2	503	504,7			
	Y1.1	-86,1	-43,3	0	0	0	0	0	0			
	X2.1	350,3	380,6	408,1	409,1	410,2	412,3	414,5	416,6			
	Y2.1	-351,2	-319,4	-285	-285	-285	-285	-285	-285			
	X1.2	325,6	-319,8	323,4	292,9	300	297,6	294	307,4			
	Y1.2	-374,2	-380,2	-378,4	-403,6	-399,3	-403,3	-408,1	-400,3			
	X2.2	51,5	43,9	48,5	9,6	18,5	15,5	11	27,7			
	Y2.2	-493,3	-494,9	-495,4	-498,5	-499,2	-501	-502,9	-504			
	angle	-18	-18	-17,5	-17	-15,5	-13,5	-12	10,5			
950mm	X1.1	513,1	513,9	520,8	521,6	524,5	526,2	528	529,7	533,2		
	Y1.1	-90,5	-90,6	-45,6	-45,6	0	0	0	0	0		
	X2.1	380	381	411,7	412,8	440,3	442,4	444,5	446,6	450,7		
	Y2.1	-356,4	-356,6	-322,1	-322,2	-285	-285	-285	-285	-285		
	X1.2	356,8	319,5	326,4	297,2	305,2	296,9	312,4	295,8	298,6		
	Y1.2	-379,6	-412,7	-408,4	-431,1	-426,5	-434,5	-425,7	-439,5	-441,8		
	X2.2	91	42,3	51	14,7	24,4	14,3	33,2	12,9	16,3		
	Y2.2	-513	-520,2	-520,3	-523,4	-523,9	-526,1	-527	-529,6	-533		
	angle	-18	-18	-17,5	-17	-16,5	-14,5	-12,5	-11,5	-9,5		
1000mm	X1.1		538,6	539,4	546,5	549,5	551,2	553	554,7	556,5	558,2	
	Y1.1		-95	-95,1	-47,8	0	0	0	0	0	0	
	X2.1		410,2	411,2	442,2	469,8	471,9	473,9	475,9	478	480	
	Y2.1		-361,7	-361,9	-324,8	-285	-285	-285	-285	-285	-285	
	X1.2		352,1	311,2	319,8	309,5	294,6	305,5	311,4	303,4	308,1	
	Y1.2		-418,4	-450,8	-445,8	-454	-465,9	-461	-459,1	-466,5	-465,5	
	X2.2		82,5	31,2	41,7	29,2	11,3	24,2	31,3	21,7	27,3	
	Y2.2		-540,6	-546,9	-547	-548,7	-551,1	-552,5	-553,9	-556,1	-557,6	
	angle		-18	-18	-17,5	-17,5	-15,5	-13,5	-12	-11	-10	
1050mm	X1.1		563,2	564	564,9	572,3	576,2	578	579,7	581,5	583,2	
	Y1.1		-99,3	-99,5	-99,6	-50,1	0	0	0	0	0	
	X2.1		438,8	439,8	440,8	472,1	500,8	502,8	504,9	506,9	508,9	
	Y2.1		-366,8	-366,9	-367,1	-327,4	-285	-285	-285	-285	-285	
	X1.2		383,8	345,5	300,6	329,3	316,2	295,8	295,7	315,8	317,4	
	Y1.2		-424	-456,8	-488,5	-470,7	-481,7	-496,5	-498,7	-488,3	-489,3	
	X2.2		121,4	72,3	18,2	52,4	36,6	12,5	12,3	35,9	37,9	
	Y2.2		-558,8	-568,2	-573,3	-572,1	-575,1	-577,9	-579,6	-580,4	-582	
