



SM-FT-1000 Banding Tool – April 2016



*Operation, Parts & Safety Manual
Original Instructions*



Tooling

Depending on set up, this tool is designed to assemble the following HCL Smart® products:

- Smart® Tie 20mm (3/4")
- Smart® Tie 32mm (1 1/4")
- Smart® Band 19mm (3/4")
- Smart® Band 32mm (1 1/4")

Follow the instructions described to achieve safe operation.



Health & Safety

- 1.1 Warning & Safety Instructions

Operation

- 2.1 Using the Tool
- 2.2 Tensioning Tables

Adapting the Tool

- 3.1 Changing the Pawl
- 3.2 Changing the Blade & Blade Housing

Maintenance

- 4.1 Servicing
- 4.2 Troubleshooting
- 4.3 Parts List

Warning & Safety Instructions



Read these instructions carefully:

Whilst Smart® Band and Smart® Tie are considered to be significantly safer than alternative metallic solutions, failure to follow these instructions can still result in personal injury.

General safety considerations:

1. STRAP BREAKAGE HAZARD

Smart® Band and Smart® Tie are free from sharp metallic edges however it is important to understand that improper operation of the tool or sharp corners on the load can result in strap breakage during tensioning that could result in the following:

- A sudden loss of balance causing you to fall
- Both tool and strap flying violently towards your face

Failure to place the strap properly around the load, an unstable or shifted load, could result in a sudden loss of strap tension during tensioning. This could result in a sudden loss of balance causing you to fall.

Positioning yourself in-line with the strap during tensioning, can result in personal injury from flying strap or tool. When tensioning, position yourself to one side of the strap and keep all bystanders away.

2. TRAINING

This tool must not be used by persons not properly trained in its use. Be certain that you receive proper training from your employer. If you have any questions contact your HCL representative.



3. EYE INJURY HAZARD

Failure to wear safety glasses with side shields can result in eye injury or blindness. Always wear safety glasses with side shields which conform to ANSI Standard Z87.1 or EN 166.



4. CUT HAZARD

Although the Smart® Band and Smart® Tie are not metallic and therefore significantly less likely to cause cuts to hands or fingers, it is still strongly recommended that the operator wear protective gloves.

5. FALL HAZARD

Maintaining improper footing and/or balance when operating the tool can cause you to fall. Do not use the tool when you are in an awkward position.

6. TOOL CARE (for further information see maintenance section)

- Inspect and clean the tool daily. Replace all worn or broken parts.
- Lubricate all moving parts approximately every 50 hours of use.
- If used in sea water, wash off with fresh water after use.

OPERATION

Using the Tool



NOTE - Steps 1 & 2 are not applicable to Smart® Tie

1

Insert band fully into fixed end of the buckle



2

Pull back band to engage latch



WARNING - Ensure latch is fully engaged with band before tightening. Latch not fully engaged could lead to premature failure of system when tightening

OPERATION

Using the Tool

3

*Wrap band around the application...
...and insert band into other end of buckle*



4

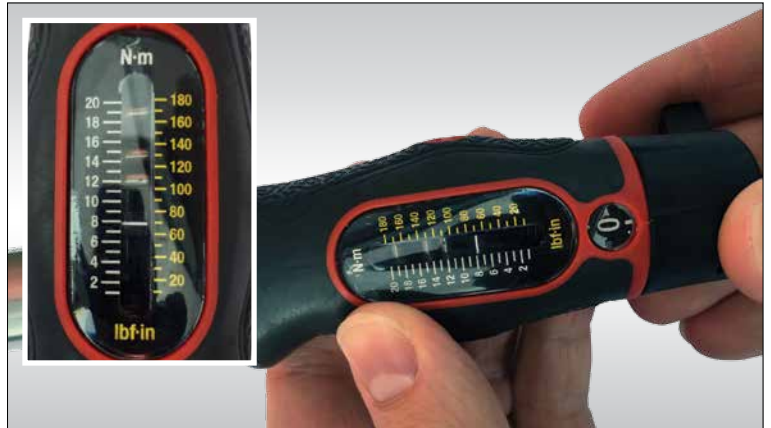
Pull band tight by hand, making sure teeth are fully engaged with band



5

Set Torque Wrench to the required Torque

*Refer to the tensioning
tables for the maximum
recommended torque.
See torque wrench manual
for detailed operating
instructions*



