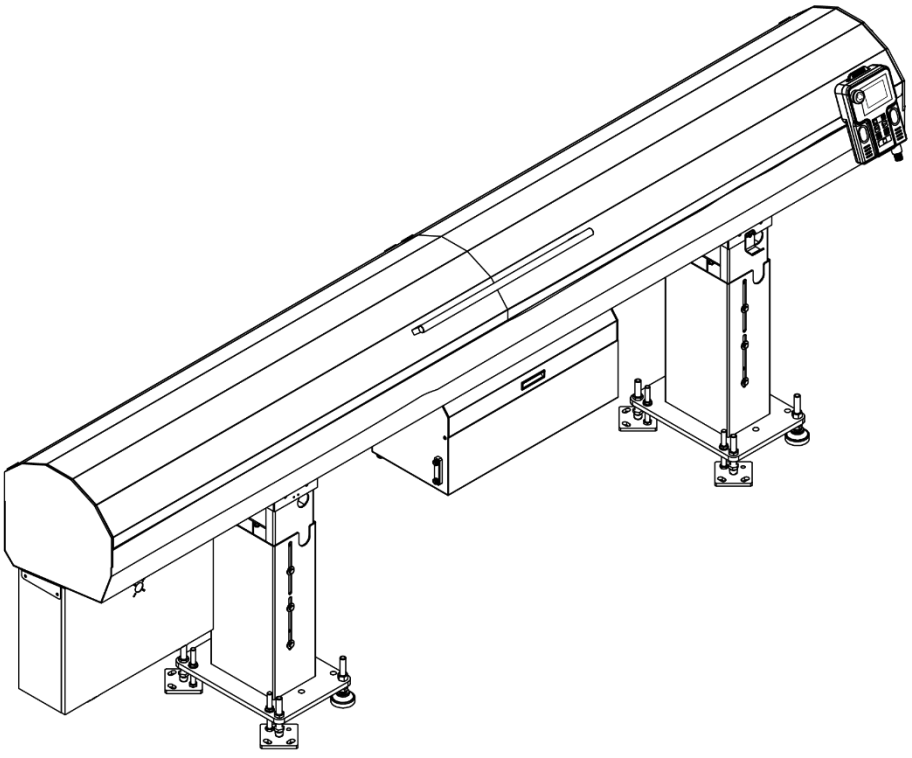
FEDEK

GT 342

Instruction Manual



LNS (China) Co., Ltd./艾恩司（苏州）机器设备有限公司
Suzhou City, Jiangsu Province/江苏省苏州市
www.LNS-asia.com

ENG

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TABLE OF CONTENTS

1 Basic notions

1.1 STRUCTURE

This manual consists of various chapters, each containing several points, paragraphs, etc. Lists may be contained in paragraphs.

- The page number is indicated in the top right-hand corner of the page.
- The model of the bar feeder is indicated in the bottom right-hand corner of the page.

Each chapter generally contains all information related to the description and settings of the devices and elements represented.

Therefore, if a setting must be made while you are handling the system, please refer to the chapter on the device to be set, for example “see chapter xxx”.

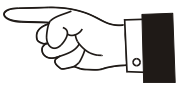
Whenever possible, the part numbers contained in the instruction manual are shown with the indicated element. The customers can order parts with the number accordingly.

Signs below serve as a tool of reading this manual:

This sign recommends the directions very closely avoiding causing an incident that could result in injury, damage to the equipment, or data loss.

This sign indicates that safety measures must be taken to avoid possible electrical shocks or mishaps.

The notes stress interesting points or comments, and provide useful advice for optimal system operation.



This sign serves to point out the portion mentioned on the description.

1.2 RIGHT

We are not accountable to any improper operation and any damage, debts due to misuse out of compass including unauthorized transportation, handling, installation, repair and design change made by the buyer or a third party. The unit will accordingly not be covered under the warranty.

We cannot take responsibility for any design changes made by clients or a third party. Design changes refer to the modification of equipment, added or deleted items on bar feeder function change, quantity change of bar feeder components, material change, setting method change, and any modification on software designed.

We cannot be held responsible for damage or defect arises from using unauthorized items or products, clients or a third party to set up, add or modify unapproved component.

The names of the products indicated in this manual are registered trademarks.

The manual is conformed to the specification of unit. We keep development and innovation so will make the manual update periodically. Design or specification change is subject to change without prior notice.

The operating life of consumables such as channel, rotating joint, finger chuck, pusher, roller and bushing of front rest and other accessories depends on the working conditions (such as rotating speed and temperature). Therefore these consumables are excluded in the warranty.

Design and specifications are subject to change without prior notice.

1.3 SAFETY INSTRUCTIONS

- Do not handle the equipment without having knowledge of the safety instructions and the instructions for use. Safety instructions for the bar feeder, as well as the CNC lathe, must be strictly observed. We disclaim all responsibility for possible accidents or property damage caused by not following our safety instructions.
- Non-qualified personnel, children, and people under the influence of alcohol or medication should not handle the equipment.
- Loose garments, long hair and jewelry can be dangerous.
- Do not remove any covers while the bar feeder or the machine is under electrical power.
- Do not conduct any maintenance operations during the automatic cycle.
- Do not grasp moving or rotating objects, or nearby elements.
- If certain safety shields or safety covers are removed to conduct maintenance, they must be reinstalled as soon as the maintenance work is completed.
- No servicing should be carried out on the interface or inside the electrical cabinet while the bar feeder or the lathe is under electrical power.
- It is strictly prohibited to jump wire of remove circuit breakers, main switches, and especially safety switches.
- To avoid any harm to people, or damage to components, use only the indicated points for lifting and moving the bar feeder system. No one should be near the handing load, or within the operating range of the overhead hoist/crane, forklift, or any other means used for lifting and transportation. Do not knock the bar feeder while moving it as this could damage it.
- Do not move the bar feeder while it is electrically powered on.
- Please use the bar feeder in a clean environment.
- Please do not use the bar feeder with extreme heat or humidity environment.
- The working area surrounded the bar feeders should always be clear of objects and well lit. The presence of oil on the ground could cause falls; it is important to maintain the floor clean on a regular basis.
- Do not place the machine in a damp area and make sure that water or oil does not come into contact with the electrical equipment.
- Do not open the clamping device (collet or chuck) of the lathe manually when the bar feeder is in AUTOMATIC mode (interface).
- Each time the diameter is changed, also adapt spindle reduction tube. The use of spindle reduction tubes is highly recommended for machining bars with diameters smaller than the maximum capacity of the spindle.
- There is no battery inside the PLC. Do not attempt to recharge it.
- For the use and maintenance of the bar feeder, use only parts provides by or recommended by us.
- If it is necessary to move the bar feeder after it has been originally installed, do not reinstall it before first contacting our representative.
- We disclaim all responsibility for possible accidents or property damage when safety device is removed.

2. TECHNICAL DATA

2.1. CHARACTERISTICS

Model	2.5M	3.0M	3.7M	4.0M
Bar diameter range	3 ~42 mm			
Magazine capacity	10 x 28 pcs			
Overall length	3380 mm	3920 mm	4460 mm	5000 mm
Overall width	540 mm			
Maximum bar length (Depend on the lathe spindle)	2670 mm	3210 mm	3750 mm	4290 mm
Hydraulic oil volume	ISO 100 (35 liters)			
Air pressure	5~7 kg/cm²			
Power supply	220V 3p (Varying power supply is available depending on applications)			

*****The table values represent the total length of the L/LL/LLL pusher versions. The total length of the 2.5L pusher version will increase by approximately 330mm. For more information, please refer to section 2.4.

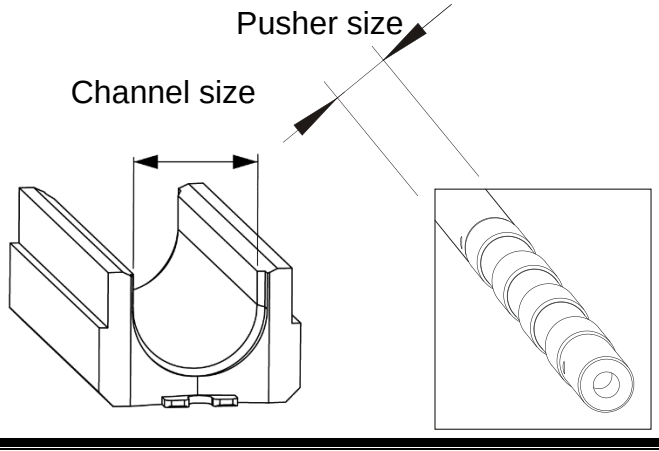
2.2. CAPACITY

Channel Size	Pusher Size	Recommended Bar Size
11	10	3~10
14	13	4~13
17	16	7~16
19	18	9~18
21	20	11~20
23	22	13~22
25	24	15~24
27	26	17~26
29	28	19~28
32	31	22~31
33	32	23~32
35	34	25~34
36	35	26~35
37	36	27~36
39	38	29~38
41	40	31~40
43	42	33~42
Bar end preparation will be required for some maximum diameters.		

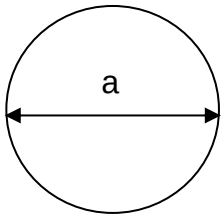
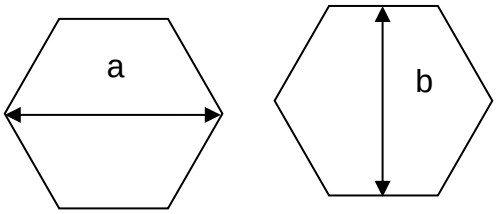
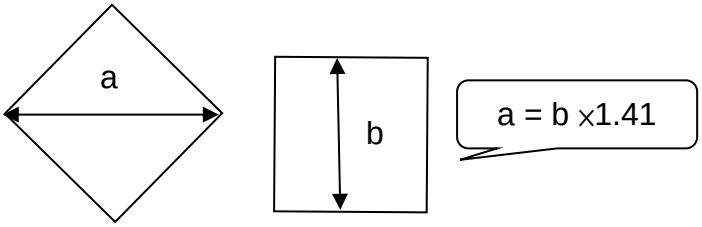
Unit: mm

GT 342 is available for loading bar stock diameter from 3 to 42 mm.

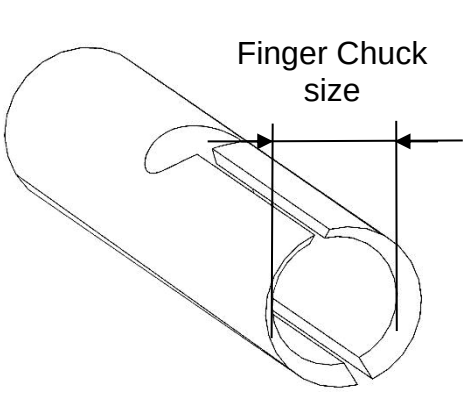
However, for best machining performance, it may be necessary to consider purchasing an additional channel and pusher set to minimize the gap between the bar stock and the channel (the channel should be greater than or equal to 1 mm) to avoid vibration.

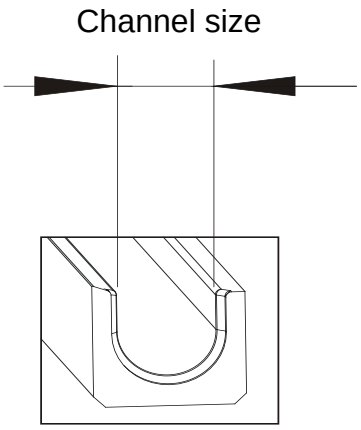


2.3. BAR DIAMETER MEASUREMENT

	a= bar diameter **b≠ bar diameter**
1	
2	
3	

Finger chuck size = a
Channel size >= a +1mm



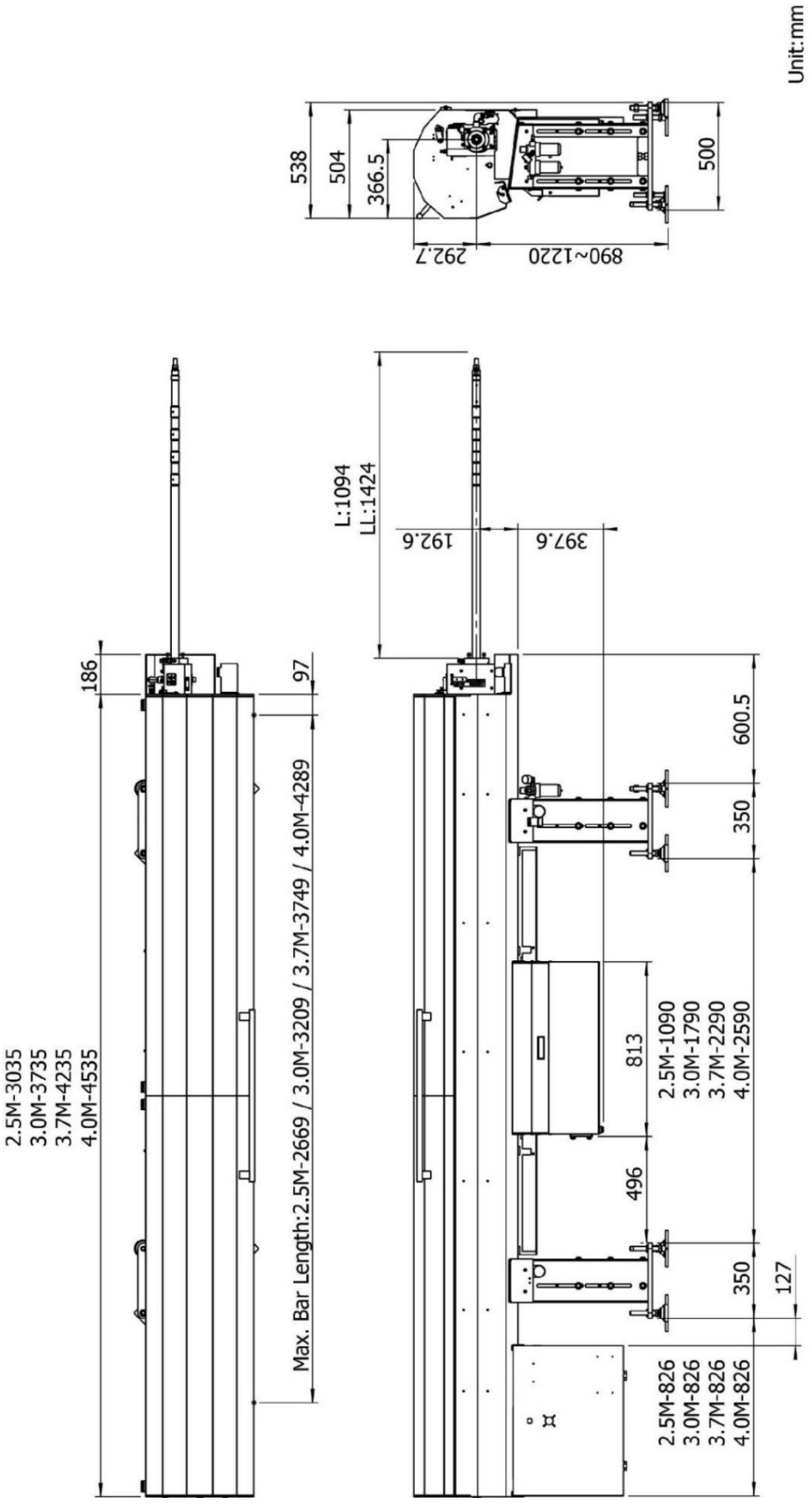


Inch/mm Conversion

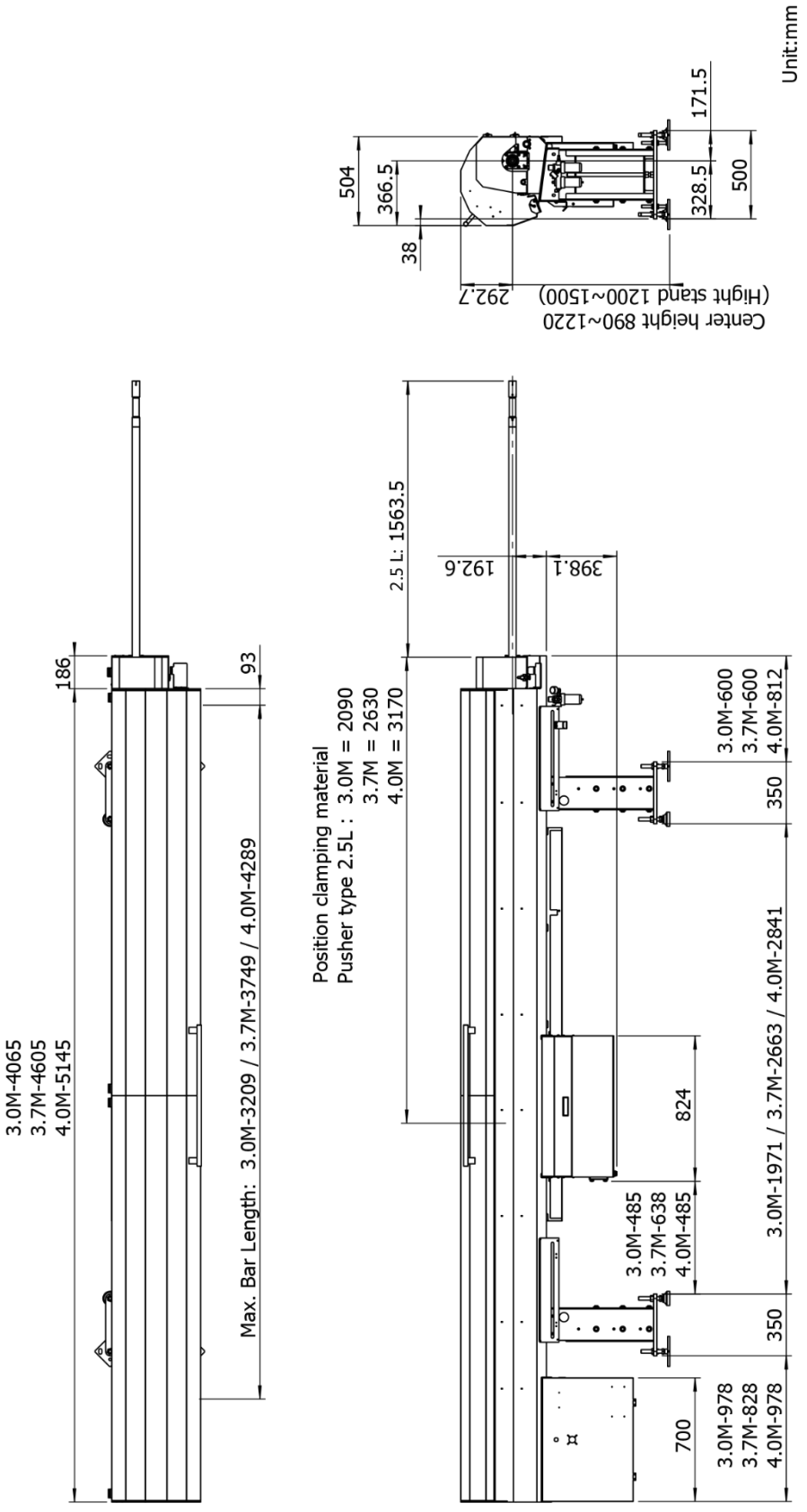
To convert to millimeters: multiply inches x 25.4
To convert to inches: multiply millimeters x 0.0394

2.4. FLOOR PLAN (LtoRF)

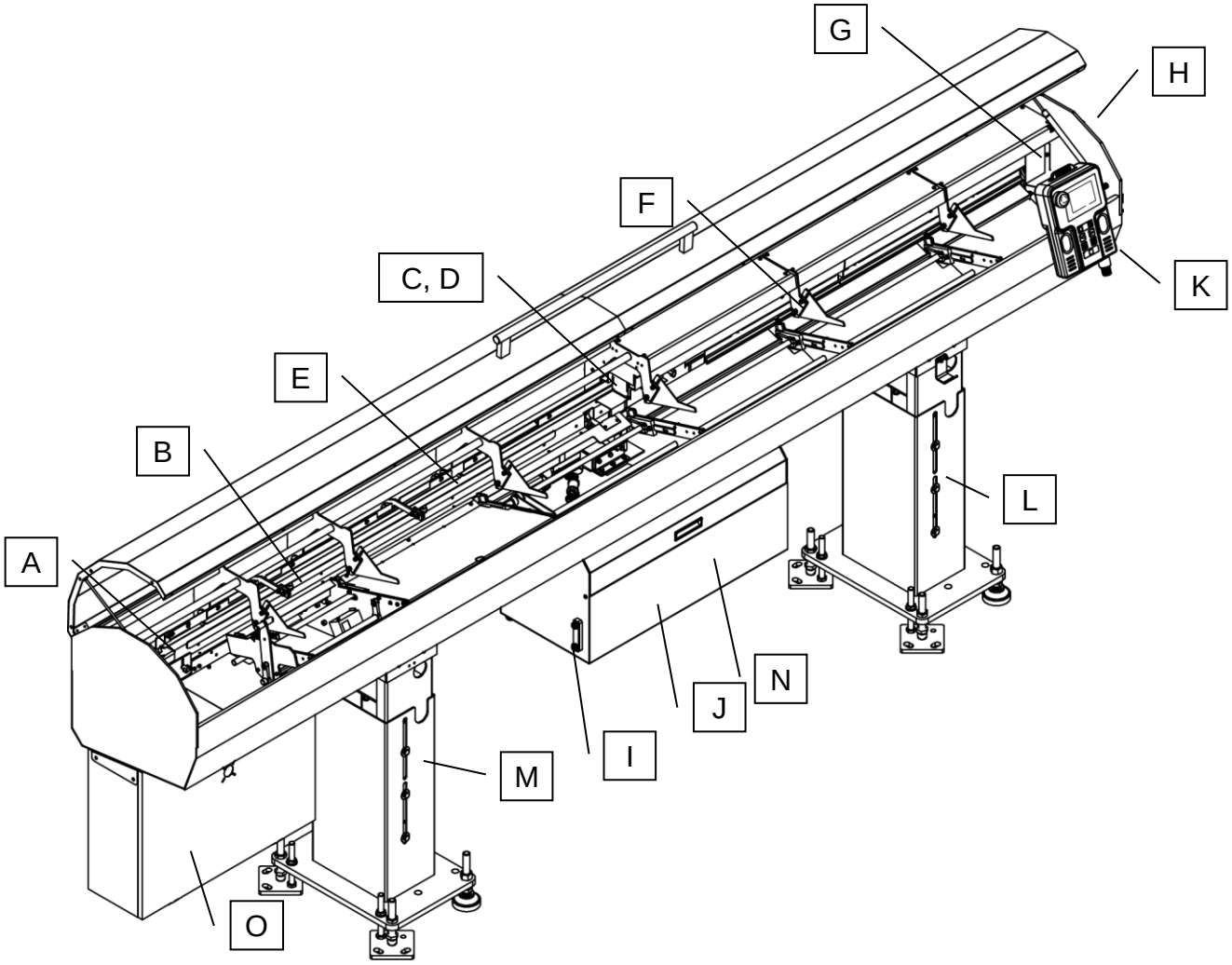
2.4.1 L, LL, LLL pusher version



2.4.2 2.5L pusher version



2.5. LAYOUT OF THE ELEMENTS



Designation	Description
A	Servo motor
B	Pusher
C	Vice (Material clamping device)
D	Remnant detecting sensor
E	Guiding channel
F	Loading rack
G	TOP CUT measuring device (Not visible)
H	Front rest
I	Hydraulic pump
J	Hydraulic oil tank
K	Remote control
L	Front stand
M	Rear stand
N	Remnant space
O	Electrical cabinet

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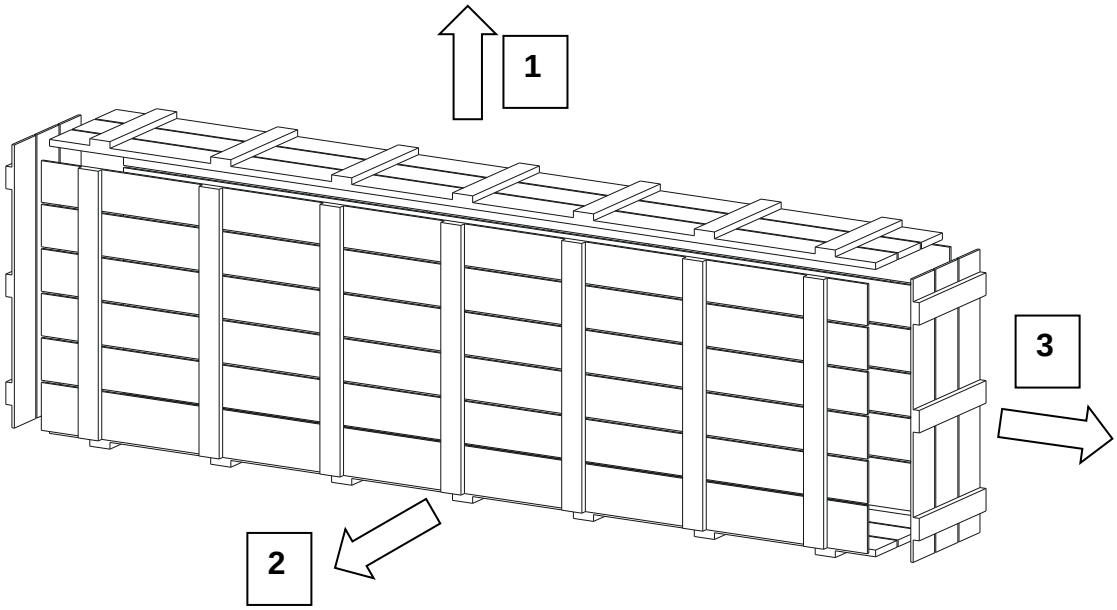
3 SETTING INTO OPERATION

3.1 TRANSPORTATION

The bar feeder may be delivered either on a pallet or packed in a wooden crate according to the customer requirement. The uncrating and lifting instructions recommended below in order to prevent any injuries to persons and damaged to objects.

3.1.1 Unpacking

For practical and safety reasons, the bar feeder must be unpacked in a spacious, well-lit location.



1. If the bar feeder is received in a crate, start by unscrewing the top panel.
2. Remove the front.
3. Remove the side-walls.

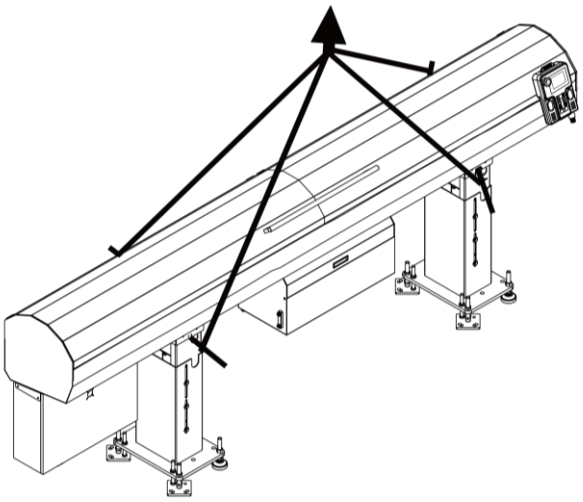
A pusher and guiding channel set may be mounted in the bar feeder. Depending on the purchase order, other sets may be delivered in a separate box. The interface plug/cable is tightened with remote control box. Interface diagram is placed inside the electrical cabinet. Documentation, tools, finger chucks, lathe connecting parts, front tube/telescopic tube, air tube... are packed inside the accessories box.

3.1.2 Preparation and Hoisting

For installing the bar feeder, it's advisable to contact us or one of our branches, agents. We cannot be held responsible for any malfunction or any damage to the bar feeder or the lathe due an incorrect installation in which we did not take part in.

< Procedures of preparation >

- Insert two bars into the holes of the stands, place the hoist vertically above the bar feeder.



- Place the straps over the ends of the bars, then attach them to the hoist. Raise the hoist to tighten the straps.

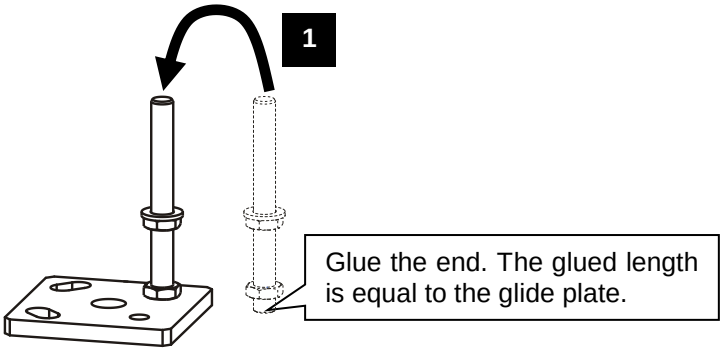
<Notice>
The loading capacity of both the hoist and straps must be larger than 1 ton.

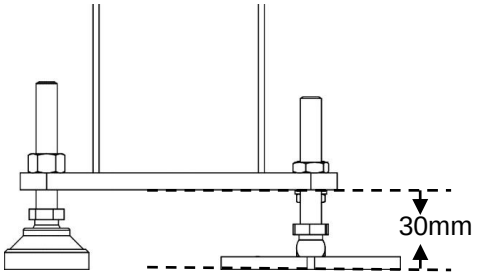
- Remove the screws for holding the bar feeder to the pallet during transportation.

- Lift the bar feeder and remove the pallet. Ensure that the bar feeder is balanced.

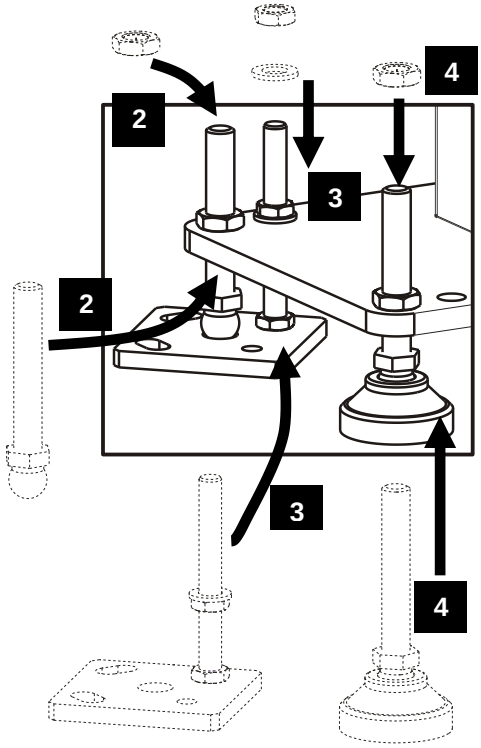
- Follow the procedures below to mount the glides:

1. Glue the pulling stem and screw onto the fixed plate.
2. Mount the supporting stem on the stand plate.
3. Mount the kit finished at step 1 on the stand plate. Keep the gap between stand plate and ground 30mm.





4. Mount the rubber foot.



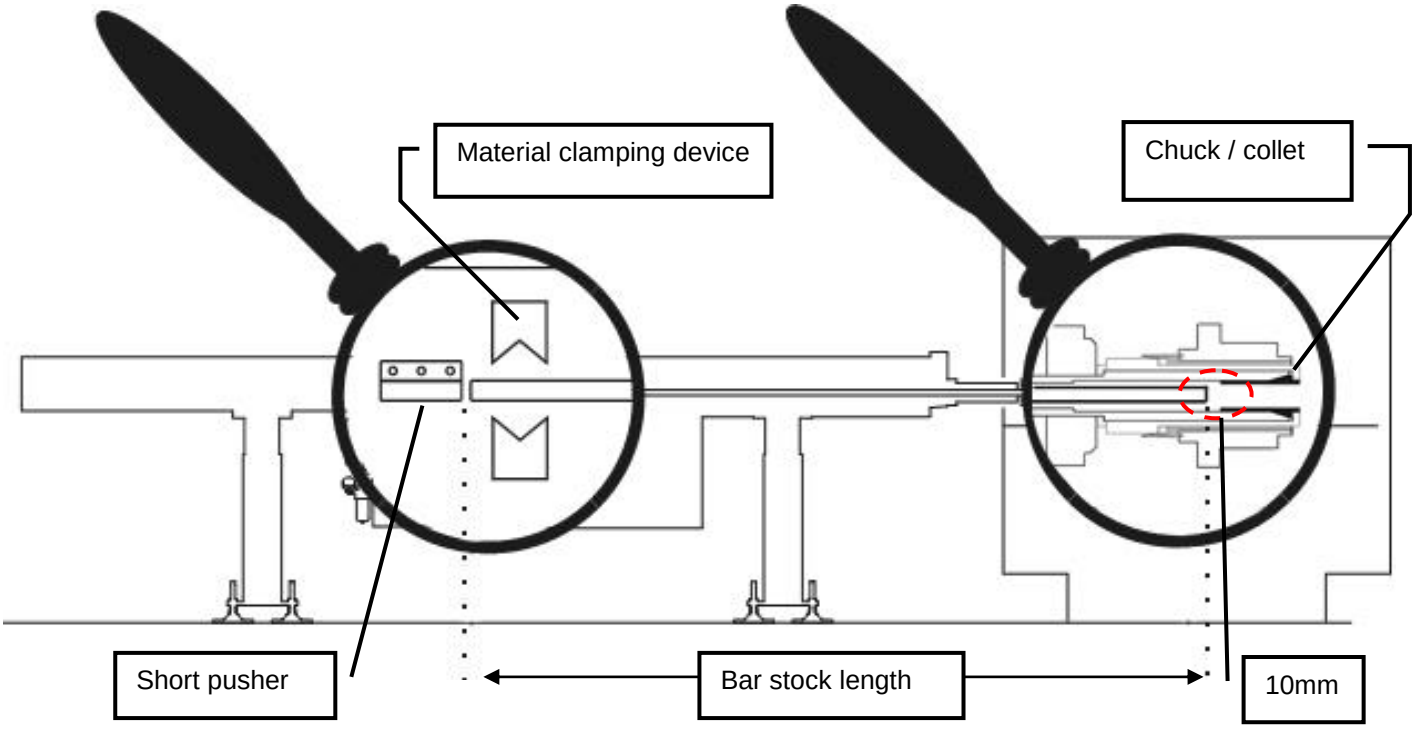
- Place the bar feeder behind the lathe and proceed mounting procedures instructed on the next chapter.

3.2 POSITIONING OF THE BAR FEEDER

3.2.1 Bar stock length check

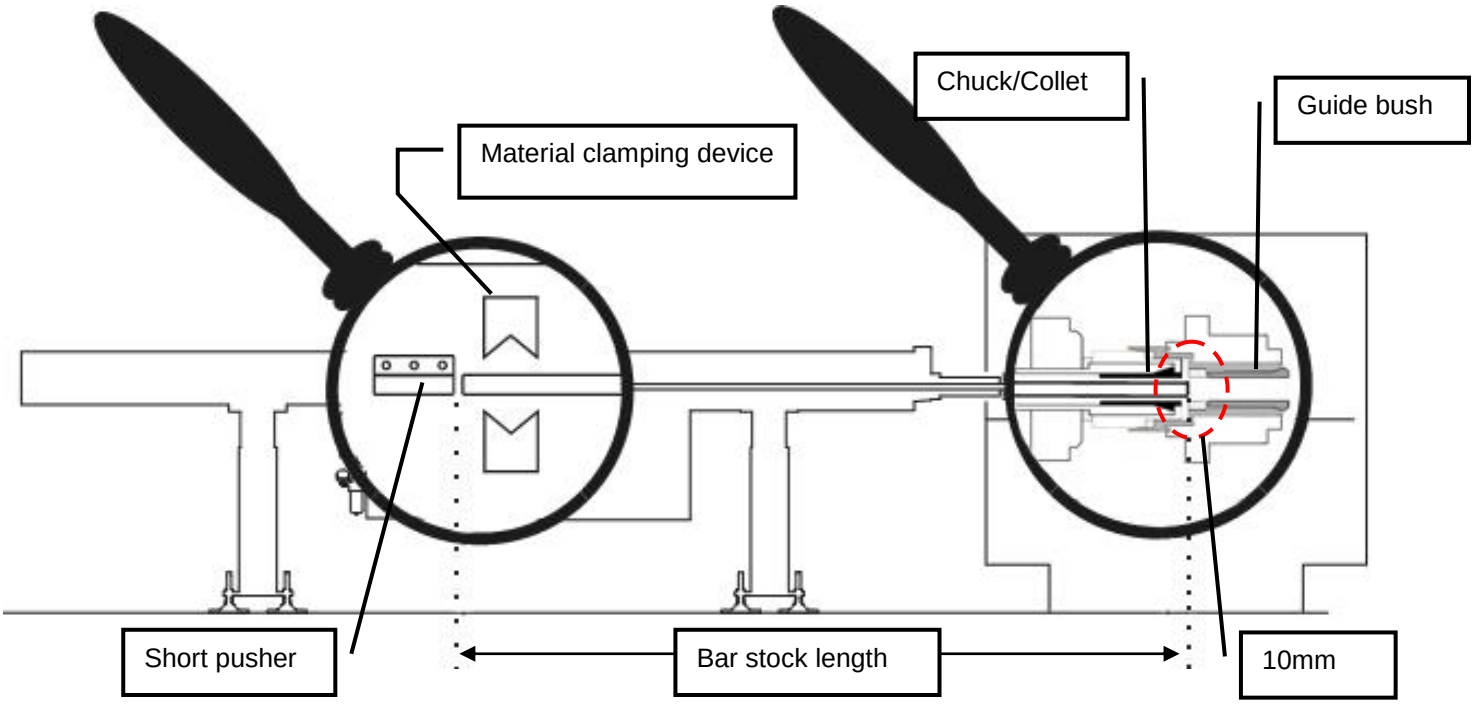
- **The bar feeder connected with fixed type lathe:**

When the bar feeder finishes FIRST FEED, the bar stock front tip should keep more than 10mm safety distance from the rear end of the **chuck**.



- **The bar feeder connected with Swiss type lathe:**

When the bar feeder finished FIRST FEED and the chuck is at maximum forward position, the bar stock front tip should keep more than 10mm safety distance from the rear end of the **guide bush**.

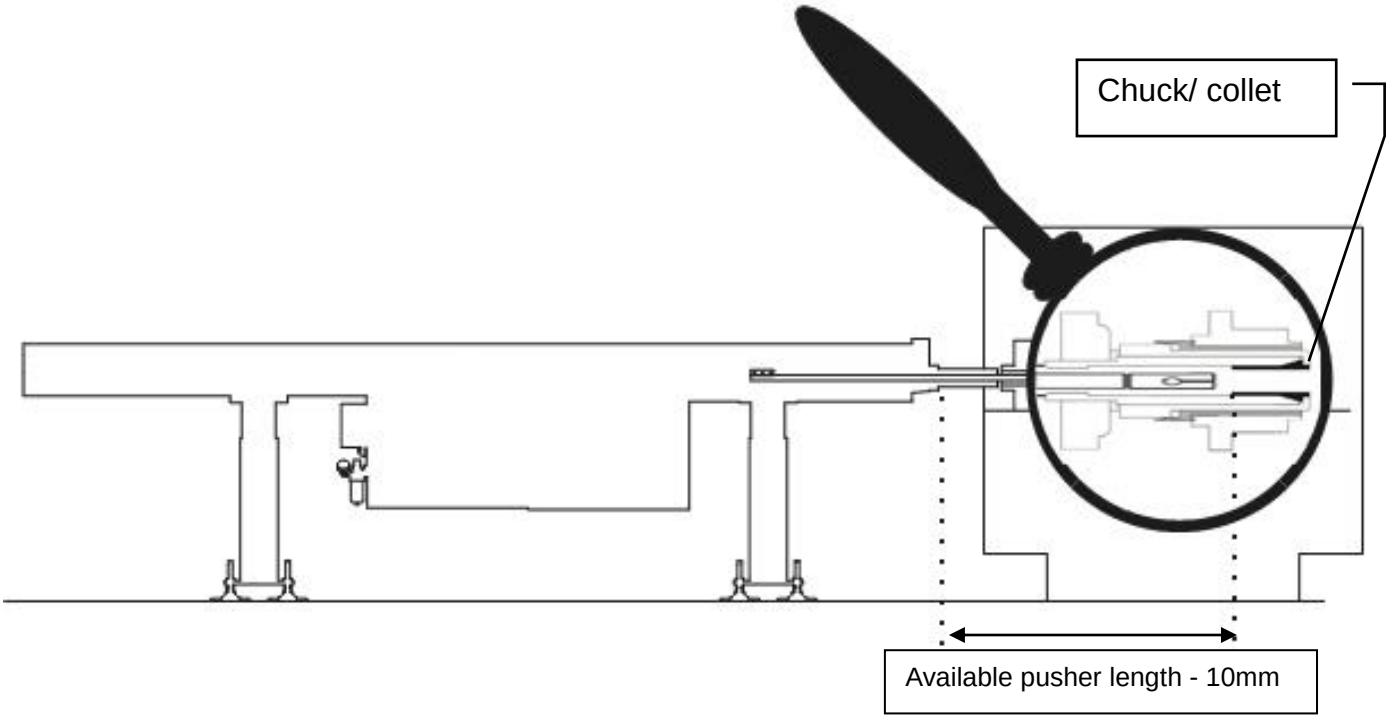


3.2.2 Pusher length check

- **The bar feeder system connected with Fixed type lathe:**

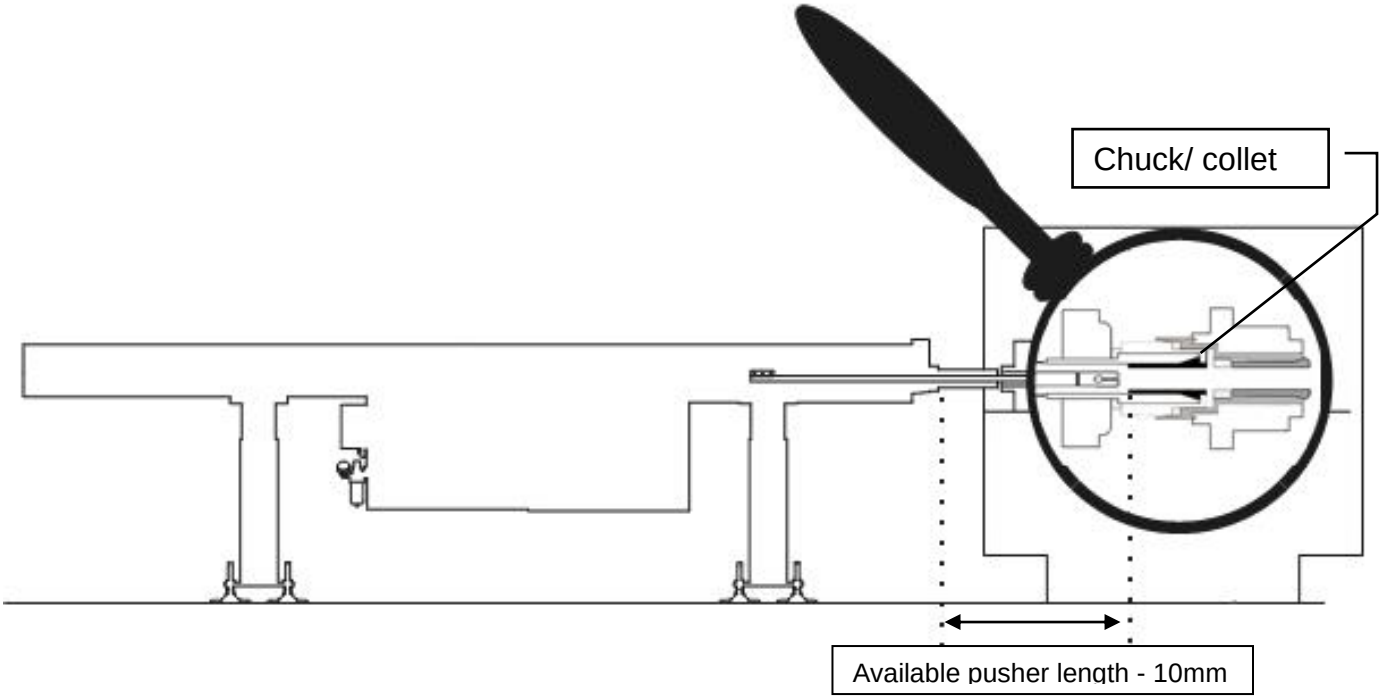
To get a shortest remnant, the pusher tip should be able to contact the rear end of the chuck.

Keep the distance between the first front rest and rear end of chuck in 10mm smaller than the available pusher length.