	angle		-18	-18	-18	-17	-16	-14,5	-13	-11,5	-10,5	
1100mm	X1.1			588,7	589,5	597,2	601,2	603	604,7	606,5	608,2	610
	Y1.1			-103,8	-103,9	-52,2	0	0	0	0	0	0
	X2.1			468	468,9	500,6	529,4	531,4	533,4	535,4	537,3	539,3
	Y2.1			-371,9	-372,1	-329,9	-285	-285	-285	-285	-285	-285
	X1.2			378,5	336,8	332,6	312,5	314,5	311,1	328	326,5	295,3
	Y1.2			-462,7	-494,9	-498,8	-513,6	-514,5	-518,6	-510,1	-513,2	-533,8
	X2.2			112,1	60,6	55,5	31,7	34	30	49,8	48	11,7
	Y2.2			-587,1	-595,6	-596,9	-600,4	-602	-604	-604,4	-606,3	-609,9
	angle			-18	-18	-18	-17	-15	-13,5	-12	-11	-10,5
1150mm	X1.1				614,1	615	626,2	628	629,7	631,5	633,2	635
	Y1.1				-108,3	-108,4	0	0	0	0	0	0
	X2.1				496,8	497,7	557,6	559,6	561,6	563,5	565,5	567,4
	Y2.1				-377	-377,2	-285	-285	-285	-285	-285	-285
	X1.2				371,4	326,1	334,1	302,1	326,4	303	335,4	299,7
	Y1.2				-501	-532,6	-529,7	-550,6	-538,5	-554,1	-537,4	-559,8
	X2.2				101,4	47,1	56,4	19,4	47,4	20,3	57,8	16,6
	Y2.2				-615,3	-622,7	-623,7	-627,7	-628	-631,2	-630,6	-634,8
	angle				-18	-18	-17,5	-16	-14	-13	-11,5	-11
1200mm	X1.1				638,8	639,6	648,8	653	654,7	656,5	658,2	660
	Y1.1				-112,6	-112,8	-56,8	0	0	0	0	0
	X2.1				524,3	525,3	558,5	587,5	589,5	591,4	593,4	595,3
	Y2.1				-381,8	-382	-335	-285	-285	-285	-285	-285
	X1.2				404,7	362,4	331,3	320,9	306,1	314,6	301,2	303,8
	Y1.2				-506,9	-539	-560,7	-568,7	-578,8	-576,2	-585,3	-585,9
	X2.2				140,8	89,1	52,5	40,5	23,7	33,3	18,1	21
	Y2.2				-633,1	-643,4	-649,1	-651,7	-654,3	-655,7	-658	-659,7
	angle				-18	-18	-17,5	-16,5	-15	-13,5	-12,5	-11,5
1250mm	X1.1					664,3	666	678	679,7	681,5	683,2	685
	Y1.1					-117,1	-117,4	0	0	0	0	0
	X2.1					552,6	554,5	615,2	617,1	619	621	622,9
	Y2.1					-386,8	-387,2	-285	-285	-285	-285	-285
	X1.2					397,2	298,3	305,3	321,3	326,1	308,8	307,4
	Y1.2					-545,1	-606,9	-605,4	-599	-598,4	-609,5	612,2
	X2.2					129,7	14,8	22,5	40,5	46	26,4	24,8
	Y2.2					-661,9	-676,1	-677,6	-678,5	-679,9	-682,7	-684,5
	angle					-18	-18	-17,5	-15,5	-14	-13	-12