6

*Attach Torque wrench to the square
drive at the rear of the tool.*

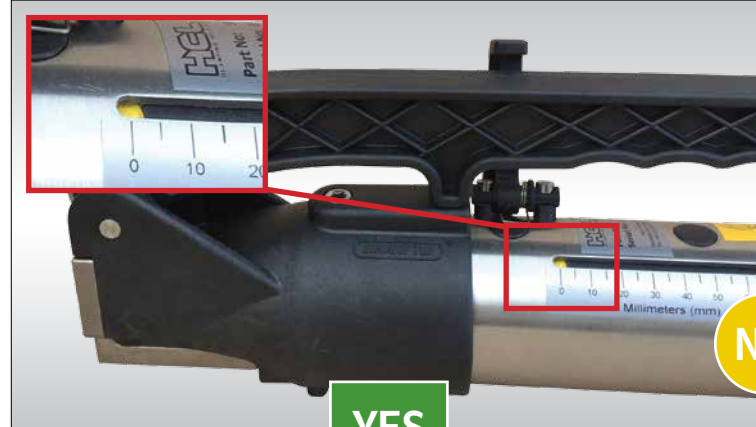
*Optional – Lock Torque wrench to
square drive using a 4mm hexagon key*



OPERATION

7

Is yellow marker in the '0mm' position?



NO

7.1

...wind Torque wrench anti-clockwise...



8

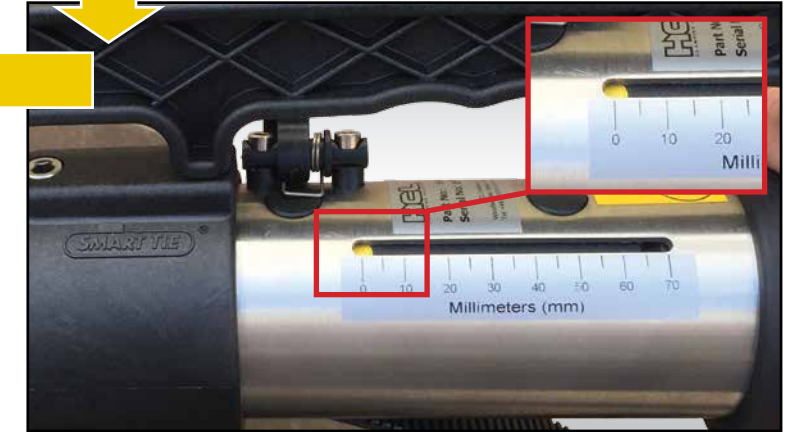
Insert tool onto band...
...and push tool up against buckle



YES

7.2

...until the yellow marker is at the '0mm' position...



9

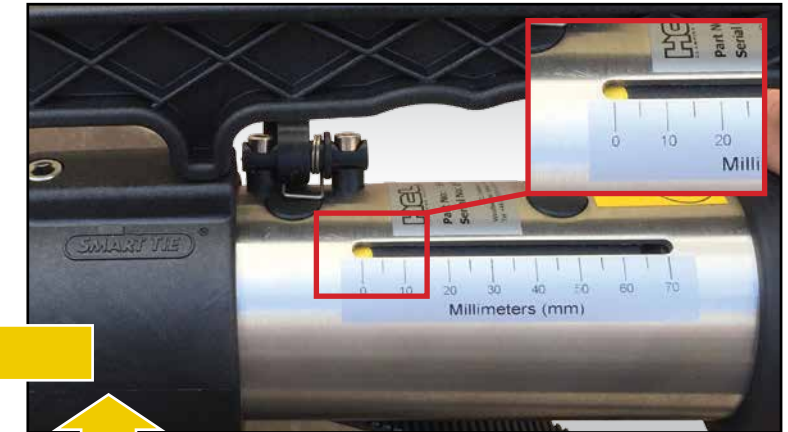
Tighten the band using a ratcheting movement...
...until the Torque wrench 'CLICKS'

WARNING - Do not wind the Torque wrench using a smooth continuous movement



10.2

...until the yellow marker is at the '0mm' position...



10

Is the yellow marker in the '70mm' position
(tool has run out of movement)?



YES

10.1

...wind Torque wrench anti-clockwise...



OPERATION

Using the Tool

11

*Wind Torque wrench anti-clockwise...
...until the yellow marker is in the '0mm' position*



12

*...until the yellow marker is in the '0mm' position, before cutting the band
(the clasp will prevent cutting in any other position)*



13

*To remove the excess band, simply take hold of the cutting handle...
...and push upwards*