- **The bar feeder system connected with Swiss type lathe:**

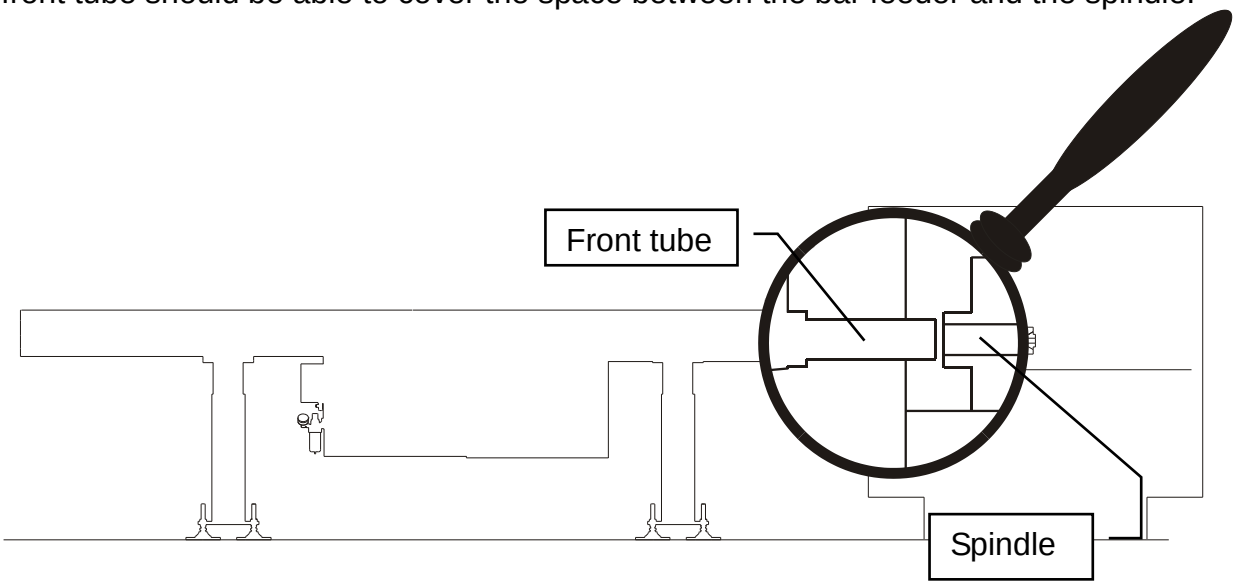
To get a shortest remnant, the pusher tip should be able to contact the rear end of the chuck. Move the chuck to maximum forward position and keep the distance between the first front rest and rear end of chuck in 10mm smaller than the available pusher length.



3.2.3 Front tube / Telescope length check

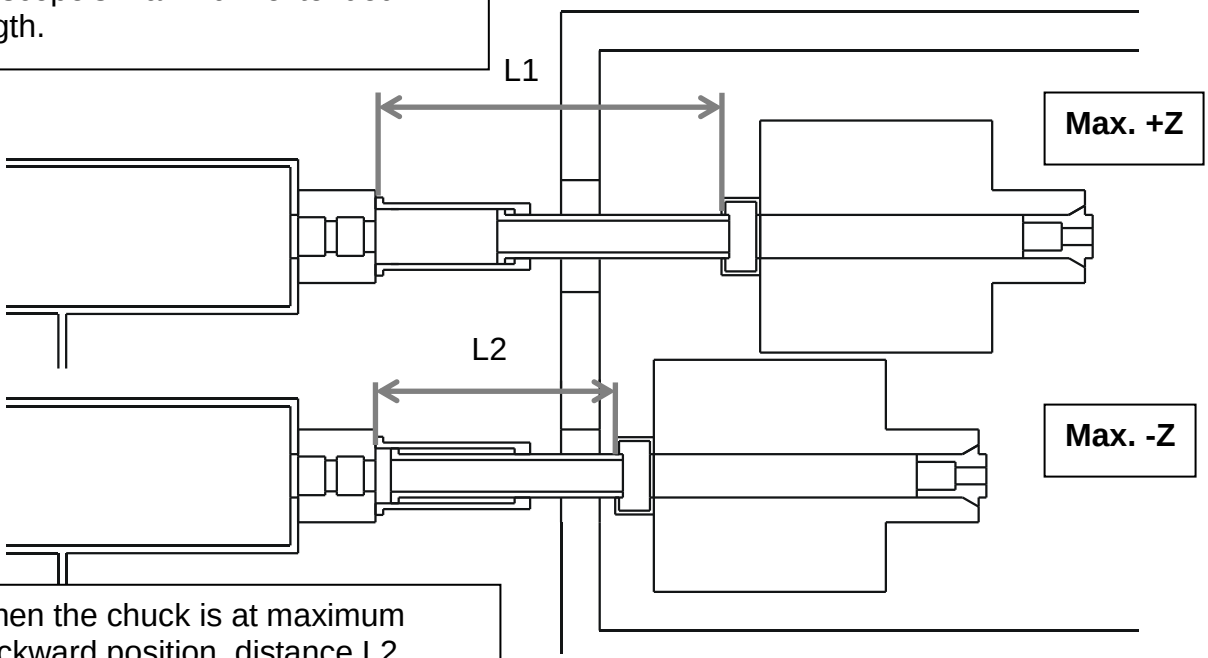
- **The bar feeder system connected with Fixed type lathe:**

The front tube should be able to cover the space between the bar feeder and the spindle.



- **The bar feeder system connected with Swiss type lathe:**

When the chuck is at maximum forward position, distance L1 should be 10mm **SMALLER** than the telescope's maximum extended length.

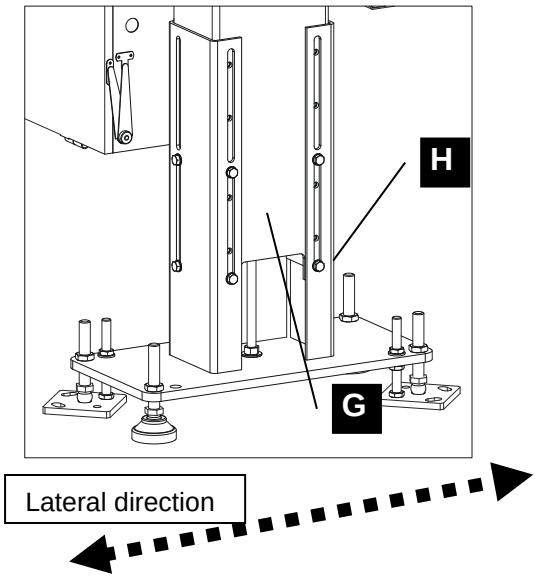


When the chuck is at maximum backward position, distance L2 should be 10mm **LARGER** than the telescope's minimum retracted length.

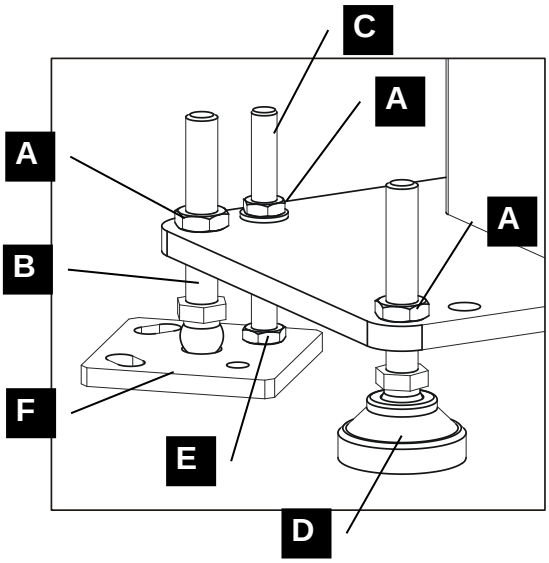
3.3 ALIGNMENT AND ANCHORING

- On each foot, loosen all 8 lock nuts (A). Adjust either stem (B) or (D) so that the weight is evenly distributed on them.

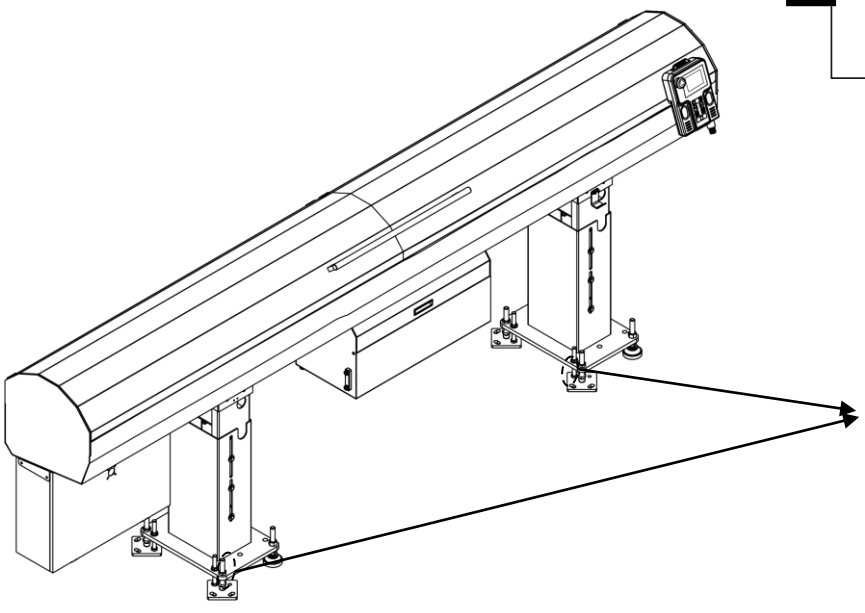
<NOTICE>
Please note nut (E) is not allowed to be adjusted.

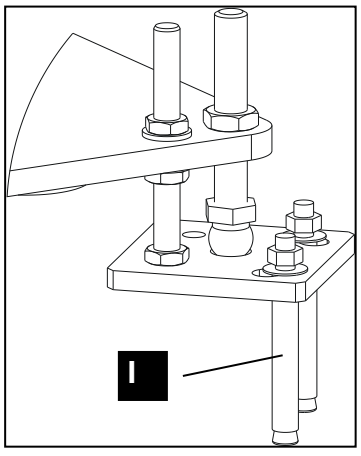


- Place a level on the stand. Adjust stem (B) and (D) so that the bar feeder are leveled on the lateral direction.
- **Make sure the bar feeder is well supported by the nut (G) on central stem (not visible).**
- On each foot, lose 8 pieces of nut (H), set height of the bar feeder by adjusting nut (G). Together with the vertical alignment, proceed with the lateral alignment.
- When the alignment is accomplished, tighten all the 8 nut (H) on each foot.
- Once the bar feeder is in place and perfectly aligned, it should be anchored to the ground to make it stable. To accomplish this, please refer to the figure below and use the 8 anchorage bolts (I) to fix the unit on the ground
- Check again the alignment. Adjust the stem (B) if necessary.
- Tighten all the lock nuts (A).



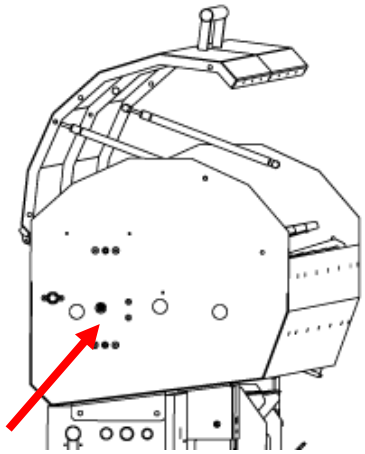
<NOTICE>
Before the bar feeder is anchored on the ground and the alignment is confirmed perfectly, the lock nuts (A) should not be tightened.



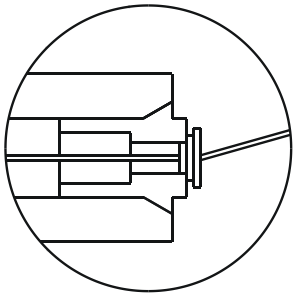


For precise alignment, use a 1mm string which pass through the rear of bar feeder to the lathe chuck. The purpose is to find out the exact center of the chuck and adjust the bar feeder center to match it perfectly.

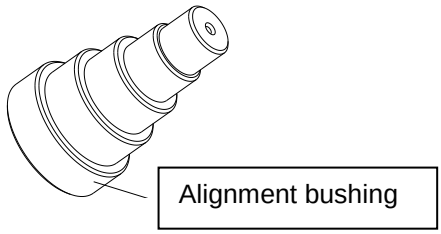
1. Prepare a string and an alignment bushing.
2. Open the channel cover, tie the string on the one side and have it pass through the end of the bar feeder from small hole and the front rest, and then remove out the front tube.



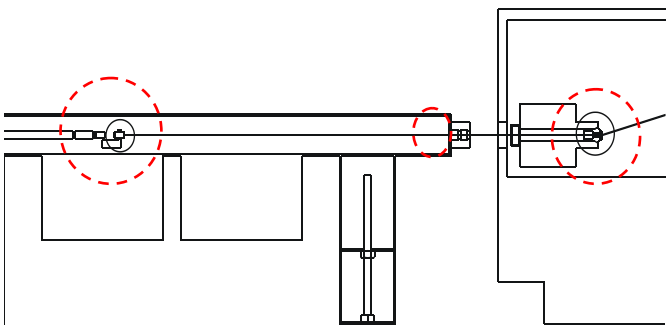
3. Hold the string and pass through the spindle of lathe.



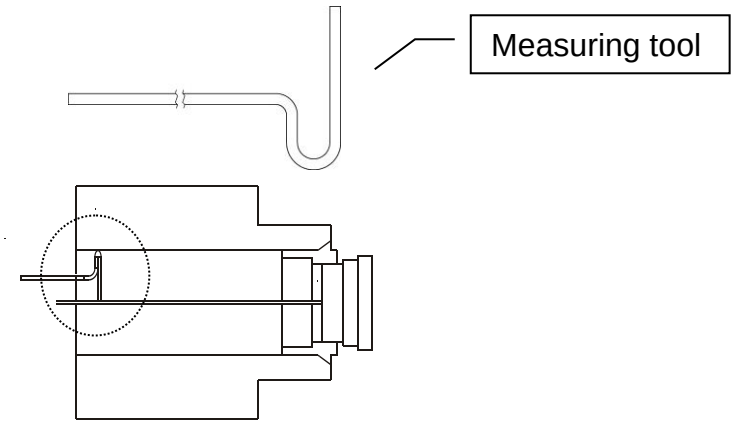
4. Have the string pass through the alignment bushing and clamp it by the collet of the lathe chuck.



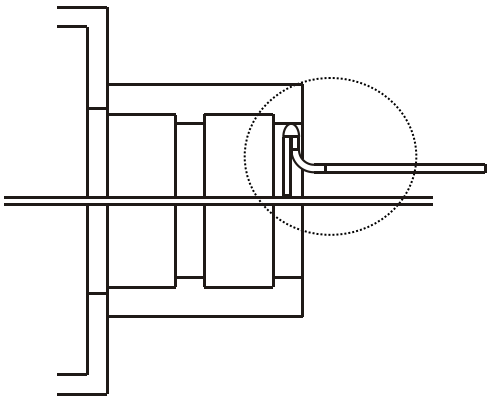
5. Pull tie the string and fasten it on the lathe.



6. Prepare a measuring tool to check the center position of the string. Adjust the REAR stand of the bar feeder until the string is in the center of the spindle.



7. Likewise, have the sting in the center of the bar feeder.



8. Tighten all the locking screws and check again the alignment.
9. Take off the string and bushings and reinstall the connecting parts.

*Notice: The alignment tool is not included in the standard part list of bar feeder, please contact LNS for purchasing if requirement.

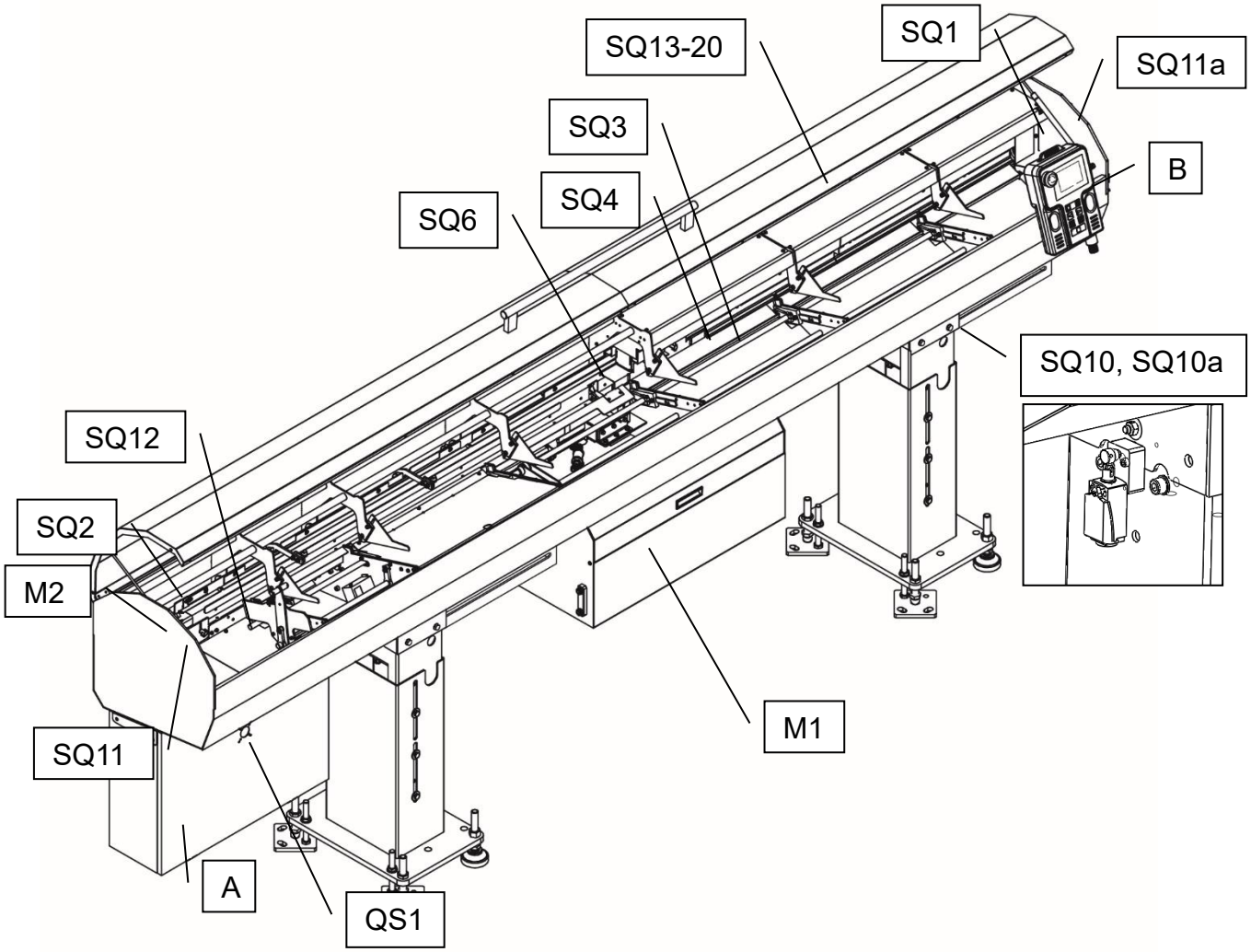
3.4 CONNECTION

Once the bar feeder has been aligned and anchored to the ground, the bar feeder must be connected to the interface of the lathe and compressed air need to be connected.

- For the electrical connection, please see Chapter 4, Electrics.
- For the pneumatic connection, please see Chapter 5, Pneumatics.
- For the hydraulic connection, please see Chapter 6, Hydraulics.
- For the mechanical connection, please see Chapter 7, General description.
- For the parameter setting, please see Chapter 8, Operation.
- For alarm message and troubleshooting, see Chapter 9, Troubleshooting guide.

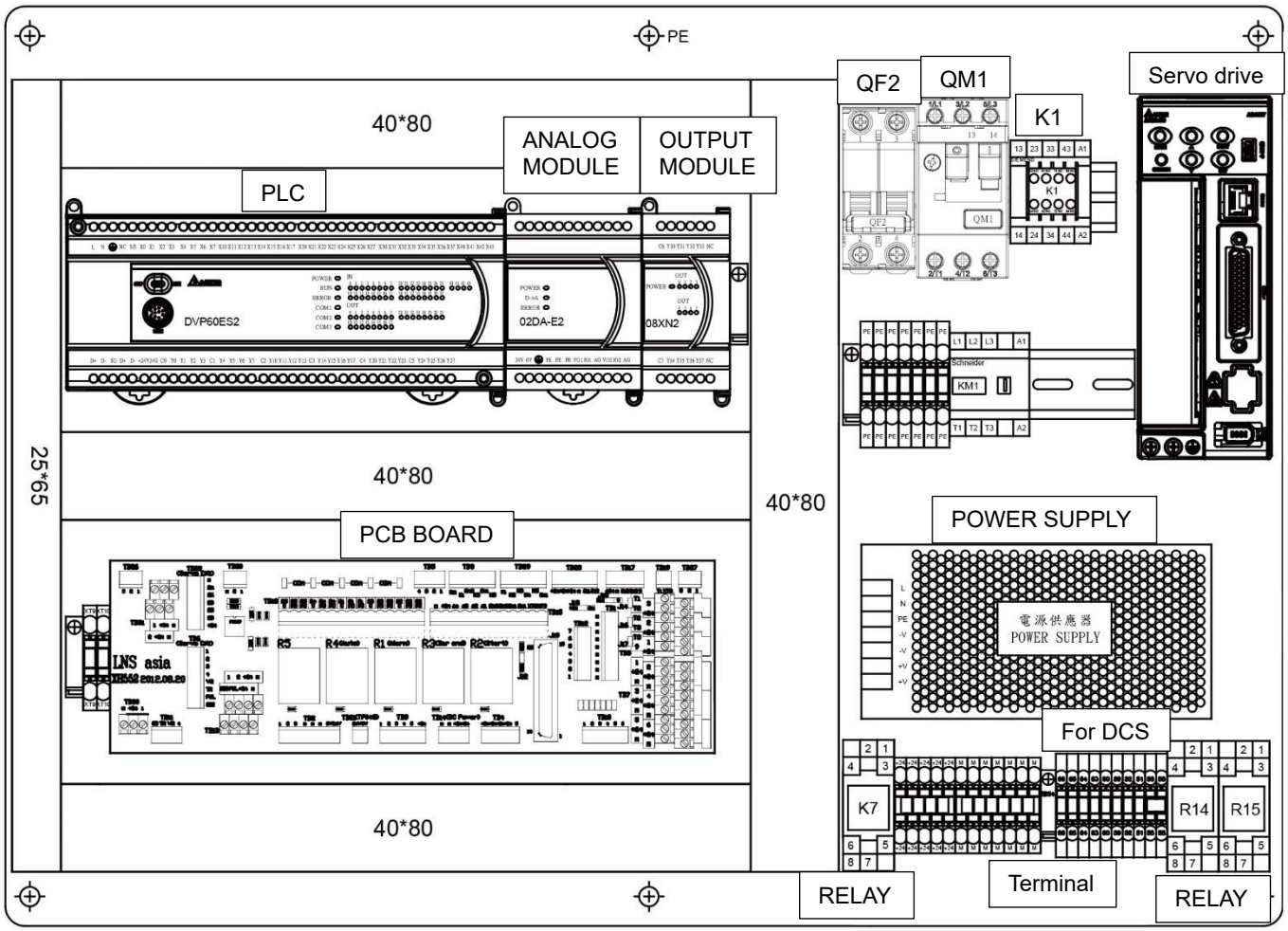
4 ELECTRICS

4.1 LAYOUT OF THE ELEMENTS



Designation	Input	Part No.	Description
A	--	XF2.12.A001A.XX	Electrical cabinet
B	--	XF2.78.A013B	Remote control (with wire)- 2.5M&3.0M
		XF2.78.A014B	Remote control (with wire)- 3.7M & 4.0M
QS1	--	B55000003	Main disconnect switch
M1	--	XT135050000	Hydraulic pump motor
M2	--	B14120208	Servo motor
SQ1	X03	B18120710	Measuring sensor switch
SQ2	X13	B18120700	Home position
SQ3	X14	C11111900	Pusher Up switch
SQ4	X15		Pusher Down switch
SQ6	X17	C11111100	Vice system
SQ10, SQ10a	X21	4.484	Retraction safety (Option)
SQ11, SQ11a	X20	4.894	Main cover safety (Option)
SQ13,14,15,16	X22,23,24,25	B18120700	Channel cover 1 & 2 sensor
SQ17,18,19,20	X26,27,06,07	B18120710	Channel cover 3 & 4 sensor

4.2 ELECTRICAL CABINET



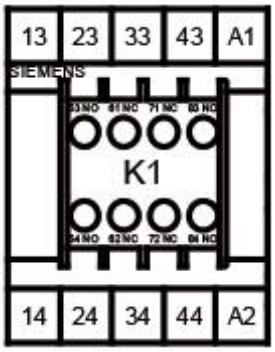
Designation	Part No.	Description	Designation	Part No.	Description
PLC	B12140800	Programmable Logic Controller	RELAY	B24110150	K7
				B11000065	Relay Base
ANALOG MODULE	B12140810	02DA-E2	RELAY (for 2 position retraction)	B24110150	R14, R15
OUTPUT MODULE	B12140850	DVP08XN211R		B11000065	Relay Base
				B13204039	Cable
QF2	B18211006	Circle Protect Device	PCB BOARD	B23140500	Relay
				B11203011	
				B24110150	
QM1	B18211009	Motor Circle Device	Terminal	B55000112	Terminal
KM1	B18180001	Electromagnetic contactor			
K1	4.932	Electromagnetic contactor	POWER SUPPLY	B25120020	24V DC Power Supply
SERVO DRIVE	B14120108	Delta Servo Driver (B2)	DCS	B23160003	Dual Channel Safety (Option)

4.3 ELECTRICAL MAJOR COMPONENTS

4.3.1 Servo drive power loop components

The servo drive is powered by servo controller through K1 contactor.

a) K1 electromagnetic contactor



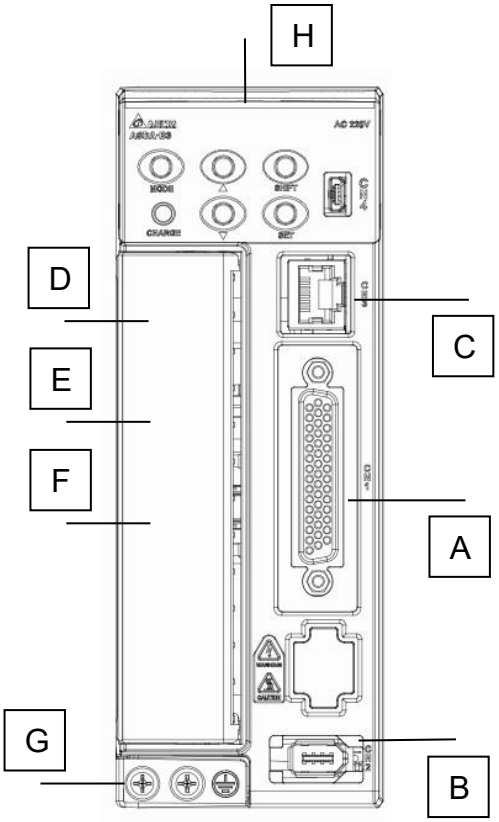
K1 is energized by the emergency stop loop. When the emergency stop loop is open, the contactor K1 will be de-energized and interrupt the power supply to the servo drive.

b) Servo amplifier

The Servo Amplifier controls the movement of the Servo Motor.

<Note> Never change the parameter settings of the servo amplifier. They are factory pre-set. Please contact the factory if help is required.

Designation	Description
A	I/O connector
B	Encoder connector
C	Serial connector
D	Main circuit terminal (R, S, T) Used to connect 200-230 VAC power supply
E	Control circuit terminal (L1, L2) Used to connect to 100-230 VAC power supply
F	Servo motor output (U, V, W)
G	Ground connection
H	Display

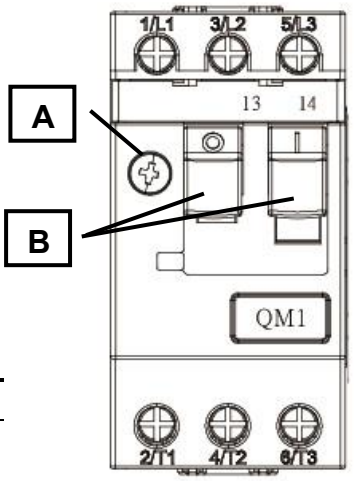


4.3.2 Hydraulic pump power loop components

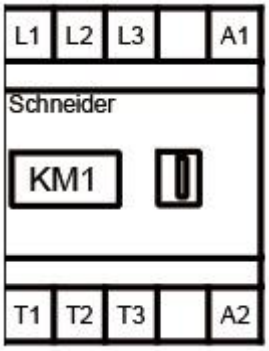
The hydraulic pump M1 is powered by 3 phases 220V AC through KM1 contactor and protected by QM1 breaker.

a) Circuit breaker - QM1

QM1 interrupts the 3 phases which power the hydraulic motor as well as emergency stop circuit. If the motor requires excessive power (the breaking current is set to 2.5 amperes). The circuit breaker activates and switch trips from ON to OFF. Both power supply to hydraulic pump and the emergency stop loop are interrupted. After the problem is fixed, reset the circuit breaker by switching to ON.



Designation	Description
A	Rating adjustment (preset at 2.5A)
B	Switch button



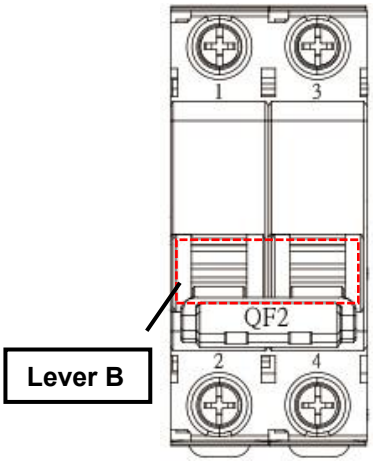
b) Electromagnetic contactor - KM1

The KM1 contactor is energized by 24V DC from PLC output Y03. When this signal is OFF, the KM1 is de-energized and the power to hydraulic pump is cut off.

4.3.3 PLC and 24V DC supply power loop component

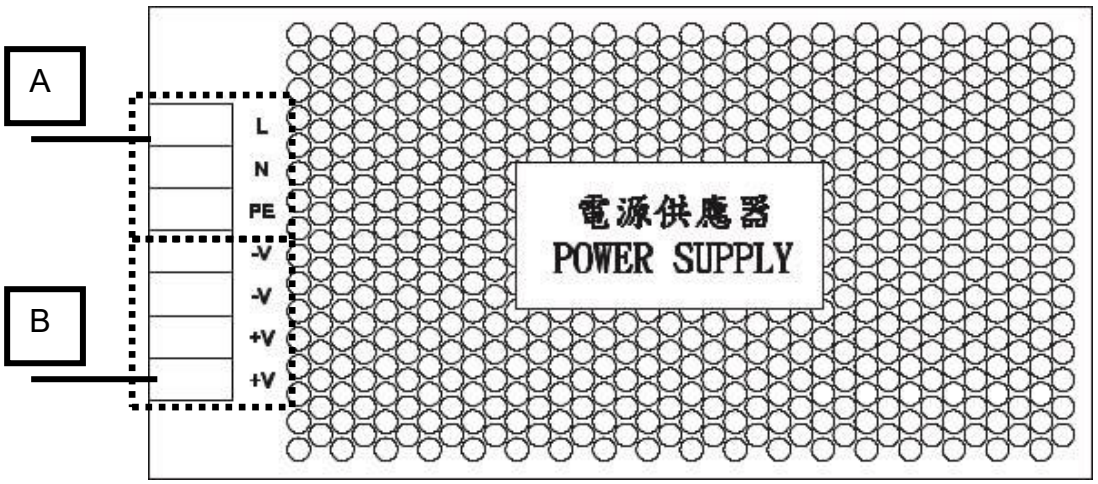
Breaker QF2 protects the two phases which power both PLC and 24V DC power supply. If the power exceeds 6A, the breaker activates and lever B flips down. The power supply to PLC and 24V DC power supply is immediately interrupted.

After the problem is fixed, reset the breaker by flipping lever B up.



4.3.4 24V DC power supply

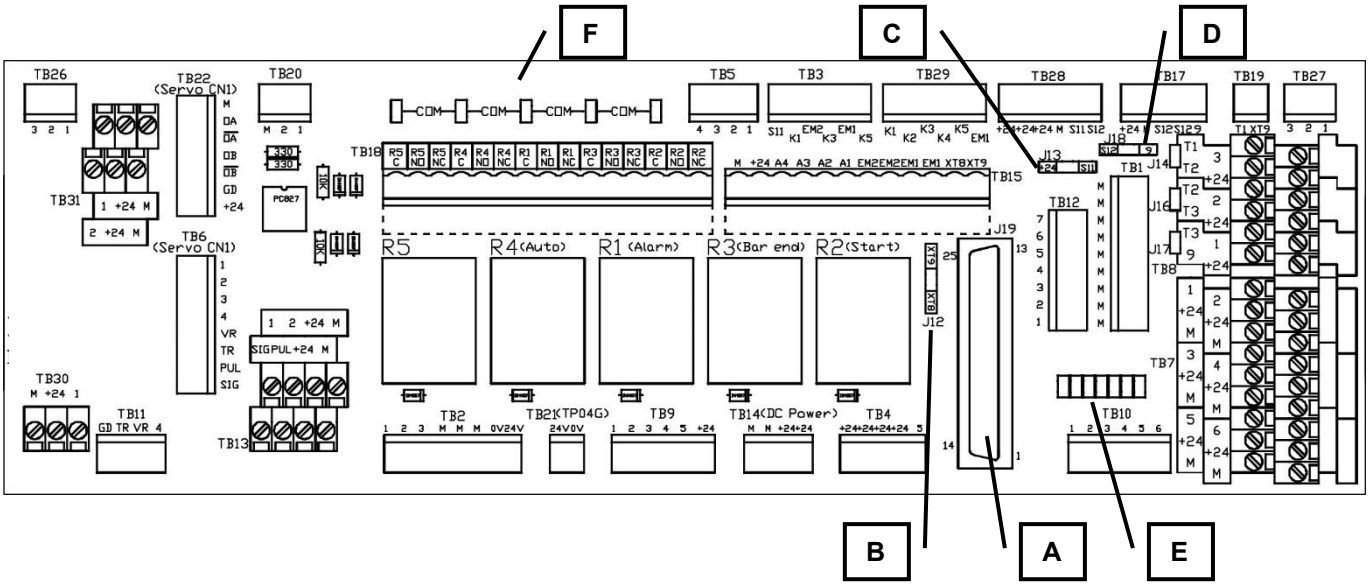
The power supply converts AC 220 V to 24V DC for the low voltage circuit.



Designation	Description
A	220V AC input terminals
B	24V DC output terminals

4.3.5 PCB (Printed Circuit Board)

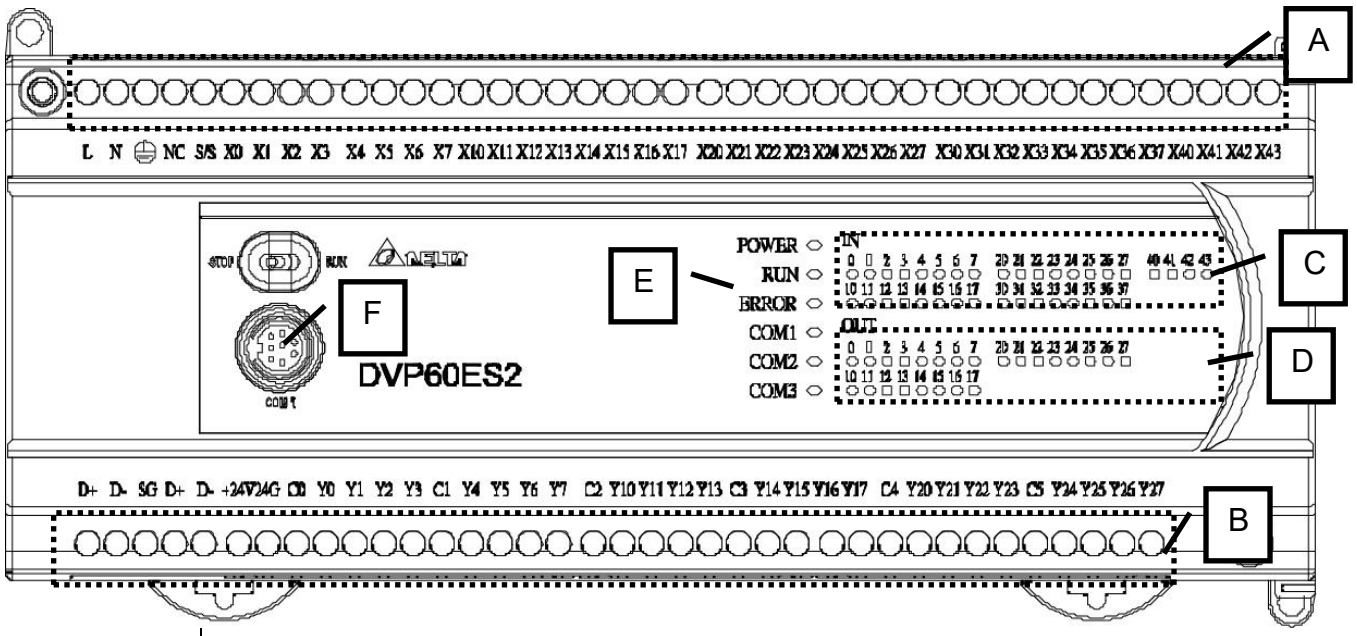
PCB is a board with circuit printed and electrical components welded on the surface. It offers sockets and terminals for electrical components like relays, cables and fuses.



Terminal block designation	Contacts	Description
A	--	Remote control terminal
B	--	XT8, XT9 bridging terminal
C	--	S11, +24 bridging terminal
D	--	S12, 9 bridging terminal
E	--	Jumpers rest terminal
F		24V DC common contacts bridging terminal
R1	--	Alarm relay
R2	--	Start signal relay
R3	--	BAR END relay
R4	--	Bar feeder AUTO relay
R5	--	INCHING relay
TB1	9 組 M 接點	Common joints terminal for Y04-Y06, Y10, Y13, Y14
TB2	1, 2, 3, M, M, M, 0V, 24V	Servo control signals.
TB3	S11, EM1, EM2, K1, K3, K5	Terminals of emergency stop buttons
TB4	4 組 +24V 接點, 5	+24 common joints of C1-C4
TB5	1, 2, 3, 4	Signals from interface terminals A1, A2, A3, A4.
TB6	1, 2, 3, 4, VR, TR, PUL, SIG	Signal terminals of servo amplifier CN1 connector.
TB7	1, +24, M, 2, +24, M, 3, +24, M, 4, +24, M, 5, +24, M, 6, +24, M	Signal terminals of SQ3, SQ4, SQ6, SQ2, SP1, SQ1
TB8	2, +24, 3, +24	Signal terminals of SQ11, SQ10 T1, T2, T2, T3, T3, 9 bridging terminal
TB9	1, 2, 3, 4, 5, +24	PLC signals for energizing R1, R2, R3, R4, R5.
TB10	1, 2, 3, 4, 5, 6	Connect to PLC input contacts X14, X15, X17, X13, X12.
TB11	GD, TR, VR, 4	- GD, TR, VR signals from PLC - Connect to PLC input contacts X02
TB12	1, 2, 3, 4, 5, 6, 7	Signal terminals of remote control station button S1, S4, S6, S7, S5, S2 and S3
TB13	SIG, PUL, +24, M,1, 2, +24, M	Synchronization device terminals.
TB14	M, M, +24, +24	DC power supply terminals.
TB15	M, +24, A4, A3, A2, A1, EM2, EM2, EM1, EM1, XT8, XT9	Interface signals input terminals
TB17	+24, M, S12, S12, 9	Connect to QM1 and K1
TB18	C, NO, NC for R5, R4, R1, R3, R2	Interface signal output terminals.
TB19	T1, XT9	Short circuit
TB20	M, 2, 1	Encoder signal terminals.
TB21	24V, 0V	Power supply for HMI
TB22	0A, /0A, 0B, /0B, GD, +24	Servo CN1 control signal terminals.
TB26	3, 2, 1	Connect to PLC input contacts X11
TB27	3, 2	Connect to PLC input contacts X20, X21
TB28	+24, +24, +24, M, S11, S12	Connect to K8 safety relay
TB29	K1, K2, K3, K4, K5, EM1	Short circuit
TB30	M, +24, 1	Connect to SP1 air pressure switch
TB31	1, +24, M, 2, +24, M	Connect to 1st channel cover switch

4.3.6 PLC (Programmable Logic Controller)

The PLC processes the signals from the interface, sensors and remote control and sets the outputs according to the program logic. In addition, the PLC also offers 24V DC power to HMI.



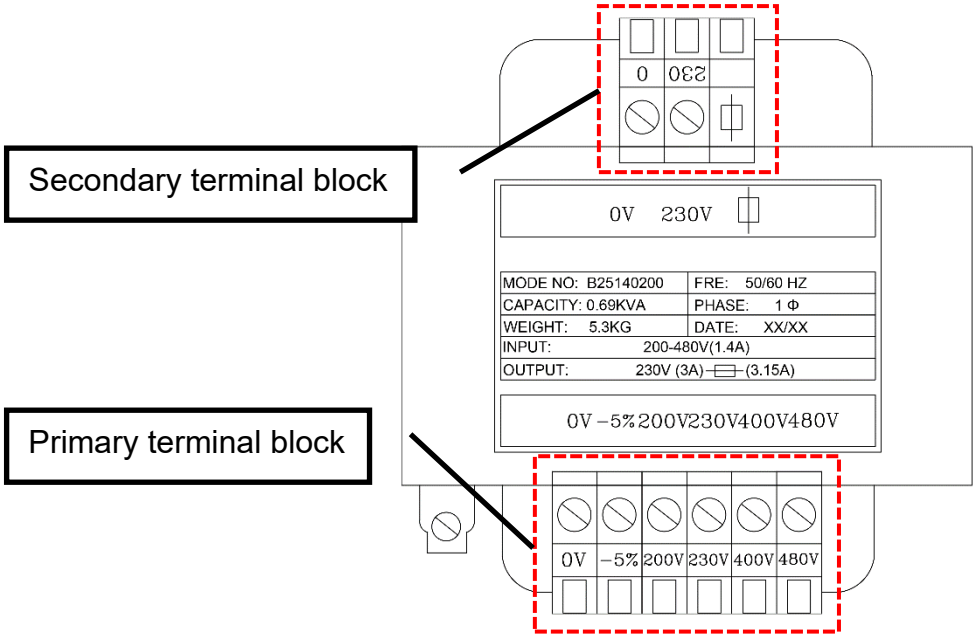
Designation	Description
A	Input contacts.
B	Output contacts.
C	Input signals indication LED. Indicate the status of inputs X0 to X43.
D	Output signals indication LED. Indicate the status of outputs Y0 to Y27.
E	PLC status indication LED.
F	Communication port.

4.3.7 Transformer (Option)

If the power supplied by the interface cable does not meet the required 220V AC the optional transformer must be used.

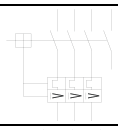
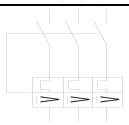
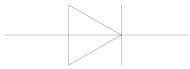
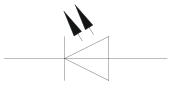
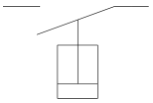
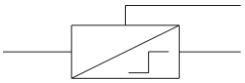
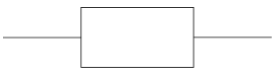
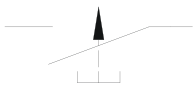
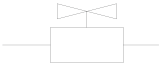
The incoming power must be connected to the Primary terminal block. Use the contacts corresponding to the supplied power (0V AC to 480V AC, see drawing below).

The outgoing power is always connected to the 230V AC terminals of the Secondary Terminal Block.