3.2.b Force diagram



Before assembling the system, make sure that the delivery is complete. For more information on the dimensions and individual parts refer to the dimensional sheets and spare parts lists.

3.3 Defining the installation position

(Figure 1)

- Defining the drilling position using the dimensions from the table 3.1
- Transfer the position to the outside and mark it on the chute wall.
- The ideal installation angle is at an inclination below 17 degrees. It may be adjusted from approx. 10 to 22 degrees. For that purpose the drilling tables in Section 3.1 should be referred to.

Highest possible installation position for belt speed ≥ 5 m/s

Installation position for belt speed < 5 m/s

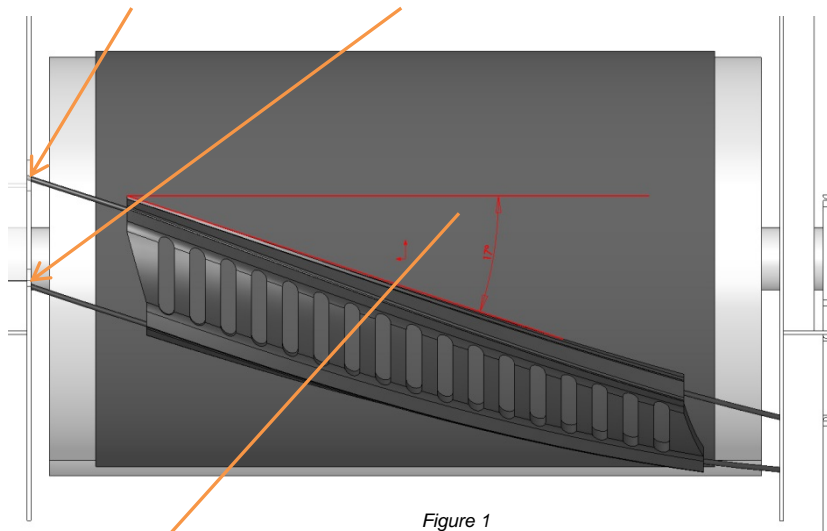
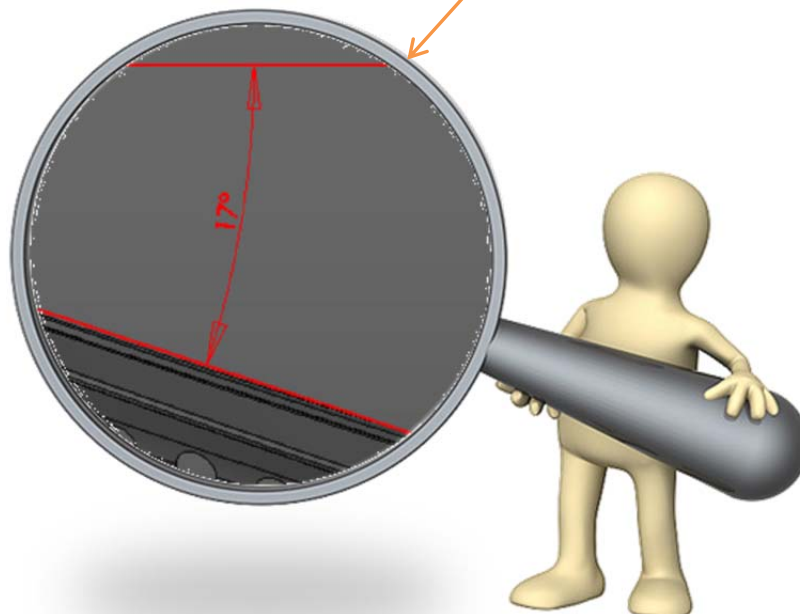


Figure 1



3.4 Drilling holes for the system tensioners

3.4.a Option 1: 4 system tensioners

(Option 1: 4 system tensioners, for belt speeds above 5 m/s and/or belt widths above 1,8 m)

Drill 4 holes (Figure 2 and Figure 3)

1. Check the clearance for the displacement mechanism, if needed, use fixed point option as per step 3.3 b. Take dimensions X1.1 / Y1.1, X2.1 / Y2.1, X1.2 / Y1.2 and X2.2 / Y2.2 from the drilling table.
2. Drill the holes for the tensioning rope ducts (see Figure 4).

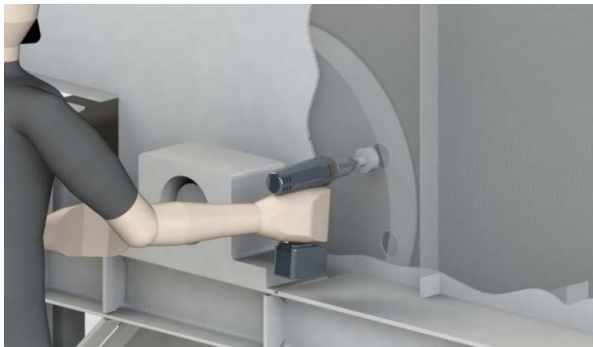


Figure 4

The creating drills are to be made according to the drilling table with the diameter of 50 – 60 mm.