14

*Once cut, remove tool from buckle
Installation is now complete*



Tensioning Tables

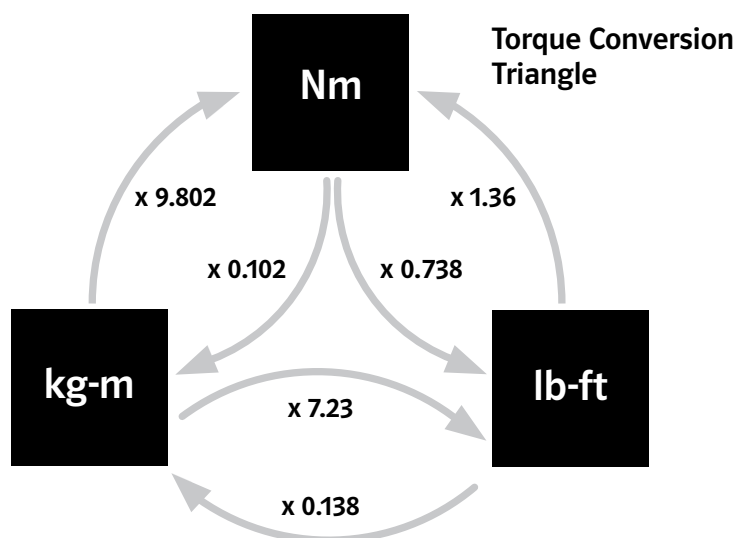
WARNING – Do not exceed the maximum torque settings recommended for the Smart® Tie or Smart® Band system being applied



Standard Buckle



Hybrid Buckle



Recommended Torque Settings

Smart® Tie		Diameter	Max Input Torque ¹		Max System Force (During Tightening)			Min Retention Force (After Tightening)		
Size	Material	mm	Nm	lb-ft	N	kgf	lbf	N	kgf	lbf
20mm (¾")	PA66 (Nylon 6.6)	100	7	5.2	3600	367	809	1500	153	337
	PA11 (Nylon 11)		6	4.4	3000	306	674	1100	112	247
	PA12 (Nylon 12)		6	4.4	3000	306	674	1100	112	247
	PPS		5	3.7	2800	286	629	1100	112	247
32mm (1¼")	PA66 (Nylon 6.6)	200	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC
	PA11 (Nylon 11)		10	7.4	6000	612	1349	2500	255	562
	PA12 (Nylon 12)		10	7.4	6000	612	1349	2500	255	562
	PPS		10	7.4	5500	561	1236	2000	204	450
	PEEK		TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC

Smart® Band			Diameter	Max Input Torque¹		Max System Force (During Tightening)			Min Retention Force (After Tightening)		
Size	Buckle Material	Band Material	mm	Nm	lb-ft	N	kgf	lbf	N	kgf	lbf
Standard Buckle – see photo above											
19mm (¾")	PA66 (Nylon 6.6.)	PA66 (Nylon 6.6.)	600	6	4.4	3800	388	854	1200	122	270
	PA66 (Nylon 6.6.)	POM (Acetal)		6	4.4	3800	388	854	1200	122	270
Hybrid Buckle – see photo above											
19mm (¾")	PA66 (Nylon 6.6.)	PA66 (Nylon 6.6.)	600	9	6.6	6000	612	1349	2500	255	562
	PA11GF (Nylon 11 Glass-filled)	PA11GF (Nylon 11 Glass-filled)		10	7.4	7000	714	1574	3500	357	787
	PA12GF (Nylon 12 Glass-filled)	PA12GF (Nylon 12 Glass-filled)		10	7.4	7000	714	1574	3500	357	787
	POM (Acetal)	POM (Acetal)		8	5.9	6000	612	1349	2500	255	562
32mm (1¼")	PA66 (Nylon 6.6.)	PA66 (Nylon 6.6.)		17	12.5	14000	1428	3147	7000	714	1574
	PA11GF (Nylon 11 Glass-filled)	PA11GF (Nylon 11 Glass-filled)		17	12.5	14000	1428	3147	7000	714	1574
	PA12GF (Nylon 12 Glass-filled)	PA12GF (Nylon 12 Glass-filled)		17	12.5	14000	1428	3147	7000	714	1574
	POM (Acetal)	POM (Acetal)		13	9.6	10000	1020	2248	5000	510	1124

¹ The input torque in the table above is the maximum recommended torque around a cylindrical application. This may need to be reduced depending on the following:

- An irregular shaped application, e.g. an application that has sharp corners around its profile
- An application in high ambient temperatures and direct sunlight, where the temperature of the Smart® Band or Smart® Tie exceeds 40°C
- An application where the Smart® Band buckle is suspended in mid-air, i.e. the buckle is not supported underneath