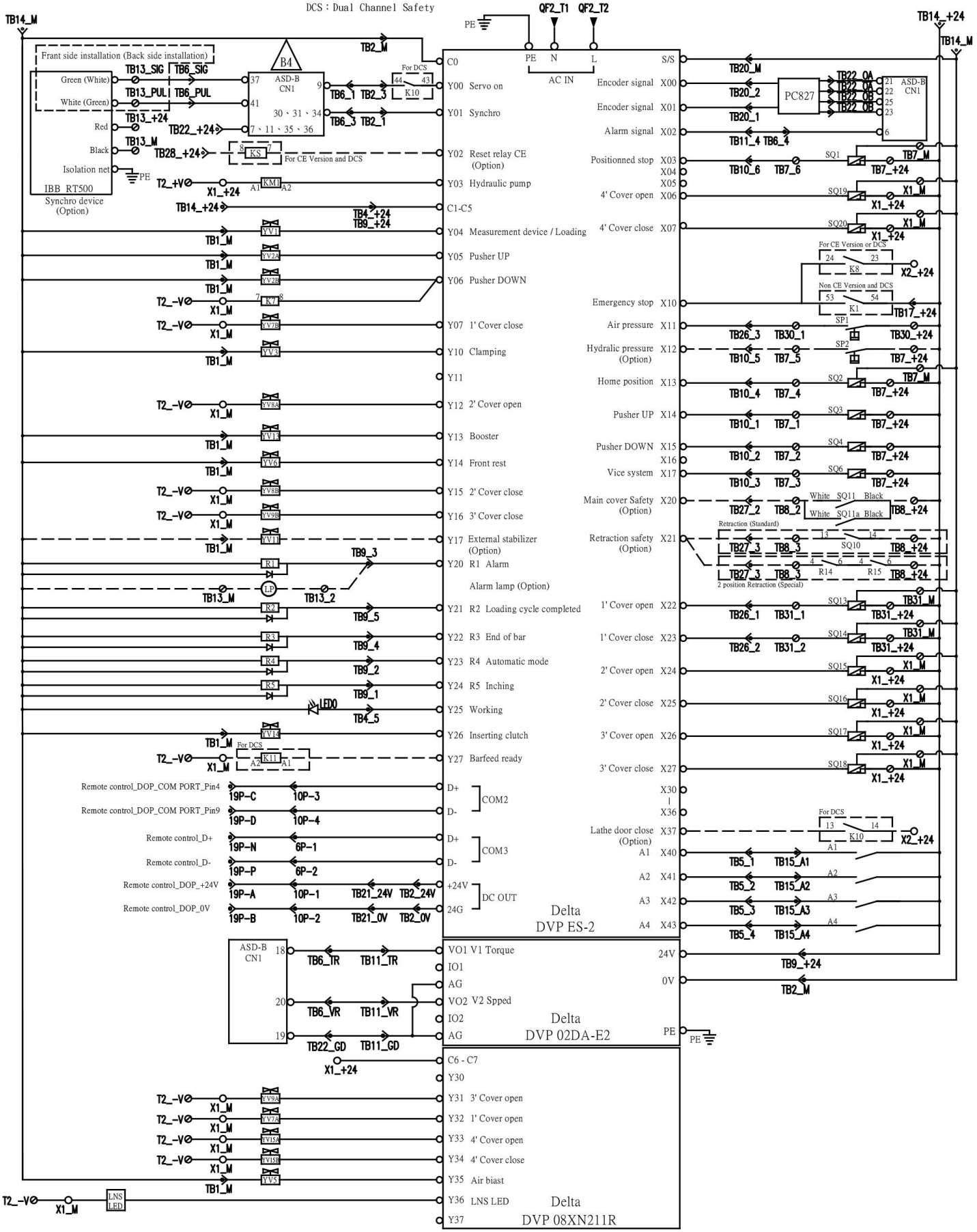


4.4 CIRCUIT DIAGRAMS

4.4.1 Symbols

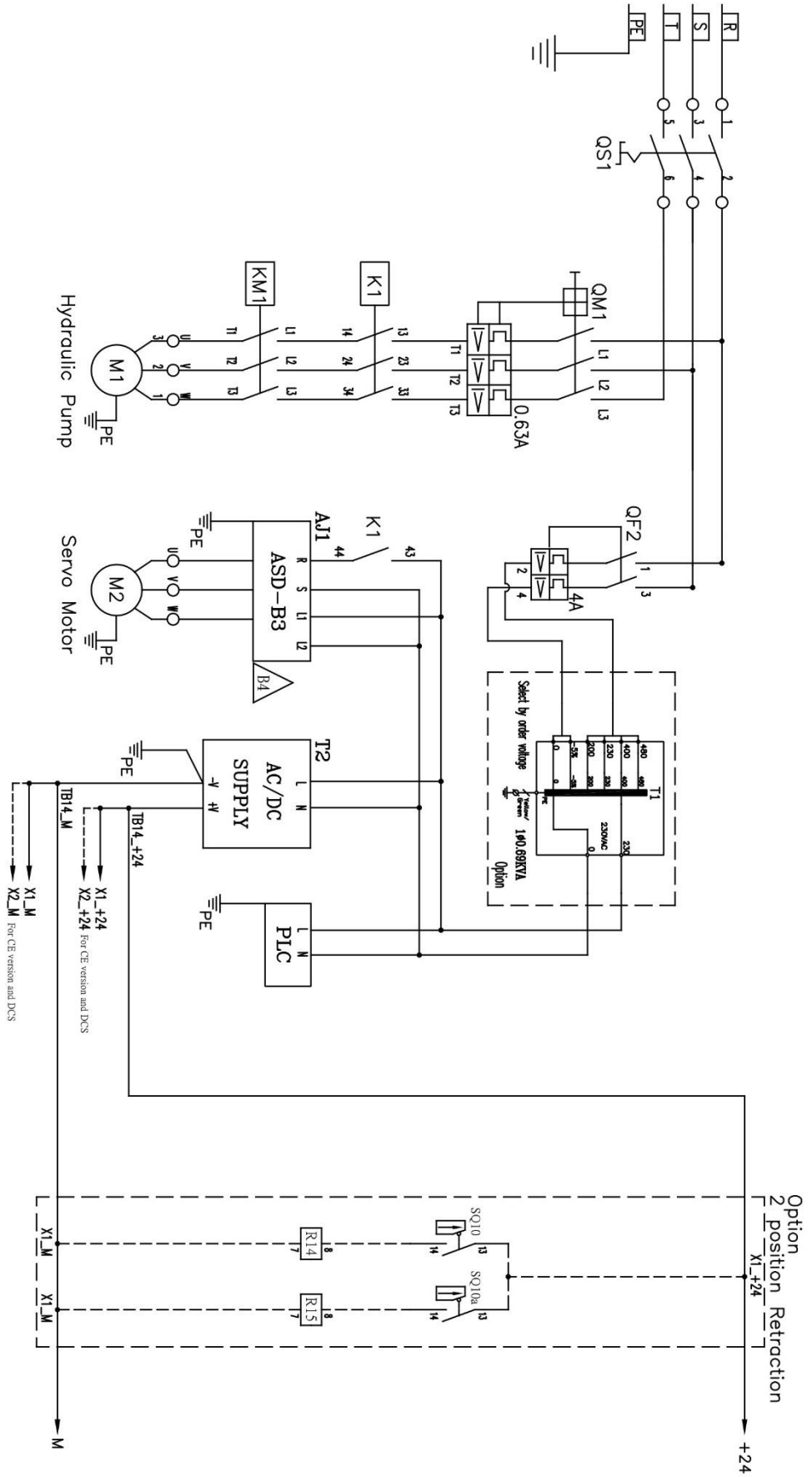
Index	Symbol	Description	Designation
1		Main circuit breaker	QM1
2		Circuit breaker	QF2
3		Diode	--
4		Main power switch	QS1
5		Emergency stop button	STP1
7		Hydraulic pump	M1
8		Light Emitting Diode	--
9		Electromagnetic switch	KM1 / K1
10		Pressure switch	SP1, SP2
11		Proximity switch	SQ1, SQ2, SQ3 SQ4, SQ6
12		Relay	KS, K7, R1 ~ R5
13		Remote control buttons	S1 ~ S7
14		Servo motor	M2
15		Solenoid valve	YV1, YV2A, YV2B, YV3, YV5, YV6, YV11

4.4.2 PLC I/O



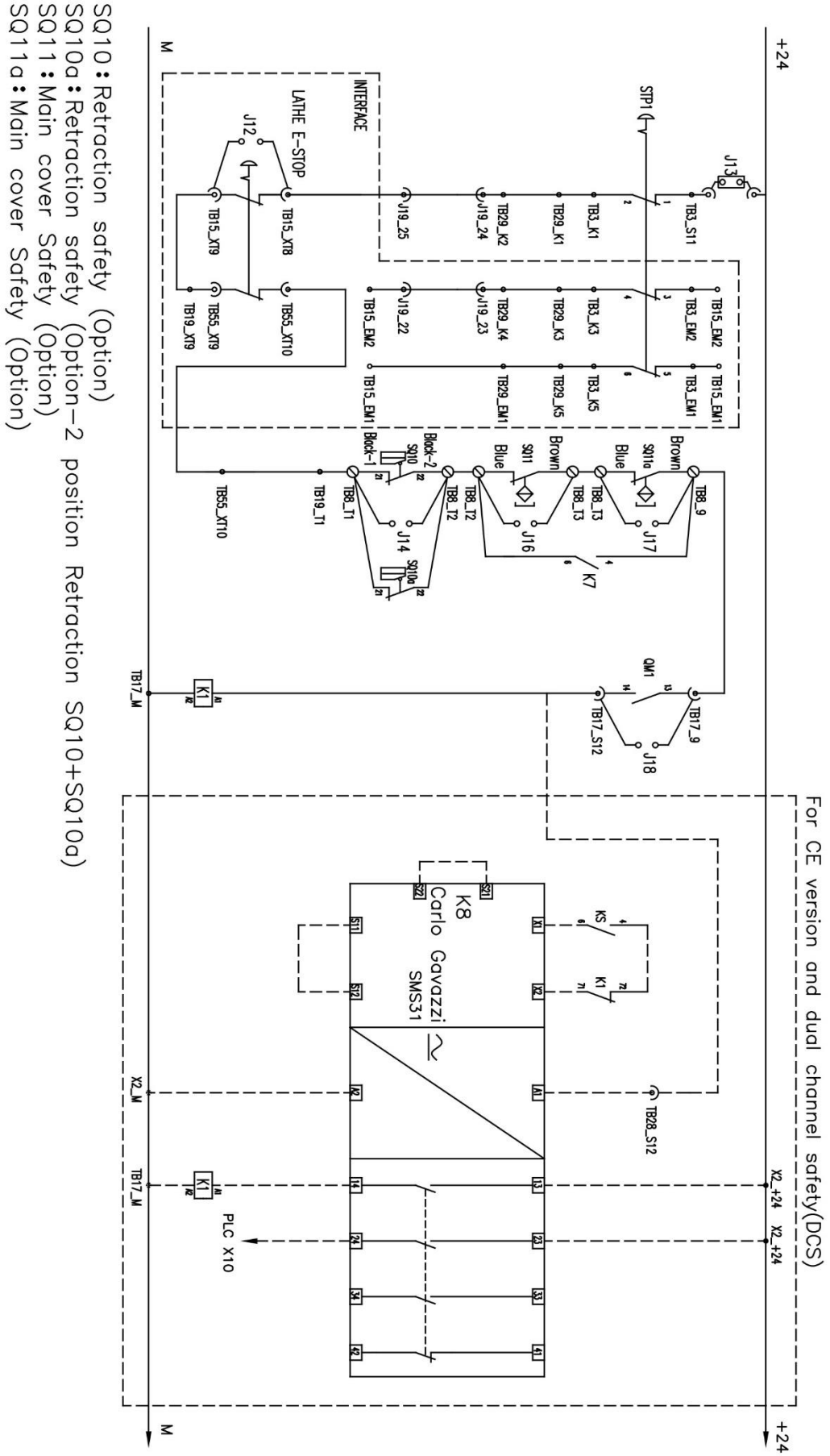
Circuit diagram: XF2.25.A001B_20230323

4.4.3 AC circuit

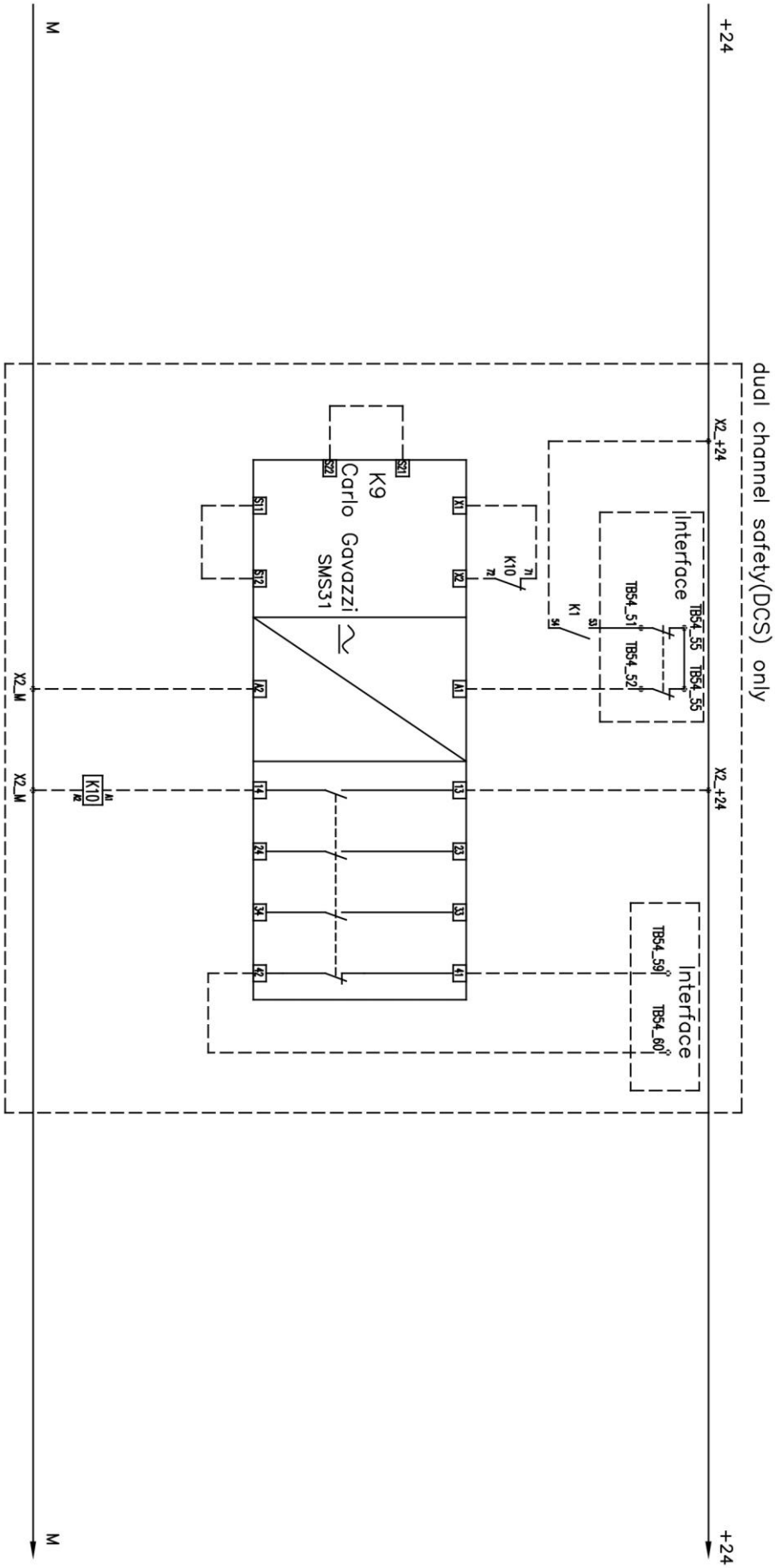


Circuit diagram: XF2.25.A001B_20230323

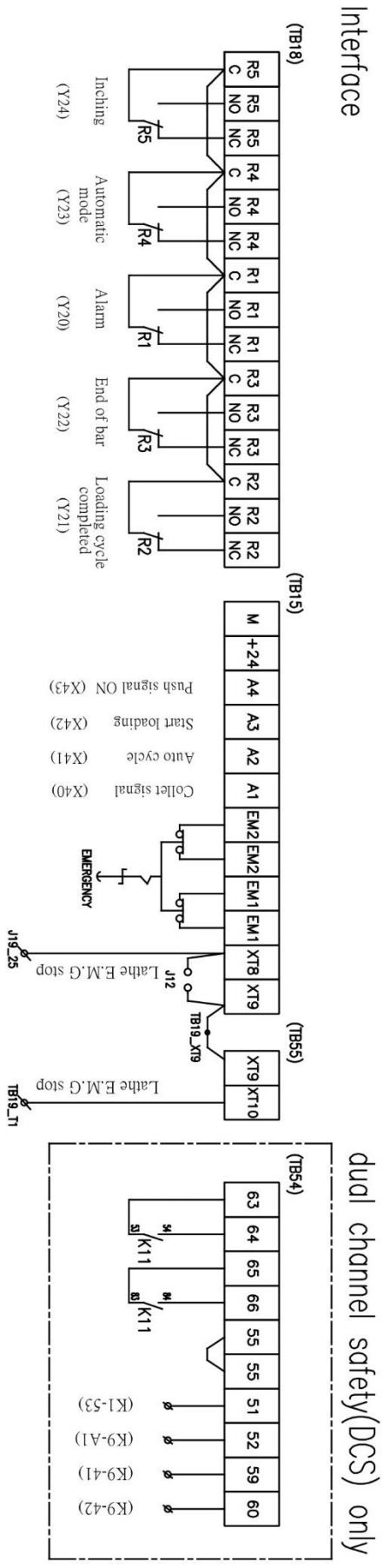
4.4.4 Emergency stop circuit



Circuit diagram: XF2.25.A001B_20230323



Circuit diagram: XF2.25.A001B_20230323



Circuit diagram: XF2.25.A001B_20230323

4.5 INTERFACE

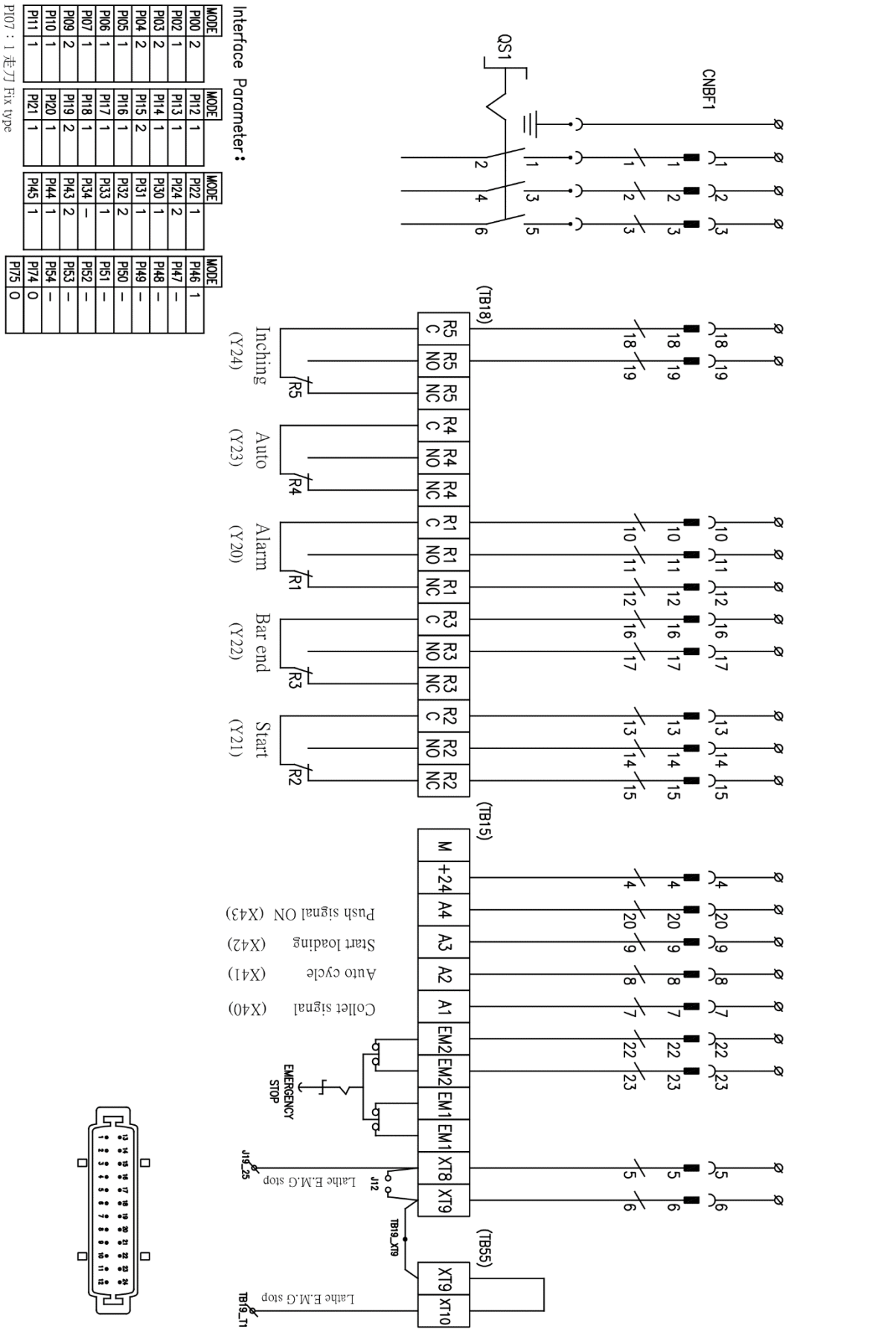
Interface presents all the signals exchanged between the bar feeder and the lathe. The interface cables which serve to transmit the interface signals is/are provided by us.

There is a wide range of different interfaces available to meet the requirement of each lathe. The A diagram of the installed interface can be found in the electrical cabinet. Before connecting the bar feeder, make sure the installed interface is suitable for your lathe. If you have any question, please contact our technician for further information.

<NOTE> A correct connection between lathe and bar feeder is critical for safe and reliable operation. It is recommended to request a trained technician to install the bar feeder.

4.5.1 Universal interface diagram

The interface shown in the next page is called UNIVERSAL or STANDARD interface diagram. If the lathe model/type is not specified, this interface will be given with the bar feeder. The universal interface consists most signals which might be transmitted between the lathe and bar feeder. The later the user can change the wiring according to the lathe requirement or contact us for technical advisement.



MODE	PI00	2
	PI02	1
	PI03	2
	PI04	2
	PI05	1
	PI06	1
	PI07	1
	PI09	2
	PI10	1
	PI11	1

MODE	PI12	1
	PI13	1
	PI14	1
	PI15	2
	PI16	1
	PI17	1
	PI18	1
	PI19	2
	PI20	1
	PI21	1

MODE	PI22	1
	PI24	2
	PI30	1
	PI31	1
	PI32	2
	PI33	1
	PI34	—
	PI43	2
	PI44	1
	PI45	1

MODE	PI46	1
	PI47	—
	PI48	—
	PI49	—
	PI50	—
	PI51	—
	PI52	—
	PI53	—
	PI54	—
	PI74	0
	PI75	0

Interface drawing: BXA00001 20200710

4.5.2 Signals from the lathe to the bar feeder

The interface logic can be configured with service parameters. Only trained personnel should change these settings.

a) 24V DC power supply

All the signals from the lathe were powered by the 24V DC from the bar feeder. When the corresponding relay energized at the lathe, 24V DC travels through corresponding contact and return to PLC. The PLC hence receives lathe signals.

b) Emergency stop signals from the lathe

This contacts XT8 and XT9 are parts of the emergency stop loop of the bar feeder. When the emergency circuit is open between XT8 and XT9, the bar feeder goes to EMERGENCY STOP MODE and arise an e01 alarm and energize relay R1.

c) Lathe collet signal A1 (PLC input X40)

Collet signal is for confirming the status of lathe chuck (collet). This signal starts feeding and bar change process of bar feeder by itself or combination with other signals.

The signal logic will be handled according to INTERFACE00 setup.

d) Auto cycle signal A2 (PLC input X41)

This signal indicates that lathe is in automatic mode and lathe is executing the machining program cyclically. This signal is used for lathe to control pushing forward actions of bar feeders. Pushing forward actions includes First feed, feed into the lathe, feed when lathe chuck is open and lathe chuck is close in synchronization mode.

The signal logic will be handled according to INTERFACE10 setup.

e) Start loading signal A3 (PLC input X42)

This signal is used for lathe to decide the timing of pusher to return for changing a new bar stock after Bar end signal is sent from the bar feeder.

The signal logic will be handled according to INTERFACE04 setup.

f) Push signal A4 (PLC input X43)

Push signal is used for lathe to control pushing forward actions during machining. Pushing forward actions includes “feeding when lathe chuck is open” and “lathe chuck is close in machining”.

The signal logic will be handled according to INTERFACE11 setup.

g) Lathe door signal A7 (PLC input X37)

Door closed signal is used to control the speed of bar feeder in manual mode when lathe door is closed/open.

4.5.3 Signals from the bar feeder to the lathe

a) 24V DC power supply

All the signals from the bar feeder were powered by the 24V DC from the lathe. When the corresponding relay energized at the bar feeder, the 24V DC is passed through corresponding contact at bar feeder relay and return to lathe PLC. The lathe PLC hence receives bar feeder signals.

b) R1 alarm relay

When the bar feeder is in normal operation, the R1 relay is de-energized. In the event of an alarm or break in the emergency stop loop, this relay is energized and the signal will be sent out passing through the contact (NO or NC contact is used upon lathe requirement).

For safety reason, this signal should bring to a stop of the axis movements of the lathe as well as the rotation of the spindle.

c) R2 START signal relay

Relay R2 confirms the action of general part feed out or/and a new bar stock loading is finished. Refer to service parameter INTERFACE13, 14, 15 and16 for related set up.

d) R3 BAR END (end of bar) relay

When the pusher reaches BAR END position during feed out process, relay R3 energizes. This signal is used to indicate that the rest bar stock length is not long enough to machine a complete part according to part length setting.

e) R4 bar feeder in auto relay

This signal is present as soon as the bar feeder is switched into automatic mode (AUTO READY + AUTO START)

f) R5 INCHING relay

This relay energizes under circumstances described below during a bar change process:

1. The loading flag is moving forward for place the bar stock at FIRST FEED position (behind the vise jaws).
2. The pusher is moving forward for advancing the bar stock to TOP CUT position after insertion in the collet of the pusher.

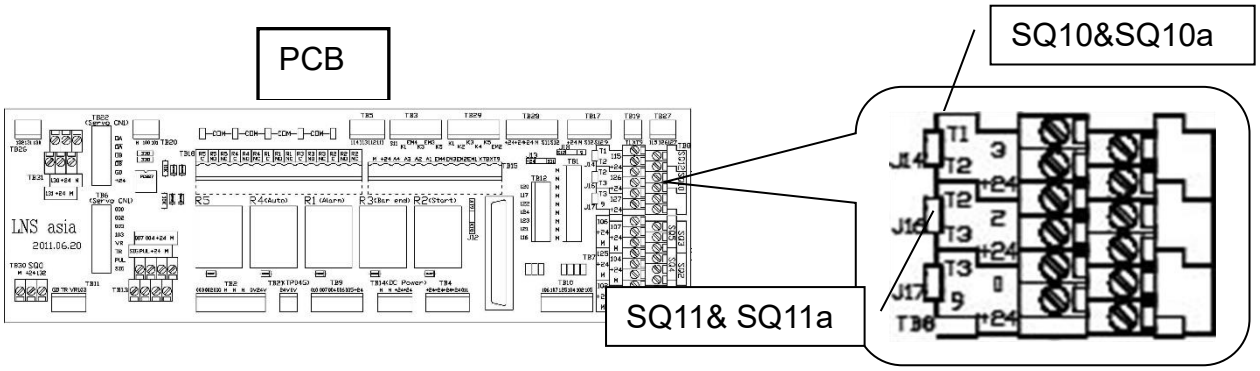
For bar stocks without proper preparation or profiled material may struggle to enter the chuck. Generally the spindle rotates at slow speed when the new bar stock is passing through. For lathes not able to rotate the spindle with the chuck open this signal can be used as an external command to turn the spindle.

Refer to service parameter INTERFACE43 for more information.

4.6 SAFETY SWITCHES (OPTION)

The optional safety switches are used as reminders for user during operation. These will impede any handling as long as the bar feeder is not in operational position.

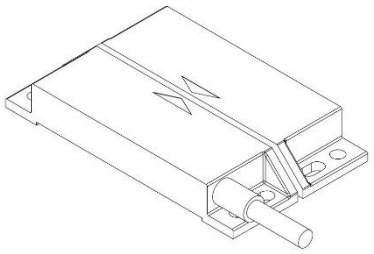
Once the switch is used, remove the pin for short circuit on TB8 accordingly.



- **Main access cover safety switch (SQ11) (SQ11a)**

The switch detects whether the main cover is closed or not to ensure bar feeder can be switched to AUTO mode.

When the cover is open, a signal will be sent to PLC input contact X20, arising an error message “Main cover is open”. The bar feeder will be switched to manual mode.



- **Retraction safety switches (SQ10) (SQ10a)**

The switches detect the position of bar feeder to ensure bar feeder is ready and lathe can machine.

When bar feeder is ready, the safety switches SQ10 and SQ10a will operate as the figure A and figure B.

Following the procedures on 7.12.2, when bar feeder is moved, the safety switches SQ10 and SQ10a will operate as the figure C. A signal will be sent to PLC contact X21, arising an alarm message “AL03” to remind user to move back bar feeder to the working position before lathe machining.

1-position

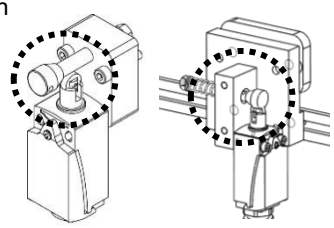


Fig. A

2-position

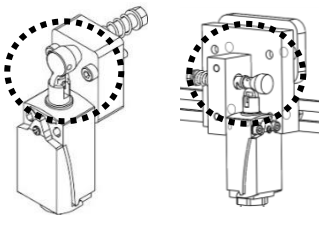


Fig. B

Alarm

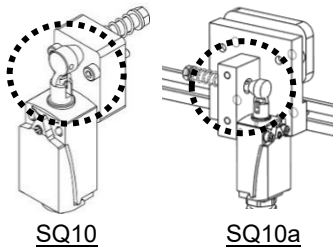


Fig. C

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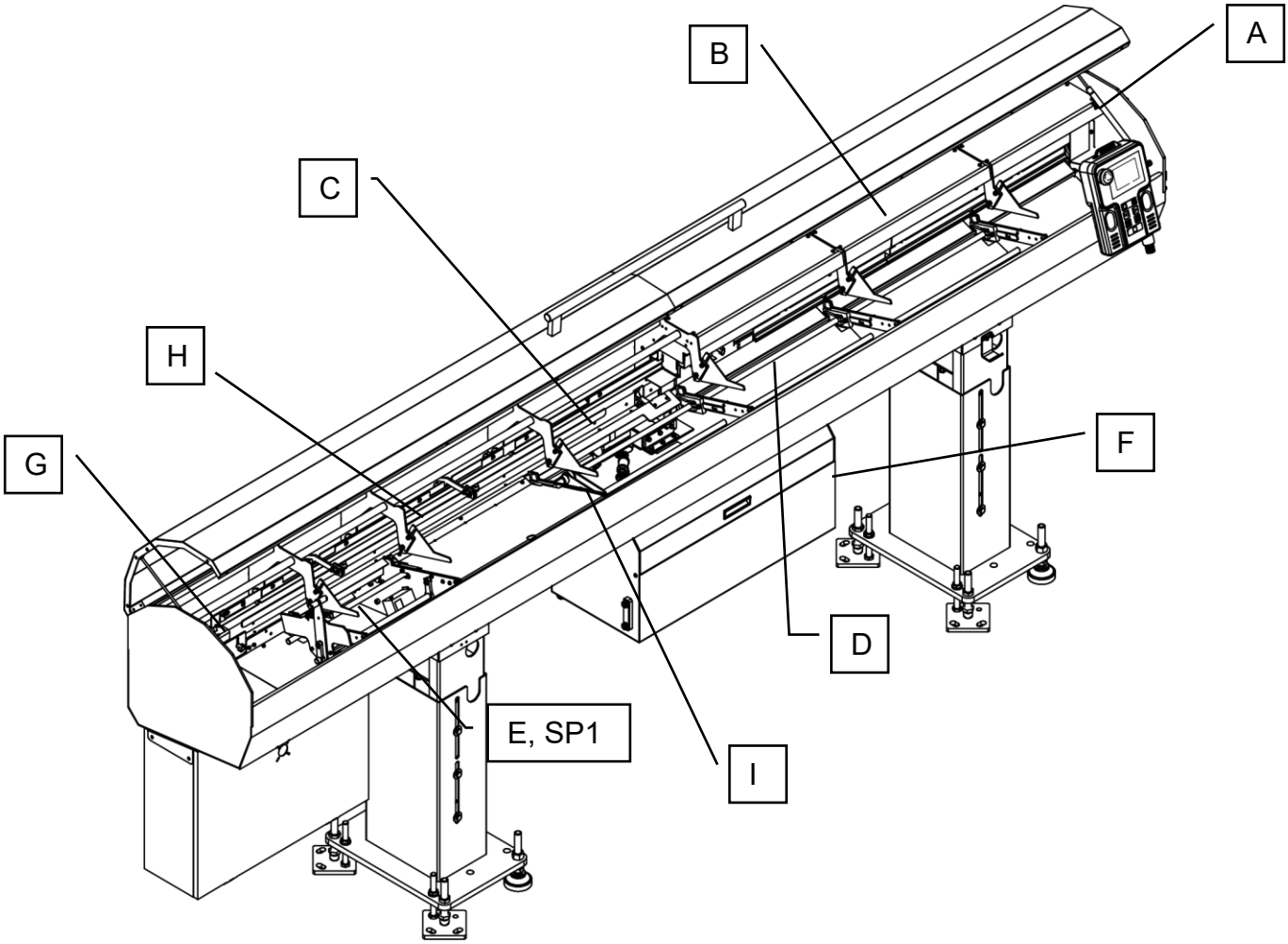
5 PNEUMATICS

5.1 GENERAL DESCRIPTION

The following automatic movements are activated by pneumatic system: loading mechanism, channel opening/closing mechanism, vice (material clamping device), TOP CUT measuring device, first and second front rest (optional) and air blast.

To guarantee an optimal operation of the bar feeder, a pressure of 5kgf/cm^2 is mandatory.



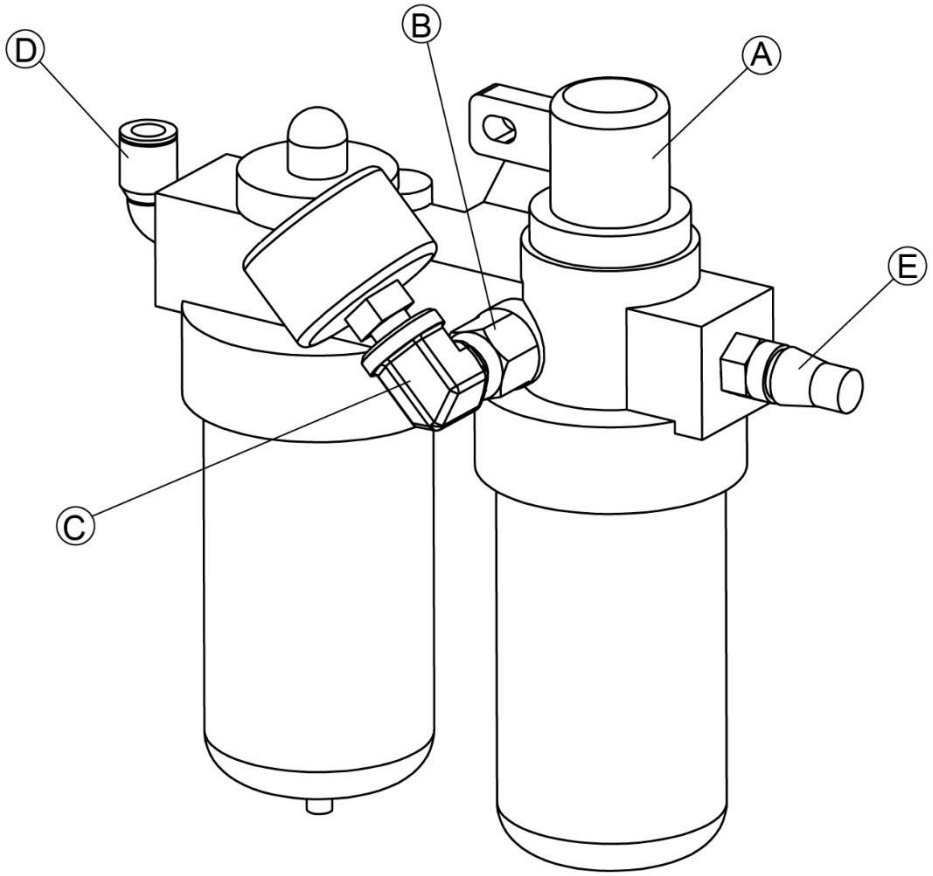
Designation	Part No.	Description
A	C12120900	Measuring pneumatic cylinder
B	C12116400	Sectional channel cover cylinder
C	C12116200	Clamping pneumatic cylinder
D	LtoRF: XF2.03.A003B	Channel opening/closing cylinder
	RtoLF: XF2.03.A013	
E	XF2.27.A001B	Solenoid valve (1st +2nd channel cover)
	XF2.27.A002A	Solenoid valve (1st channel cover)
SP1	C11121400	Air pressure switch
F	RtoLF: XT032020210	F.R.L. combination unit
	LtoRF: XT032020220	
G	C12114800	Clutch cylinder
H	C12115700	Power booster
I	XF2.08.A005B	Loading pneumatic cylinder

5.2 F.R.L. COMBINATION UNIT

The F.R.L. (Filtering-Regulation-Lubrication) combination serves to perform filtering, lubrication and regulation of the pressure air before it enters pneumatic system.

The air must be furnished at a pressure of 5 bar and whenever possible, clean and dry.

5.2.1 Layout of the elements

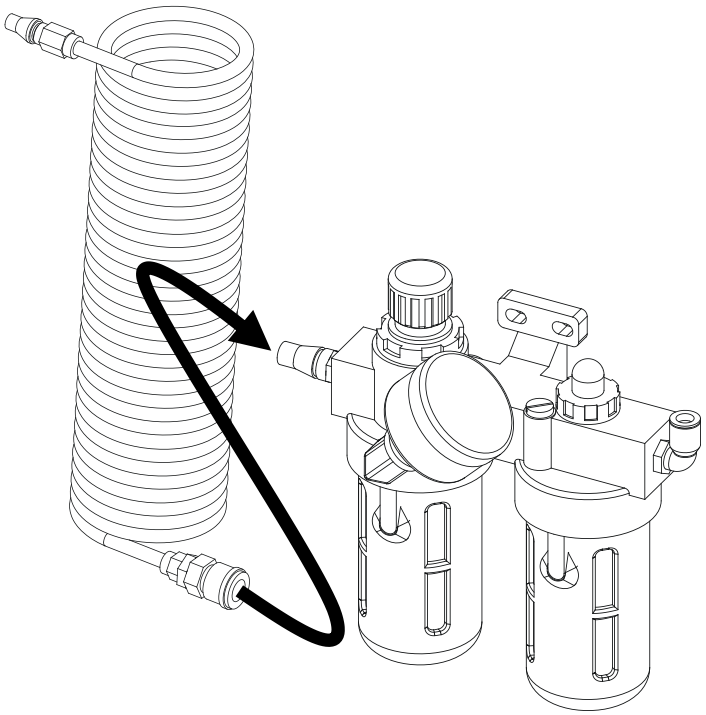


Designation	Part No.	Description
A	C11120100	Pressure regulator
B	C11121100	Air filter connector
C	C11121000	90 degree connector
D	C13110500	Bent connector
E	C13120300	External connector

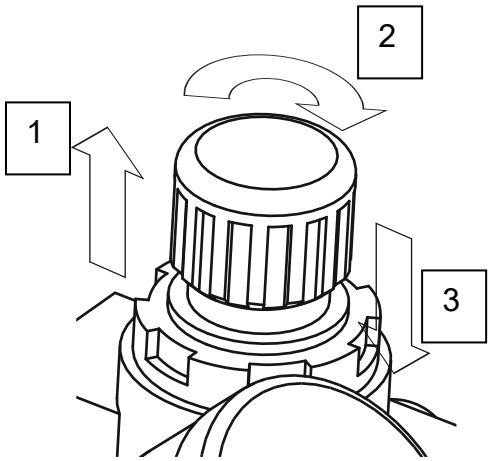
5.2.2 Connection

For the pneumatic connections of the bar feeder, we provide a tube with quick acting coupler and probe pre-mounted.

Before connection, confirm the factory air pressure is not larger than 8 kgf/cm^2. Connect this tube on both F.R.L. unit and factory compressed air source.



5.2.3 Settings

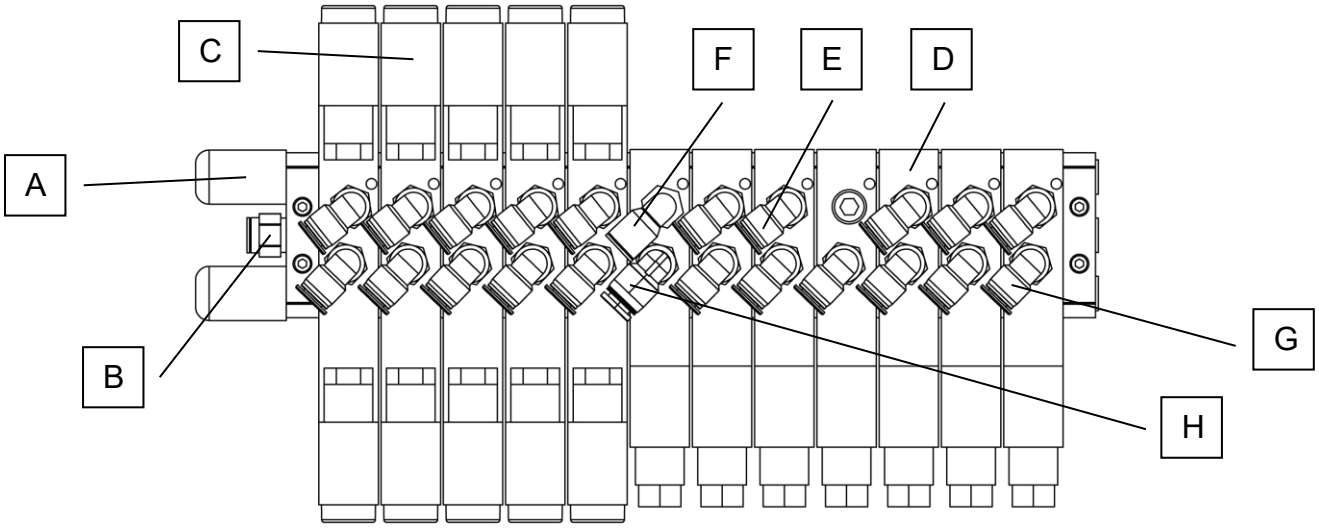


1. Unlocking the adjusting knob by pulling it upward.
2. To increase the pressure, turn the knob clockwise. To decrease the pressure, turn it counter clockwise. The operational pressure should be kept at 5kgf/cm^2 (5bar).
3. When the setting is finished, lock the knob by pressing it downward.

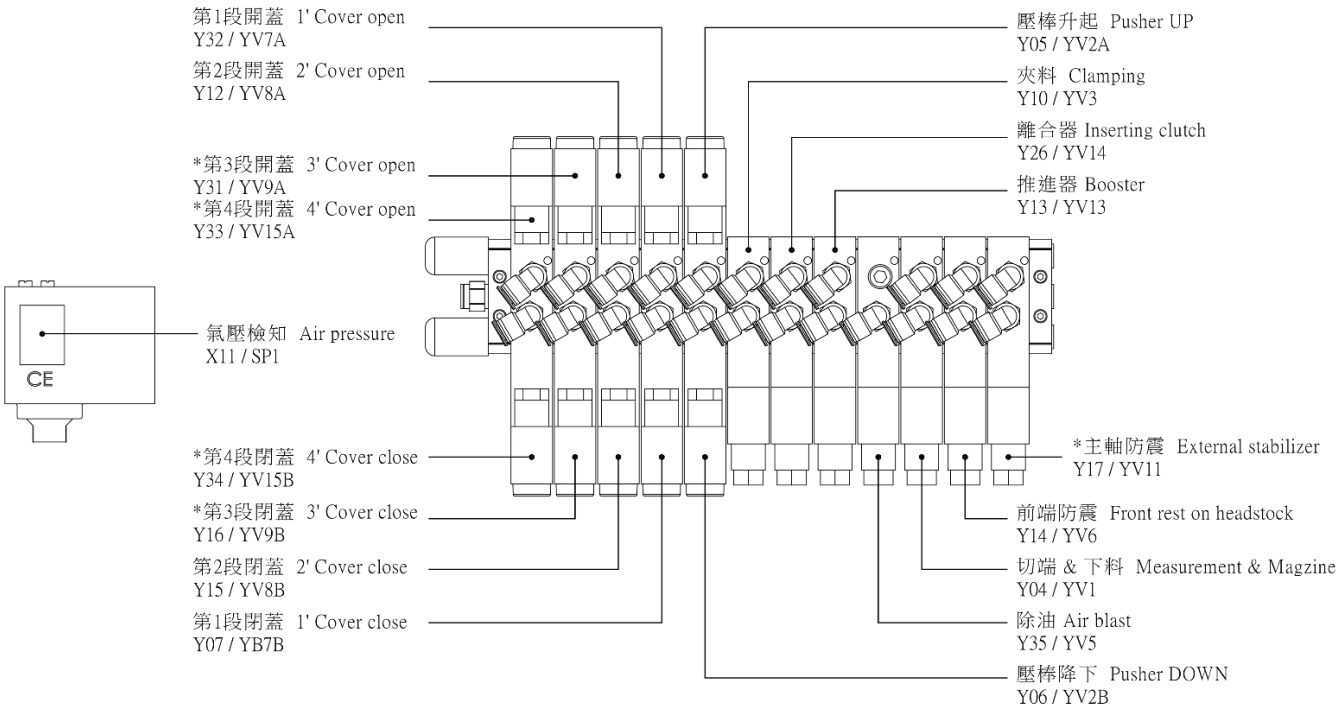
5.3 SOLENOID VALVE MANIFOLD

The solenoid valve manifold consists of control and pressure monitoring elements of the bar feeder pneumatic circuit. Open its cover to press those bottoms if needed.