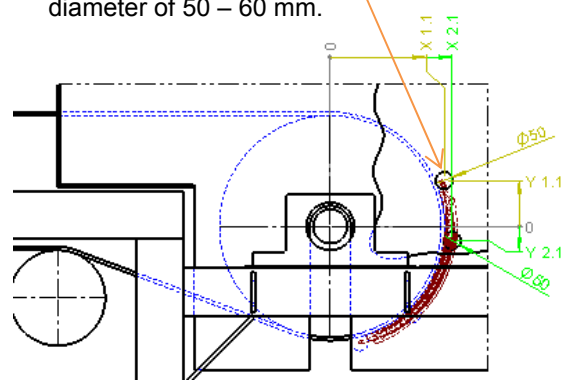


Figure 2

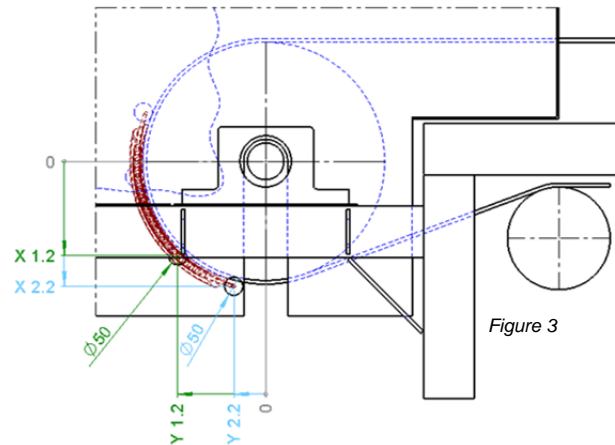


Figure 3

3.4.b Option 2: Fixed point system

(With this option, only 2 drill holes are required on one side as rope ducts)

1. Check clearance for the displacement mechanism; take dimensions X1.1 / Y1.1 and X2.1 / Y2.1 from the drilling table.
2. Drill the holes for the tensioning rope ducts.

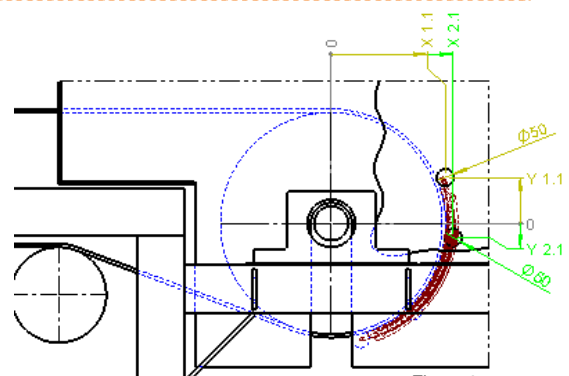


Figure 2

3.4.c Option 3: Inside deflector

(this option is to use if Option 1 is required, but there is not enough place available for the system tensioners)

1. Use Option 1 where it is possible with respect to the installation location.
2. Weld the inside deflector welding plate on the inside of the side walls onto the missing X- and Y-dimensions from the drilling table.



Figure 5

3.5 Fixing the welding plates

-
- Align the welding plates for the roll holder with the prepared drill holes tangentially to the belt surface and weld them on (Figure 6)



Figure 6

3.6 Fixing the roll holders

- Bolt the roll holders onto the welding plates and align them roughly. The axis of the deflector roll must line up with the rope deflector (tangentially to the belt surface).
- Attach the scraper module, pull the chains through the adjustment plates over the deflector rolls and lock.