ADAPTING THE TOOL

Changing the Pawl



Example of an Adaptation Kit

Changing the Pawl

Remove Pawl Housing by following the instructions in Section 4.1, steps 1 to 4

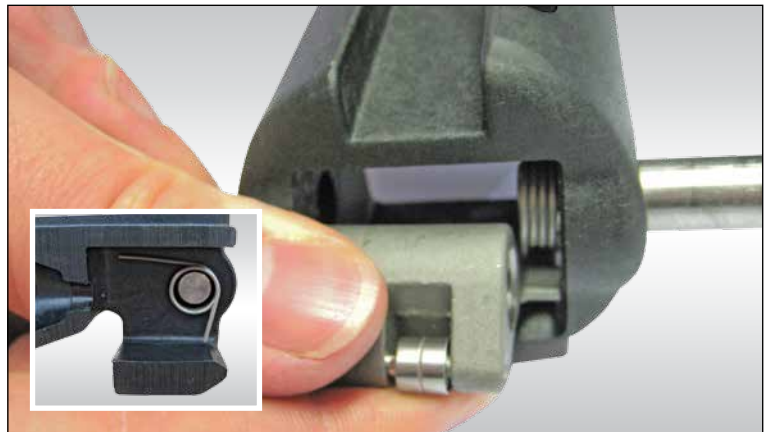
1

Remove pin from housing



2

Remove old pawl and insert new pawl



NOTE – Take care to reinsert spring in correct orientation.

3

Re-fit pin. Reassemble tool as reverse of disassembly



ADAPTING THE TOOL

Changing the Blade & Blade Housing

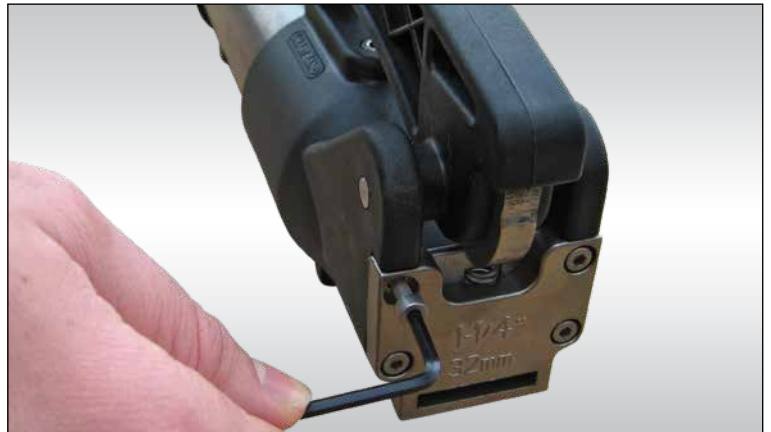


Example of an
Adaptation Kit

Changing the Blade & Blade Housing

1

Ensure cutting handle is in the down position. Remove Capscrews (4x) using 3mm hexagon key and remove old front plate



2

Remove existing blade and insert spring into new blade

WARNING – Care must be taken when handling the sharp blade to avoid injury

3

Reassemble tool as reverse of disassembly



MAINTENANCE

Servicing

1

Wind the square drive clockwise until yellow marker is in the '70mm' position

2

Tap square drive on rear of tool to ensure rear housing is as far forward as possible (this will aid the removal of the bolts)

3

Remove M8 Buttonhead screws (4x) using 5mm hexagon key

4

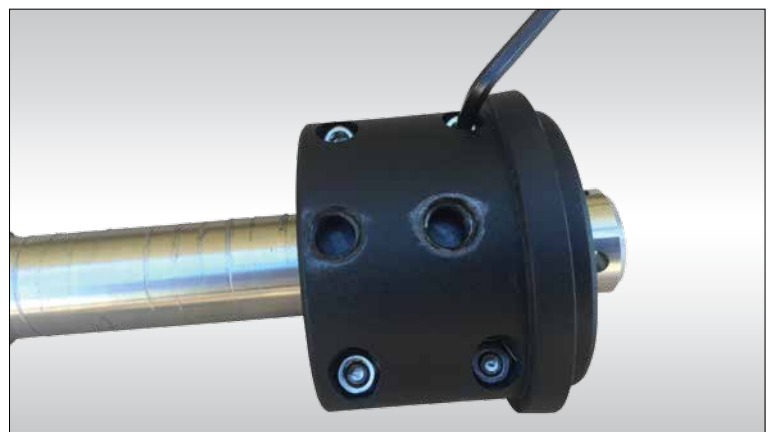
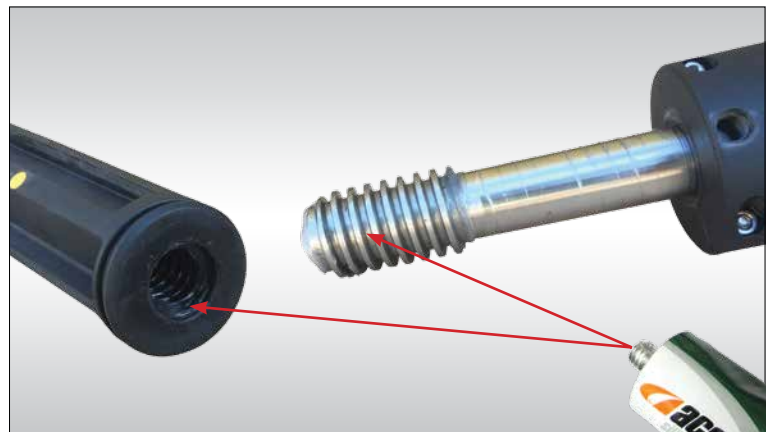
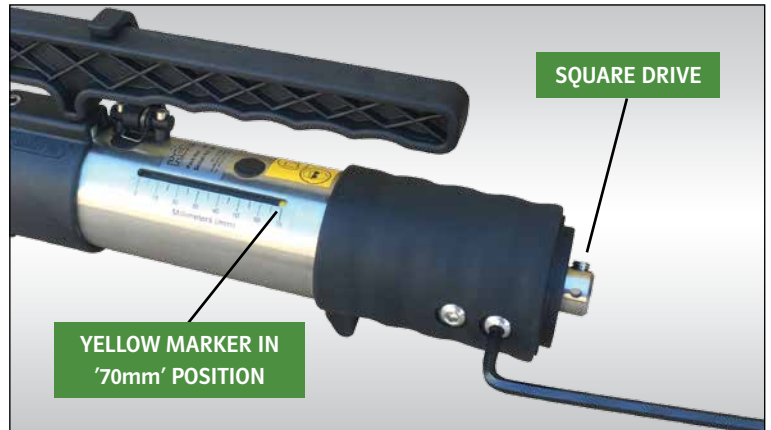
Remove internal sub-assembly