5.3.1 Layout of the elements

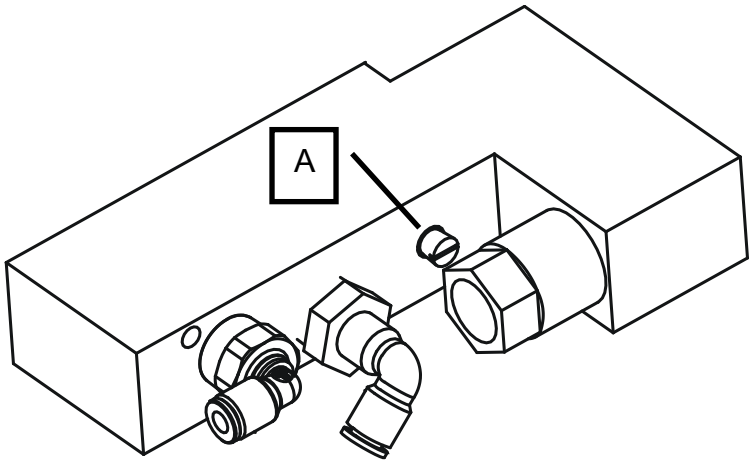


Designation	Part No.	Description
A	C14120200	Silencers (Air outlet)
B	C13121800	DC connector (Air inlet)
C	C11110210	Sectional channel cover & pusher solenoid valve
D	C11110100	Solenoid valve
E	C13110100	Connector
F	C13110800	Small connector for measuring cylinder
G	C13110400	Lengthen connector
H	C13110600	Clamping pneumatic cylinder connector



*Options are depending on models.

5.3.2 Solenoid valve



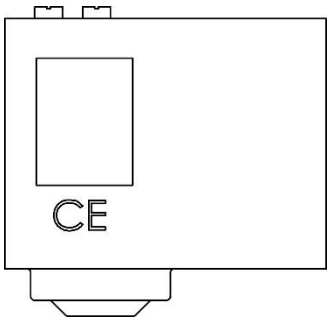
Directly controlled by the PLC, the solenoid valves activate the cylinders.

Press button A to activate the cylinders manually. This button could be kept at the activation position by pressing it down and turning 90° clockwise. This position could be released by turning it 90° counterclockwise. This device is proved to be useful during testing or connection. Normal pneumatic cylinder returns to its original position when releasing the button (except for pneumatic cylinder activated by double-effect solenoid valve).

5.3.3 Air pressure switch, SP1

To guarantee the compressed air is supplied to the bar feeder, the pressure switch serves to confirm the pressure is existing.

The pressure switch engages when the pressure is larger than 4 kgf/cm^2. If the pressure is below 4 kgf/cm^2, the switch will disengage and the emergency stop circuit will be interrupted. Alarm AL05 then arise.



5.4 MAINTENANCE

The pneumatic system should be regularly maintained in order to ensure the system is powered by qualified compressed air. We recommend the user to check the F.R.L. combination every week as instructed below.

1. Check the condensate collector:

   The condensate collector is a measure of the compressed air quality. A qualified air should not produce any condensate inside the collector.

   The collector has an automatic drain plug. When there is no pressure inside the F.R.L. system, the drain plug is activated by the spring and the condensate released.

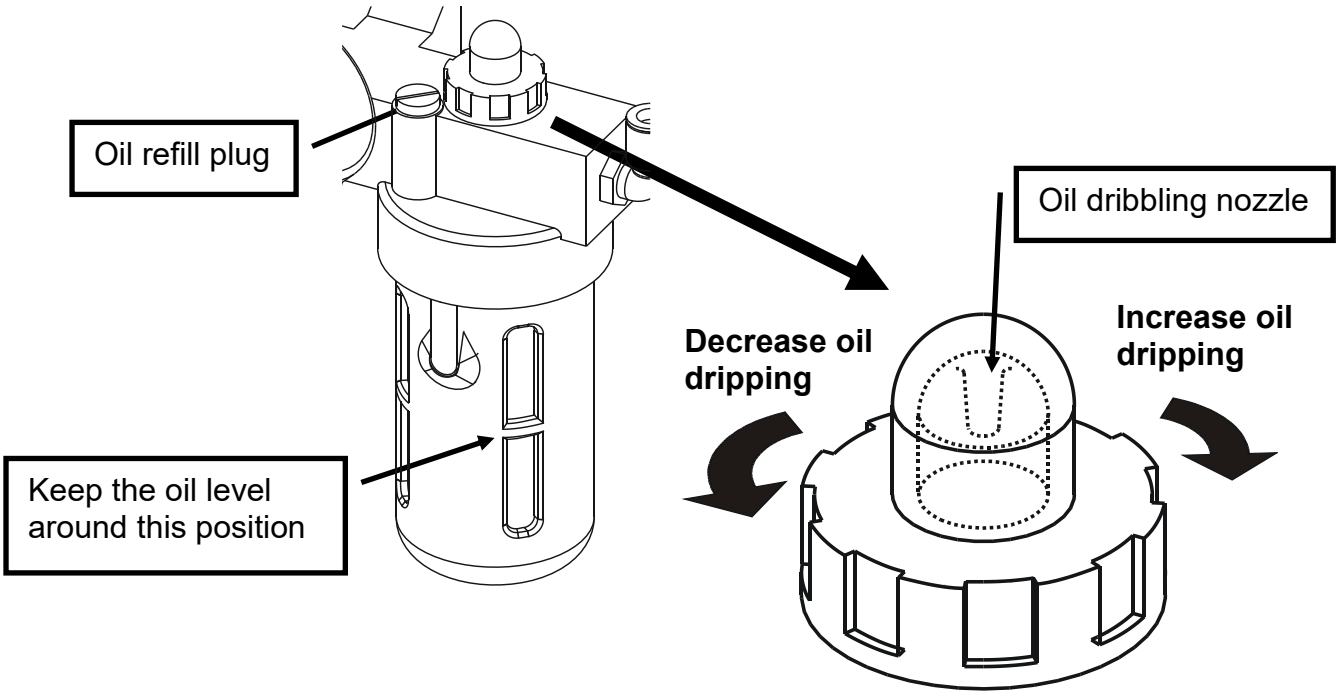
   For users who always connect the compressed air, a manual draining is needed. Whenever the condensate is found inside the collector, drain the condensate by pushing the plug upward to open the drain plug and drain.

2. Check lubricator:

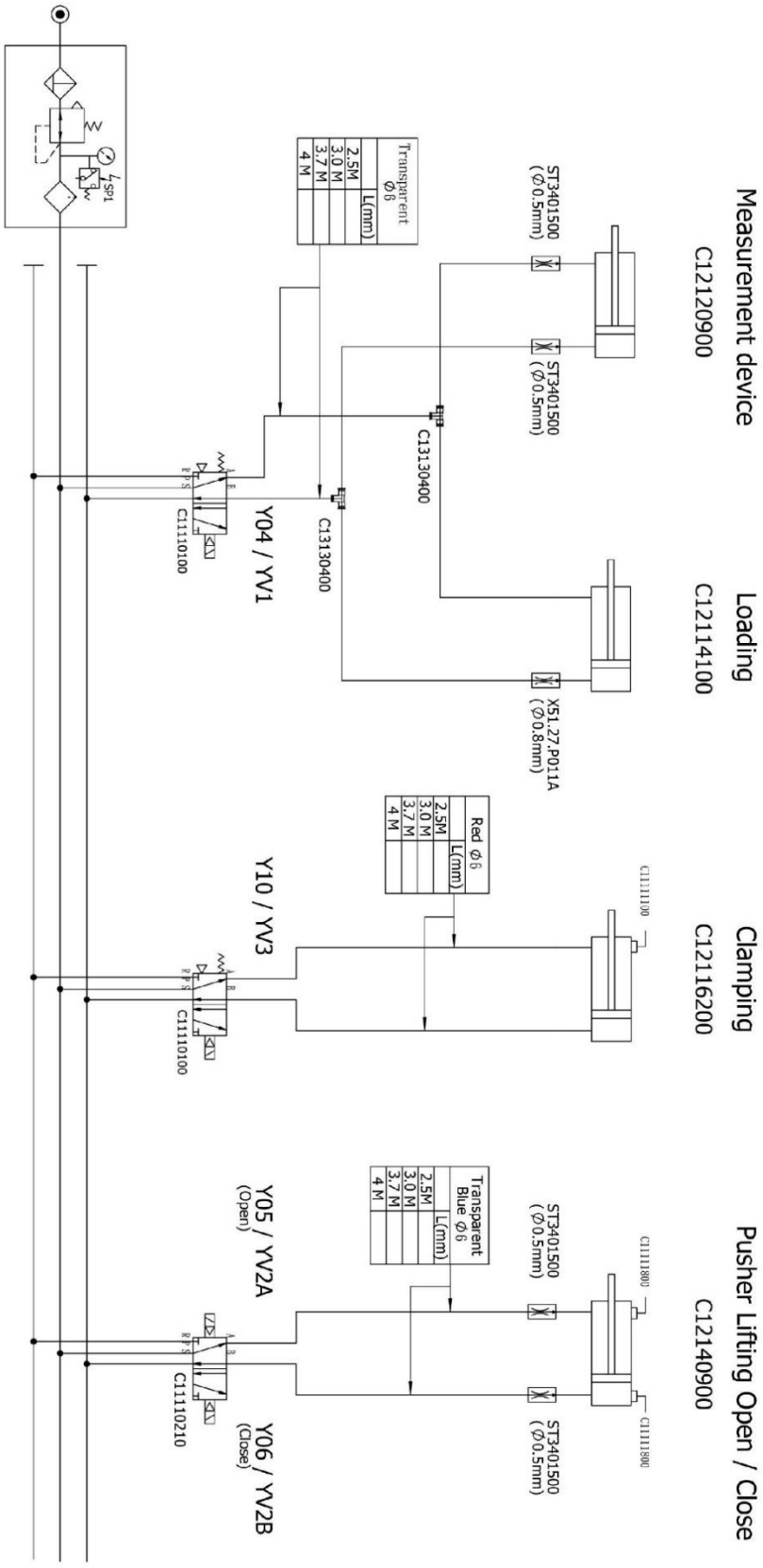
   The oil consumption varies with the bar feeder applications. The oil height should not exceed half of the oil cup. It is recommended to use oil ISO VG 32. When the oil is less than 30%, follow the procedures below to refill it.

Steps:

1. Disconnect the air inlet tube.
2. Remove the plug and fill the oil up to the position shown on the figure.
3. For the best performance, the oil should drop every 10 cylinder operation. Set the amount if oil dripping by using  and  on the remote control.
4. Connect the air inlet tube and turn air source on.

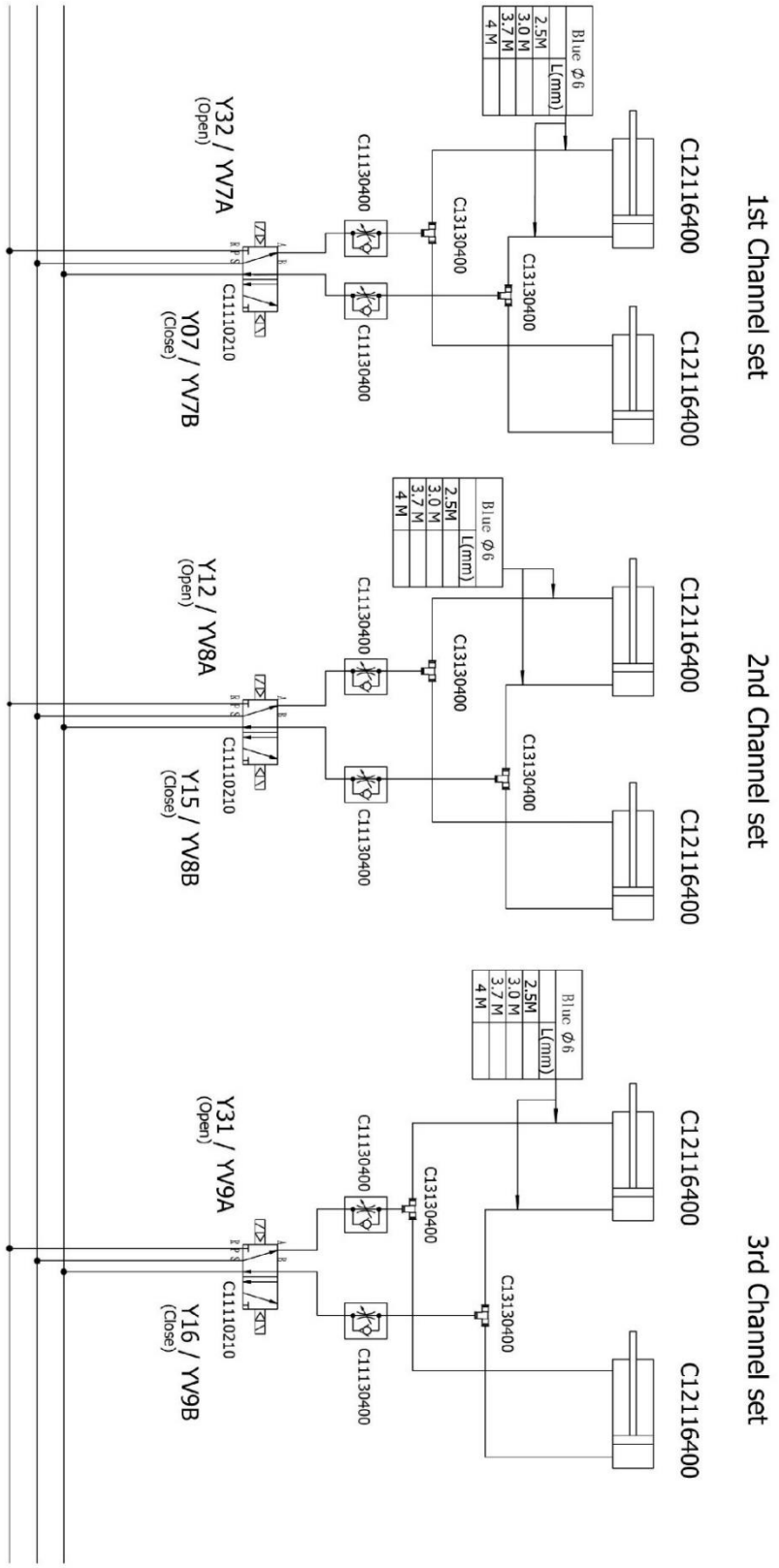


5.5 PNEUMATIC CIRCUIT DIAGRAM

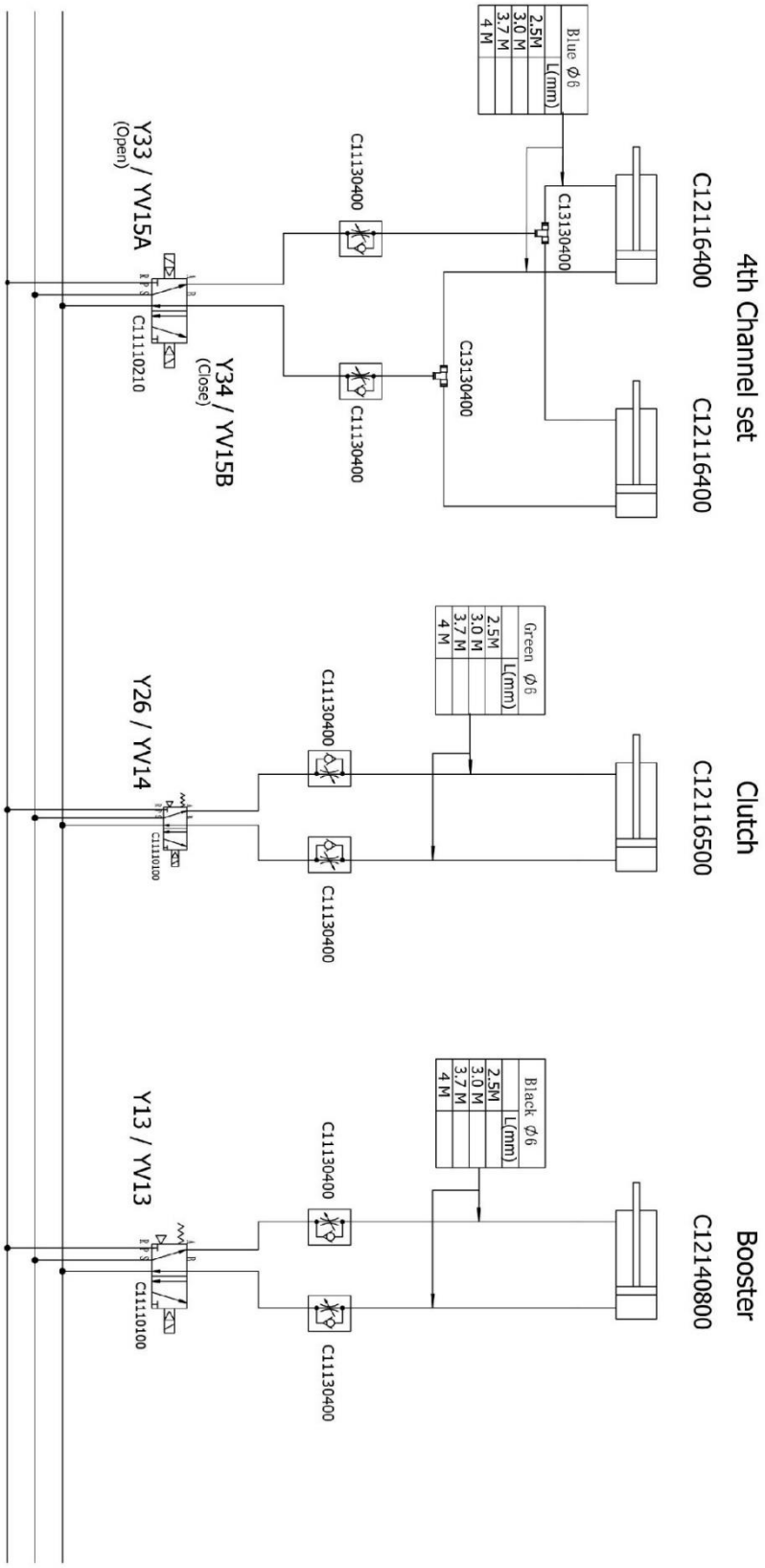


Pneumatic diagrams: XF2.27.P004A

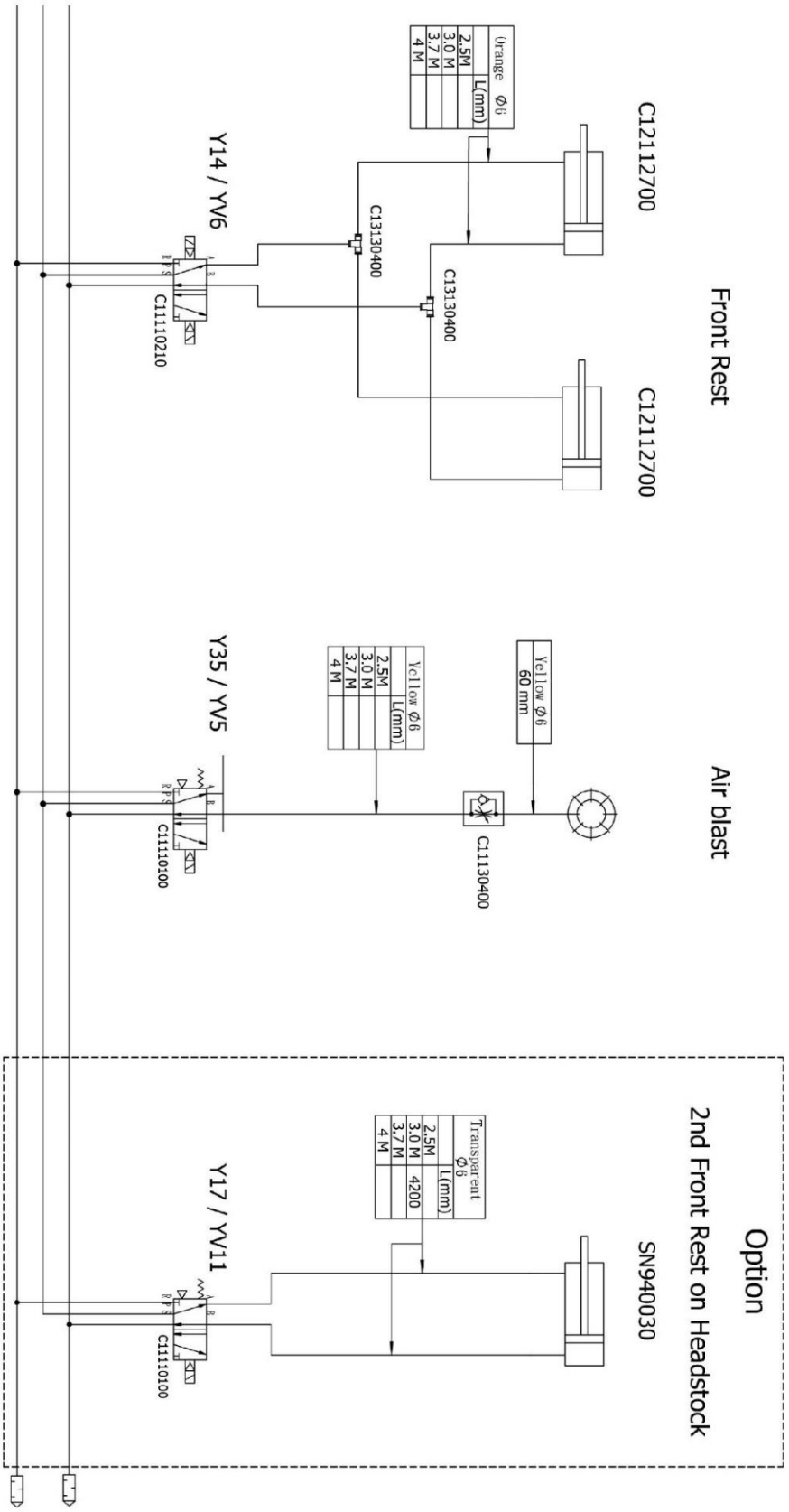
Note: Sectional channel cover numbers is depending on different models.



Pneumatic diagrams: XF2.27.P004A



Pneumatic diagrams: XF2.27.P004A



Pneumatic diagrams: XF2.27.P004A

6. HYDRAULICS

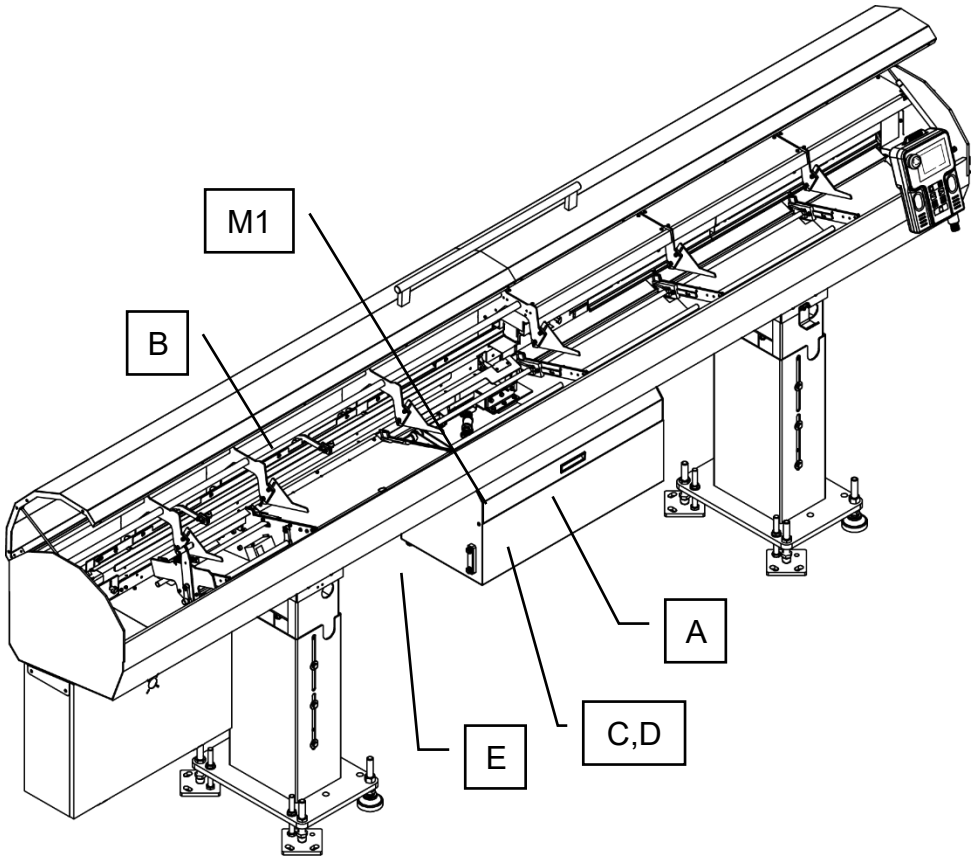
6.1. GENERAL DESCRIPTIONS

The hydraulic pump injects the oil into the space between running bar stock and guiding channel elements hence achieve functions below:

1. To keep the bar stock positioned at central of the channel.
2. To reduce friction between running bar stock and the guiding channel.
3. To absorb the vibration created during machining.

A pressure sensor detects the pressure at the outlet of the pump. A level allows the monitoring of the oil level of the hydraulic tank.

6.2. LAYOUT OF THE ELEMENTS



Designation	Part No.	Description
A	-	Remnant storage space
B	-	Guiding channels
C	-	Hydraulic tank
D	3.124	Drain plug (underneath the oil tank)
E	C17120402	Oil Level indicator
M1	XT135050000	Hydraulic pump motor

6.3. DESCRIPTIONS OF THE ELEMENTS

6.3.1. Hydraulic pump motor M1

The hydraulic pump is powered by 3 phases 220V AC. It powered on immediately when conditions below are satisfied:

1. Bar feeder is in automatic mode.
2. Guiding channel is closed.

If one of the following conditions is fulfilled, the hydraulic pump will turn OFF immediately:

1. Bar feeder is switched to manual mode.
2. Guiding channel is opened.

6.3.2. Remnant storage space

The space is used for remnants from extracted. The available capacity of the space depends on remnant diameter and length. The space should be checked and emptied regularly to ensure it would not overfilled. An overfilled remnant box might cause problems below:

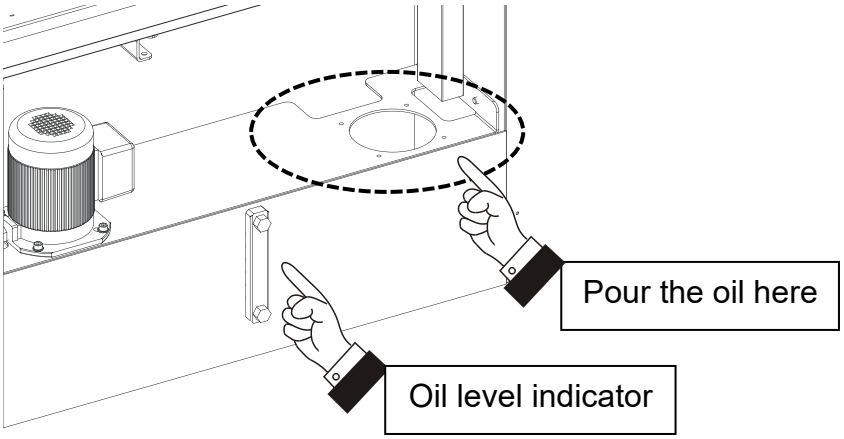
1. The oil draining out from the bar feeder to the space might be interrupted and spill out.
2. The remnants might be lying between the material clamping space and interrupt with the next bar stock insertion or loading.

6.3.3. Hydraulic pressure switch SP2 (Option)

When hydraulic pressure is lower than the value setup, the alarm arises. However, the bar feeder will continue to operate until the next chuck opens, at which point the bar feeder operation will stop.

6.3.4. Oil filling and draining

The bar feeder is delivered without oil. Hydraulic oil of any type indicated below must be provided by the client. The oil should be filled into bar feeder before running. Pour the oil into the oil tank directly as shown. The oil height should be kept around H mark on the level when the hydraulic pump is not running.



*Before running your bar feeder, please pour approximately 35 liters of oil into the tank.

	Viscosity index (CST@ 40°C / 104°F)
ISO VG 68	61.2 ~ 74.8
ISO VG 100	90.0 ~ 110

Consult your supplier for adequate oil according to the table above. The thicker oil (ISO VG 100) produces better result. However, the usage of oil where its viscosity exceeds ISO VG 100 is not recommended.

6.4. MAINTENANCE

The hydraulic oil quality gets worse with the bar feeder system running continuously. The cutting chips and sludge heap on bottom of the oil tank and will be pumped into the hydraulic system. Those substances damage the pump, the guiding channel as well as bar stock surface. Therefore, depends on the bar feeder running status, it is recommended to drain and clean the oil tank at least once every 6 months. Please follow the procedures below:

1. Power OFF the bar feeder system. Confirm most of the oil return to oil tank.
2. Place a container with enough capacity (minimum: 35 liters) underneath the drain plug.
3. Remove the drain plug and drain the oil.
4. When the oil tank is empty, clean the sludge inside the tank and bar feeder.
5. Clean the drain plug. Apply seal on the plug and screw the drain plug in.
6. Refill new oil into the bar feeder according to chapter 6.3.4 until the level indicates oil level at H. Confirm there is no leaking from the plug.
7. Check if it leaks from the drain plug.

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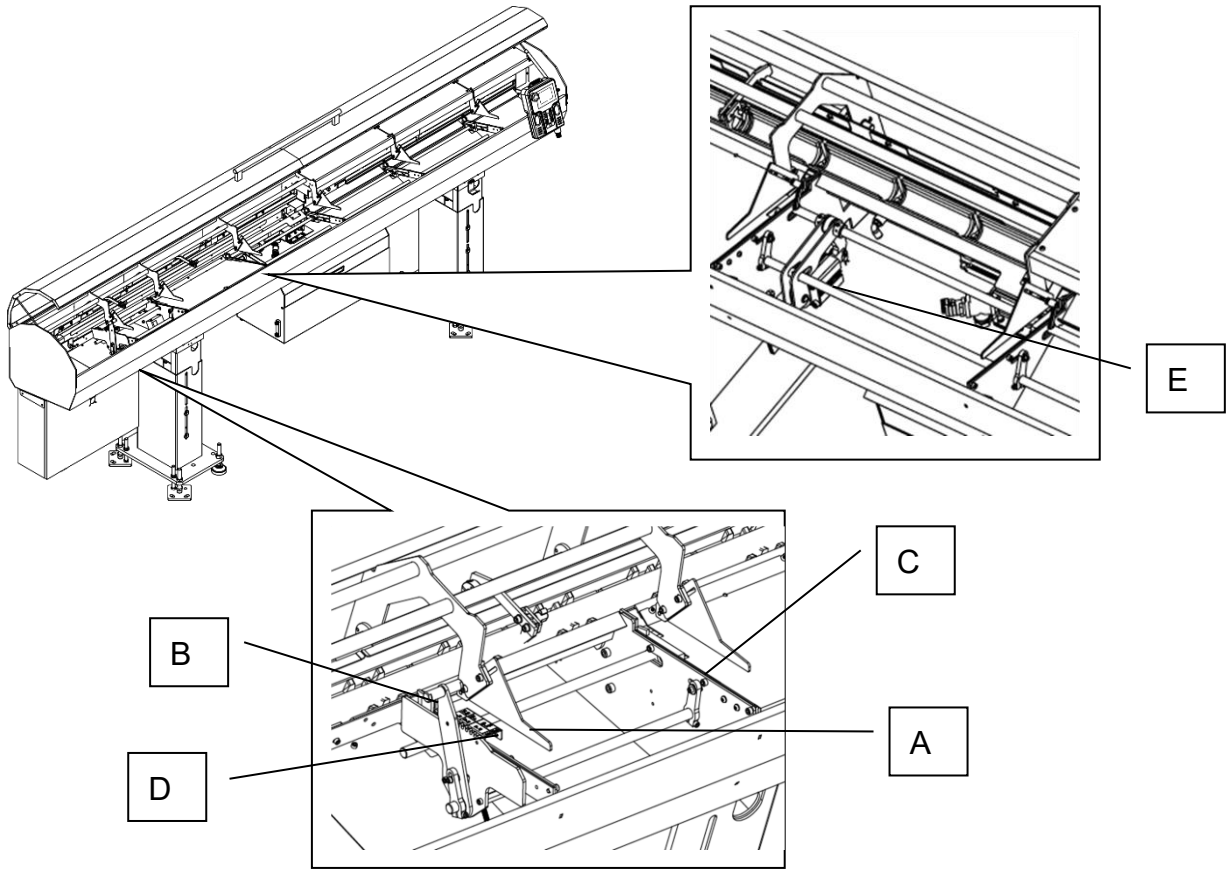
7 GENERAL DESCRIPTION

7.1 LOADING SYSTEM

GT 342 loading system is composed of bar magazine, loading fingers and the loading cylinder. This system serves to storage bar stocks and loads them into the guiding channel. In order to load the bar stocks smoothly during automatic cycles, the loading elements must be properly set up according to bar stock diameter.

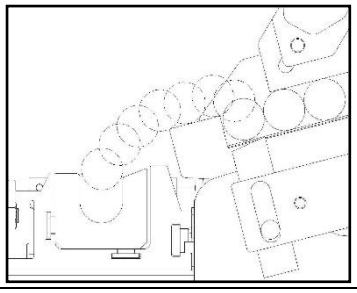
7.1.1 Layout of the elements



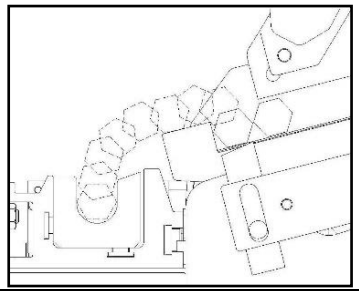
Designation	Description
A	Bar guiding limiter*
B	Loading finger adjusting knob
C	Loading finger*
D	Scale
E	Loading cylinder

7.1.2 Adjustment

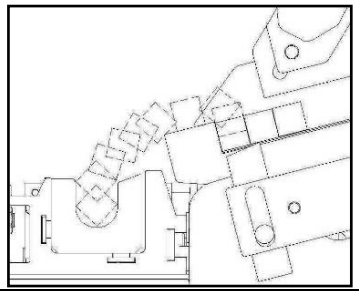
The smooth loading actions are as the following:



Round bar



Hex bar

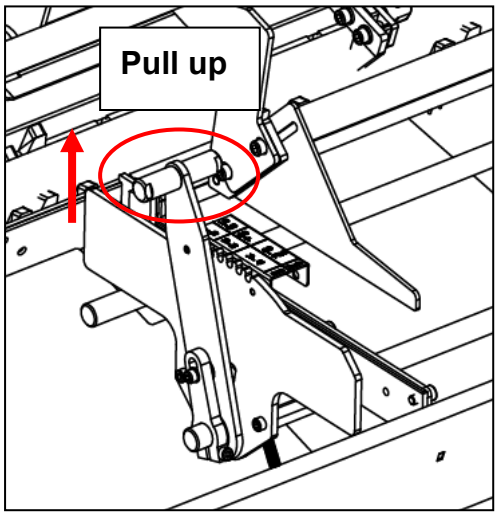


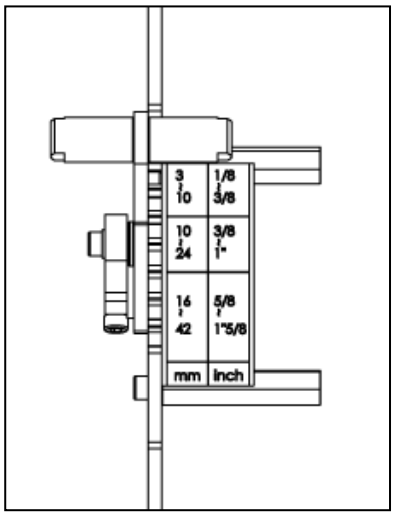
Square bar

Reading the scale next to the bar diameter bar selection adjusting handle select the diameter range that fits the bar to load.

Range A: 3 to 10 mm
Range B: 10 to 24 mm
Range C: 16 to 42 mm

The adjustment method is pulling up the handle, move the loading finger to the corresponding bar diameter, and put down the handle, it will be fixed.



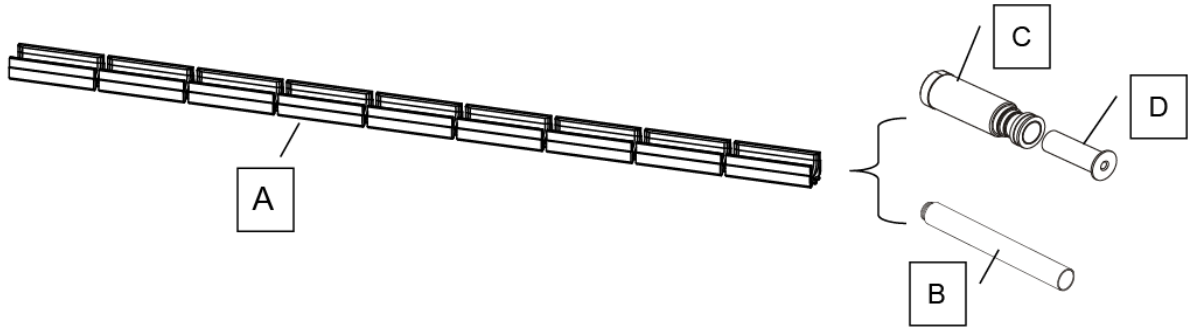


7.2 CHANNEL SET: GUIDING SYSTEM

The guiding system offers functions below:

1. To keep the pusher at the central of the guiding channel axis.
2. To house the moving/rotating components inside.
3. To seal the section of guiding channel with oil injected hence keep the hydraulic system working performance.

7.2.1 Layout of the elements



Designation	Description
A	Guiding channel
B	Front tube (for fixed type lathe)
C	Telescopic tube (for Swiss type lathe)
D	Telescopic tube bushing (for Swiss type lathe)

7.2.2 Guiding channel

The channel opening and closing could be operated by the remote control under manual mode. When the guiding channel is open, the long pusher is lifted up with the channel cover and disconnected with the chain. The guiding channel is then empty hence allows the action of bar loading and first feed.

When the guiding channel is closed, the long pusher is positioned into guiding channel. The channel cover seals the guiding channel between clamping device and TOP CUT device. Part of pusher assembly and bar stock will be completely housed inside. The hydraulic oil is injected into the space between the guiding channel and pusher/bar stock.

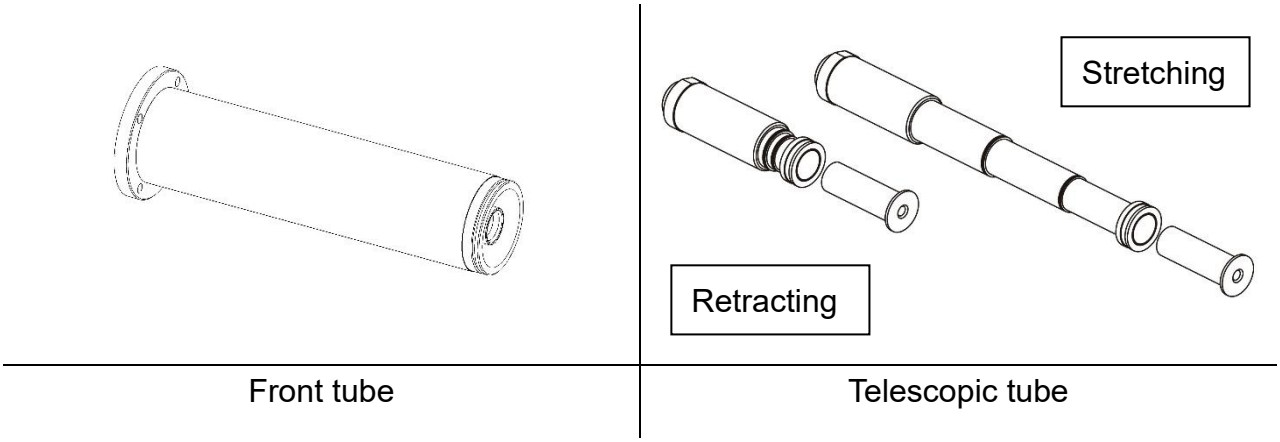
Sets of guiding channel of different dimensions are available. Each dimension of guiding channel is available to load a range of bar stock dimensions. For best performance of guiding channel, it is recommended to keep 1mm gap width between bar stock and channel.

7.2.2.1 Channel set selection

Model		Channel Size xx (mm)	Channel Set		
			Standard pusher (L) & Extended pusher (LL)	Extended pusher (2.5L)	Extended pusher (LLL)
Bar Feeder	**2.5M**	11, 14, 17, 19, 21, 23, 25, 27, 33, 35, 36, 37, 39, 41, 43	XF2.31.A025A.**xx**	XF2.31.A029A.**xx**	Not exist
	3.0M		XF2.31.A026A.**xx**	XF2.31.A030A.**xx**	XF2.31.A026A.**xx**
	3.7M		XF2.31.A027A.**xx**	XF2.31.A031A.**xx**	XF2.31.A027A.**xx**
	4.0M		XF2.31.A028A.**xx**	XF2.31.A032A.**xx**	XF2.31.A028A.**xx**

7.2.3 Front tube/Telescopic tube

The front tube or telescopic tube (also called telescope) functions as an extension of guiding channel. It performs function of guiding channel between the bar feeder and the lathe so it is installed them.



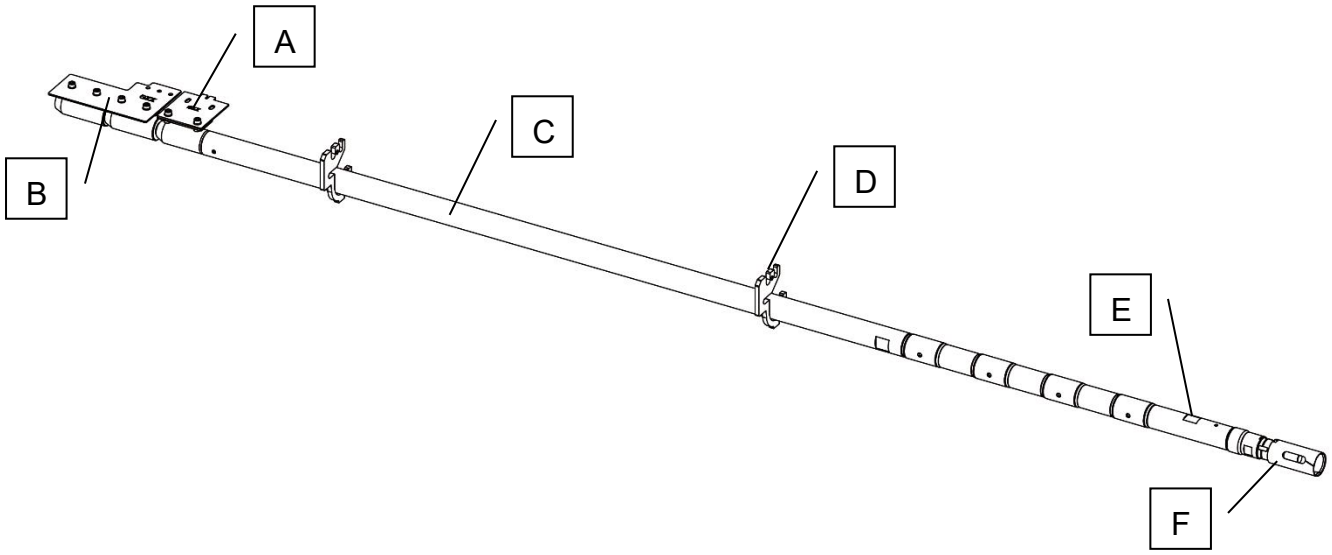
The front tube is a tube with fixed length. It serves specifically for fixed type lathe. The telescopic tube could extend and retract. It's designed specifically for Swiss type lathe since the spindle is movable. A liner inside whose dimension must match the pusher. In addition, an oil collector is mounted under the front / telescopic tube for collecting the leaking oil.

7.3 CHANNEL SET: FEEDING SYSTEM

The feeding system consists of the pusher assembly and chain transmission device. With this system, the motor drives the pusher forward and backward hence achieve the functions below:

1. Bar insertion
2. Bar feeding and moving
3. Remnant retraction

7.3.1 Layout of the elements



Designation	Description
A	Flag
B	Short pusher
C	Long pusher
D	Pusher hook
E	Rotating joint
F	Finger chuck

7.3.2 Pusher assembly

Pusher set is carried by the chain. It includes the first feeder and long pusher.
The first feeder is always connected with the chain no matter the channel is open or closed. When the channel is closed, it simply follows the movement of the long pusher. When the channel is open, it mainly serves to position a bar stock to the insertion position.
The long pusher is a long rod which serves to control the bar stock movement either in the bar feeder or lathe spindle. When the channel is open, the long pusher is disengaged from the chain and lifted by the pusher carrier. When the channel is closed, the long pusher engaged with the chain.
Part of the long pusher is able to extend outside of bar feeder. In the other hand, the pusher must enter the spindle to get a shortest remnant. During installation, it must be confirmed that the tip of long pusher is able to reach the rear end of lathe chuck. Therefore, the length of spindle (Swiss type: stroke) to the back of lathe is taken into account so as to choose a suitable pusher.
LNS offers two specifications of pushers as below:

Specification	Available length of pusher
Standard - L	1094mm
Extended - LL	1424mm
Extended – 2.5L	1563 mm
Extended - LLL	1784mm

7.3.2.1 Pusher set selection guide

Note: Keep 1mm between channel and pusher for optimum feeding.