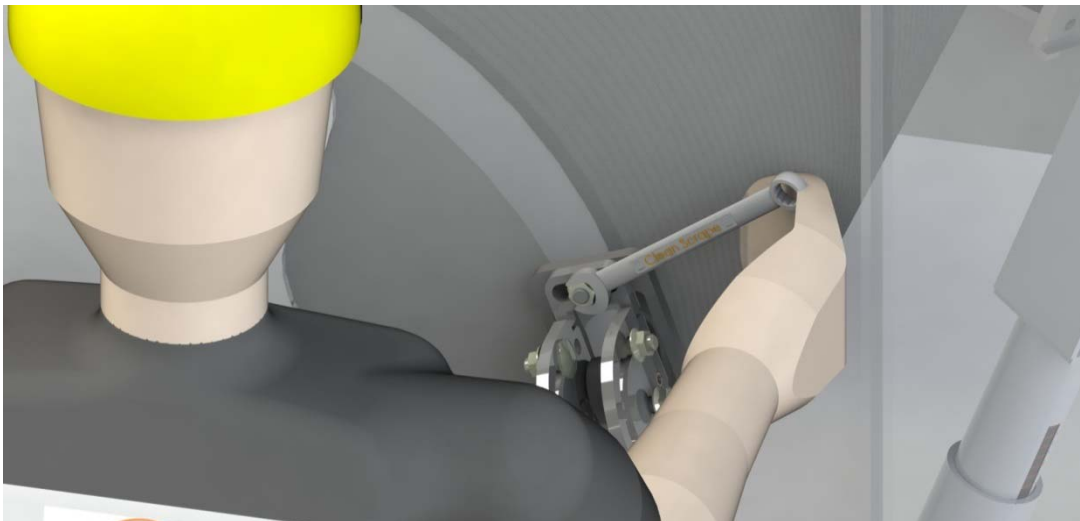
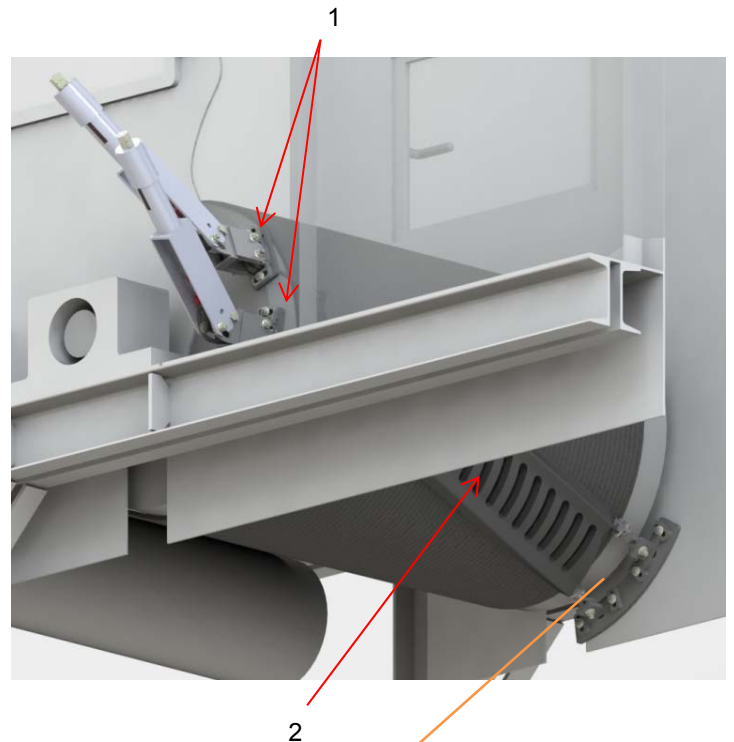
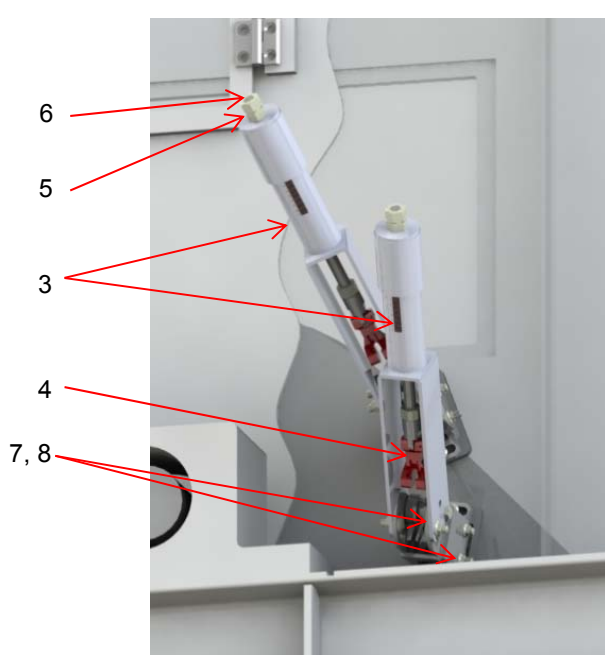