5

Wind the square drive anti-clockwise to remove threaded shaft from internal housing. Thoroughly clean all parts. Apply Silicone grease to male and female threads as shown

6

Remove M4 Capscrews and Full nuts (4x each) from split housing. Thoroughly clean all parts

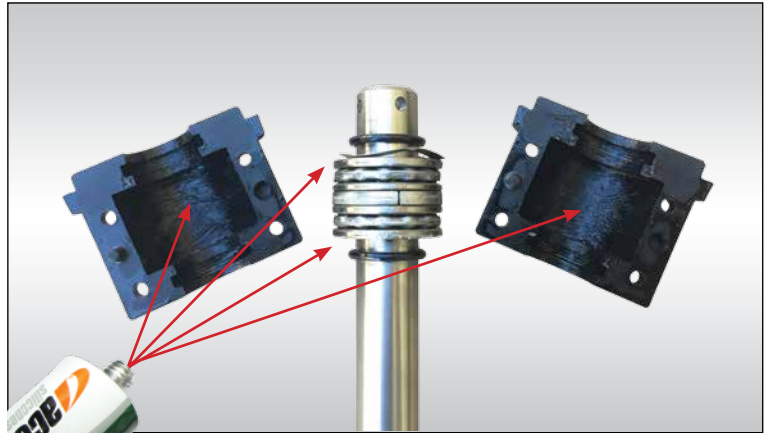


MAINTENANCE

Servicing

7

Apply Silicone grease to thrust washers and split housing as shown



8

Remove M6 Capscrew and slide front assembly off main body. Thoroughly clean all parts

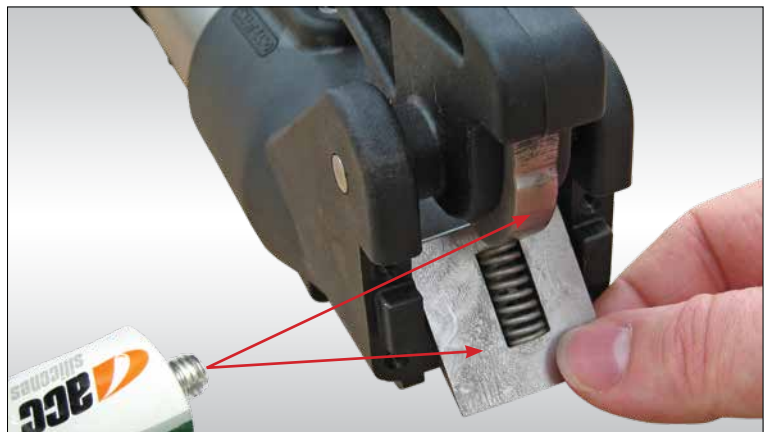
Remove the Blade and Blade Housing by following the instructions in Section 3.2, steps 1 to 2