Pusher size xx (mm)		Pusher set			
		Standard - L	Extended - LL	Extended - 2.5L	Extended - LLL
10, 13, 16, 18, 20, 22, 24, 26, 32, 34, 35, 36, 38, 40, 42	LtoRF	XF2.15.A092A.xx	XF2.15.A094A.xx	XF2.15.A121A.xx	XF2.15.A096A.xx
	RtoLF	XF2.15.A093A.xx	XF2.15.A095A.xx	XF2.15.A123A.xx	XF2.15.A097A.xx

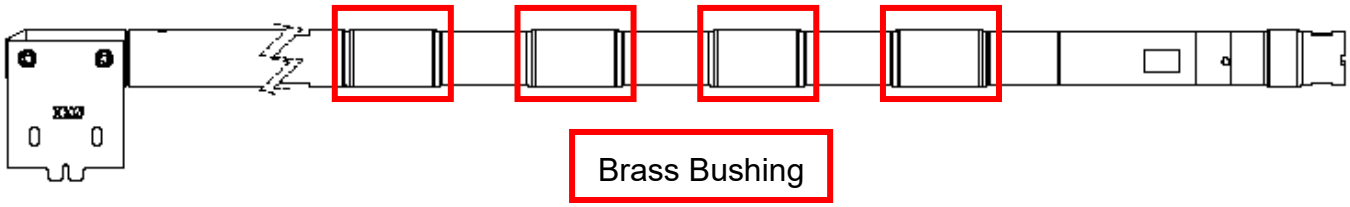
Once the customer needs to change the bar size, the following parts: Channel set, Pusher Set and Front tube/telescopic tube bushing must be replaced accordingly.
If there is any question about the component size, please contact our technical department directly.

Take **3.0M, LtoRF** bar feeder, installed with **standard or extended pusher** for example:

Channel size xx (mm)	Channel set	Pusher size Ø (mm)	Standard pusher - L Extended pusher - LL Extended pusher - 2.5L Extended pusher - LLL	Max. brass ring size (mm)	Front tube / Telescopic tube bushing	
					Fixed type	Swiss type
11	XF2.31.A026A.xx (L, LL, LLL) XF2.31.A030A.xx (2.5L)	10	XF2.15.A092A.Ø XF2.15.A094A.Ø XF2.15.A121A.Ø XF2.15.A096A.Ø		SN8116xx SN8120xx SN8121xx SN8135xx	SNW-3xx SNW-7xx (*SNW-1xx, SNW-4xx, SNW-5xx are available if needed. Please contact our service representative.)
14		13				
17		16				
19		18				
21		20				
23		22				
25		24				
27		26				
33		32		32.5		
35		34		34.5		
36		35		35.5		
37		36		36.5		
39		38		38.5		
41		40		40.5		
43		42		42.5		

<Example >

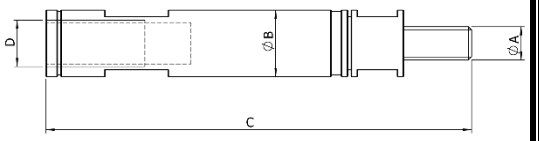
A Fixed type lathe is equipped with **3.0M**, **LtoRF** bar feeder, installing with **11mm channel set and standard pusher set**. Please select channel set **XF2.31.A026A.11**, pusher set **XF2.15.A092A.10,** and front tube **SN81xx11** (Tube length is decided by lathe model or customers' preference).
When the pusher size is between 32mm to 42mm (including 32mm), there are the brass bushings outside of pusher. The OD of these bushings are 0.5mm bigger than the pusher.



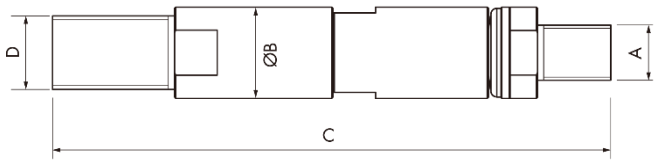
7.3.3 Rotating joint

The rotating joint is mounted on tip of the long pusher and serves to connect static part (pusher rod) and rotating part (finger chuck). This part decides if both ends of the bar stock rotates at the same speed. Due to its function, this part becomes the most critical index of bar feed system performance. A bad rotating joint could results in serious vibration and big noise. The user is strongly recommended to inspect its status regularly in order to keep the bar feeder running at the best performance.

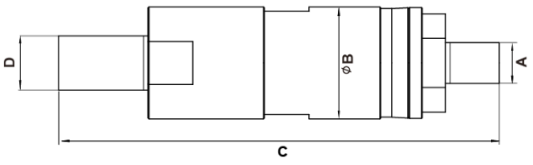
Item	Description
Part Number	FL-07850
A: Thread (finger chuck)	M5xP0.8
B: Overall diameter, mm	10
C: Overall length, mm	64
D: Thread (Pusher)	M7xP0.75
Available channel set	11, 14



Item	Description		
Part Number	FL-15800	FL-20800	FL-25800
A: Thread (finger chuck)	M9xP1.0		
B: Overall diameter, mm	14.9	20	24.7
C: Overall length, mm	91.5	91.5	98.5
D: Thread (Pusher)	M12xP1.25		
Available channel set	17, 19	21, 23, 25	27

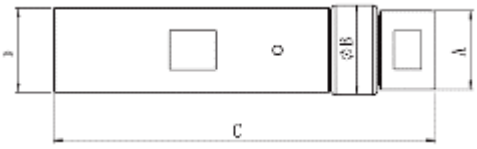


FL-15800、FL-20800



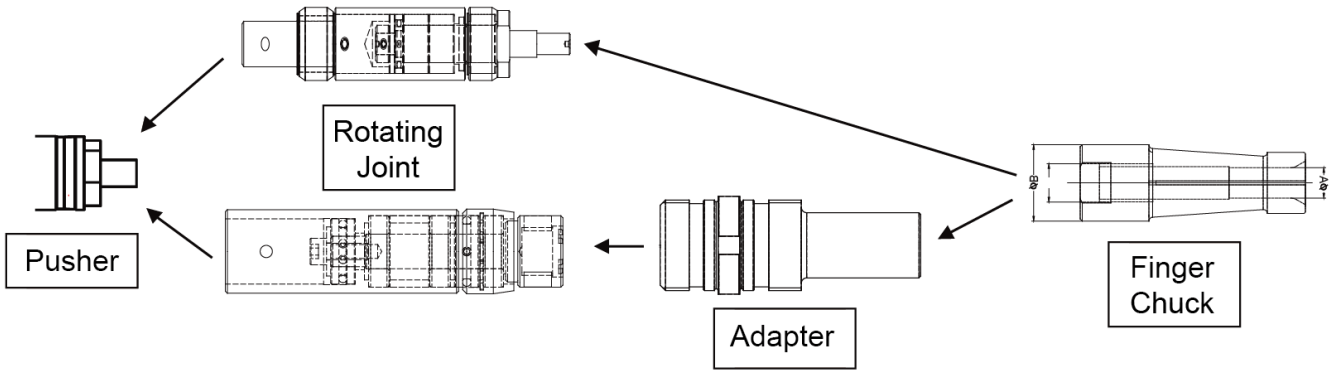
FL-25800

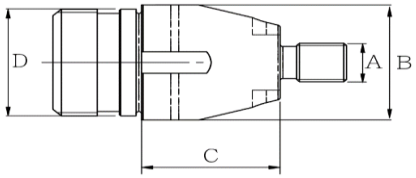
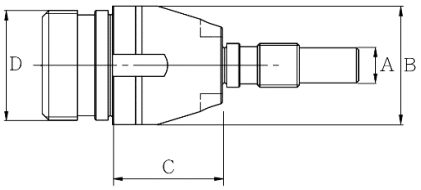
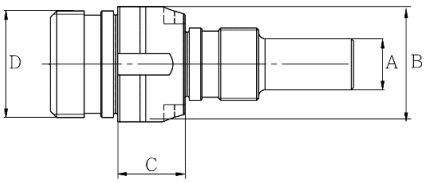
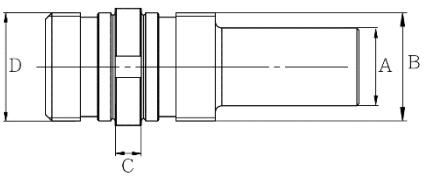
Item	Description				
Part Number	SNF32002	SNF35002	SNF38002	SNF38002	SNF42002
A: Thread (finger chuck)	M25xP1.5				
B: Overall diameter, mm	32.5	35.5	38.5	38.5	41.5
C: Overall length, mm	165				
D: Thread (Pusher)	M27xP1.5	M29xP1.5	M29xP1.5	M29xP1.5	M34xP1.5
Available channel set	33, 35	36, 37	39	41	43



7.3.4 Adapter

An adaptation is needed to connect finger chuck and rotating joint only when the pusher is bigger than 27mm (27mm is not included). There are 4 standard adaptations available with each bar feeder purchased.



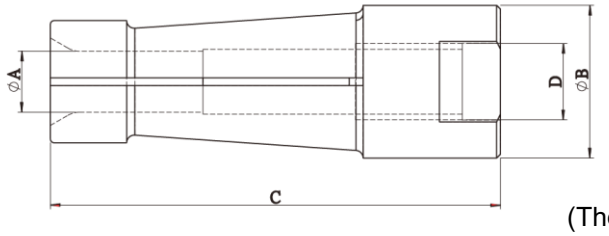
Part No.	Specification	Compatible finger chuck	
SNF42205	A (Thread for mounting finger chuck): M9xP1.0 B Overall diameter: Ø29.6 C Overall length: 25 D (Thread for mounting pusher rod): M25xP1.5	FR/L-12030~ FR/L-12190 FR/L-12090C~ FR/L-12190C	
SNF42203	A (Thread for mounting finger chuck): M10xP1.0 B Overall diameter: Ø29.6 C Overall length: 25 D (Thread for mounting pusher rod): M25xP1.5	FO1020050~FO1020160 FO1027165~FO1027230	
SNF42201	A (Thread for mounting finger chuck): M17xP1.0 B Overall diameter: Ø29.6 C Overall length:16 D (Thread for mounting pusher rod): M25xP1.5	FO1732235~FO1732280 FO1732235C~FO1732280C	
SNF42200	A (Thread for mounting finger chuck):M25xP1.5 B Overall diameter: Ø29.6 C Overall length: 6 D (Thread for mounting pusher rod): M25xP1.5	FO2535285~F02535320 FO2537310~FO2537340 FO2542315~FO2542380 FO2535285C~FO2535310C	
All the above adapters are only applied to pushers greater than 27mm (27mm NOT included).			

7.3.5 Finger chuck

The finger chuck is the part to keep the connection between the bar stock and the pusher. When the lathe spindle is turning, the bar stock is supported by lathe chuck and finger chuck. In order to get a good support during machining, the finger chuck must be properly selected according to the bar stock dimension.
Different types of finger component are available for different applications:

- **Standard type**

The standard type of finger chuck is a cylinder with flexible jaws that are able to clamp bar stock tip. Each finger chuck matches a specific bar stock dimension only. For profiled bar stock, the finger chuck diameter must be selected according to the virtual circle created by the bar stock corners. Refer to table below for dimension conversion.



(The photo is for reference only!)

The part number is **"FR"** or **"FL"**. For example: If the bar diameter is 3.0mm, please choose finger chuck: FR-07030 **OR** FL-07030 according to the lathe application and user's preference.

Part number	Min. channel size, mm	Finger chuck dimension			Thread D, mm
		Dimension A, mm	Outside diameter B, mm	Length C, mm	
FR/L-07030	11	3.00	9.5	45	M5xP0.8
FR/L-07032		3.20	9.5	45	M5xP0.8
FR/L-07035		3.50	9.5	45	M5xP0.8
FR/L-07038		3.80	9.5	45	M5xP0.8
FR/L-07040		4.00	9.5	45	M5xP0.8
FR/L-07042		4.20	9.5	45	M5xP0.8
FR/L-07045		4.50	9.5	45	M5xP0.8
FR/L-07048		4.80	9.5	45	M5xP0.8
FR/L-07050		5.00	9.5	45	M5xP0.8
FR/L-07052		5.20	9.5	45	M5xP0.8
FR/L-07055		5.50	9.5	45	M5xP0.8
FR/L-07058		5.80	9.5	45	M5xP0.8
FR/L-07060		6.00	9.5	45	M5xP0.8
FR/L-07062		6.20	9.5	45	M5xP0.8
FR/L-07065		6.50	9.5	45	M5xP0.8
FR/L-07068		6.80	9.5	45	M5xP0.8
FR/L-07070		7.00	9.5	45	M5xP0.8
FR/L-07072		7.20	9.5	45	M5xP0.8
FR/L-07075		7.50	9.5	45	M5xP0.8
FR/L-07078		7.80	9.5	45	M5xP0.8
FR/L-07080		8.00	10	45	M5xP0.8

Part number	Min. channel size, mm	Finger chuck dimension			Thread D, mm
		Dimension A, mm	Outside diameter B, mm	Length C, mm	
FR/L-07085	11	8.50	10	45	M5xP0.8
FR/L-07086A	14	8.6	12	45	M5xP0.8
FR/L-07088A		8.8	12	45	M5xP0.8
FR/L-07090A		9.0	12	45	M5xP0.8
FR/L-07092A		9.2	12	45	M5xP0.8
FR/L-07094A		9.4	12	45	M5xP0.8
FR/L-07096A		9.6	12	45	M5xP0.8
FR/L-07098A		9.8	12	45	M5xP0.8
FR/L-07100A		10.0	12	45	M5xP0.8
FR/L-07102A		10.2	12	45	M5xP0.8
FR/L-07104A		10.4	12	45	M5xP0.8
FR/L-07106A		10.6	12	45	M5xP0.8
FR/L-07108A		10.8	13	45	M5xP0.8
FR/L-07110A		11.0	13	45	M5xP0.8
FR/L-12030	17	3.00	15	60	M9xP1.0
FR/L-12032		3.20	15	60	M9xP1.0
FR/L-12035		3.50	15	60	M9xP1.0
FR/L-12038		3.80	15	60	M9xP1.0
FR/L-12040		4.00	15	60	M9xP1.0
FR/L-12042		4.20	15	60	M9xP1.0
FR/L-12045		4.50	15	60	M9xP1.0
FR/L-12048		4.80	15	60	M9xP1.0
FR/L-12050		5.00	15	60	M9xP1.0
FR/L-12052		5.20	15	60	M9xP1.0
FR/L-12055		5.50	15	60	M9xP1.0
FR/L-12058		5.80	15	60	M9xP1.0
FR/L-12060		6.00	15	60	M9xP1.0
FR/L-12062		6.20	15	60	M9xP1.0
FR/L-12065		6.50	15	60	M9xP1.0
FR/L-12068		6.80	15	60	M9xP1.0
FR/L-12070		7.00	15	60	M9xP1.0
FR/L-12072		7.20	15	60	M9xP1.0
FR/L-12075		7.50	15	60	M9xP1.0
FR/L-12078		7.80	15	60	M9xP1.0
FR/L-12080		8.00	15	60	M9xP1.0
FR/L-12082		8.20	15	60	M9xP1.0
FR/L-12085		8.50	15	60	M9xP1.0
FR/L-12088		8.80	15	60	M9xP1.0
FR/L-12090		9.00	15	60	M9xP1.0
FR/L-12092		9.20	15	60	M9xP1.0
FR/L-12095		9.50	15	60	M9xP1.0
FR/L-12098		9.80	15	60	M9xP1.0
FR/L-12100		10.00	15	60	M9xP1.0
FR/L-12102		10.20	15	60	M9xP1.0
FR/L-12105		10.50	15	60	M9xP1.0
FR/L-12108		10.80	15	60	M9xP1.0
FR/L-12110		11.00	15	60	M9xP1.0

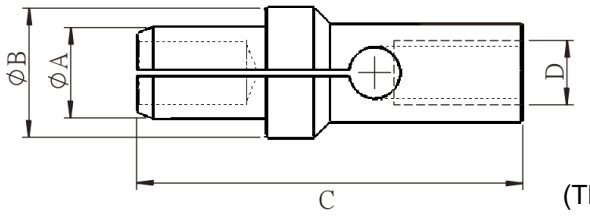
Part number	Min. channel size, mm	Finger chuck dimension			Thread D, mm
		Dimension A, mm	Outside diameter B, mm	Length C, mm	
FR/L-12112	17	11.20	15	60	M9xP1.0
FR/L-12115		11.50	15	60	M9xP1.0
FR/L-12118		11.80	15	60	M9xP1.0
FR/L-12120		12.00	15	60	M9xP1.0
FR/L-12122		12.20	15	60	M9xP1.0
FR/L-12125		12.50	15	60	M9xP1.0
FR/L-12128		12.8	15	60	M9xP1.0
FR/L-12130		13.0	15	60	M9xP1.0
FR/L-12132	19	13.2	18	60	M9xP1.0
FR/L-12135		13.5	18	60	M9xP1.0
FR/L-12138		13.8	18	60	M9xP1.0
FR/L-12140		14.0	18	60	M9xP1.0
FR/L-12142		14.2	18	60	M9xP1.0
FR/L-12145		14.5	18	60	M9xP1.0
FR/L-12148		14.8	18	60	M9xP1.0
FR/L-12150		15.0	18	60	M9xP1.0
FR/L-12152	21	15.2	19	60	M9xP1.0
FR/L-12155		15.5	19	60	M9xP1.0
FR/L-12158		15.8	19	60	M9xP1.0
FR/L-12160		16.0	19	60	M9xP1.0
FR/L-12162		16.2	20	60	M9xP1.0
FR/L-12165		16.5	20	60	M9xP1.0
FR/L-12168		16.8	20	60	M9xP1.0
FR/L-12170		17.0	20	60	M9xP1.0
FR/L-12172		17.2	20	60	M9xP1.0
FR/L-12175		17.5	20	60	M9xP1.0
FR/L-12178		17.8	20	60	M9xP1.0
FR/L-12180		18.0	20	60	M9xP1.0
FR/L-12182		18.2	20	60	M9xP1.0
FR/L-12185	23	18.5	22	60	M9xP1.0
FR/L-12188		18.8	22	60	M9xP1.0
FR/L-12190		19.0	22	60	M9xP1.0
ST(R)22195		19.5	22	60	M9xP1.0
ST(R)23200	25	20.0	23	60	M9xP1.0
ST(R)23205		20.5	23	60	M9xP1.0
ST(R)23210		21.0	23	60	M9xP1.0
ST(R)26215	27	21.5	26	60	M9xP1.0
ST(R)26220		22.0	26	60	M9xP1.0
ST(R)26225		22.5	26	60	M9xP1.0
ST(R)26230		23.0	26	60	M9xP1.0

Part number	Min channel size, mm	Finger chuck dimension			Thread D, mm
		Dimension A, mm	Outside diameter B, mm	Length C, mm	
FO1020110	21	11	20	60	M10xP1.0
FO1020115		11.5	20	60	M10xP1.0
FO1020120		12	20	60	M10xP1.0
FO1020125		12.5	20	60	M10xP1.0
FO1020130		13	20	60	M10xP1.0
FO1020135		13.5	20	60	M10xP1.0
FO1020140		14	20	60	M10xP1.0
FO1020145		14.5	20	60	M10xP1.0
FO1020150		15	20	60	M10xP1.0
FO1020155		15.5	20	60	M10xP1.0
FO1020160		16	20	60	M10xP1.0
FO1020162		16.2	20	60	M10xP1.0
FO1027165	33	16.5	27	60	M10xP1.0
FO1027170		17	27	60	M10xP1.0
FO1027175		17.5	27	60	M10xP1.0
FO1027178		17.8	27	60	M10xP1.0
FO1027180		18	27	60	M10xP1.0
FO1027185		18.5	27	60	M10xP1.0
FO1027190		19	27	60	M10xP1.0
FO1027195		19.5	27	60	M10xP1.0
FO1027200		20	27	60	M10xP1.0
FO1027205		20.5	27	60	M10xP1.0
FO1027210		21	27	60	M10xP1.0
FO1027215		21.5	27	60	M10xP1.0
FO1027220		22	27	60	M10xP1.0
FO1027225		22.5	27	60	M10xP1.0
FO1027230		23.0	27	60	M10xP1.0
FO1732235		23.5	32	70	M17xP1.0
FO1732240		24.0	32	70	M17xP1.0
FO1732245		24.5	32	70	M17xP1.0
FO1732250		25.0	32	70	M17xP1.0
FO1732254		25.4	32	70	M17xP1.0
FO1732255		25.5	32	70	M17xP1.0
FO1732260		26.0	32	70	M17xP1.0
FO1732265		26.5	32	70	M17xP1.0
FO1732270		27.0	32	70	M17xP1.0
FO1732275		27.5	32	70	M17xP1.0
FO1732280		28.0	32	70	M17xP1.0
FO2535285	36	28.5	35	80	M25xP1.5
FO2535290		29.0	35	80	M25xP1.5
FO2535295		29.5	35	80	M25xP1.5
FO2535300		30.0	35	80	M25xP1.5
FO2535305		30.5	35	80	M25xP1.5
FO2535310		31.0	35	80	M25xP1.5
FO2535315		31.5	35	80	M25xP1.5
FO2535320		32.0	35	80	M25xP1.5
FO2537310	39	31.0	37	80	M25xP1.5

Part number	Min channel size, mm	Finger chuck dimension			Thread D, mm
		Dimension A, mm	Outside diameter B, mm	Length C, mm	
FO2537315	39	31.5	37	80	M25xP1.5
FO2537320		32.0	37	80	M25xP1.5
FO2537325		32.5	37	80	M25xP1.5
FO2537330		33.0	37	80	M25xP1.5
FO2537335		33.5	37	80	M25xP1.5
FO2537340		34.0	37	80	M25xP1.5
FO2540305	41	30.5	40	80	M25xP1.5
FO2540320		32.0	40	80	M25xP1.5
FO2540325		32.5	40	80	M25xP1.5
FO2540330		33.0	40	80	M25xP1.5
FO2540340		34.0	40	80	M25xP1.5
FO2540345		34.5	40	80	M25xP1.5
FO2540350		35.0	40	80	M25xP1.5
FO2540360		36.0	40	80	M25xP1.5
FO2542315	43	31.5	42	80	M25xP1.5
FO2542320		32.0	42	80	M25xP1.5
FO2542325		32.5	42	80	M25xP1.5
FO2542330		33.0	42	80	M25xP1.5
FO2542335		33.5	42	80	M25xP1.5
FO2542340		34.0	42	80	M25xP1.5
FO2542345		34.5	42	80	M25xP1.5
FO2542350		35.0	42	80	M25xP1.5
FO2542355		35.5	42	80	M25xP1.5
FO2542360		36.0	42	80	M25xP1.5
FO2542365		36.5	42	80	M25xP1.5
FO2542370		37.0	42	80	M25xP1.5
FO2542375		37.5	42	80	M25xP1.5
FO2542380		38.0	42	80	M25xP1.5

- **C type**

This type is specifically designed for tubes. Instead of jaws, the C type finger chuck has a core which could be inserted into tubes. Like finger chuck, each C type finger also fits one dimension tube only.



(The photo is for reference only!)

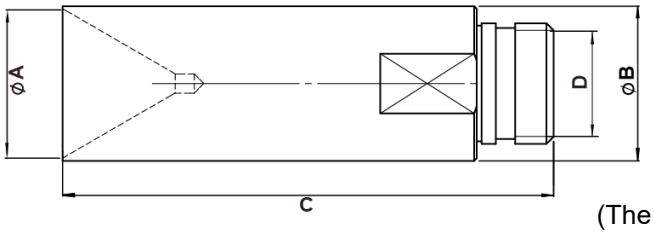
Part number	Min. channel size, mm	Finger chuck dimension			Thread D, mm
		Dimension A, mm	Outside diameter B, mm	Length C, mm	
FR/L-07070C	11	7.0	10	50	M5xP0.8
FR/L-07074C		7.4	10	50	M5xP0.8
FR/L-07075C		7.5	10	50	M5xP0.8
FR/L-07080C		8.0	10	50	M5xP0.8
FR/L-12090C	17	9.00	15	60	M9xP1.0
FR/L-12095C		9.50	15	60	M9xP1.0
FR/L-12100C		10.00	15	60	M9xP1.0
FR/L-12105C		10.50	15	60	M9xP1.0
FR/L-12110C		11.00	15	60	M9xP1.0
FR/L-12115C		11.50	15	60	M9xP1.0
FR/L-12120C		12.00	15	60	M9xP1.0
FR/L-12125C		12.50	15	60	M9xP1.0
FR/L-12130C	19	13.0	18	60	M9XP1.0
FR/L-12135C		13.5	18	60	M9XP1.0
FR/L-12140C		14.0	18	60	M9XP1.0
FR/L-12145C		14.5	18	60	M9XP1.0
FR/L-12150C		15.0	18	60	M9XP1.0
FR/L-12155C		15.5	18	60	M9XP1.0
FR/L-12160C	21	16.0	20	60	M9XP1.0
FR/L-12165C		16.5	20	60	M9XP1.0
FR/L-12170C		17.0	20	60	M9XP1.0
FR/L-12175C		17.5	20	60	M9XP1.0
FR/L-12180C		18.0	20	60	M9XP1.0
FR/L-12185C	25	18.50	22	60	M9xP1.0
FR/L-12190C		19.00	22	60	M9xP1.0
FO1027195C	33	19.5	27	60	M10Xp1.0
FO1027200C		20.0	27	60	M10Xp1.0
FO1027205C		20.5	27	60	M10Xp1.0
FO1027210C		21.0	27	60	M10Xp1.0
FO1027215C		21.5	27	60	M10Xp1.0
FO1027220C		22.0	27	60	M10Xp1.0
FO1027225C		22.5	27	60	M10Xp1.0
FO1027230C		23.0	27	60	M10Xp1.0
FO1732235C	35	23.5	32	70	M17xP1.0
FO1732240C		24.0	32	70	M17xP1.0

Part number	Min. channel size, mm	Finger chuck dimension			Thread D, mm
		Dimension A, mm	Outside diameter B, mm	Length C, mm	
FO1732245C	35	24.5	32	70	M17xP1.0
FO1732250C		25.0	32	70	M17xP1.0
FO1732254C		25.4	32	70	M17xP1.0
FO1732255C		25.5	32	70	M17xP1.0
FO1732260C		26.0	32	70	M17xP1.0
FO1732265C		26.5	32	70	M17xP1.0
FO1732270C		27.0	32	70	M17xP1.0
FO1732275C		27.5	32	70	M17xP1.0
FO1732280C		28.0	32	70	M17xP1.0
FO2535285C	36	28.5	35	70	M25xP1.0
FO2535290C		29.0	35	70	M25xP1.0
FO2535295C		29.5	35	70	M25xP1.0
FO2535300C		30.0	35	70	M25xP1.0
FO2535305C		30.5	35	70	M25xP1.0
FO2535310C		31.0	35	70	M25xP1.0

- **Push type**

The push type cone supports the bar stock tip by a corn shaped sinking instead of clamping it. The main purpose of using push type finger is to get a closer fit between the bar stock and guiding channel.

When this type of finger chuck is selected, the service parameter must be set up accordingly (refer to chapter 8 for further information). During bar change process, the bar feed system reloads a new bar while the last part is under machining. When the last part finished, the new bar stock ejects the remnant out of the chuck. Another method is having pusher ejected remnant out of the chuck after past part is finished.



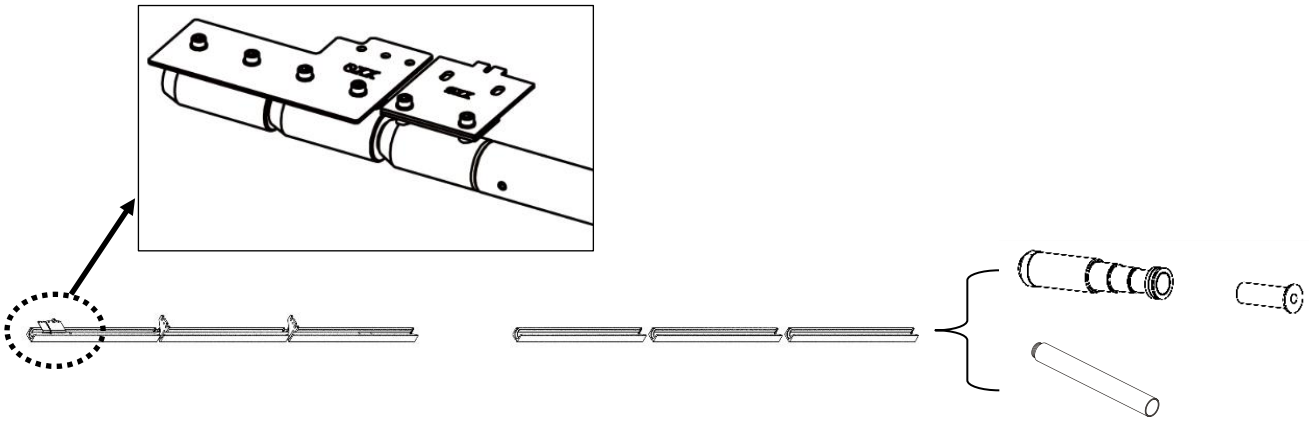
(The photo is for reference only!)

Part number	Min. channel size, mm	Finger chuck dimension			Thread D, mm
		Dimension A, mm	Outside diameter B, mm	Length C, mm	
STP51010	11	10	10	45	M5xP0.8
STP51310	14	13	13	45	M5xP0.8
STP51610	17	16	16	60	M9xP1.0
STP51810	19	18	18	60	M9xP1.0
STP52010	21	20	20	60	M9xP1.0
STP52210	23	22	22	60	M9xP1.0
STP52410	25	24	24	60	M9xP1.0
STP52610	27	26	26	60	M9xP1.0
SNP73010	33	30	30	102	M25xP1.5
SNP73210	33	32	32	102	M25xP1.5
SNP73410	35	34	34	102	M25xP1.5
SNP73510	36	35	35	102	M25xP1.5
SNP73610	37	36	36	102	M25xP1.5
SNP73810	39	38	38	102	M25xP1.5
SNP74010	41	40	40	102	M25xP1.5
SNP74210	43	42	42	102	M25xP1.5

7.4 CHANNEL SET CHANGEOVER PROCEDURE

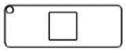
The channel set is composed of components of guiding system and feeding system. Once the bar stock diameter exceeds the available dimension of the channel. The whole channel set elements must be replaced.

7.4.1 Layout of the elements

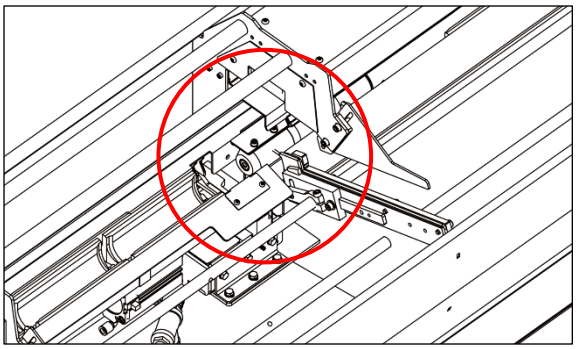


7.4.2 Changeover procedures

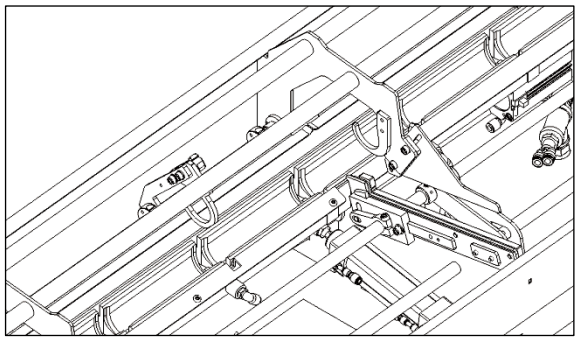
	Please don't shut down bar feeder to ensure the pusher position is read correctly and make sure there is no bar stock in the finger chuck.

1. Press  to switch bar feeder into manual mode.

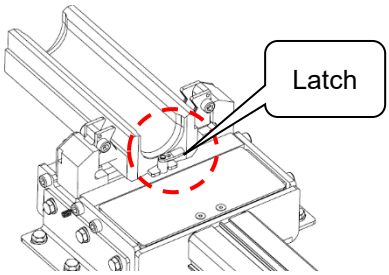
2. Press  to close channel and press  to move the first feeder and the pusher pass through vise.



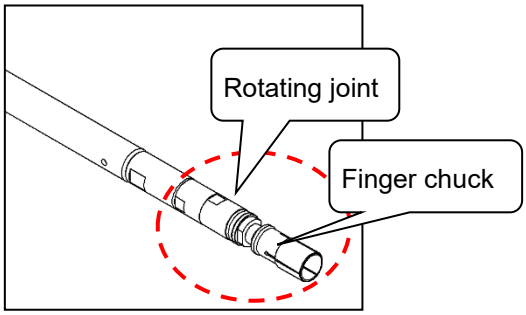
3. Press  to open the channel.

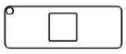


4. Press  to make the first feeder and the pusher back to the home position.
5. Press  emergency stop button to stop any action.
6. Remove the pusher hooks (two in total). Then remove the first feeder and the pusher together.
7. Replace the guiding channels. (Press the latch, slide the guiding channels to the remnant box. After installing the new guiding channels, loose the latch.)



8. Install rotating joint and finger chuck on pusher.



9. Install the first feeder and put the pusher back in channels.
10. Install the pusher hooks.
11. Pull  and then press  to resume emergency stop.
12. Press  to make the first feeder and the pusher pass through vise.
13. Press  to close channels and then press  to move the first feeder and the pusher back to home position.
14. Change the channel size setup on parameter “Diameter & length” setup.
15. If configured with Fixed type lathe, please replace front tube; Swiss type lathe, please replace the PE bushing of telescopic tube.
16. The changeover is completed.

Only replace front joint and finger chuck:

1. Follow the above steps 1 to 5.
2. Remove the pusher hooks (two in total.)
3. Take out pusher.

4. Replace the rotating joint and the finger chuck.
5. Put pusher back in the channels.
6. Install the pusher hooks.
7. Pull  and then press  to resume emergency stop.
8. Press  to make the first feeder and the pusher pass through vise.
9. Press  to close channels and then press  to move the first feeder and the pusher back to home position.
10. Partial diameter changeover is complete.

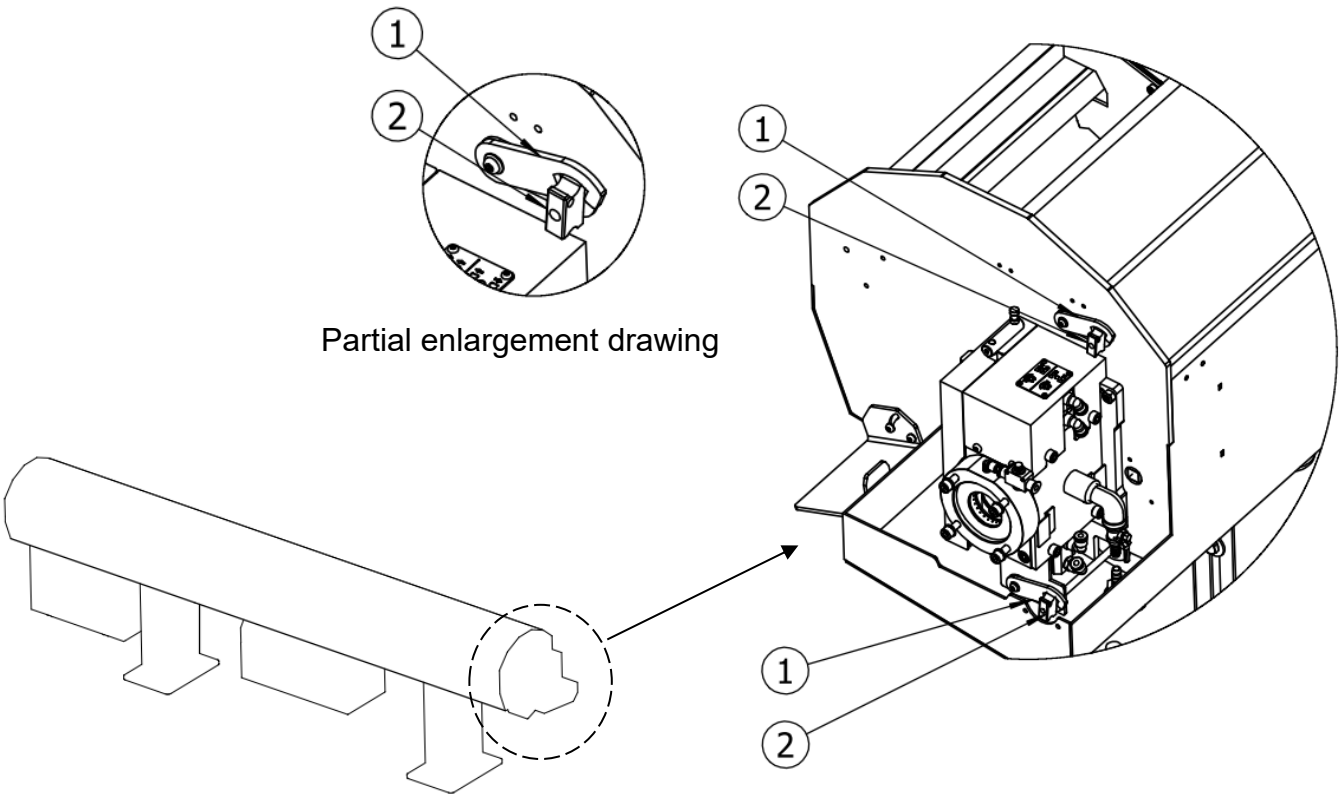
7.5 CHAIN

7.5.1 Adjustment of the chain tension

Depends on the application, the chain might get elongated after running a period and the chain needs to be tightened again.

Steps:

1. Release the locking plate (1) to separate from the knob (2).
2. Rotate knob (2) to adjust the chain tension, clockwise is tightening, counterclockwise is loosening.
3. Make sure both knobs are adjusted, and the adjusted range should be consistent (see the protruding length of screw).
4. After finished, turn the locking plate (1) down to hook the knob (2).

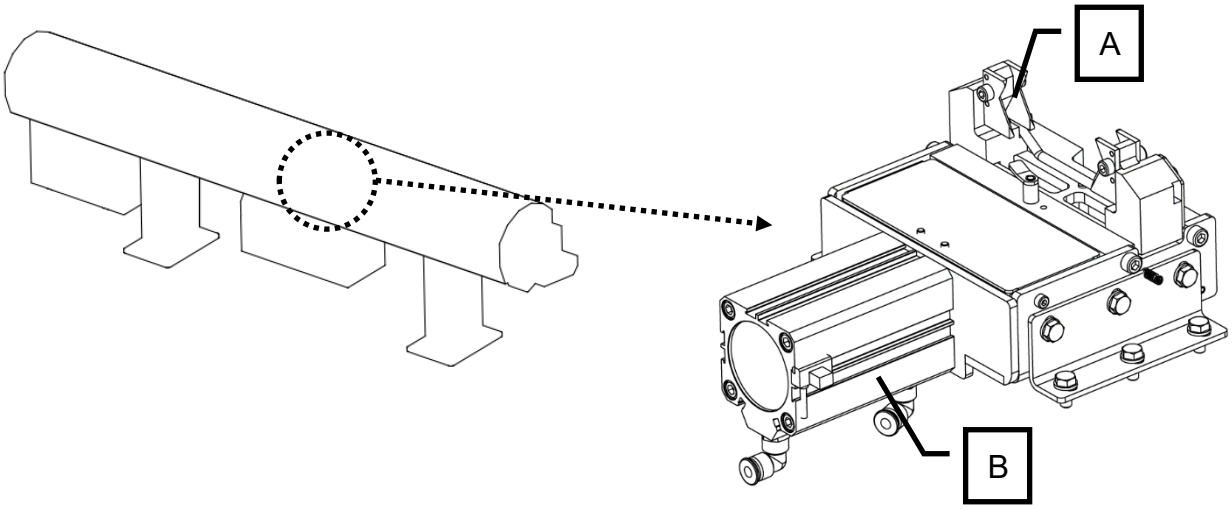


Partial enlargement drawing

7.6 VISE

Vise (material clamping device) is used to fix material for insertion or retraction. Independently of bar diameter or bar profile, the clamping blades are invariably the same and do not require any adjustment.

7.6.1 Layout of the elements



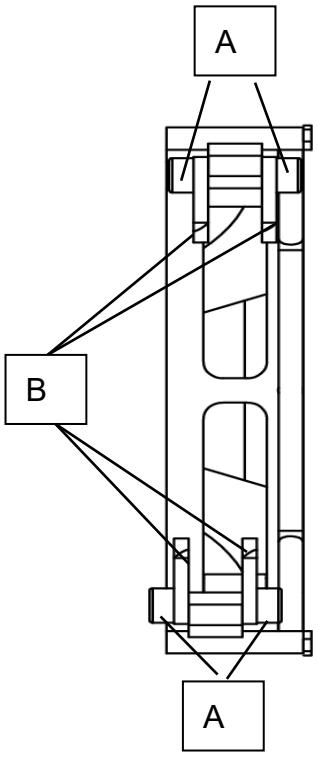
Designation	Description
A	Clamping blades
B	Clamping device cylinder

7.6.2 Replacement of the blades

The clamping blades must be replaced when worn out.
Proceed the procedures below:

1. Unscrew the screws (A) then removed the worn blades (B).

2. Install the new blades and tighten with the removed screw.

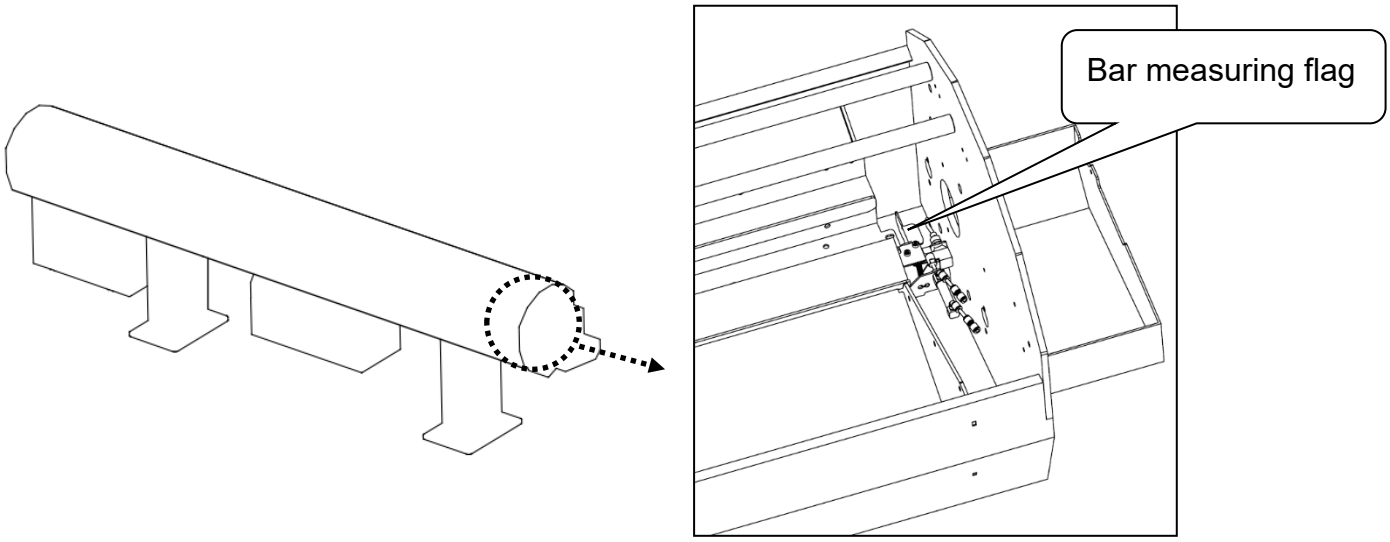


7.7 BAR MEASURING DEVICE

The term TOP CUT presents both the action and the position of the bar tip machining process which a new bar stock is just loaded into the lathe. The purpose is to get rid of unqualified tip surface and get the correct reference for positioning bar stock during machining. Generally, this process will be proceeded in the bar change sub-program once for each bar stock. Depends on the tooling layout, this position could be placed at any position outside the lathe chuck. Generally, 30 to 50mm from the lathe chuck surface.

The bar measuring device serves to measure the distance that a bar stock been pushed out of the bar feeder. During bar feeder loading cycle, the bar measuring cylinder activates and positions the bar measuring flag on front opening of the guiding channel as soon as the loading fingers activated. When the bar feed system advances the bar stock forward and the bar tip surface hits the flag, the PLC reads the signal from the bar measuring sensor and starts to measure the bar stock moving distance. When the bar tip arrives TOP CUT position (parameter P05), a START signal will be sent through relay A2 to the lathe. Then the pusher either keep moving forward or holds at the position according to the service parameter set up.

Since the bar measuring sensor is only activated by the bar tip surface, please note that the TOP CUT distance is independently from the bar stock length. Once the bar feeder position is fixed, the TOP CUT position is only related to the distance from the bar feeder to the lathe chuck surface.



7.8 HEADSTOCK SYNCHRONIZATION DEVICE (OPTIONAL)

The synchronization device has a built-in sensor for reading its own guide rail movement and feedback to PLC. When it's mechanically connected with the headstock and the function was activated in the bar feeder, the pusher movement is synchronized with the headstock during automatic mode. This mode applied for **Swiss type lathe** only.