Figure 7

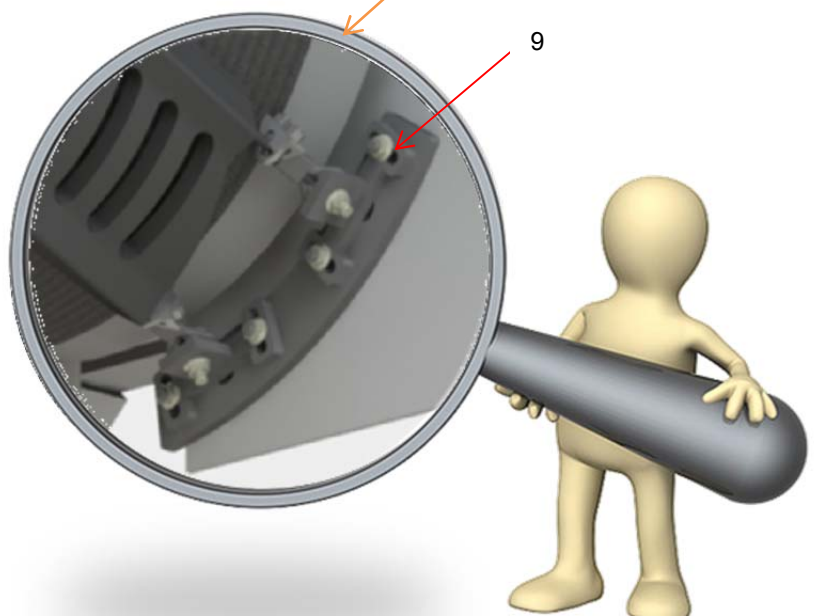
3.7 Fixing the system tensioners and fixed points

- Bolt the system tensioners onto the roll holders and line them up with the tangential exit line of the chain/rope.
- Check the tangential alignment of the roll holders (1) with the drum axis. Line up the rope thimbles with the outward facing carriage bolts on the insides of the fixed point brackets. This ensures that the belt cannot be damaged even if it is not running straight.
- Align the scraper module on the belt (2) to match the drum contour. Pull the chain through the roll holders (1) and system tensioners (3) and suspend it in the chain shortening claw (4). Pull the chain through the lower roll holder (1) and system tensioner and fix.



3.8 Lining up the scraper with the belt

- Tension the system tensioners by tightening the nut (5) until the scraper lies fully flush against the belt and the bushing scale shows the tension value from the drilling table. Then lock it up fixing an additional nut (6).
- Tighten the nuts on the roll holders (7) and system tensioners (8).
- Tighten the four clamping nuts (9) on the fixed point.



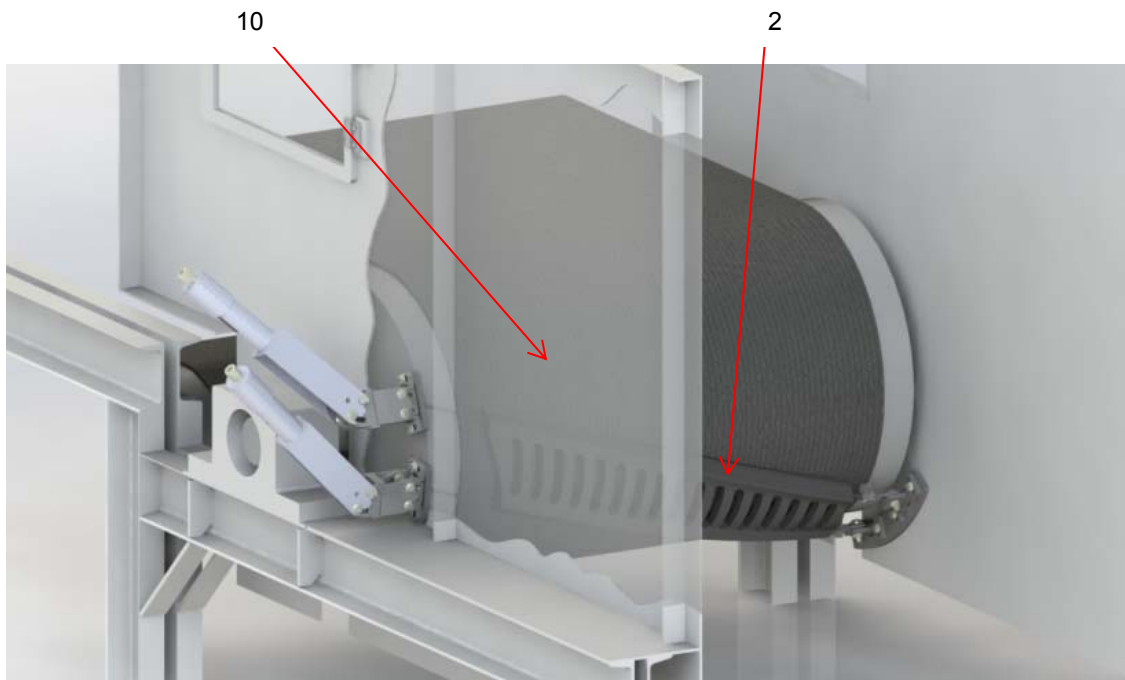
3.9 Checking the installation



- Tighten and lock all screw connections.
- Check if all components operate correctly.
- Check the clearance of the module (2) by pulling off the belt (10).