9

Grease Cam and blade as shown

WARNING – Care must be taken when handling the sharp blade to avoid injury



Troubleshooting

Symptom 1: Smart® Band or Smart® Tie failure during fitting

Failure Mode & Possible Cause	Solution
1. System breaks due to cutting whilst in tension (yellow marker not in '0mm' position)	Do not operate cutter during tightening (Refer to Section 2.1, steps 12-14)
2. Band/Buckle breaks due to incorrect input torque	Set correct input torque (Refer to Section 2.2, Tensioning Tables)
3. Buckle breaks due to incorrect tool positioning during fitting	Ensure tool is correctly positioned in buckle. Do not lift tool away from application during tightening (Refer to Section 2.1, steps 8-9)
4. Band breaks due to repeated relaxing and re-tightening	Only tighten the band once (Refer to Section 2.1, step 10)
5. Band pulls out of fixed end of buckle	Ensure that latch is fully engaged with band before tensioning (Refer to Section 2.1, step 2)
6. Buckle breaks due to being positioned in mid-air or around too small a radius	Position Buckle on suitable radius (Refer to Banding Products Technical Booklet). Reduce the input torque if re-positioning is not possible
7. Band breaks due to being positioned around too small a radius	Position Buckle on suitable radius (Refer to Banding Products Technical Booklet). Reduce the input torque if re-positioning is not possible

Symptom 2: Inadequate Smart® Band or Smart® Tie tension

Possible Cause	Solution
1. Tool has hit rear stop (yellow marker in '70mm' position)	Wind square drive anti-clockwise until yellow marker is in '0mm' position. Then continue tightening the band (Refer to Section 2.1, step 11). Then continue tightening the band until the Torque wrench 'CLICKS'
2. Input torque incorrect	Set Torque Wrench to correct torque (Refer to Section 2.2, Tensioning Tables)
3. Tool requires servicing	Service fitting tool (Refer to Section 4.1, steps 1-9)

Symptom 3: Tool does not grip Smart® Band or Smart® Tie

Possible Cause	Solution
1. Excess band tail too short	Remove band and replace with a longer length
2. Pawl housing not fully forward (yellow marker not in '0mm' position)	Wind square drive anti-clockwise until yellow marker is in '0mm' position (Refer to Section 2.1, step 11)
3. Pawl teeth dirty or clogged	Remove internal sub-assembly from tool and clean pawl teeth (Refer to Section 4.1, steps 1-4)
4. Incorrect pawl fitted	Remove pawl and replace with correct size for band (Refer to Section 3.1, steps 1-3)
5. Pawl stuck in position	Remove internal sub-assembly from tool and un-stick pawl (Refer to Section 4.1, steps 1-4). Clean and re-grease pawl and ensure free movement

Symptom 4: Smart® Band or Smart® Tie does not feed through tool

Possible Cause	Solution
1. Blockage in tool, e.g. band	Remove internal sub-assembly or front sub-assembly as required, then clear blockage (Refer to Section 4.1, steps 1-4)
2. Pawl stuck in position	Remove internal sub-assembly from tool and un-stick pawl (Refer to Section 4.1, steps 1-4). Clean and re-grease pawl and ensure free movement
3. Pawl Housing not fully forward (green marker not showing)	Wind square drive anti-clockwise until yellow marker is in '0mm' position (Refer to Section 2.1, step 11)
4. Blade stuck down	Remove and clean blade. Front end may need to be removed. Be careful that blade does not spring out (Refer to Section 3.2, steps 1-3)
5. Incorrect front end is fitted	Remove front end and replace with correct one (Refer to Section 3.2, steps 1-3)

Symptom 5: Tool does not cut or it is too difficult to cut

Possible Cause	Solution
1. Blockage in tool, e.g. band	Remove blade and/or front end as required, then clear blockage (Refer to Section 3.2, steps 1-3)
2. Cam not lubricated (blade may also make 'screeching' noise)	Grease cam and blade (Refer to Section 4.1, step 9)
3. Blade worn or damaged	Replace or re-sharpen blade (Refer to Section 3.2, steps 1-3)
4. Incorrect blade or front end is fitted	Remove blade and/or front end and replace with correct size for band (Refer to Section 3.2, steps 1-3)