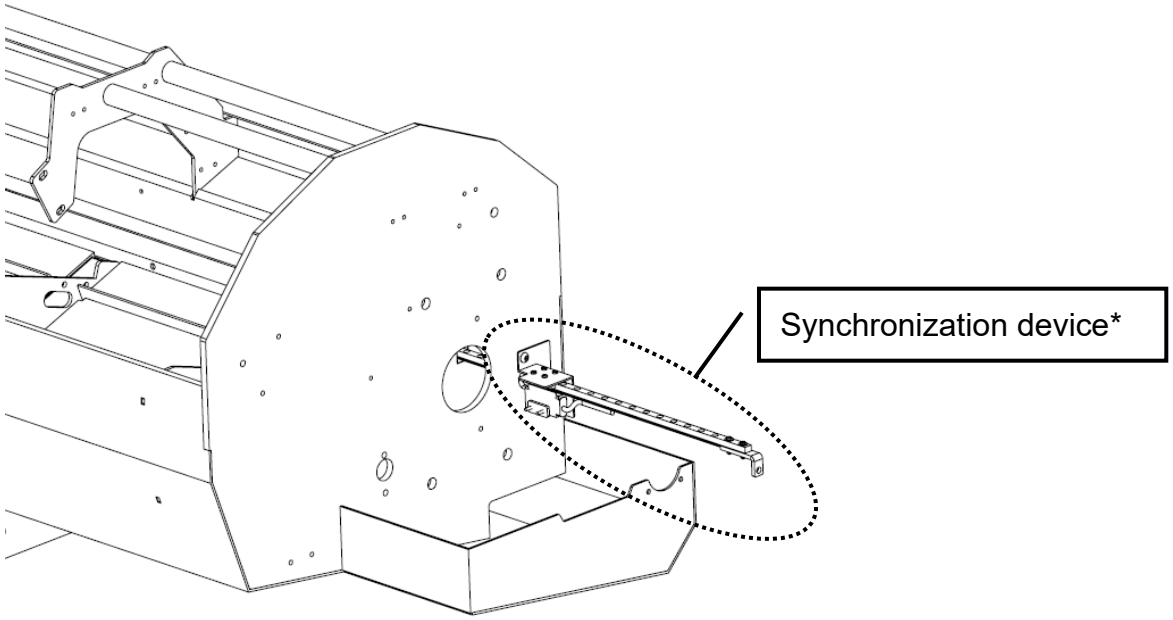
During automatic mode, there are 2 conditions for the feeding system:

1 Without synchronization device:

The feeding system pushes forward all the time either the lathe chuck is open or closed. Apply for both fixed and Swiss type lathe.

2 With synchronization device (optional):

When chuck is closed, the feeding system movement is synchronized with the spindle. When the chuck is open, the feeding system feeds forward all the time. This mode applied for Swiss type lathe only. For safety reason, a torque stop interface signal is available for stopping the pusher when chuck is open.



*The location of the device installed will depend on the type of lathe.

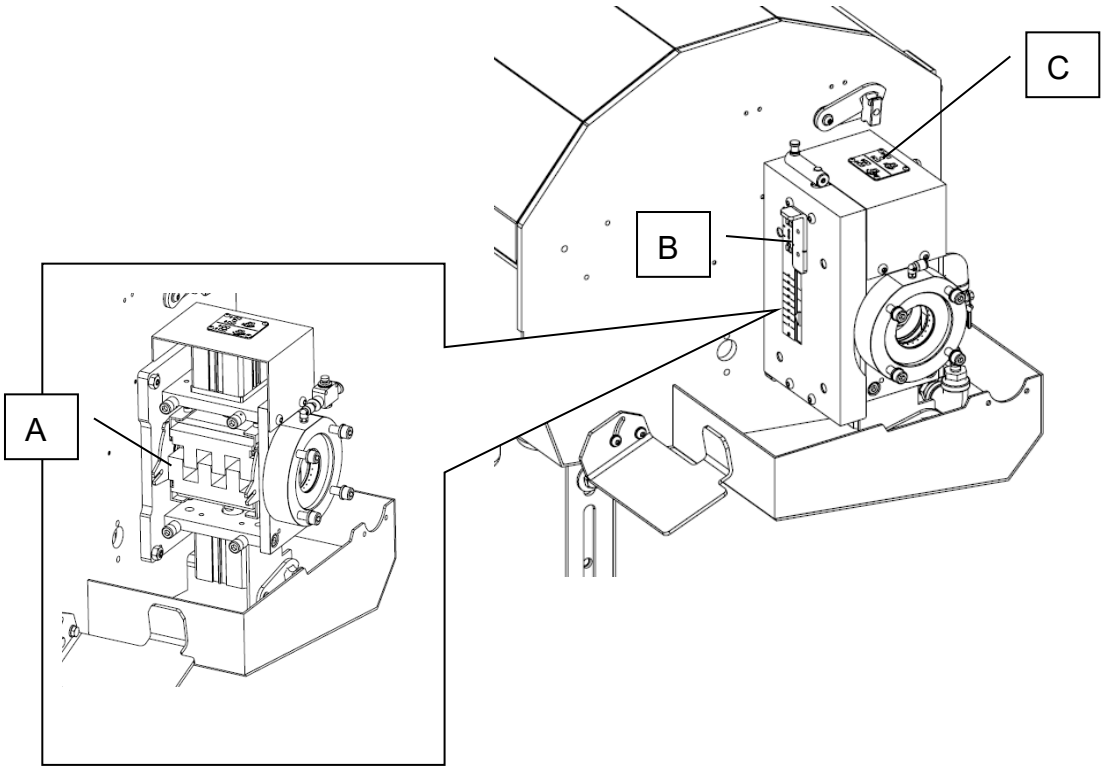
7.9 FRONT REST

The front rest device serves to constrict the rotating bar stock on central of the bar feeder so vibration can be reduced to minimum.

One standard front rest device (first front rest) is mounted on front of the bar feed system.

7.9.1 The first front rest

7.9.1.1 Layout of the elements



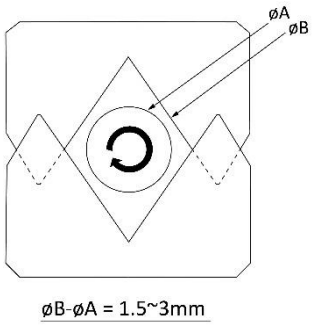
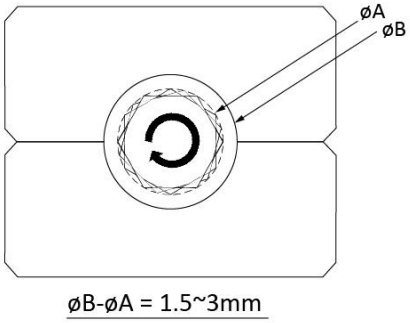
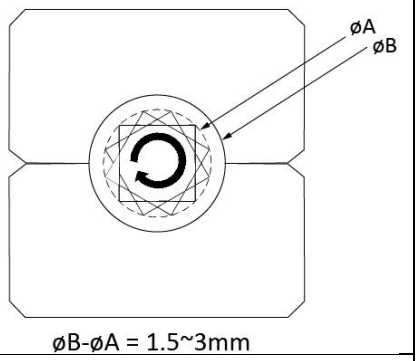
Designation	Description
A	Anti-vibration V-block
B	Adjusting knob
C	Clamping adjustment reference

7.9.1.2 Anti-vibration V-blocks

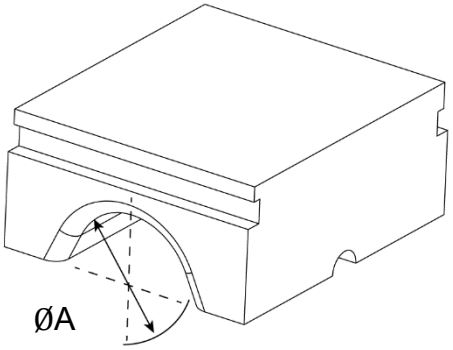
Adjustment

To avoid friction between the bar stock and blocks, V/O blocks should NEVER clamp the bar stock. There should be about 1.5~3 mm gap between them. For profiled bar stocks, the gap should be kept between V/O blocks surface and the virtual circle formed by bar stock corners.

V and O type blocks of first front rest are designed for different bars applications. V block is better for round bars, no need to replace the block. O block is better for hex and square bars, but need to replace the block according to different size of bar.

First front rest		
		
Round bar: V block	Hex bar: O block	Square bar: O block

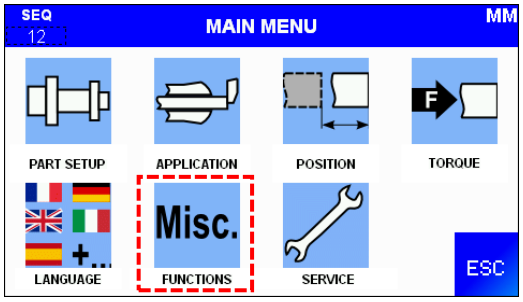
- **O block**



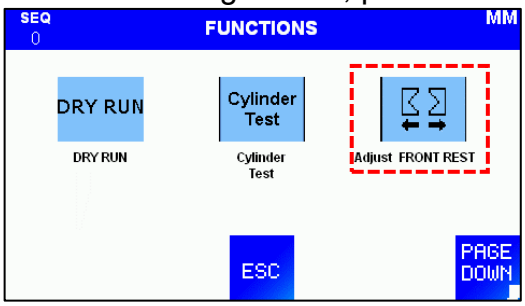
Block Part No.	Diameter (øA) mm	Optimum bar range mm
XF2.07.P070A.15	15	12~13.5
XF2.07.P070A.17	17	14~15.5
XF2.07.P070A.19	19	16~17.5
XF2.07.P070A.21	21	18~19.5
XF2.07.P070A.23	23	20~21.5
XF2.07.P070A.25	25	22~23.5
XF2.07.P070A.27	27	24~25.5
XF2.07.P070A.29	29	26~27.5
XF2.07.P070A.31	31	28~29.5
XF2.07.P070A.33	33	30~31.5
XF2.07.P070A.35	35	32~33.5
XF2.07.P070A.37	37	34~35.5
XF2.07.P070A.39	39	36~37.5
XF2.07.P070A.41	41	38~39.5
XF2.07.P070A.43	43	40~41.5

Clamping adjustment:

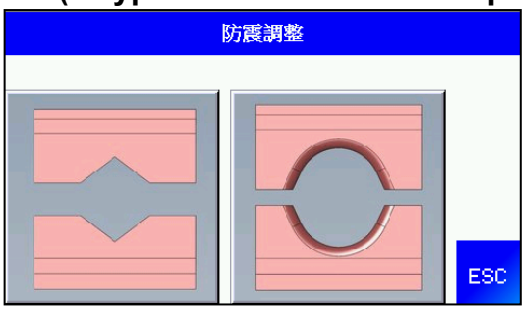
1. Switch bar feeder into manual mode.
2. Go into" FUNCTIONS" interface on HMI to switch the front rest into manual control.



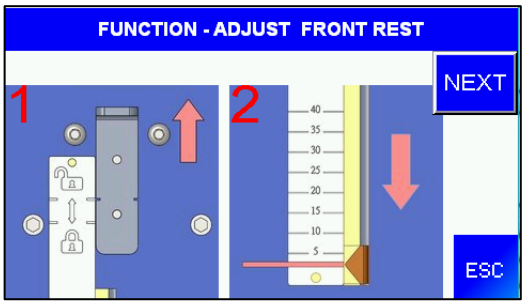
3. Enter setting screen, press "ADJUST FRONT REST" option.



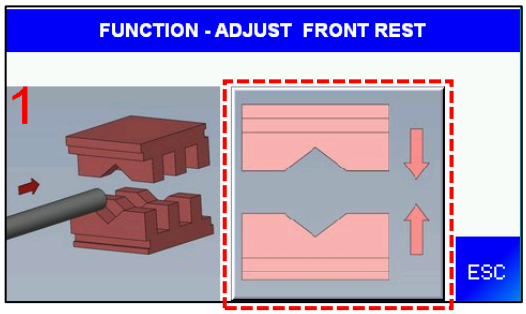
4. According to the demand to choose V type or O type block.
   (O type block needs to be replaced when bar diameter is changed.)



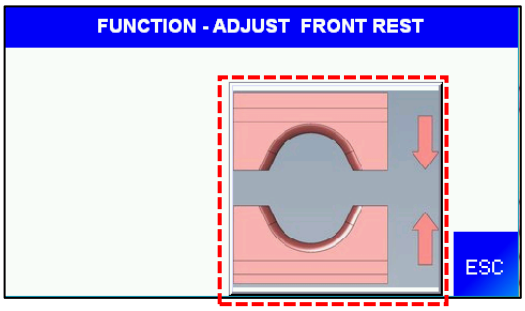
5. Lift the fixed plate up to release the lock and turn the knob counterclockwise to lowest limit.



6. Load a new bar and feed into the block, press the right-side of figure on the screen to close the block.

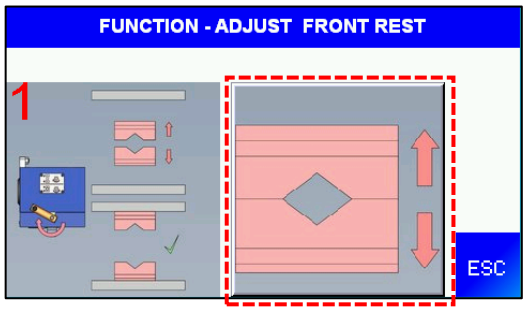


V-Type

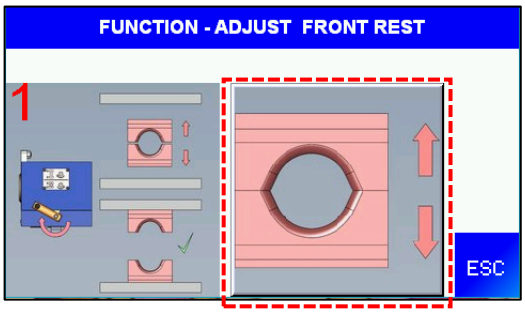


O-Type

7. Turn knob clockwise to become tight and press right-side figure on screen to open the block.

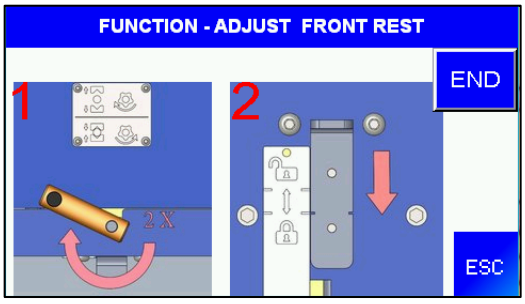


V-Type

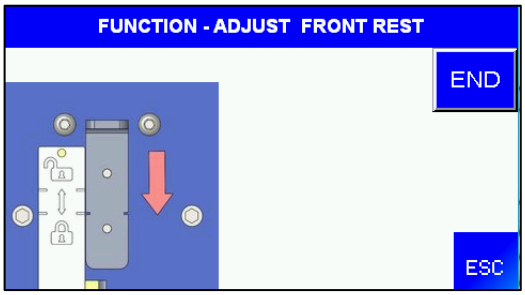


O-Type

8. Refer to below instructions to modify Front Rest position.



V-Type



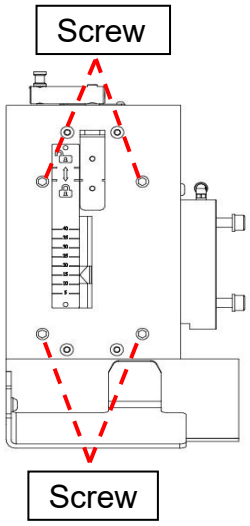
O-Type

A. Turn clockwise two more rounds to keep clearance between blocks and bar stock for optimum performance. B. Press down the fixed plate to lock it and click “Enter” button on screen, the adjustment is finished.	Press down the fixed plate to lock it and click “Enter” button on screen, the adjustment is finished.

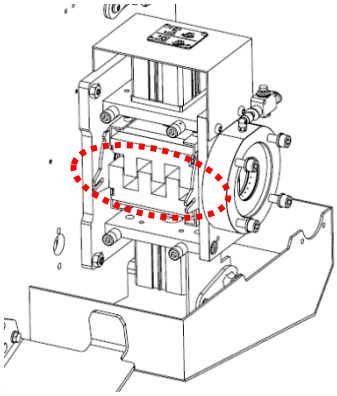
9. Move pusher back to the home position by manual.
10. Press “manual” to cancel front rest manual control.

Replacement

1. Switch bar feeder into manual mode.
2. Press the emergency stop button on remote control box to stop any operation.
3. Loosen 4 screws to remove the side cover.



4. Take out and replace the V-blocks or round blocks.
5. Before fastening the screws, make sure the side cover is tenoned by the cam plate.



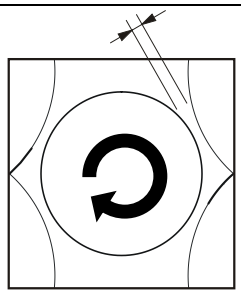
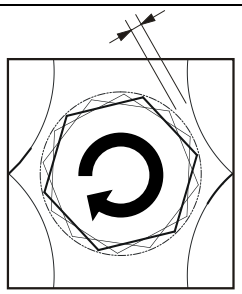
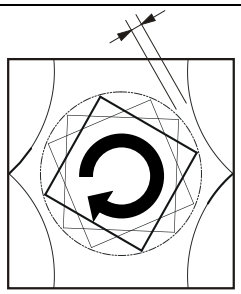
6. Resume the emergency stop.

7.9.2 The second front rest (Option)

For Swiss type lathe, an optional spindle front rest (second front rest) is available and offered by request.

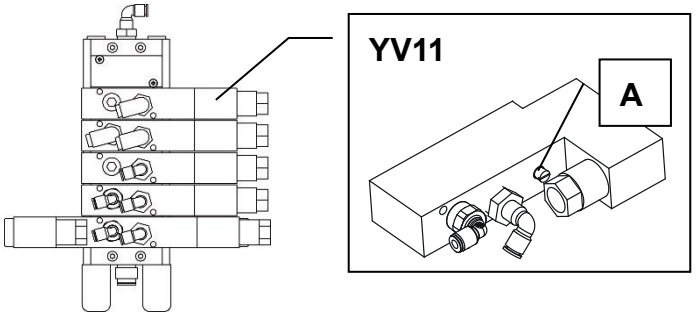
7.9.2.1 Adjustment

To avoid friction between the bar stock and front rest rollers, rollers should NEVER clamp the bar stock. There should be 1mm gap between them. For profiled bar stocks, the gap should be kept between rollers surface and the virtual circle formed by bar stock corners.

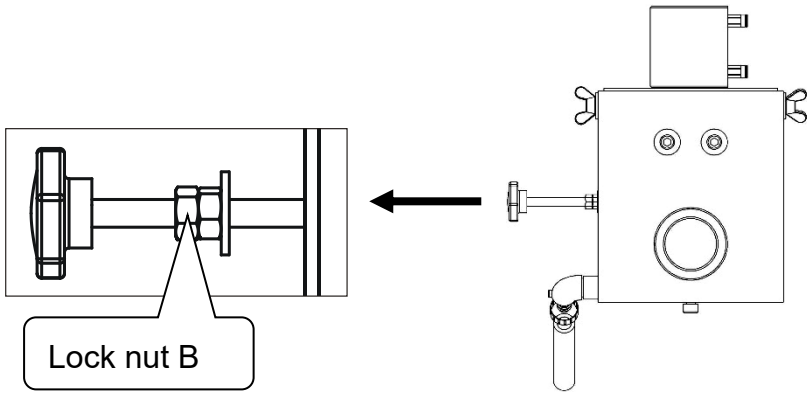
		
Round bar	Hex bar	Square bar

Clamping adjustment:

1. Feed a bar stock into lathe, have the chuck clamp the bar and then slowly rotate the spindle.
2. Press the set button “A” on solenoid valve YV11 and fix it at activation position.



3. Loosen the lock nut “B” of clamping adjustment screw.



4. Turn the screw slowly till the rollers touch the bar surface slightly and then reverse it 1 to 2 turns to keep clearance.
5. Release the button “A” on valve. Then press/ release the button time and again while lathe is rotating at different speed. Make sure the bar stock doesn’t touch the roller, and then lock the nut.

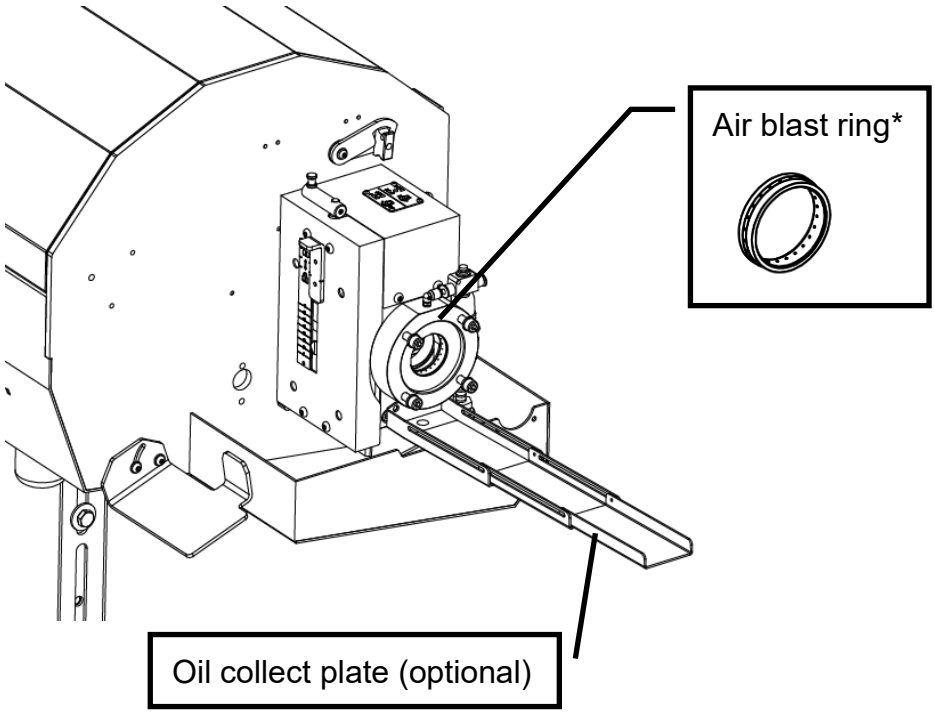
7.10 AIR BLAST RING AND OIL COLLECT PLATE

The air blast ring is mounted over the bar feed system exit which driven by solenoid valve YV5. It serves to build an air curtain which creates forceful air turbulence on the bar stock surface when the bar stock pass through it. The turbulence functions as a virtual seal which keeps the hydraulic oil inside the air curtain.

The air blast right blows at 2 situations below:

1. Anytime when the pusher is moving forward either manually or automatically.

2. While the bar feeder is doing FIRST FEED.

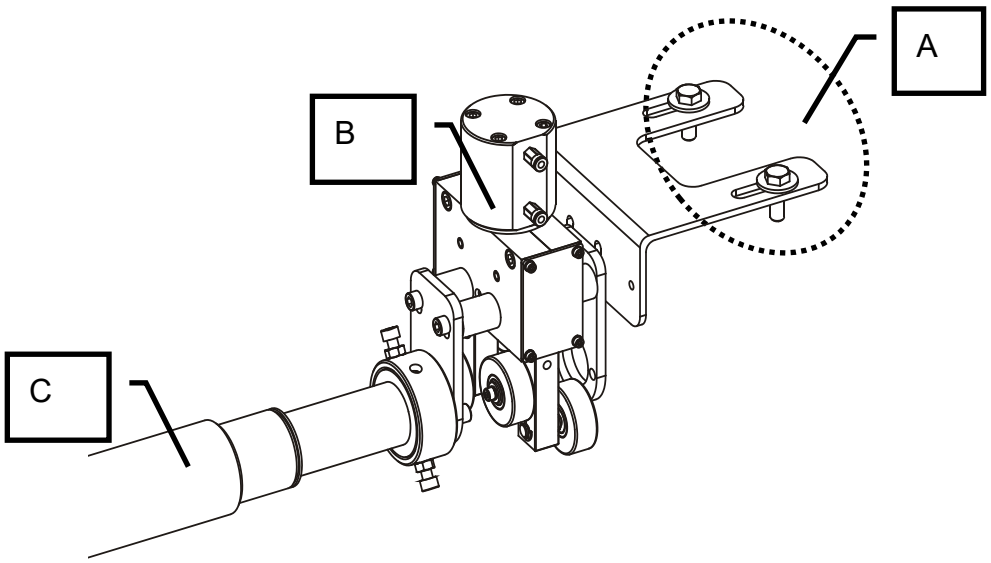


*Note: The air blast ring should be installed at the right direction. The larger circle is inside.

7.11 LATHE CONNECTING PARTS

The lathe connecting parts, or simply called connecting parts, are composed of brackets which serve to connect the lathe spindle and bar feed system. One end of the connecting parts set is always attached to the lathe spindle. The other end of connecting parts set could be connected either with optional second front rest or simply the front tube / telescopic tube.

The connecting parts design varies with the lathe type and brand. Diagram of connecting parts shipped with the bar feeder was placed inside the accessories box. Refer to the diagram to do the installation.



Designation	Description
A	Connecting parts
B	Second front rest (option)
C	Front tube or telescopic tube

7.12 RETRACTION DEVICE (OPTION)

It is strictly prohibited to use the retraction system before the bar feeder is anchored to the ground. Please read the safety instructions provided at the beginning of this manual before handling the following devices.

Before handling the retraction mechanism, check to see that the interface cables between the spindle and the bar feeder are long enough.

7.12.1 Description

When a lathe is equipped with a bar feeder, certain elements (motors, spindle reduction tubes, etc.) become inaccessible, and sometimes it is difficult, or even impossible, to proceed with their maintenance. To facilitate these tasks, the bar feeder can be equipped with a retraction system, which allows the operator to move it. The rigidity of the system guarantees a perfect alignment when the bar feeder is in working position. Safety switches impede any handling as long as the bar feeder is not in operational position.

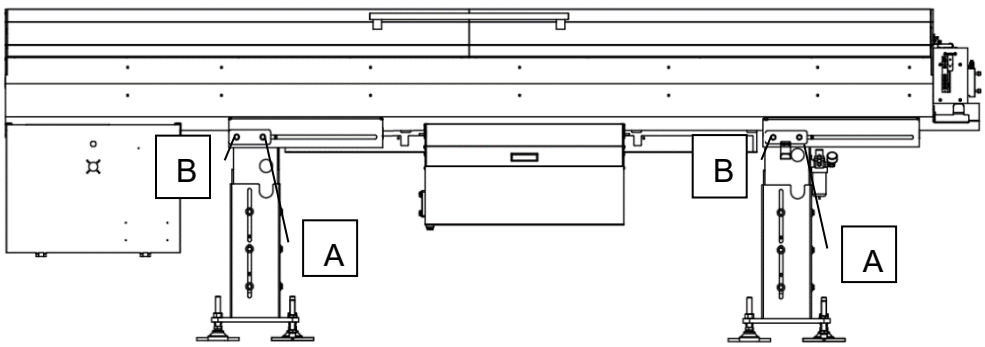
7.12.2 Operation

Conditions:

- Bar feeder in MANUAL or STOP mode.
- No bar between the bar feeder and the lathe
- Pusher inside the bar feeder
- The area around the bar feeder must be clear

Procedure:

1. Loosen the 8 lock screws (A) on the two stands.
2. Loosen and remove the 4 lock screws (B) behind the two stands.
3. Pull the bar feeder back, safety switches SQ10 & SQ10a will engage.
4. After completing the maintenance operations, bring the bar feeder back in working position, lock the side screws (A) and the screws (B). (max. 75 Nm). Check if SQ10 & SQ10a operates correctly.

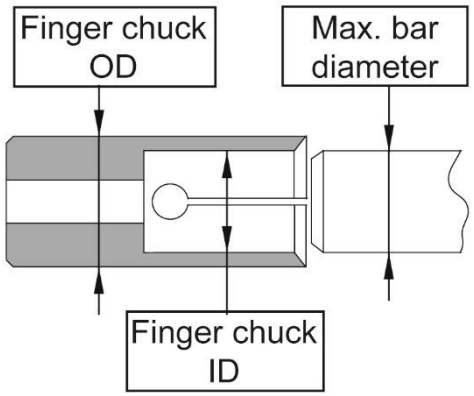


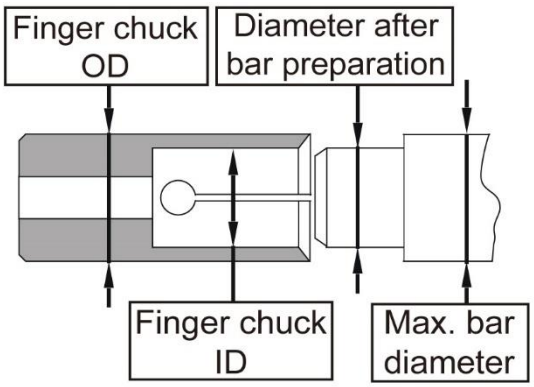
7.13 BAR PREPARATION

Bar preparation is the machining process which changes the shape of bar tip. It aims to get an improved insertion process during automatic process. The bar preparation must be selected according to the finger component the user chose. We recommend customers proceed bar preparation in advance for best machining performance.

Chamfering

The very basic and necessary preparation. It's strongly recommended to apply this machining on each bar stock when a finger chuck is selected.



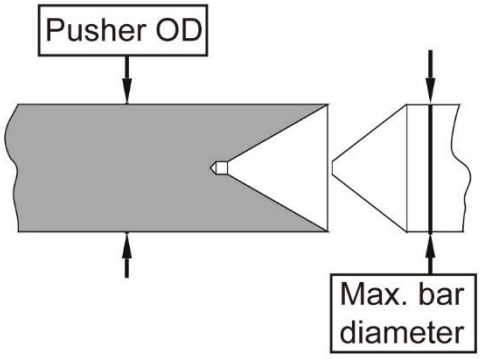


Turning down

Due to strength concern, the maximum finger chuck size within a guiding channel specification is limited by its own wall thickness and therefore the maximum loaded bar stock diameter is limited. To maximize the bar stock diameter, the user is recommended to turn down the bar tip as shown. The maximum bar stock diameter should be kept 1mm below the guiding channel.

Shaping

When the push type finger chuck is selected, the bar preparation should be proceeded as shown. The bar end must be chamfered at a 60 degree angle.



7.14 SPINDLE LINER

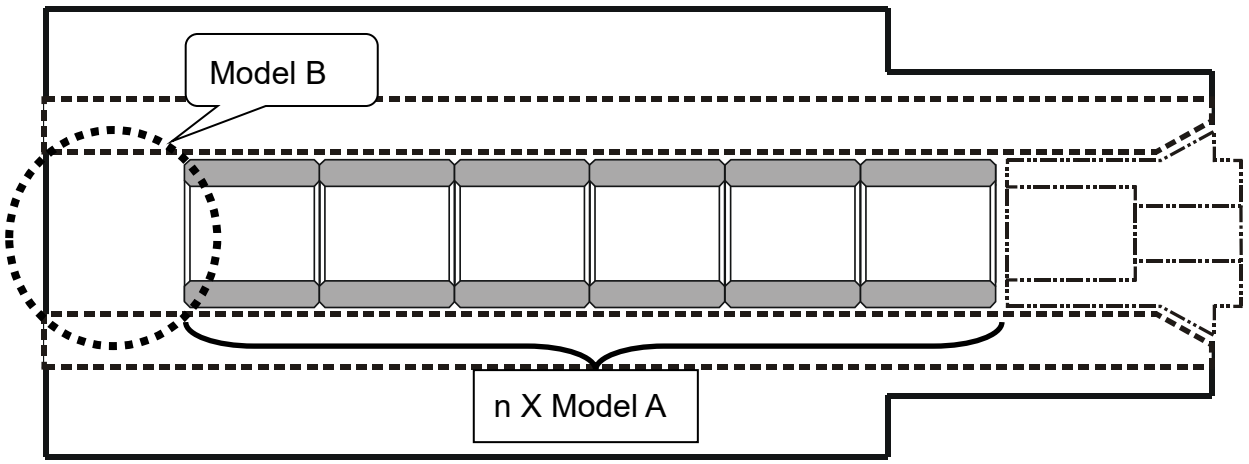
*** LNS does not provide the spindle liner.**

The spindle liner acts as an extension of guiding system. It fills the gap between the pusher/bar stock and spindle inner surface hence constrict the space of vibration. The spindle liner serves to support the pusher and bar stock inside the spindle when the spindle inner diameter is larger then pusher's. The bar feed system is delivered without spindle liner. The spindle liner is not a must but strongly recommended to be prepared and installed by the customer.

7.14.1 Design

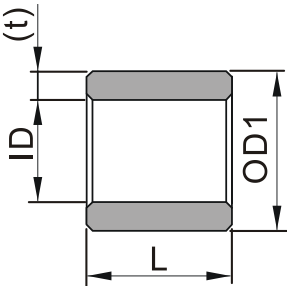
The material could be either steel or plastic like Teflon or PE. Both single tube and combination of multiple pieces of short tubes are available. The only target is to cover the whole spindle length as complete as possible.

Below we suggest multiple spindle liner. Two kinds of spindle liner are needed:



Model A

Type A is supposed to be repeatedly inserted into spindle which fills most of its overall length.



<Dimension>

1. Overall length L: Obtained by divided the spindle length by the quantity the user wants to make. Generally the length of each length could be 50 ~ 100mm.

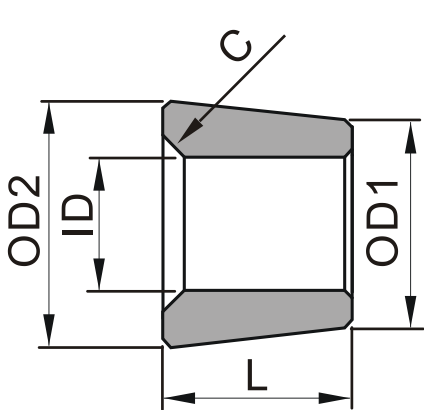
2. OD1: The outside diameter of the spindle liner. Generally 1mm smaller than the spindle inner diameter.

3. ID: The inner diameter of the spindle liner. Generally 1mm larger than the bar stock outside diameter.

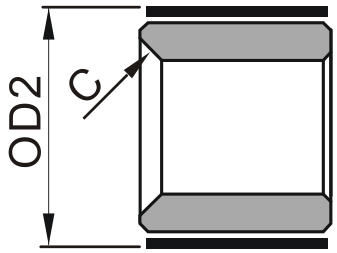
4. t :For reference only. Generally the thickness should not be smaller than 5mm.

Model B

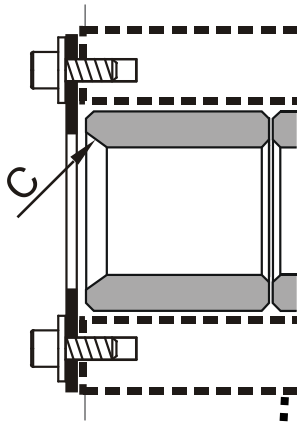
The one which seals the rear end of the spindle. There are 3 different designs available of the last piece. Select the mode which fit the lathe spindle or consult us for technical support.



Model B.1



Model B.2



Model B.3

Model B.1

All the dimensions are same as Model A except:

- OD2: 1 or 2mm larger than the spindle inner diameter.
- Entrance chamfer C: C = 0.5 X t

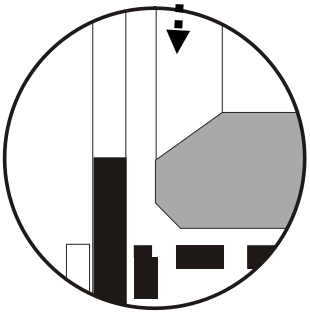
Model B.2

All the dimensions are same as Model A except for:

- OD2: 1 or 2mm larger than the spindle inner dimension by entwining tape on the surface
- Entrance chamfer C: C = 0.5 X t

Model B.3

This type could be applied when there are screw holes on rear end of the spindle. The user can make a ring to stop the spindle. The inner diameter of this ring should be located between the outside and inner diameter of the spindle liner.

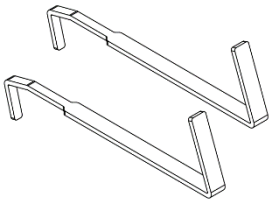


All the dimensions are same as Model A except:

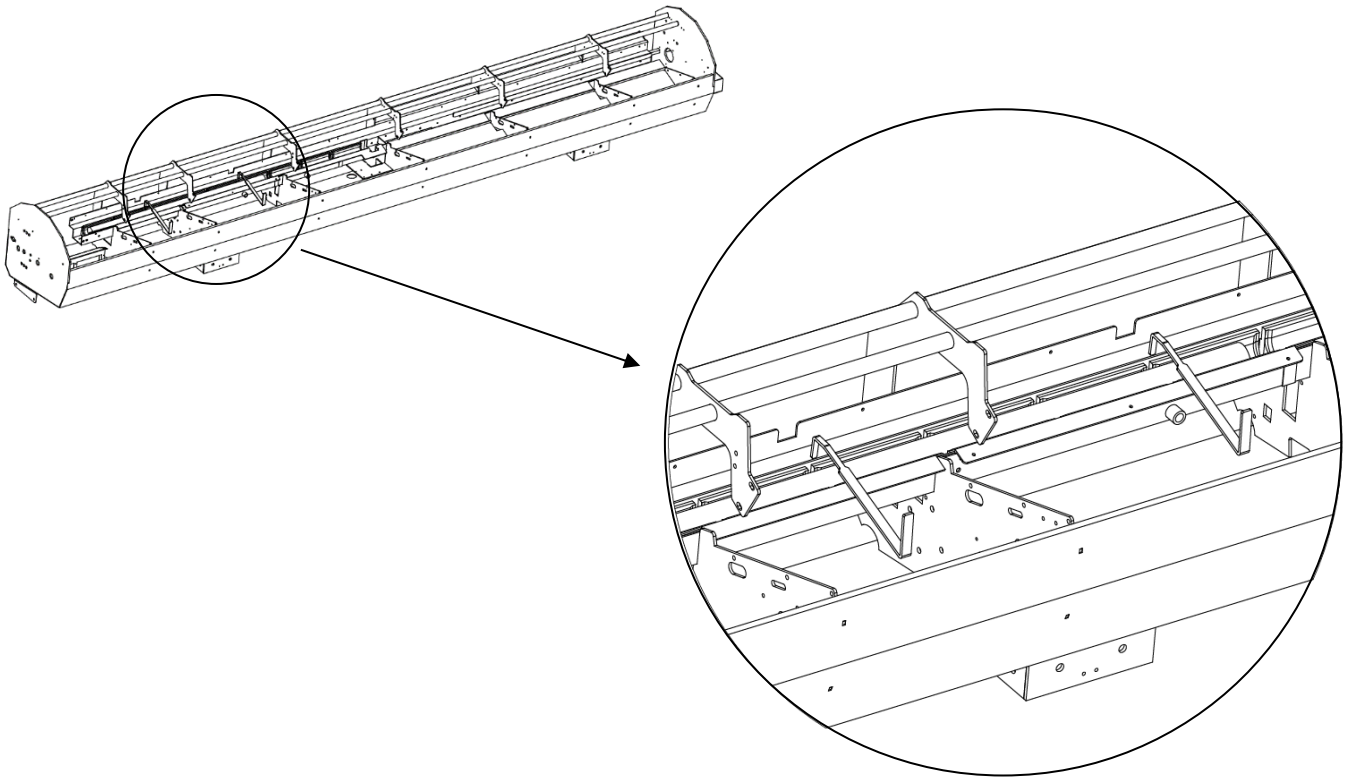
- Entrance chamfer C : C = 0.5 X t

7.15 BAR DRAWING AUXILIARY TOOL

The auxiliary tool is provided with delivered as other appendix, it can be applied to the bar stock which is too heavy to take out by hand.



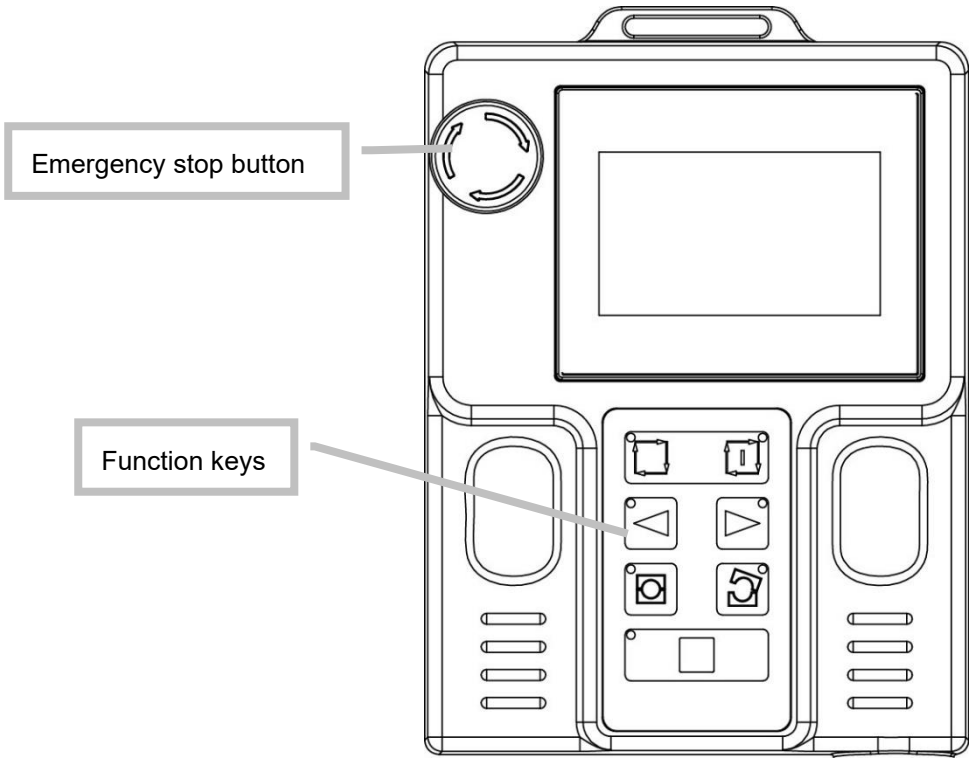
Way of usage: Hook the bar stock with auxiliary tools and pull it out.



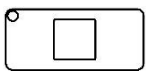
8 OPERATIONS

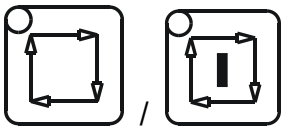
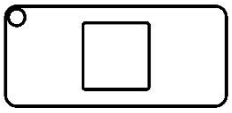
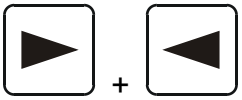
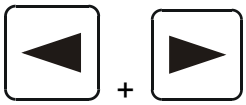
8.1 REMOTE CONTROL OPERATION

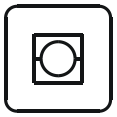
The remote control offers interface signal indicating lights and buttons for operating bar feeding system when it's in MANUAL mode.



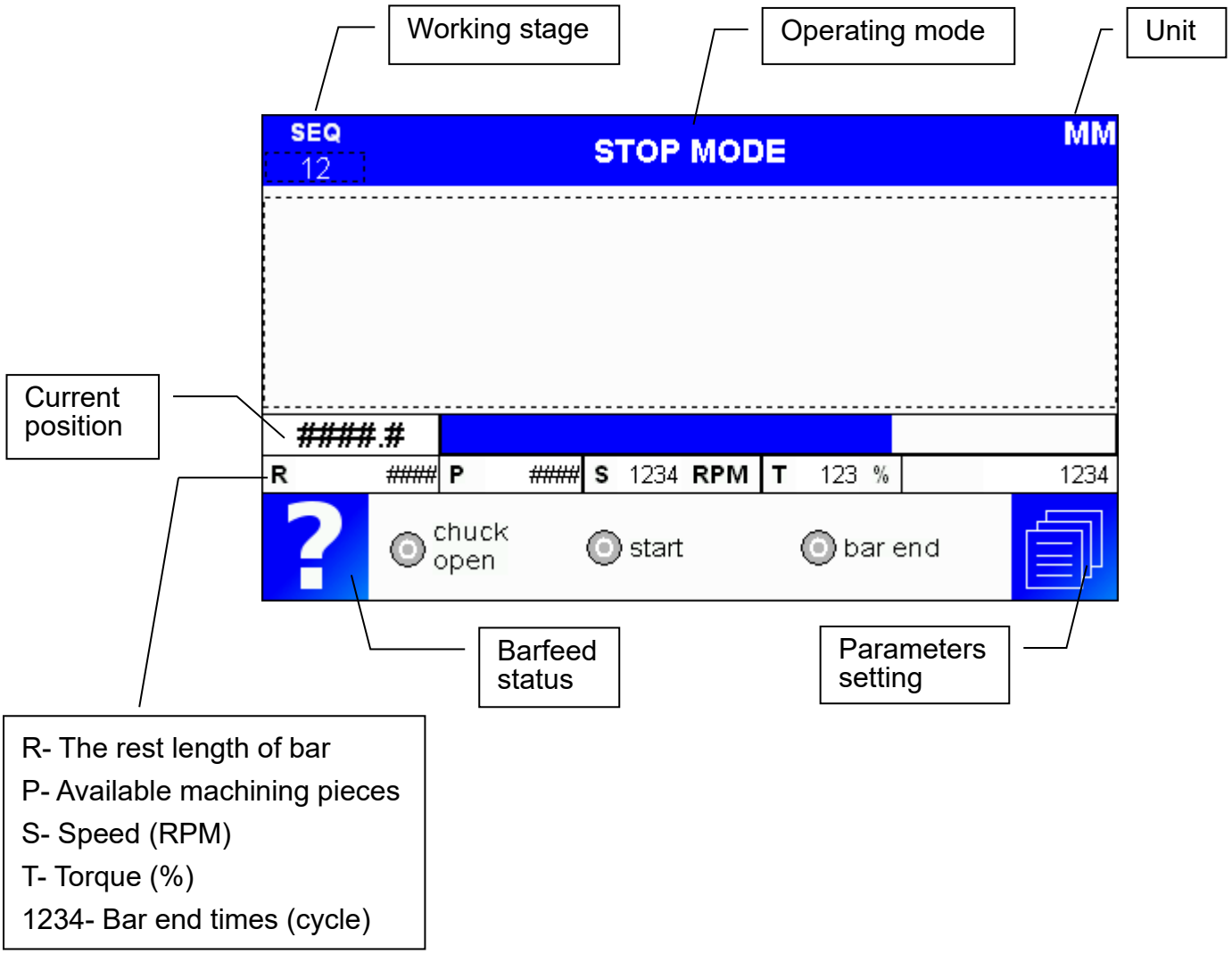
8.1.1 Function keys

	***Emergency stop*** When a dangerous situation arises, pressing the emergency stop button immediately interrupts all functions of the bar feeder. The bar feeder will send alarm signal to the lathe and interrupt the lathe if interface is wired accordingly. Error message e01 will be shown on the HMI display. To cancel the alarm, release the button by rotating it clockwise Pressing the Manual key  will then reset the Emergency stop alarm-condition.