CAUTION: The scraper is now in operating position. The tensioning units of the scraper module are tensioned. When threaded joints are loosened, they can release energy abruptly. There is danger of injury.

- Remove the installation material and tools from the location of use.



3.10 Test run

The following test runs are required to check the proper functioning of the scraper:



- Perform a test run **with the conveyor belt unloaded** (at least 15 minutes)
Check the scraper, especially at the transition points of belt connectors and mends.
This test run should last at least 15 minutes to ensure all components are checked properly. Long conveyor systems must be tested for a minimum of 3-5 full circulations of the conveyor belt.
- Perform a test run **with the conveyor belt loaded** (at least 30 minutes)
Check the achieved cleaning performance. If needed, adjust individual tensioners or fixed points while the conveyor belt is stationary. Due to the changing load of the bulk material being conveyed or changes in the properties of the bulk material, this check should last at least 30 minutes. In case of inefficient belt cleaning or flooding of the system, the system tensioners must be tensioned additionally, 100 Newton more each. The adjusting of the system should be carried on until the cleaning effect is sufficient. (Caution: bear in mind the maximum force of the system tensioner, see page 6)
Make sure that there are no persons dangerously close to the conveyor system and follow the rules for safe commissioning of the system

4. Inspection and service

The system tensioners must be visually checked at regular intervals to ensure the proper function of the entire scraper system. In operation, the pressure spring must always be adjusted at least up to the data listed in the drilling table or be re-tensioned, if necessary. The necessary safety precautions for all service work on scrapers and conveyor belt systems are always to comply with.

4.1 Initial inspection

Immediately after the first full day of operation of the scraper, a visual check must be performed. In this process, the device function, cleaning performance, material flow and smooth running of the scraper are to be checked. Check the belt surface and the belt connectors and mends along the entire length of the belt. Check the proper function of the system tensioner adjustment.

Inspection work

1. Functional check of the system tensioners.
2. Check the belt surface and belt connectors.
3. Check screw connections.
4. Perform a test run.

4.2 Follow-up inspection

You must perform regular follow-up inspections; the intervals are variable and mainly depend on the load to which the scraper is exposed. The follow-up inspection includes a visual check of all components. The system tensioners must be checked visually inspecting the pressure spring setting. To do so, refer to page 19 of this guide, "Notes"; an assembly fitter may have recorded changes to the pre-tensioning strokes there. Additionally, check the state of the carbide metal and clean the scraper, if needed, removing any bulk material adhering to it. The scraper module must be replaced if the carbide metal wear is ≥ 5 mm as the belt damage will otherwise be inevitable. When cleaning the scraper, be sure to avoid damaging the scraper edges of the module. **CAUTION - damaged scraper edges can lead to the belt damage and impair the cleaning performance. For further reference, regard the general hazard warnings.**



Inspection work

1. Functional check of the system tensioners.
2. Inspect and possibly repair the corrosion protection of all components.
3. Inspect the wear state of all components.
4. Replace worn or damaged components with original parts.
5. Before reinstalling a used module, remove all sharp carbide metal edges.
6. In case of a belt change, install and readjust the scraper in line with the assembly and operation manual.
7. Check screw connections.
8. Perform a test run.

4.3 Maintenance

Under normal operating conditions, you should check the scraper every 12 weeks.