MAINTENANCE

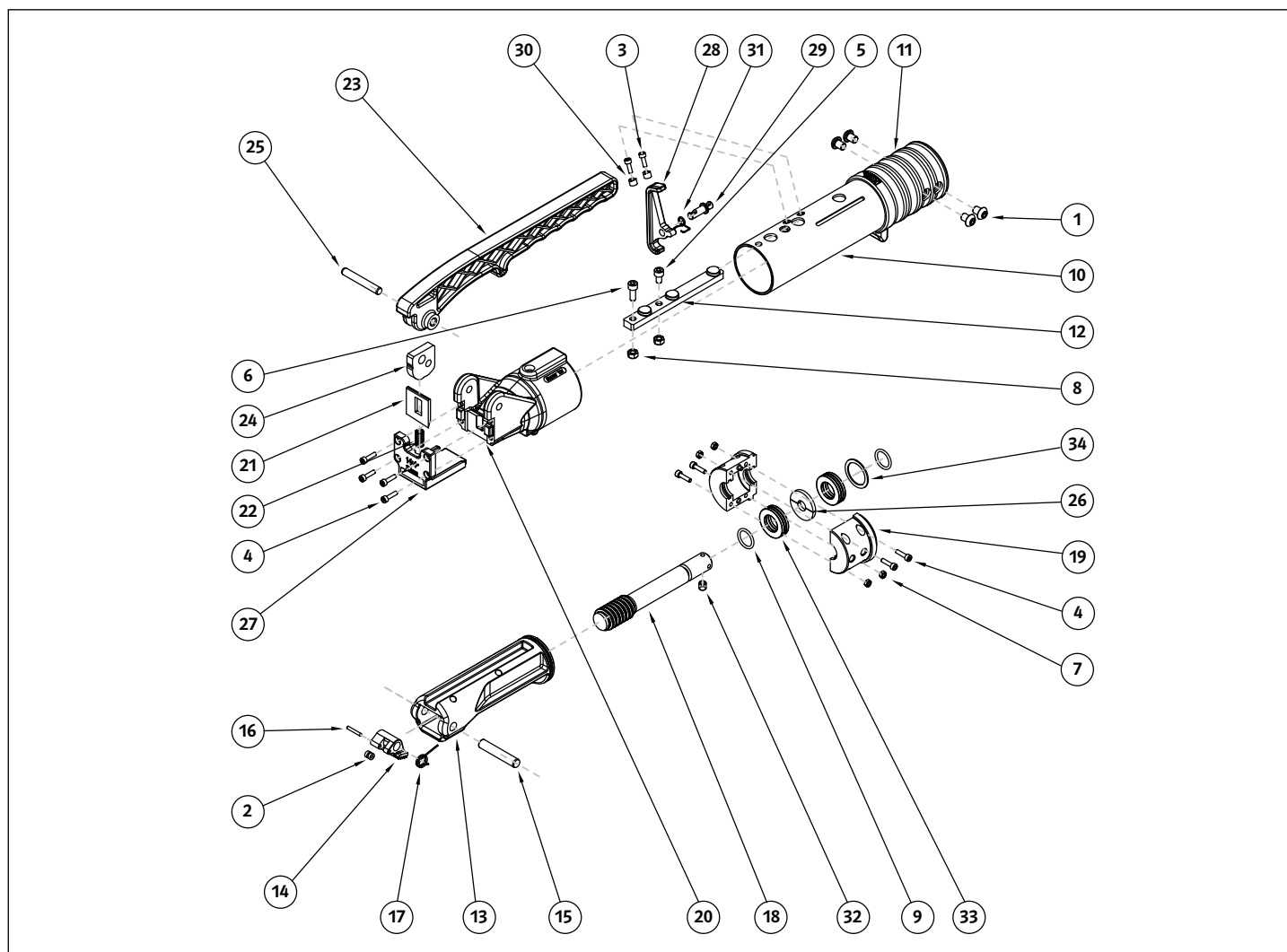
Parts List

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	BHS_M8X10_SS	BUTTONHEAD SCREW, SKT HD, M8x10LG, SS	4
2	BLB_3_7_3_SS	BEARING, BALL ROLLER, 3IDx70Dx3LG	2
3	CPS_M4X12_SS	CAPSCREW, SKT HD, M4x12LG, SS	2
4	CPS_M4X16_SS	CAPSCREW, SKT HD, M4x16LG, SS	8
5	CPS_M6X10_SS	CAPSCREW, SKT HD, M6x10LG, SS	1
6	CPS_M6X16_SS	CAPSCREW, SKT HD, M6x16LG, SS	1
7	NUT_HEX_M4_SS	NUT, FULL, HEXAGON, M4, SS	4
8	NUT_NYLOC_HEX_M6_SS	NUT, NYLOC, HEXAGON, M6, SS	2
9	ORG_01872X262	O-RING, 18.72IDx2.62CS, NITRILE 70A	2
10	PRT1002	HOUSING, MAIN BODY	1
11	PRT1003	GRIP, OVERMOULDED, FITTING TOOL	1
12	PRT1004	GUIDE	1
13	PRT1035	HOUSING, PAWL	1
14*	PRT1036	PAWL, 32mm SMART® BAND	1
	PRT1055	PAWL, 19mm SMART® BAND	1
	PRT1297	PAWL, 20mm SMART® TIE	1
	PRT1338	PAWL, 32mm SMART® TIE	1
15	PRT1037	PIN, Ø10x54LG	1
16	PRT1038	PIN, Ø3x20LG	1
17	PRT1039	SPRING, TORSION	1
18	PRT1041	MAIN SHAFT, THREADED	1
19	PRT1045	HOUSING, THRUST BEARING	2
20	PRT1046	HOUSING, CUTTING BLADE	1