	***Auto ready/ Auto start*** To switch the bar feeder to **AUTOMATIC** mode, press "Auto ready  (PLC X31)" then "Auto start  (PLC X32)" key for 3 seconds, both LED in the keys are ON if all conditions are met. The bar feeder is now in **AUTOMATIC** mode. To switch to **AUTOMATIC** mode, one of the following conditions must be fulfilled : • Lower the pusher (SQ4 ON). - OR - • Rise the pusher (SQ3 ON).
	***Stop*** This key offers two functions: • To switch the bar feeder to STOP mode. When the bar feeder is in STOP mode, the LED in the key is ON and the user can operate the bar feeder by function keys. • To reset the bar feeder from an emergency stop.
	***Rightward*** Move pusher rightward. Only available when the bar feeder is in STOP mode.
	***Slow Rightward*** Press  then press  . Move the pusher rightward with 2% of the general speed. Only available when the bar feeder is in STOP mode.
	***Leftward*** Move the pusher leftward. Only available when bar feeder is in STOP mode.
	***Slow Leftward*** Press  then press  . Move the pusher leftward with 2% of the general speed. Only available when the bar feeder is in STOP mode.

	***Open Channel*** The key offers three functions: 1. When pusher is at home position and bar feeder is in in **MANUAL** mode**,** pressing this key will automatically start the following sequencing: ● The long pusher moves forward to extraction position (behind the vise). ● The vise closes to check remnant disposal. Then after the long pusher returns to its home position. ● The pusher rises. 2. If the pusher exceeds the position "1ST FEED LOADING FLAG POSITION+ 150mm", the pusher will rise when pressing this key. 3. Loading a bar from the magazine into the channel When the channel is open, pressing this key again the bar measuring device will set in the ready position (up).
	***Close Guiding Channel*** This key offers three functions : 1. When the pusher is at a position shorter than the First Feed position and the bar feeder is rise**,** pressing this key will automatically start the following sequencing: ● The loading flag moves forward to the First Feed position. ● The short pusher returns to its home position. ● Lower the pusher and go forward to the insertion position (If there's no bar, the bar feeder will not cycle an insertion.) 2. If the channel is opened by pressing  when the long pusher is at a position exceeding "1ST FEED LOADING FLAG POSITION+ 150mm" and press  will lower the pusher. 3. When the pusher is on the lower position, if press this button, the sectional channel covers will be activated to do the close movement.

8.1.2 Text display area



8.2 POWERING AND EMERGENCY STOP

8.2.1 Powering up

The main power is supplied by the interface cable. Before connecting the interface cable to the lathe, make sure the power supply meets the interface specifications.

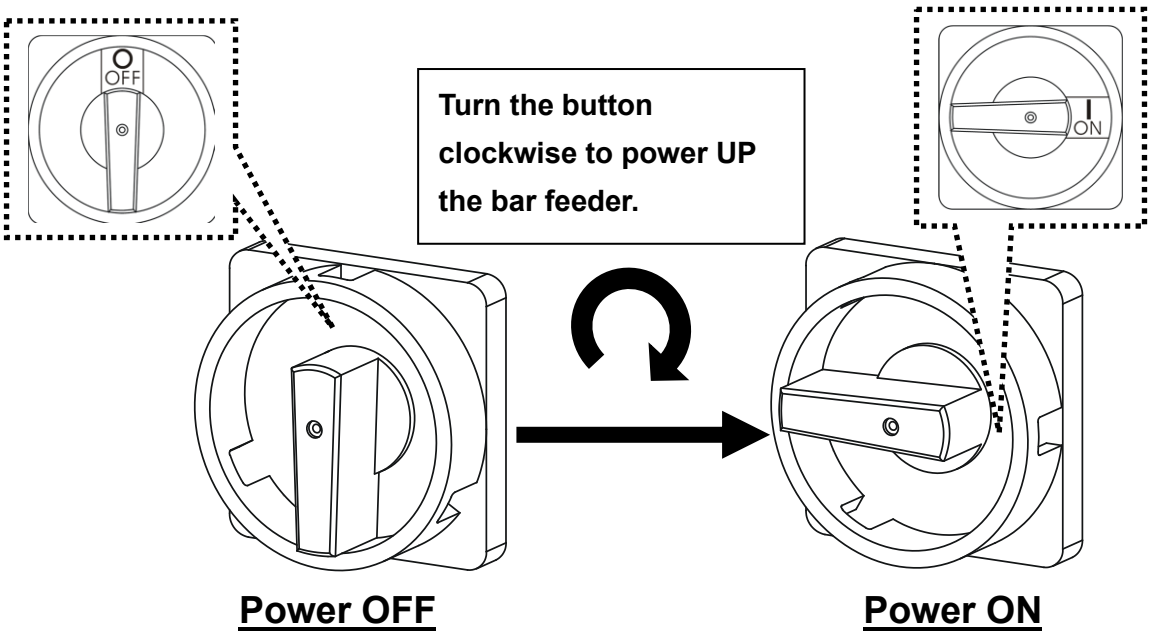
Depending on the power supplied by the lathe, a Transformer (optional) may be needed.

The power supplied to the bar feeder should be protected by a circuit-breaker (6A max) located in the lathe.

The servo motor of bar feeder is equipped with a built-in absolute encoder that continuously controls the position of the carrier. When the bar feeder is powered down or there is a power failure, this position is kept in the memory by the PLC.

When powering up, the pusher position value saved is immediately taken into account. The PLC reads signals from sensors and gives the operator allowable operations only.

Main disconnect switch QS1

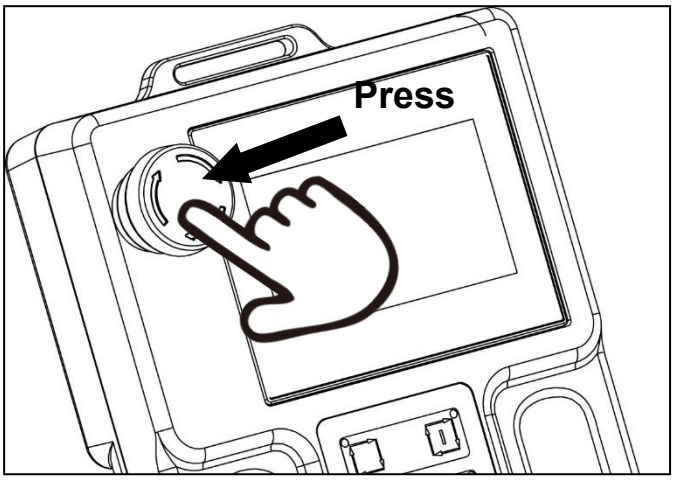


- **Make sure it is turned OFF before opening the electrical cabinet.**
- **Do not move or change the pusher position by hand when bar feeder is powered OFF.**
  In case the pusher was accidently moved before powering down move the pusher back to its home position. Turn the bar feeder OFF and power back up.

8.2.2 Emergency stop buttons

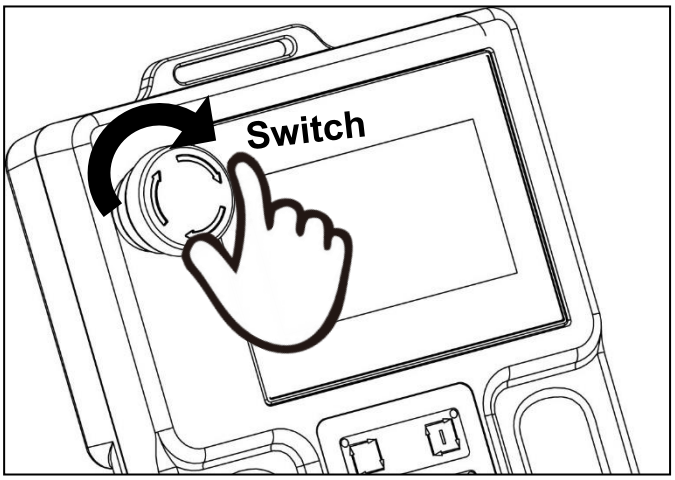
When there is a dangerous situation arising. Pressing the emergency stop buttons to interrupt the bar feeder. The following procedures will be carried out.

1. The 3 phases 220V AC to servo amplifier is interrupted.
2. All the output signals of PLC are interrupted except Y20 (input signal of relay R1).
3. An alarm AL01 is arising at HMI.



Press the emergency button, the bar feeder will stop the operation immediately.

When the emergency is removed, release the emergency stop button and press the manual key on remote control to restart the bar feeder.



Switch the emergency button to release the emergency state, back to the normal state.

8.3 AUTOMATIC/MANUAL SEQUENCE

The bar feeder can be switched into AUTOMATIC mode from two starting conditions.

8.3.1 Start a new machining

Conditions must be fulfilled:

1. **The lathe is not in AUTOMATIC mode.**
2. **The lathe chuck is open.**
3. **The lathe stopper must be positioned at the TOP CUT position**

Before proceeding automatic sequence, make sure the bar feeder has been properly setup on pneumatics, hydraulics, electrics and mechanics according to bar stock dimension and machining conditions.

Step	Description	
1	Move the pusher to its home position and confirm the current pusher position is 0.	
2	Rise the pusher by pressing 	
3	Press  again to load a bar into the channel and at the same time the measuring device will be ready.	
4	There are two methods to switch the bar feeder to auto mode: **A:** Start the lathe in AUTOMATIC sequence by accessing the sub-program and proceeding with the Top Cut cycle. Let the lat4i he start machining cycle by the program. **B:** In manual mode advance the bar to the Top Cut position. Start the lathe AUTOMATIC sequence from main program.	
	A	**B**
4	Press  and  to switch bar feeder to **AUTOMATIC** mode, it will proceed step 5 and 6 automatically.	
5	The loading flag advances the bar to the First Feed position and then returns to its home position. Lower the pusher as well so insertion is completed.	Press  . The loading flag will feed the bar to the First Feed position then return to its home position. Lower the pusher as well so insertion is completed.
6	Position the bar to Top Cut position and send Start signal from the lathe.	Push forward by pressing  or  until the bar reaches the TOP CUT position.
7	Close lathe chuck, switch lathe to auto mode.	Close the chuck of lathe. Manually advance the bar to Top Cut.
8		Open the chuck of the lathe. Move the bar stopper of the lathe to the desired part length. Manually advance the bar until it touches the bar stopper in the lathe. Then close the chuck of the lathe and retract the bar stopper.
9		Press  and  to switch bar feeder to **AUTOMATIC** mode. Then switch the lathe to **AUTOMATIC** mode.

Method B:

If parameter ”Top cut positioning”=With turret, never switch the bar feeder into AUTOMATIC mode if the chuck of the lathe is open but no stopper in front of the chuck.

Do not switch lathe to AUTO mode before bar feeder is in AUTO mode.

8.3.2 Continue an interrupted machining

Conditions below must be fulfilled:

1. **The lathe is not in AUTOMATIC mode.**
2. **The lathe chuck is open.**
3. **The lathe stopper is positioned at part length position.**
4. **The pusher is at the lower state and not at home position.**

Step	Description
1	Manually move the pusher forward until the bar stock pushes against the stopper.
2	Close the lathe chuck.
3	Press  and  to switch bar feeder to **AUTOMATIC** mode. Then switch lathe to **AUTOMATIC** mode.

1. **If “Top cut positioning” = Without turret, never switch the bar feeder into AUTOMATIC mode if the chuck of the lathe is open with no bar stopper in front of the face of the chuck of the lathe to receive the front of the bar.**
2. **Never switch the lathe into AUTOMATIC mode before switching the bar feeder into AUTOMATIC mode.**

8.3.3 Switch the bar feeder and lathe from Automatic to Manual mode

When the lathe finishes a machining cycle and the last part is cut-off with chuck closed, switch the bar feeder and lathe to manual mode as follows:

Step	Description
1	Switch bar feeder to manual mode first.
2	Switch lathe to manual mode and open lathe chuck.

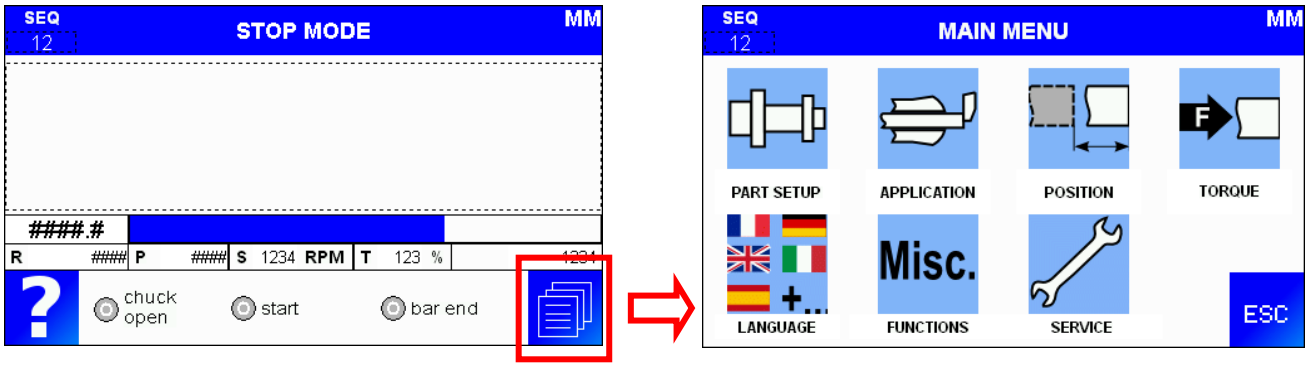
Never open the chuck of the lathe when the lathe is in manual mode and the bar feeder is in AUTOMATIC mode.

8.4 OPERATION PARAMETERS

The operation parameters are most frequently changed parameters for controlling the bar feeder when it's in AUTOMATIC mode. To achieve the best performance, the operator is strongly recommended to read this chapter before preceding any modification.

8.4.1 Accessing

After selecting the operation parameters, the following screen will be displayed



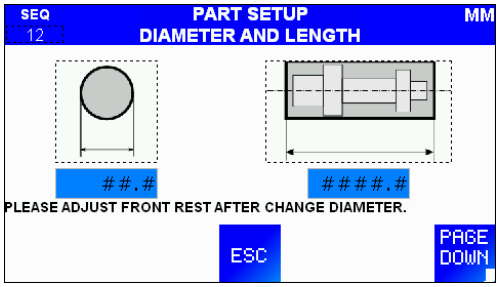
8.4.2 Quick preview

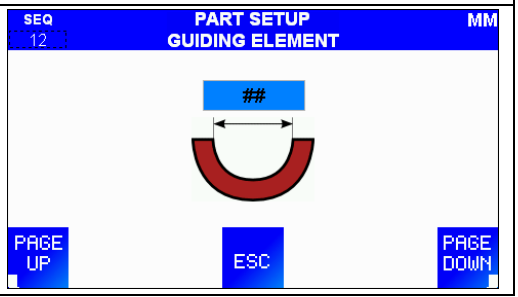
Designation	Description		Default Value			
PART SETUP						
Diameter & length	Bar diameter		Subject to actual use			
	Part length		1000mm			
Guiding element	Guiding element		Subject to actual use			
Number of clamping device openings	Collect openings		1 times			
Part setup	Too short		0			
	Too long-collet closed		110mm			
	Too long- collet open		110mm			
	Loading screw 2 turns for bar		0			
Pusher type	With collet/ With cone		With collet			
APPLICATION						
Feeding type			Turret parked in position			
Application	M-code for part feed out		NO			
	Deceleration distance		20mm			
POSITION						
End of bar			2.5M	3.0M	3.7M	4.0M
	Short pusher – L		1990mm	2490mm	3190mm	3490mm
	Long pusher - LL		1600mm	2100mm	2800mm	3100mm
	Long pusher - 2.5L			2430mm	3130mm	3430mm
	Long pusher -LLL			1740mm	2440mm	2740mm
Top cut	Top cut position		200mm			
Front rest opening	Front rest opening position	Short pusher - L	1550mm	2090mm	2630mm	3170mm
		Long pusher - LL	1220mm	1760mm	2300mm	2840mm
		Long pusher - 2.5L		1940mm	2480mm	3020mm
		Long pusher - LLL		1400mm	1940mm	2480mm
Auxiliary end of bar	Auxiliary end of bar position		1500mm	2000mm		
External stabilizer (option)	External stabilizer opening position		2000mm			
Hydraulic pump OFF	Hydraulic pump OFF at pusher position	Short pusher - L	2870mm	3410mm	3950mm	4490mm
		Long pusher - LL	2870mm	3410mm	3950mm	4490mm
		Long pusher - 2.5L		3740mm	4280mm	4820mm
		Long pusher - LLL		3410mm	3950mm	4490mm
Position	Insertion travel distance		43mm			
	Extraction travel distance		45mm			
TORQUE						
Pusher torque rate	During feeding		Depend on “PART SETUP”			
	With clamping device closed (For fixed headstock machine)					
	To compensate the pusher friction (For sliding headstock machine)					
	Against the cut-off tool (For sliding headstock machine)					
	Torque rate according to part setup					

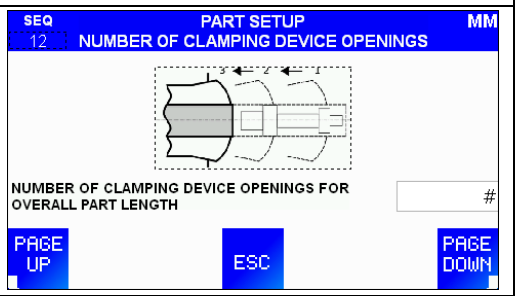
LANGUAGE	
Language	Subject to actual use
Unit of measure	Subject to actual use
FUNCTIONS	
Dry run	
Cylinder test	
Adjust front rest	
When bar feeder is in normal state, LED is	
Dry run failure	

8.4.3 Description

PART SETUP

DIAMETER & LENGTH	***This parameter should be modified if bar stock dimension changed.***
BAR DIAMETER This parameter sets the basic pushing force. Enter the bar stock diameter currently loaded inside the channel. **PART LENGTH** Overall feeding length needed for making a part. Part length plus cut off tool width. This value is for calculation of BAR END position and timing of sending CYCLE START signal. The bar feeder will not stop at this distance during feeding. The lathe must place a stopper inside the lathe for positioning. *Example: If the part is 100mm and the cut off tool width is 3mm. The value entered here is 100+3=103.*	

GUIDING ELEMENT	***This parameter should be modified if bar stock dimension changed.***
GUIDING ELEMENT SIZE The diameter of the guiding elements is always proposed for change after the pusher changeover cycle.	

NUMBER OF CLAMPING DEVICE OPENINGS	
Number of lathe clamping openings during the machining of one part. Used to prevent undesired part feed out during clamping opening.	

PART SETUP

The maximum/minimum acceptable feeding length for machining a part.

TOO SHORT

The minimum allowable bar feeding distance.

TOO LONG – COLLET CLOSED

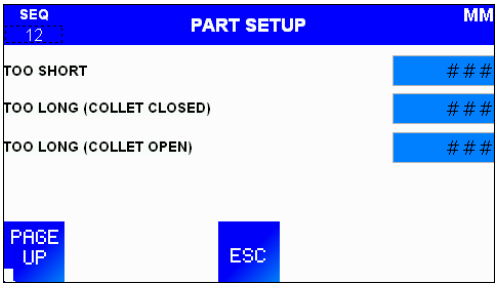
The maximum allowable feeding distance when chuck is closed.

TOO LONG – COLLET OPEN

The maximum allowable bar feeding distance when chuck is open.

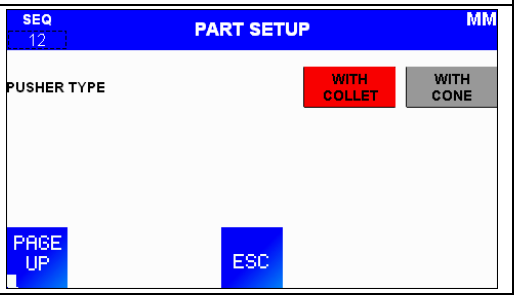
The setup varies depend on lathe type.

Lathe type	Fixed type	Swiss type
Too short	Part length – 15mm	
Too long collet closed	Less than part length	(Max spindle movement of machining a part) + 15mm
Too long collet open	Part length + 15mm	Less than part length

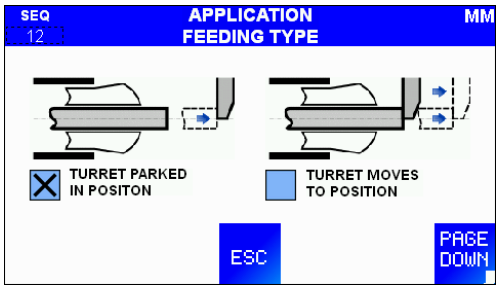


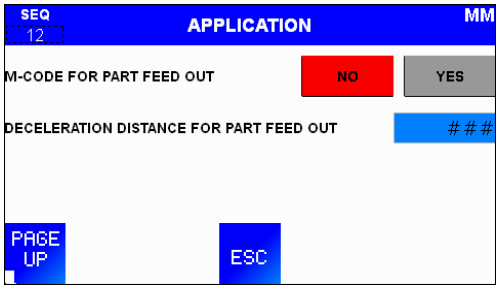
PUSHER TYPE

Allow to choose pusher with collet or pusher with cone.

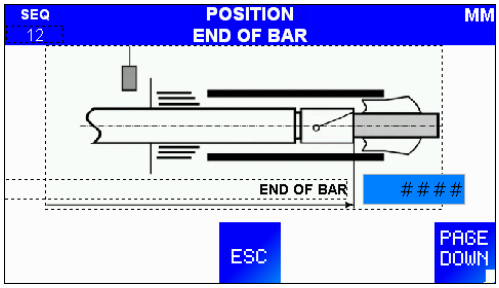


APPLICATION

FEEDING TYPE	
Defines if the lathe turret waits in position or follows the barstock displacement during feeding operation. **TURRET PARKED IN POSITION** Turret moves forward for a part length and waits till barstock touches it. **TURRET MOVES TO POSITION** Turret moves backward to touch the front tip of barstock and follows it to the part length position.	

APPLICATION	
M-CODE FOR PART FEED OUT During production time, the lathe issues an M-code signal (A4). The bar feed will push the bar into position and emit a signal over the R2 relay to reset the M-code and the lathe will then be able to continue working. **DECELERATION DISTANCE FOR FEED OUT** Distance in which the pusher has to slow down before the stopper.	

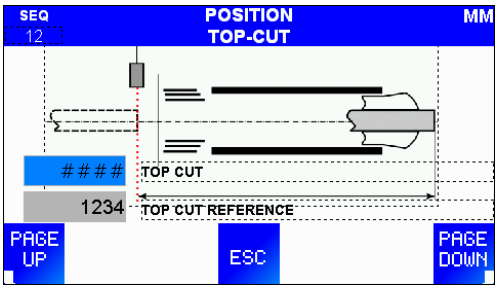
POSITION

END OF BAR	***This parameter should be modified if the bar feeder is re-installed or moved.***
END OF BAR Limit position set to prevent the pusher to reach inside the chuck of the lathe. It is set at about 10 mm behind the chuck jaws of collet pads of the lathe. In automatic cycle a new bar will be loaded in the guiding channel.	

TOP CUT	***This parameter should be modified if the bar feeder is re-installed or moved.***

- Position of the newly loaded bar outside the front of the chuck of the lathe. The term Top Cut is a face off or cut off operation before starting a new production part after a new bar is loaded.
- This position is measured by the sensor SQ1 (bar measuring device.). The value is independent from bar length. It will not change unless the bar feeder is moved.
- During automatic cycle, the bar measuring device flag is activated while the new bar is loading.

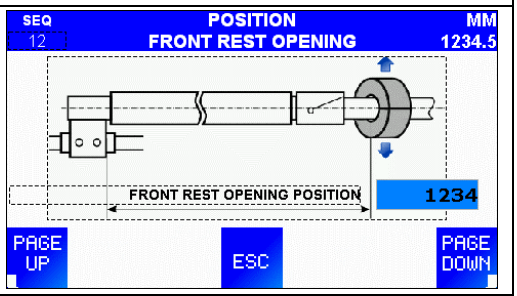
TOP CUT REFERENCE (read only)
The position measured automatically from bar measuring device (SQ1) for TOP CUT value reference.



FRONT REST OPENING

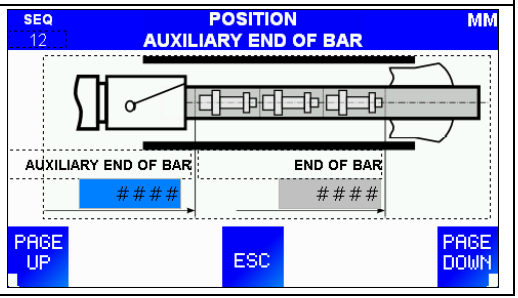
FRONT REST OPENING POSITION

Define the current position of the pusher when the front rest is opened. It is to avoid the pusher hitting the front rest.



AUXILIARY END OF BAR

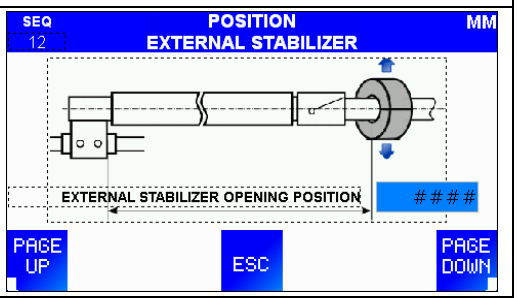
Under the AUTO mode, when finger chuck moves to this position, the bar feeder will be considered as EOB.



EXTERNAL STABILIZER (OPTION)

EXTERNAL STABILIZER

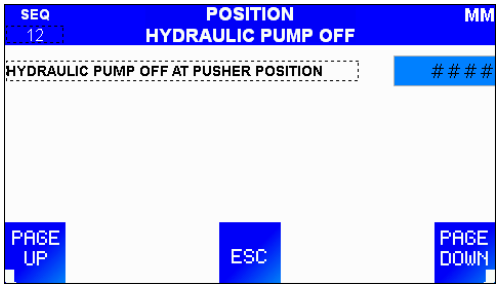
Define the pusher position where the external stabilizer opens.



HYDRAULIC PUMP OFF

HYDRAULIC PUMP OFF AT PUSHER POSITION

When the pusher reaches this position, the hydraulic pump will be deactivated.



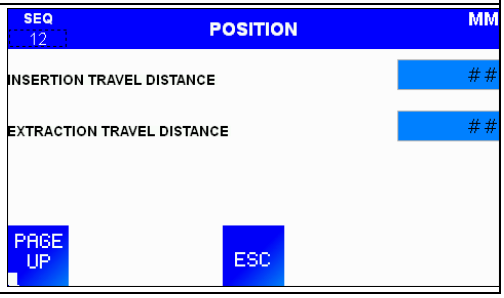
POSITION

INSERTION TRAVEL DISTANCE

Specifies the stroke of the pusher for the insertion of the bar into the pusher collet.

EXTRACTION TRAVEL DISTANCE

Specifies the stroke of the pusher for the extraction of the bar from the pusher collet.



TORQUE

PUSHER TORQUE RATE

Torque values as described.

DURING FEEDING

Part setup will influence the torque of bar feeding including during the FIRST FEED, feeding into lathe, manual forward and feed on fixed headstock type lathe with chuck opened.

WITH CLAMPING DEVICE CLOSED (For fixed headstock machine)

Torque applied during machining operations.

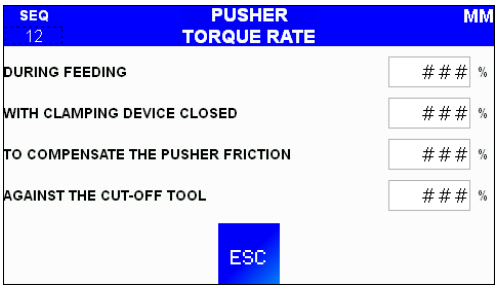
Part setup will influence the torque when the chuck of the lathe is closed. User can also use this parameter to adjust the torque.

TO COMPENSATE THE PUSHER FRICTION (For sliding headstock machine)

This setup defines the torque applied during machining operations with lathe chuck closed to compensate the pusher friction.

AGAINST THE CUT-OFF TOOL (For sliding headstock machine)

This setup defines the torque applied when the lathe chuck is opened, and the bar stock pushes against the Cut-Off tool.

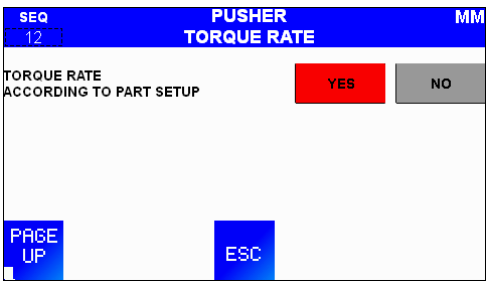


PUSHER TORQUE RATE

Define if user wants to activate torque rate according to part setup.

If this parameter is set to YES, according to bar stock diameter, bar feeder will define a proper pushing force automatically.

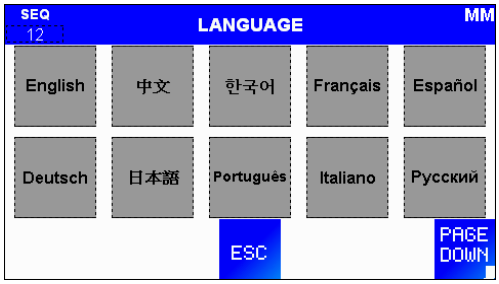
If this parameter is set to NO, bar feeder will not define a proper torque rate according to bar stock diameter.



LANGUAGE

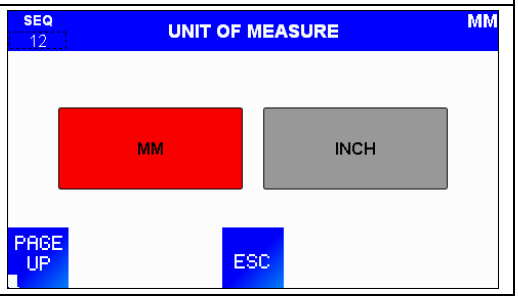
LANGUAGE

Allows the user to choose the barfeed HMI language.



UNIT OF MEASURE

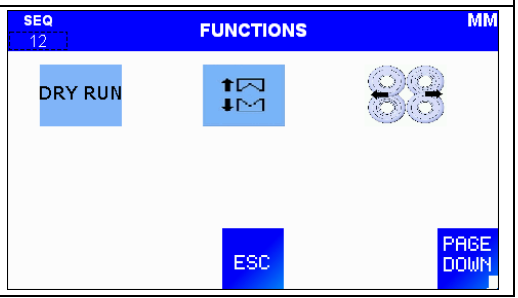
Allows choosing the unit of measure.



FUNCTIONS

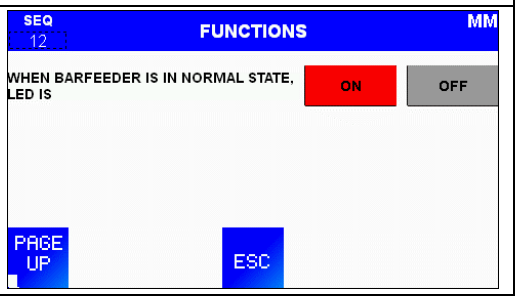
FUNCTIONS

Dry run, external stabilizer and cylinder setup functions are available on this screen.



FUNCTIONS

User can choose to let LED logo keep ON or OFF when bar feeder is in normal state.

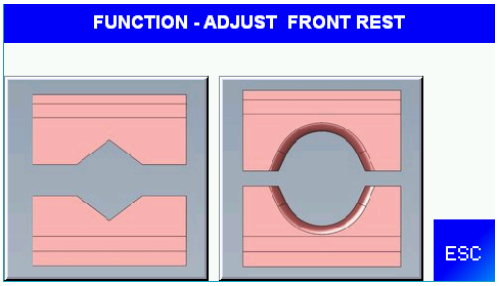


DRY RUN

This state allows the lathe to run without the bar feeder.
Conditions: Bar feeder in manual or stop mode, channel open (SQ3 ON) and pusher at home position (SQ2 ON) and bar measuring device ready (SQ1 ON) “Press DRY RUN”, the bar feeder will switch to DRY RUN mode.
Interface output signal (R4) will automatically turn on and interface signals from the lathe will be ignored.
Press “STOP” to exit.

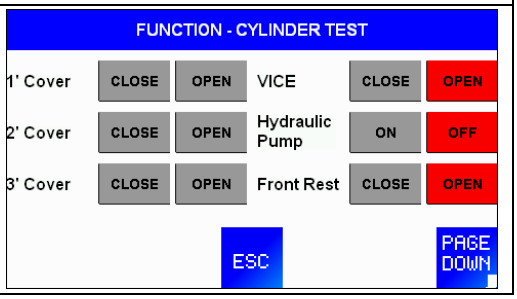
ADJUST FRONT REST

When the bar diameter change, user can refer to this front rest adjusted steps, according to the bar diameter to adjust the scale of front rest correctly so that the device can be activated smoothly.



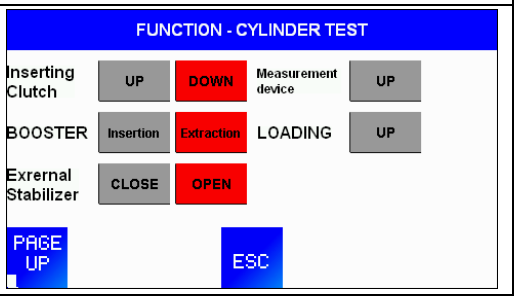
CYLINDER TEST

For testing purpose, manual operate each device controlled by different cylinder



CYLINDER TEST

For testing purpose, manual operate each device controlled by different cylinder



DRY RUN FAILURE	
If user wants to run DRY RUN mode, the conditions as below must be satisfied, or it wouldn't be activated, and the message will arise: 1. Pusher must be home position. 2. Guiding channel is open. 3. No bar in the guiding channel.	"TO ACTIVATE THIS FUNCTION, PUSHER MUST BE HOME, GUIDING CHANNEL OPEN, NO BAR IN THE GUIDING CHANNEL" (Measurement cell needs to be activated when press DRY RUN button)

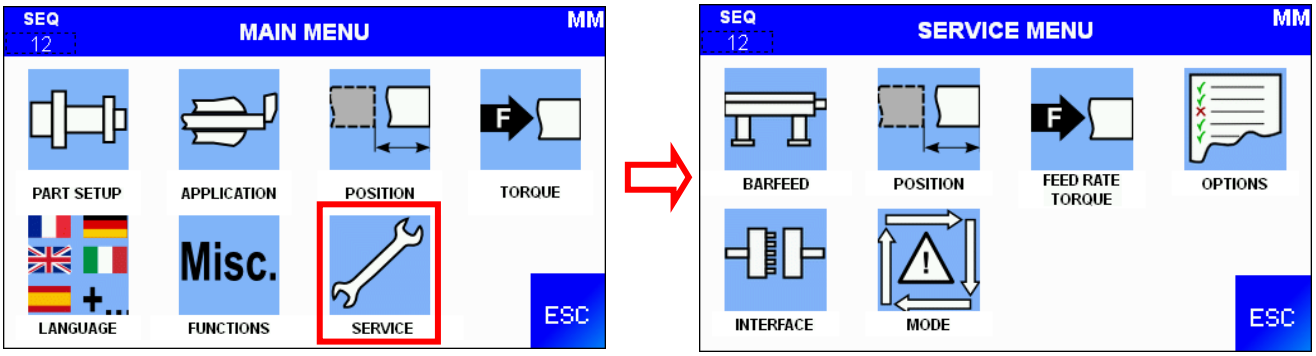
CYLINDER TEST AND ADJUST FRONT REST FAILURE	
If user wants to enter the setting function of cylinder test and front rest adjustment, but bar feeder is not in the STOP mode, this message will arise.	TO ACTIVATE THIS FUNCTION, BARFEEDER STATUS MUST BE IN STOP MODE.

8.5 SERVICE PARAMETERS

Service parameters must only be modified by technicians of or personnel authorized by us. Incorrect setup might cause unexpected malfunction or damage on either bar feeder or lathe. Accessing these parameters is password protected. Please contact us or our official agent in your country for getting technical support in case any modification is needed.

8.5.1 Accessing

After selecting the service parameters, the following screen will be displayed:



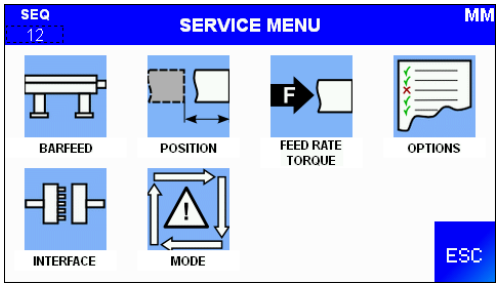
8.5.2 Quick preview

Parameter Designation	Description		Default value			
BARFEED						
Barfeed length	2.5M 3M 12' 4M		Subject to actual use			
Barfeed location	Left/ Right		Left			
1st feed loading flag position			2.5M	3M	3.7M	4M
	Short pusher- L		1440mm			
	Extended pusher- LL		1770mm			
	Extended pusher- 2.5L			1900mm		
	Extended pusher -LLL			2130mm		
Loading cycle enable while clamping device	Open/ Closed		Open			
Automatic halt push forward at end of bar	No/ Yes		Yes			
Bar check after extraction (manual mode)	Activate check/ Deactivate check		Activate			
Close front rest & external stabilizer on the pusher when clamping device is closed	No/ Yes		No			
Barfeeder auto safety	No/ Yes		No			
Front rest close at	SQ1 front stopper / Top cut		SQ1 front stopper			
Chuck close check after part feed out	Yes/ No		Yes			
POSITION						
Pusher retracts dist. For spindle inching			50mm			
Cover setup			2.5M	3M	3.7M	4M
	Short pusher - L	Active cover 1	1550	1550	1550	1550
		Active cover 2	1900	2500	TBD	2120
		Active cover 3	-	-	TBD	2840
		Active cover 4	-	-	-	3560
	Extended - LL	Active cover 1	1900	1900	1900	1900
		Active cover 2	-	2400	2400	2400
		Active cover 3	-	-	-	2800
		Active cover 4	-	-	-	-
	Extended - 2.5L	Active cover 1		2050	2050	2050
		Active cover 2		2550	2550	2550
		Active cover 3		-	-	2950
		Active cover 4		-	-	-
	Extended - LLL	Active cover 1		2250	2250	2250
		Active cover 2		-	TBD	TBD
		Active cover 3		-	-	TBD
		Active cover 4		-	-	-
FEED RATE/ TORQUE						
Torque rate	During insertion		250%			
	During extraction		250%			
Feed rate	During part feed out		1550 RPM			
	During barstock measuring		1000 RPM			
	Without barstock		2000 RPM			
	Manual forward		1100 RPM			
	Manual reverse		1100 RPM			
	With clamping closed (fixed headstock)		45 RPM			
Torque rate	Torque setting - Low/High		High			
OPTIONS						
Headstock synchronization device	No/ Yes		Subject to actual use			

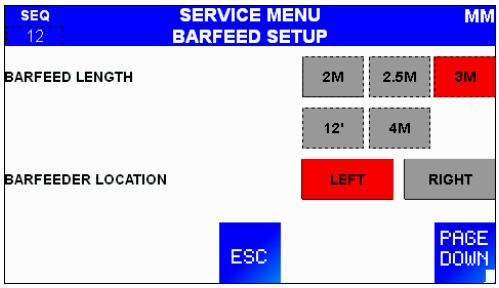
External stabilizer operation	Keep closed/ With chuck open/close	Keep closed
Booster type	Servo/ Mechanical	Subject to actual use
Top cut positioning	With turret/ Without turret	Without turret
Bar insertion check	No/ Yes	No

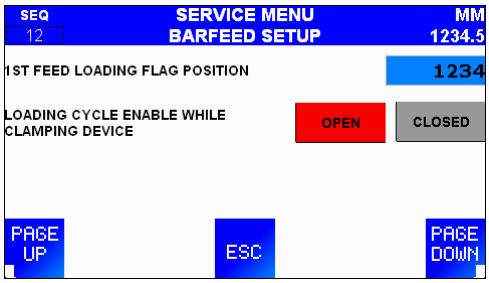
8.5.3 SERVICE PARAMETERS

(Password protected, only for trained technician)

SERVICE MENU	
Main screen	

BARFEED

BARFEED SETUP	
Defines the Bar feeder length and position is Left/ Right of machine.	

BARFEED SETUP	
1ST FEED LOADING FLAG POSITION ● The bar stock first movement right after it's loaded into the bar feeder. First Feed by Loading Flag. ● This movement is called **FIRST FEED**. It is used to locate the bar rear tip at the insertion position. ● The FIRST FEED must be correctly set so that the gap between the bar rear tip and collet of the pusher is within 5mm. **LOADING CYCLE ENABLE WHILE CLAMPING DEVICE** Defines at End of Bar the loading cycle will initiate when receiving the chuck signal open or close.	

BARFEED SETUP

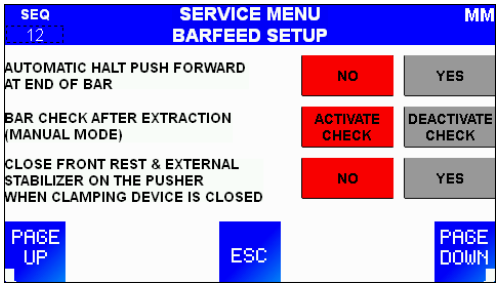
If this parameter is set to YES, the bar feeder doesn't push forward at end of bar (Only with Swiss type lathe).

BAR CHECK AFTER EXTRACTION (MANUAL MODE)

Defines if cancel detection of bar extraction in manual mode.

CLOSE FRONT REST & EXTERNAL STABILIZER ON THE PUSHER WHEN CLAMPING DEVICE IS CLOSED

Defines if the front rest and external stabilizer clamp while the pusher is passing through during automatic mode.



BARFEED SETUP

BARFEEDER AUTO SAFETY

If this parameter is activated, no matter lathe is on Auto mode or Manual mode, bar feeder will calculate the ON/OFF signal of chuck. When the chuck signal is turned ON/OFF for 3 cycles, but bar feeder is still on Manual mode, the alarm AL26 will arise.

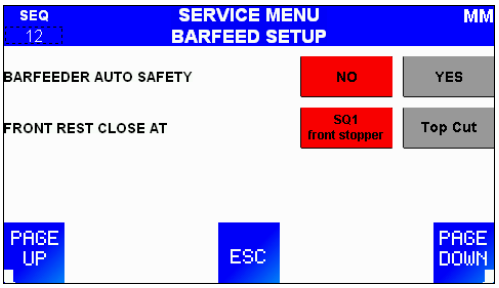
This parameter is used for reminding the user, lathe may be switched to Auto mode, but bar feeder is still on Manual mode.

FRONT REST CLOSE AT

Decide the timing of front rest closed.

Front stopper (SQ1): During the changeover, after the new bar hits down the measuring device and moves forward by 250mm, the front rest will close instantly.

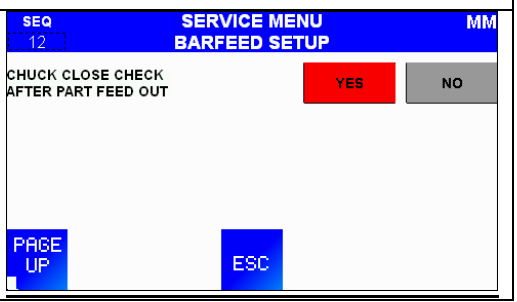
Top Cut: During the changeover, after new bar moves to Top Cut position, the front rest will close instantly.