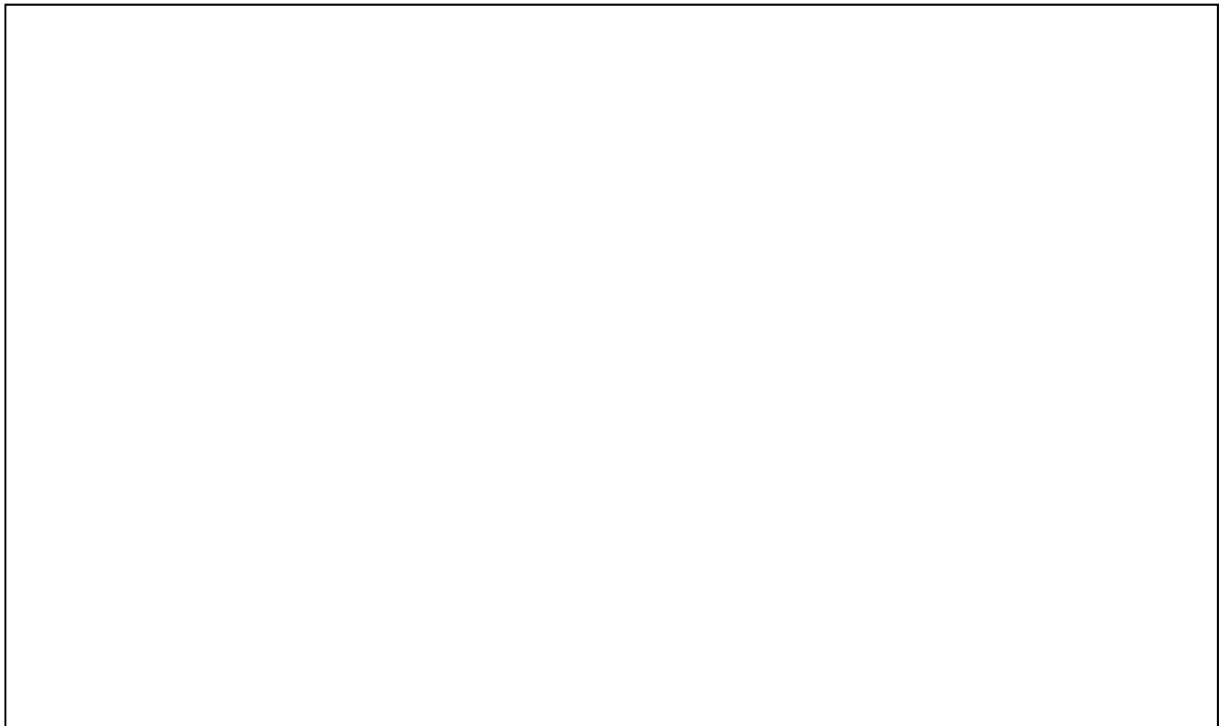
Martin Engineering will be happy to advise you if you have any questions relating to defining the exact inspection intervals or required actions within the scope of maintenance.

Martin Engineering Service

On request, the service department at **Martin Engineering** will be happy to handle all required inspection work. Service employees from **Martin Engineering** or partner companies are available worldwide to perform the work. In addition to this, **Martin Engineering** offers training seminars on topics of selecting, installing and maintaining its cleaning systems.

Notes

Layout

A large, empty rectangular box with a thin black border, intended for a layout diagram or drawing.

Technical alterations

The scraper is subject to ongoing development and may contain modified components

Martin Engineering GmbH

In der Rehbach 14
65396 Walluf, Germany
Tel.: +49 6123 9782 20
Fax: +49 6123 75533
info@martin-eng.de
www.martin-eng.de

**Martin Engineering Makina Sanayi
ve Ticaret Ltd.Şti.**

Yukarı Dudullu
IMES Sanayi Sitesi
B Blok 205. Sokak No. 6
34775 Ümraniye – Istanbul
Turkey
PH: +90 216 499 34 91
FX: +90 216 499 34 90
www.martin-eng.com.tr

Martin Engineering S.A.R.L.

Eurocentre 50
50, Avenue d'Alsace
68025 Colmar Cedex
France
Phone: +33(0)3 89 20 63 24
Fax: +33(0)3 89 20 43 79
info@martin-eng.fr
www.martin-eng.fr

Martin Engineering Ltd.

8 Experian Way
ng2 Business Park
Nottingham
NG2 1EP UK
Phone: +44 (0)1159 464746
Fax: +44 (0)1159 465550
info@martin-eng.co.uk
www.martin-eng.co.uk

Martin Engineering Italy Srl

Via Buonarroti, 43/A
20064 Gorgonzola (MI)
Italy
Phone: +39 02 95383851
Fax: +39 02 95383815
info@martin-eng.it
www.martin-eng.it

OOO Martin Engineering

Shlyuzovaya naberezhnaya 8, bldg. 1
115114 Moscow, Russia
Tel: +7 499 678 33 49
Fax: +7 499 678 25 95
info@martin-eng.ru
www.martin-eng.ru