ITEM	PART NUMBER	DESCRIPTION	QTY.
21*	PRT1048	BLADE, CUTTING, 32mm	1
	PRT1057	BLADE, CUTTING, 19mm & 20mm	1
22	PRT1049	SPRING, COMPRESSION	1
23	PRT1050	LEVER, CUTTING MECHANISM	1
24	PRT1051	CAM, ROLLER	1
25	PRT1052	PIN, Ø8x55LG	1
26	PRT1058	WASHER, FLAT, 12IDx350Dx4LG	1
27*	PRT1296	FRONT END, CAST, 19mm & 20mm	1
	PRT1295	FRONT END, CAST, 32mm	1
28	PRT1339	CLASP, CUT PREVENTION	1
29	PRT1340	PIN, PIVOT PROTOTYPE	1
30	PRT1341	SPACER, PIVOT PIN PROTOTYPE	2
31	PRT1342	SPRING, TORSION	1
32	SSS_M8X8_CUP_SS	SKT SETSCREW, M8x8LG, CUP POINT, SS	1
33	THB_20_35_10_SS	BEARING, THRUST, BALL, 20IDx350Dx10LG	2
34	WAS_WAVE_2670_3432_124	WASHER, WAVE SPRING, 26.70IDx34.320Dx1.24LG	1

*Item 14 is either Smart® Tie 20mm (¾"), Smart® Tie 32mm (1¼"), Smart® Band 19mm (¾") or Smart® Band 32mm (1¼") option.

Items 21 & 22 are either 19mm or 32mm options (20mm Smart® Tie tool uses 19mm option).



Name of manufacturer: HCL Fasteners Ltd

Address of manufacturer: Clamping House, First Avenue, Westfield Industrial Estate,
Radstock, Bath BA3 4BS, UK

Telephone: +44 (0)1761 417714

Email sales@hcl-clamping.co.uk

Machinery description: Banding tool for tensioning the HCL Smart® Tie 20mm (¾"),
Smart® Tie 32mm (1¼"), Smart® Band 19mm (¾") or
Smart® Band 32mm (1¼") Systems

Tool Size: ☐ Smart® Tie 20mm (¾")
☐ Smart® Tie 32mm (1¼")
☐ Smart® Band 19mm (¾")
☐ Smart® Band 32 mm (1¼")

Serial No:

Your attention is drawn to the following:

HCL warrants that a new HCL banding tool will operate per functional specifications for a period of sixty (60) days after the date of shipment to the owners place of business. Normal wearing parts, as outlined in the Operations, Parts & Safety manual, are also covered by a sixty (60) day warranty unless, in HCL's judgement, these parts have been subjected to abnormal or extreme usage. HCL's sole liability hereunder will be to repair or replace, without charge, F.O.B. HCL, Bath UK, any tool which proves to not operate per functional specifications within the stated period. HCL reserves the right to replace any tool which proves not to operate per functional specifications with a new or like-new tool of the same model, if in HCL's judgement such replacement is appropriate. Any new replacement or like new replacement tool provided to an owner will carry a full sixty (60) day warranty. Any warranty repaired tool will carry a warranty for the balance of time remaining on the initial sixty (60) day warranty. This warranty will be extended to compensate for the time the tool is in HCL's possession for warranty repairs.

This warranty is void as to any tool which has been:

- a) subjected to mis-use, misapplication, accident damage, or repaired with other than genuine HCL replacement parts.
- b) improperly maintained, or adjusted, or damaged in transit or handling.
- c) in HCL's opinion, altered in a way that affects or detracts from the performance of the tool.

HCL MAKES NO WARRANTY, EXPRESSED OR IMPLIED, RELATING TO MERCHANTABILITY, FITNESS OR OTHERWISE EXCEPT AS STATED ABOVE AND HCL'S LIABILITY AS ASSUMED ABOVE IS IN LIEU OF ALL OTHERS ARISING OUT OF OR IN CONNECTION WITH THE USE AND PERFORMANCE OF THE TOOL. IT IS EXPRESSLY UNDERSTOOD THAT HCL SHALL IN NO EVENT BE LIABLE FOR ANY INDIRECT OR CONSEQUENTIAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES WHICH MAY ARISE FROM LOSS OF ANTICIPATED PROFITS OR PRODUCTION, SPOILAGE OF MATERIALS, INCREASED COSTS OF OPERATION OR OTHERWISE.

Considerable effort has been made to ensure that this product conforms to our high quality standards. However, should you experience any difficulties, please contact your Sales representative providing samples and the serial code specified on the tool.



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