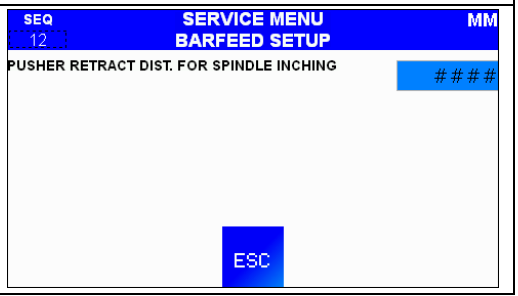
BARFEED SETUP

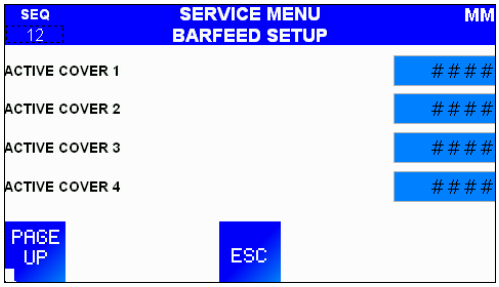
CHUCK CLOSE CHECK AFTER PART FEED OUT

Define if user wants to activate chuck close detection; When lathe collet keeps opening over 30 sec. and without closing, then the alarm message AL13 will arise.



POSITION

POSITION	
Defines the retraction distance of the pusher for spindle inching during loading of profiled bars.	

POSITION	
Define each open position of the sectional covers. Set the value according to the pusher position for the pusher flag to pass through the channel. **ACTIVE COVER 1** The pusher position where the first channel must open when the pusher passes it. *When channel size is under 23mm (23mm included), the program automatically makes the opening of the first section channel cover activated 300mm earlier before it reaches to the set point. **ACTIVE COVER 2** The pusher position where the second channel must open when the pusher passes it. **ACTIVE COVER 3** The pusher position where the third channel must open when the pusher passes it. **ACTIVE COVER 4** The pusher position where the fourth channel must open when the pusher passes it.	

FEED RATE/ TORQUE

TORQUE RATE

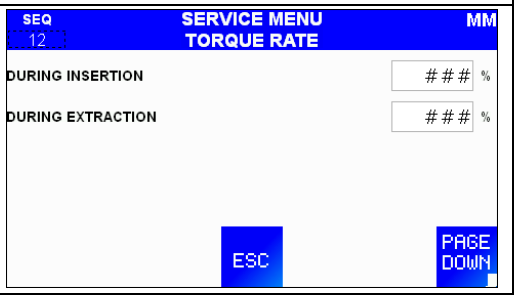
Sets the torque of servo motor to define the pushing force for bar insertion and extraction.

DURING INSERTION

The default value of torque: 250%

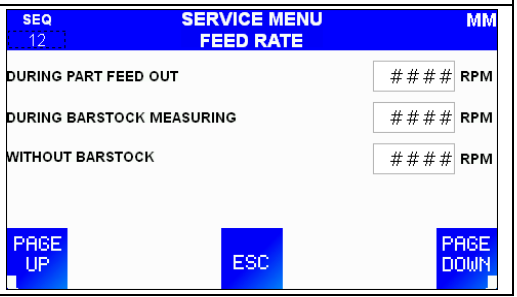
DURING EXTRACTION

The default value of torque: 250%



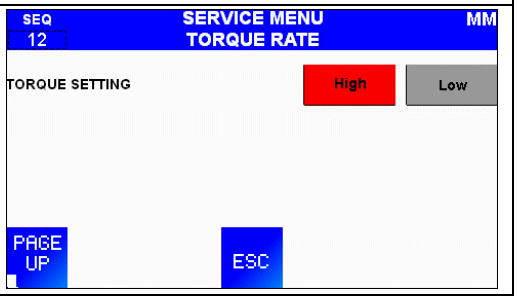
FEED RATE

Defines the feed rate of the pusher movement during these three situations.

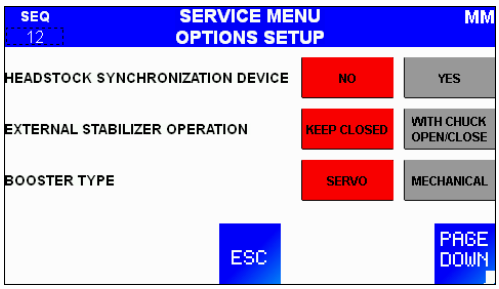


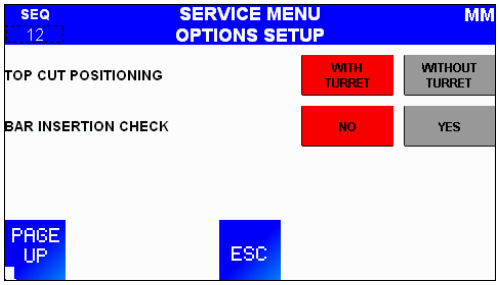
TORQUE RATE

Allow to choose torque setting with high or low level. (Only LNS SA machines use low level at present.)

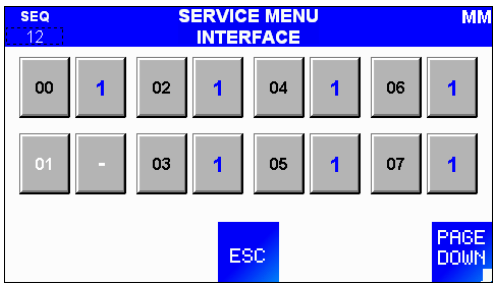


OPTIONS

OPTIONS SETUP	
HEADSTOCK SYNCHRONIZATION DEVICE Defines if using the headstock synchronization device. **EXTERNAL STABILIZER OPERATION** Defines the action of optional external stabilizer before the pusher reaches the “second anti-vibration opening position”. - Keep closed - Follow the chuck moving open and close **BOOSTER TYPE** Allow to choose booster type for SERVO or MECHANICAL.	

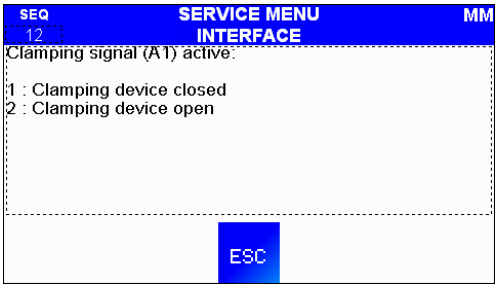
OPTIONS SETUP	
TOP CUT POSITIONING Defines Top Cut positioning with or without turret help. **BAR INSERTION CHECK** When bar insertion is completed the pusher will move back and forth. During this cycle the vise will close to verify if the bar is inserted.	

INTERFACE

INTERFACE	
Shows several interface parameter status. Please refer to the INTERFACE PARAMETER NUMBERS description as following or click on the parameter number on the touch screen to show more information.	

00- Clamping signal (A1) logic setup

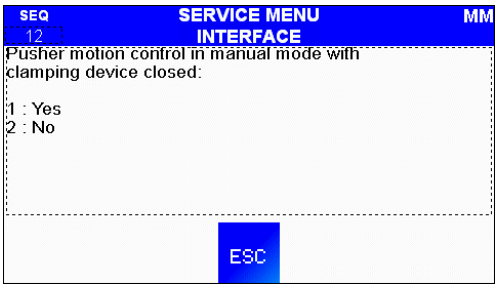
1. Clamping signal on HMI (A1) lit, the lathe chuck is closed.
2. Clamping signal on HMI (A1) lit, the lathe chuck is open.



02- Pusher motion setup

Give the possibility of using the manual function (e.g., pusher forward and backward) when the bar feeder is in automatic mode and the clamp is closed.

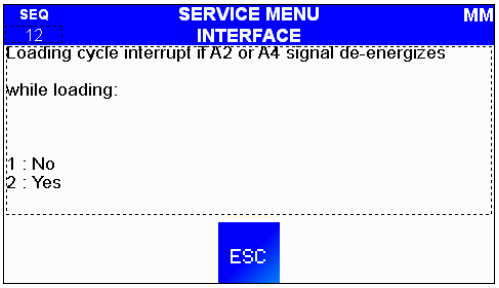
1. When the clamp is closed, manual function of the pusher is allowed.
2. When the clamp is closed, manual function of the pusher is not allowed.



03- Loading interrupt if A2 or A4 signal de-energizes

Defines during a bar change cycle, the condition for pushing the bar when the chuck of the lathe opens.

1. Neither A2 nor A4 signal is checked. During a bar change cycle, when the chuck of the lathe opens, the pusher will advance the bar to Top Cut position.
2. Either A2 or A4 signal is checked. During a bar change cycle, either one of the signals is required for pushing bar stock to Top Cut position when the chuck of the lathe opens.

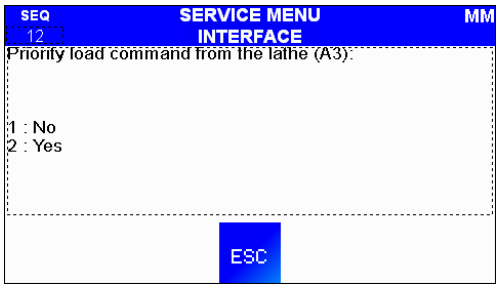


04- (A3) Priority load command from lathe (Refer to INTERFACE05 for related setup)

Defines if A3 signal initiates the bar change cycle.

1. The bar change cycle initiates when the chuck of the lathe opens at end of bar.
2. The bar change cycle initiates depending on INTERFACE05 setup (End of Bar).

*Refer to the timing chart <1> on 8.5.3.1

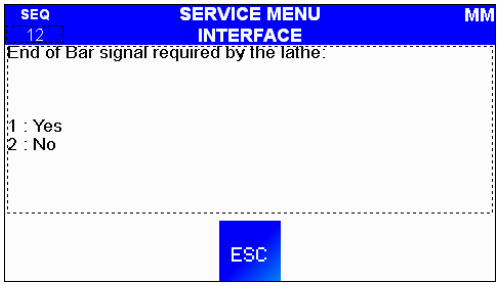


05- EOB signal required by the lathe (Refer to INTERFACE04 for related setup)

Defines when the new bar change cycle is initiated by A3 signal.

1. Bar change cycle initiates when receiving A3 signal after the End of Bar signal arises.
2. Bar change cycle initiates at any time when A3 signal is received.

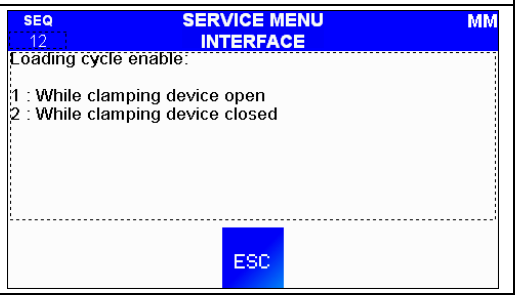
*Refer to the timing chart <1> on 8.5.3.1



06- Loading cycle enable

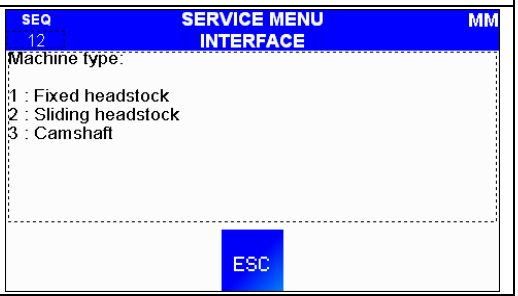
Defines when the new bar change cycle is enabled.
(This applied only if INTERFACE04=1)

1. At End of Bar the loading cycle will initiate when receiving the chuck signal open.
2. At End of Bar the loading cycle will initiate after receiving the chuck close signal (pusher with cone)



07- Lathe type setup

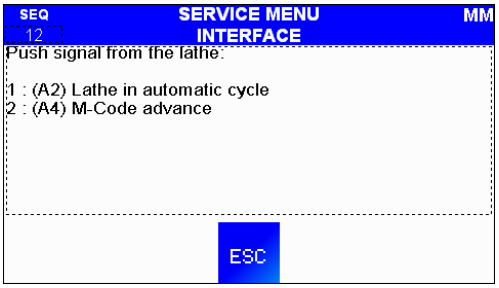
1. Fixed headstock lathe
2. Sliding headstock lathe
3. Camshaft lathe



09- Push signal from the lathe (Refer to INTERFACE24 for related setup)

1. Chuck signal A1 and AUTO signal A2 enables the pusher to advance the bar stock.
2. Chuck signal A1 and M-Code Push A4 enables the pusher to advance the bar stock.

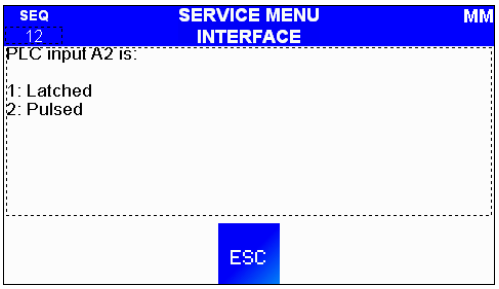
*Refer to the timing chart <2> on 8.5.3.1



10- AUTO signal (A2) setup

Defines how does the bar feeder react to the A2 signal. The definition of A2, please refer to INTERFACE49.

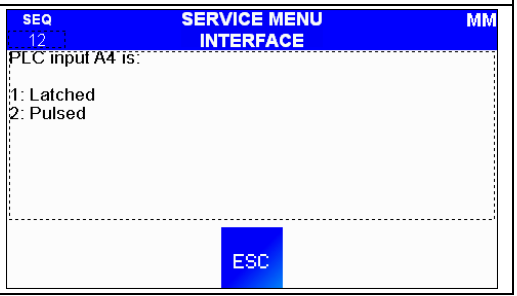
1. A2 signal is a latched signal. Only when bar feeder receives the A2 signal that will consider the lathe is in the AUTO mode.
2. A2 signal is a pulsed signal. Once received the A2 signal, it will be valid even though the signal is not keeping output.



11- PUSH signal (A4) setup

Defines the type of the A4 signal for bar feeding.

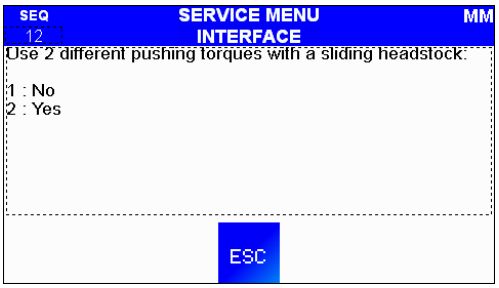
1. A4 signal is a latched signal. The pusher will advance the bar stock while receiving A4 signal.
2. A4 signal is a pulsed signal. The pusher will advance the bar stock once A4 signal is sent



12- Pushing force setup with sliding headstock

Defines the pushing force for sliding lathe with chuck opened.

1. When the lathe chuck opens, the pushing force is according to “PUSHER TORQUE RATE”: TO COMPENSATE THE PUSHER FRICTION.
2. When the lathe chuck opens, the pushing force is according to “PUSHER TORQUE RATE”: AGAINST THE CUT-OFF TOOL.

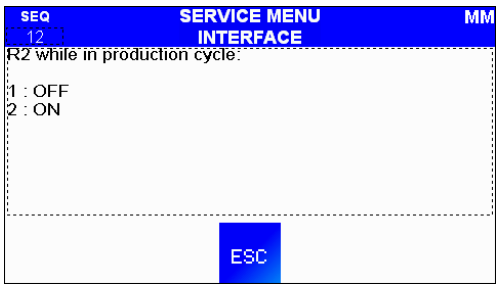


13- R2 while in production cycle (Refer to INTERFACE14, 15, 16 for related setup)

Defines if R2 signal is On or Off during production cycle

1. R2 signal output according to INTERFACE14, 15, 16 and 34 setup.
2. R2 signal is ON after the newly loaded bar reaches the Top Cut position and turns OFF when bar feeder starts a new loading cycle.
   This output indicates the bar feeder is in working mode.

*Refer to the timing chart <3> on 8.5.3.1

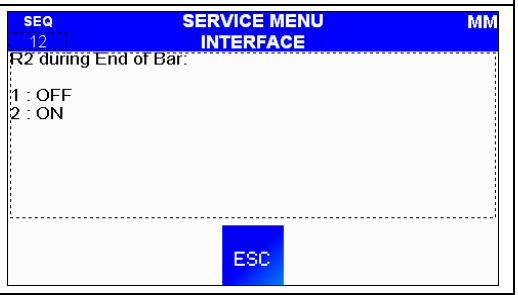


14- R2 during End of Bar (Refer to INTERFACE13, 15, 16 for related setup)

Defines the condition of R2 signal at End of Bar.

1. R2 signal will be OFF during End of Bar condition.
2. R2 signal will be ON during End of Bar condition.

*Refer to the timing chart <3> on 8.5.3.1

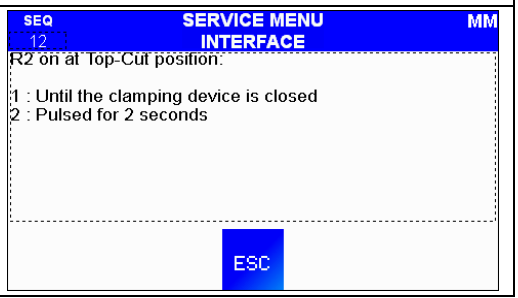


15- R2 ON at top cut position (Refer to INTERFACE13, 14, 16 for related setup)

Defines how long R2 signal remains On from the time the new bar stock reached the Top Cut position.

1. R2 signal remains ON until the chuck of the lathe closes.
2. R2 signal is pulsed for 2 seconds.

*Refer to the timing chart <3> on 8.5.3.1

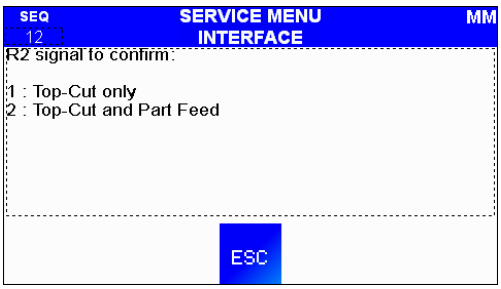


16- R2 to confirm (Refer to INTERFACE13, 14, 15 for related setup)

Defines R2 signal functionality.

1. R2 signal turns ON to confirm the newly loaded bar reaches Top Cut position.
2. R2 signal turns ON to confirm the newly loaded bar reaches the Top Cut position and also to confirm part feedout when M-code is connected.

*Refer to the timing chart <3> on 8.5.3.1

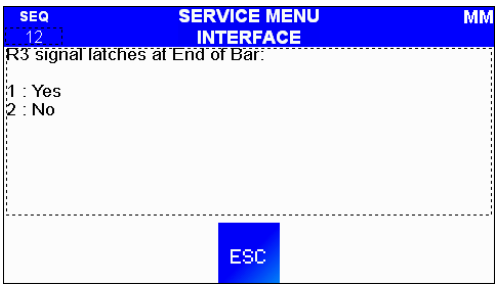


17- R3 signal latches at End of Bar
(Refer to INTERFACE18, 19, 20, 31, 32, 33 for related setup)

Defines the type of R3 signal output.

1. R3 signal turns ON when the pusher reaches the End of Bar position and remains ON. It turns OFF according to INTERFACE18, 19, 20 or 33 setup.
2. R3 signal turns ON only while the pusher is in the End Of Bar position.

*Refer to the timing chart <4> on 8.5.3.1

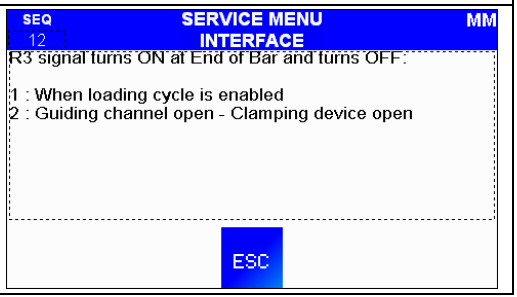


18- R3 turns on at EOB and turns off
(Refer to INTERFACE17, 19, 20, 31, 32, 33 for related setup)

Defines when R3 signal turns OFF.

1. R3 signal turns OFF when bar feeder is during changeover.
2. R3 signal turns OFF when the last machining is finished and the lathe chuck opens.

*Refer to the timing chart <4> on 8.5.3.1

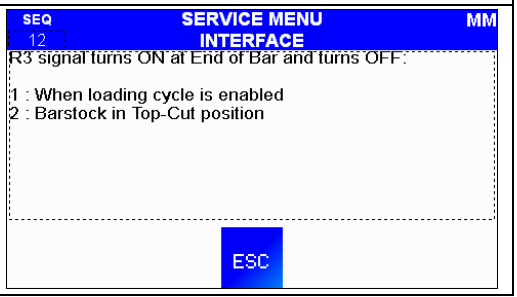


19- R3 turns ON at EOB and turns OFF
(Refer to INTERFACE17, 18, 20, 31, 32, 33 for related setup)

Defines when R3 signal turns OFF.

1. R3 signal turns OFF when A3 signal is activated and the pusher retracts back to home position.
2. R3 signal turns OFF when the new bar reaches Top Cut position

*Refer to the timing chart <4> on 8.5.3.1

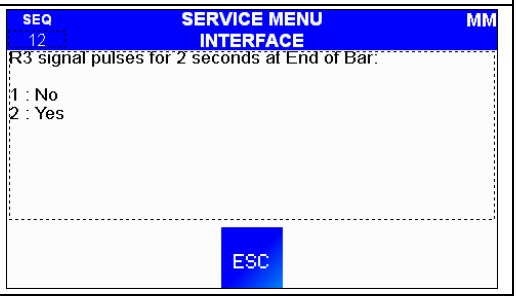


20- R3 pulses for 2 sec. at End of Bar
(Refer to INTERFACE17, 18, 19, 31, 32, 33 for related setup)

Defines if R3 signal pulses for 2 seconds or not.

1. R3 signal is not a pulse signal. Refer to INTERFACE18, 19 or 33 for related setup on to turning OFF.
2. R3 signal is a 2 seconds pulses signal.

*Refer to the timing chart <4> on 8.5.3.1

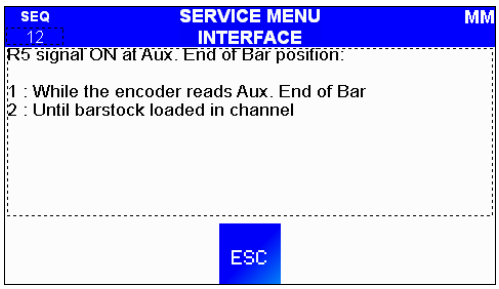


21- R5 ON at Aux. EOB position (Refer to INTERFACE43 for related setup)

When the pusher arrives at “AUXILIARY END OF BAR” position, R5 signal turns ON. This parameter defines the output type of R5 signal.

1. R5 signal turns ON when pusher passes the Aux. EOB position.
2. R5 remains ON when the pusher exceeds the Aux. EOB position until the bar feeder loads a new bar stock.

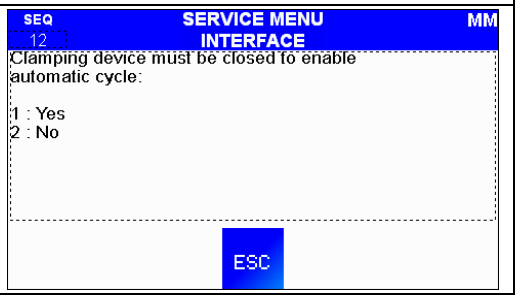
This parameter is only applied if INTERFACE43 set 1.



22- Clamping device closed to start AUTO

Defines if the chuck of the lathe must be closed at Auto Start of the bar feeder.

1. Safety setup. The chuck of the lathe must be closed before switching to automatic mode.
2. The chuck condition of the lathe does not matter to switch the bar feeder to automatic mode.

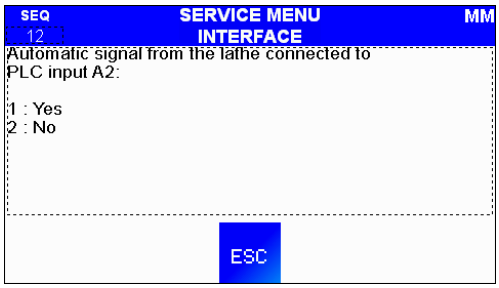


24- Automatic signal connected to (A2) (Refer to INTERFACE09 for related setup)

Defines if A2 signal (lathe in auto mode) is connected.

1. If INTERFACE09=1, Chuck signal A1 and Auto signal A2 enables the feeding process.
   If INTERFACE09=2, Chuck signal A1, Auto signal A2 and Push signal A4 enables feeding process.
2. If INTERFACE09=1, Chuck signal A1 only enables feeding process.
   If INTERFACE09=2, Chuck signal A1 and Push signal A4 enables feeding process.

*Refer to the timing chart <2> on 8.5.3.1

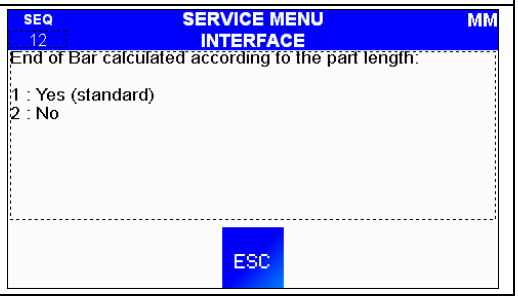


31- EOB calculated according to part length (Refer to INTERFACE17, 18, 19, 20, 32, 33 for related setup)

Defines how the End of Bar position is calculated.

1. The End of Bar position is calculated by “DIAMETER & LENGTH: PART LENGTH” setup.
2. The End of Bar position is calculated by “END OF BAR” setup and pusher position.

*Refer to the timing chart <4> on 8.5.3.1

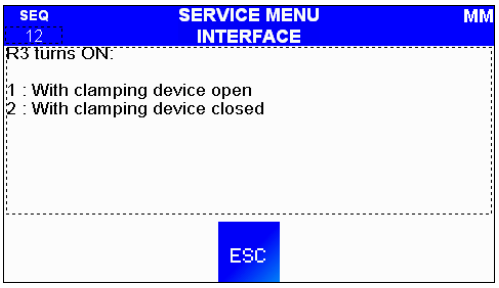


32- R3 turns ON (Refer to INTERFACE17, 18, 19, 20, 31, 33 for related setup)

Defines when the End of Bar signal R3 turns ON.

1. R3 signal turns ON when the pusher reaches the End of Bar position during chuck opened.
2. R3 signal turns ON when the last part is machined with chuck closed after the End of Bar.

*Refer to the timing chart <4> on 8.5.3.1

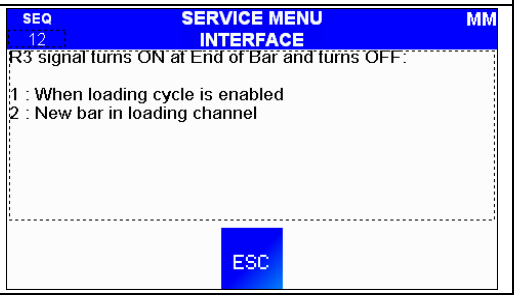


33- R3 turns ON at EOB and turns OFF (Refer to INTERFACE17, 18, 19, 20, 31, 32 for related setup)

Defines when R3 turns OFF.

1. R3 signal of EOB turns OFF when bar feeder is during changeover.
2. R3 signal turns OFF when the new bar is loaded into the channel.

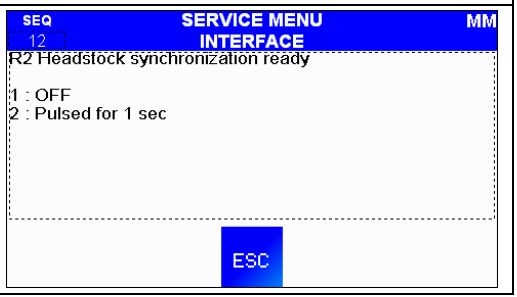
*Refer to the timing chart <4> on 8.5.3.1



34- R2 While in Synchronization Ready

Defines if R2 signal turns ON when headstock synchronization is enabled.

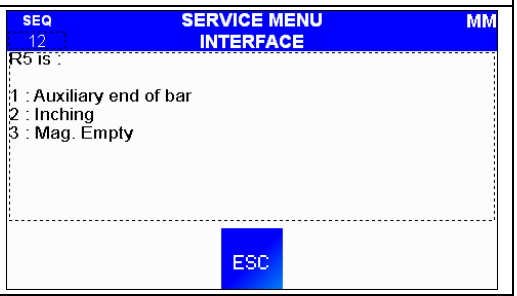
1. R2 signal is OFF.
2. R2 signal is pulsed for 1 second to confirm M-code for headstock synchronization enabled.



43- R5 is

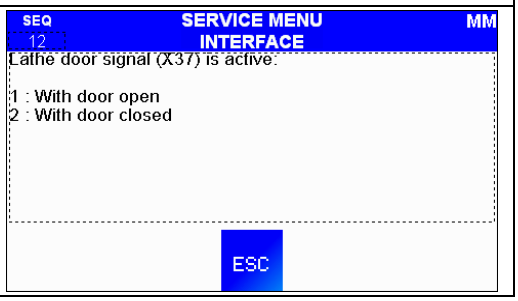
Defines function of R5 signal

1. Used for Auxiliary End of Bar signal.
2. Used for spindle Inching signal
3. Used for Magazine Empty



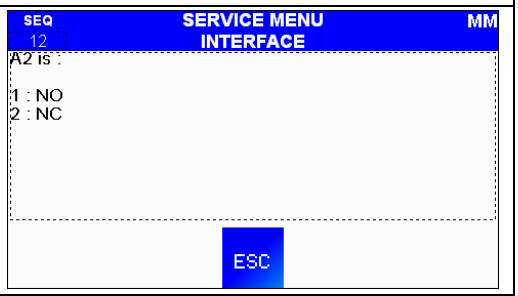
44- Lathe door signal logic setup

1. Lathe door signal lit, the door is open.
2. Lathe door signal lit, the door is closed.



45- A2 signal logic setup

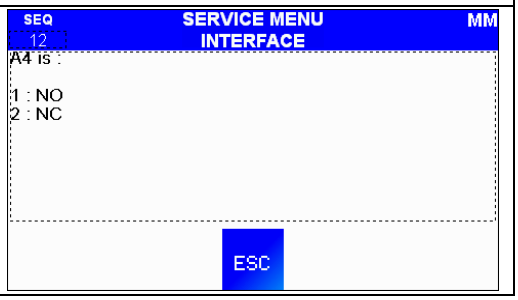
1. When the lathe output the A2 signal, the X41 contact on bar feeder is ON.
2. When the lathe doesn't output the A2 signal, the X41 contact on bar feeder is ON.



46- PUSH signal (A4) logic setup

PUSH signal is used to control pusher pushing forward during machining. Pushing while chuck opens for feeding and closed for machining are included.

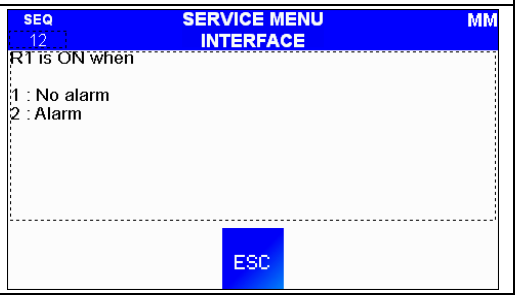
1. A4 Push signal lit, the lathe commands pushing.
2. A4 Push signal lit, the lathe commands not pushing.



47- Alarm signal (R1) logic setup

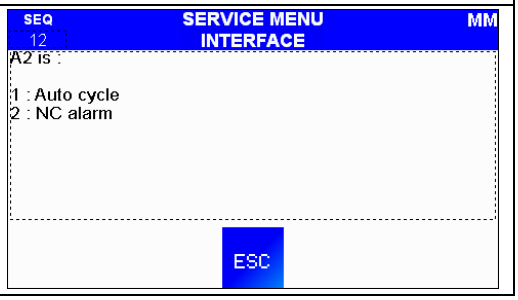
Defines the situation when R1 is ON

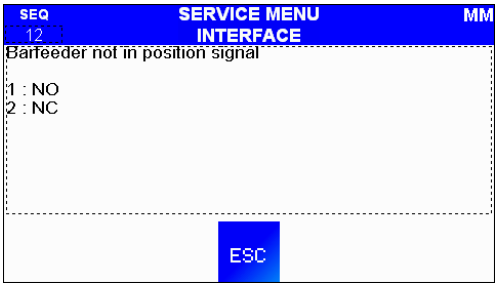
1. No alarm
2. Alarm

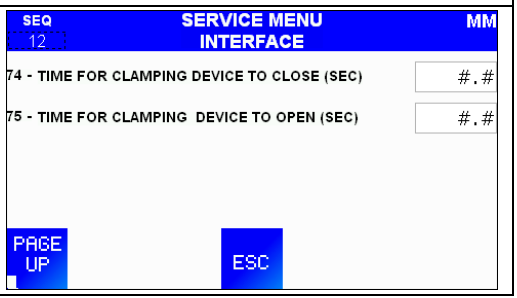


49- A2 Signal definition

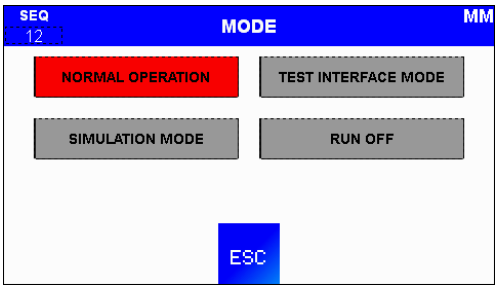
1. A2 signal lit, the lathe is in automatic mode.
2. A2 signals lit, the lathe is abnormal.



50- Retraction safety logic setup	
Retraction safety switches are to confirm the bar feeder is either retracted of in a safe position. 1. Retraction safety switch lit, the retraction system is not safely positioned. 2. Retraction safety switch lit, the retraction system is safely positioned.	

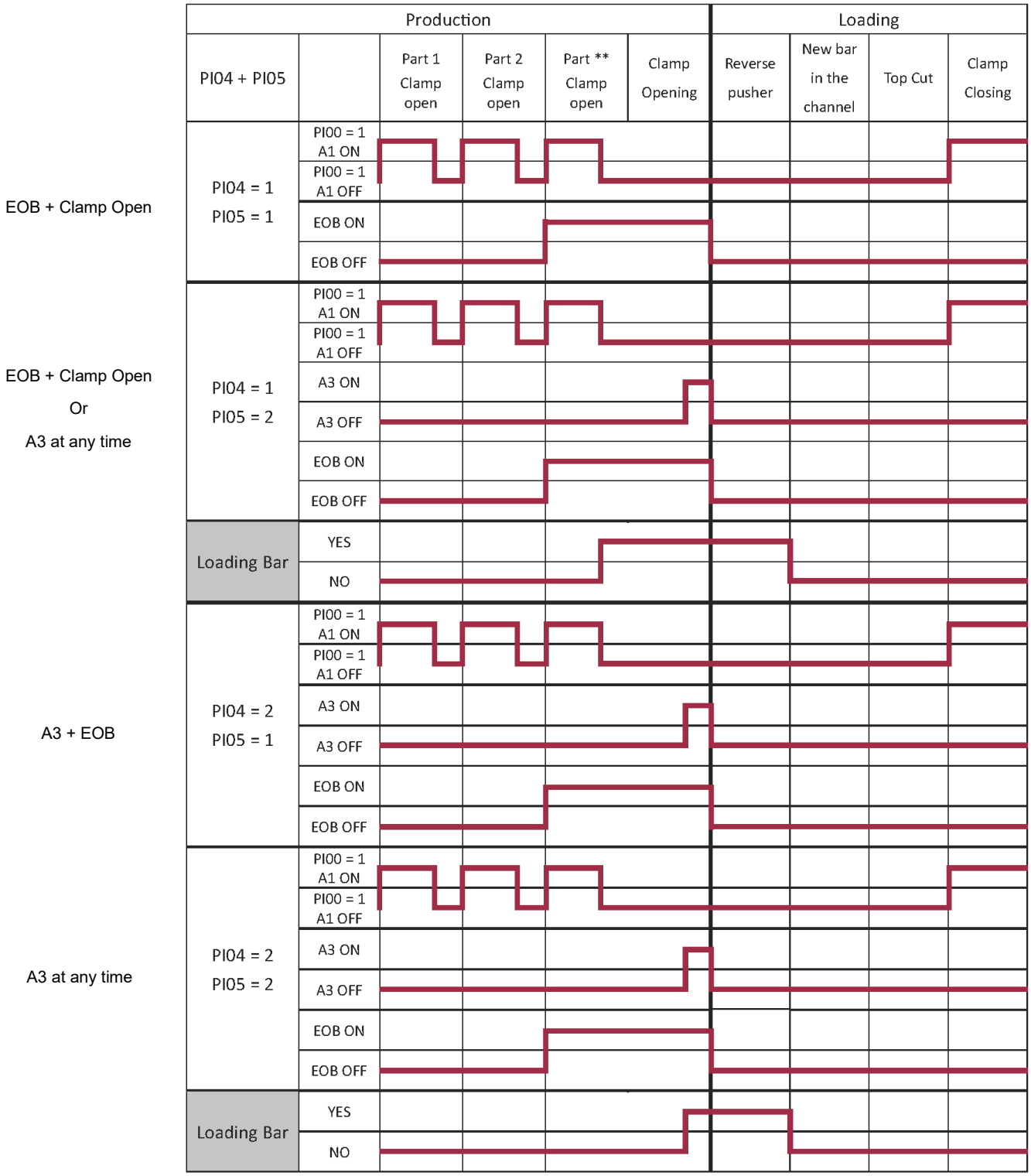
74&75- Time for clamping (sec.)	
Defines the time it takes for the chuck of the lathe to be physically closed or open. **74 TIME FOR CLAMPING DEVICETO CLOSE (SEC)** Time for the chuck to close. **75 TIME OFR CLAMPING DEVICE TO OPEN (SEC)** Time for chuck to open.	

F3: Mode

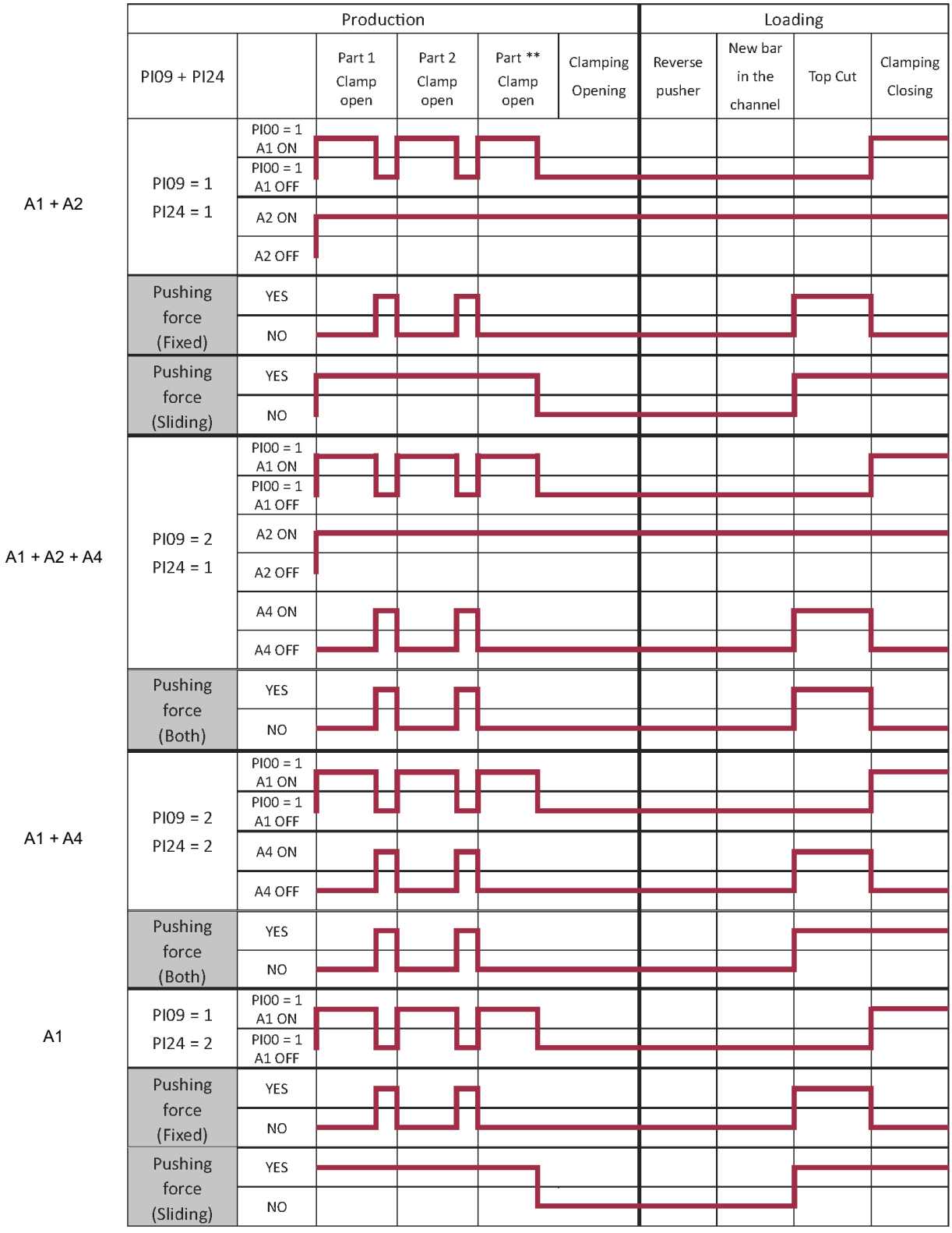
NORMAL OPERATION **SIMULATION MODE** Attention! This mode is used for simulation purpose only. It allows to test run the bar feeder without taking the lathe interface into consideration. No bar stock should be present on the magazine or in the bar feeder **TEST INTERFACE MODE** This mode is selected for test purpose only. It allows testing the interface signals (Input/Outputs) of the PLC. **RUN OFF** LNS factory test only. It's only used for special test.	

8.5.3.1 Timing chart reference

<1> Start loading signal A3

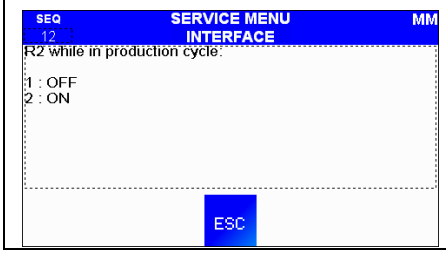


<2> Push signal A4

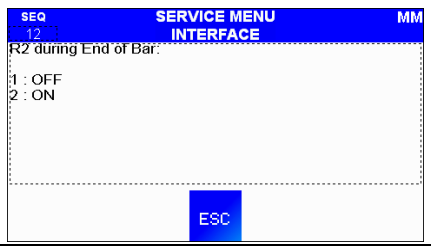


<3> Start signal R2

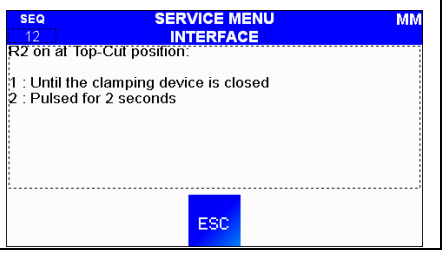
INTERFACE13



INTERFACE14

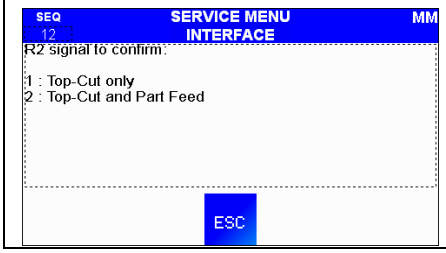


INTERFACE15



		Production				Loading			
PI13/PI14 /PI15	R2	Part 1 Clamp open	Part 2 Clamp open	Part ** Clamp open	Clamp Opening	Reverse pusher	New bar in the channel	Top Cut	Clamp Closing
PI13 = 1 PI14 = 1 PI15 = 1	R2 ON								
	R2 OFF								
PI13 = 2 PI14 = 1 PI15 = 1	R2 ON								
	R2 OFF								
PI13 = 1 PI14 = 2 PI15 = 1	R2 ON								
	R2 OFF								
PI13 = 1 PI14 = 1 PI15 = 2	R2 ON								
	R2 OFF								

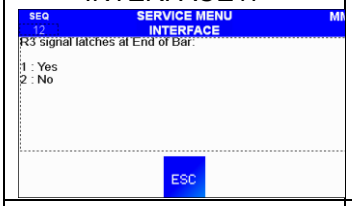
INTERFACE16



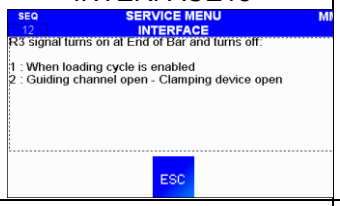
		Production				Loading			
PI16	R2	Part 1 Clamp open	Part 2 Clamp open	Part ** Clamp open	Clamp Opening	Reverse pusher	New bar in the channel	Top Cut	Clamp Closing
PI16 = 1	R2 ON								
	R2 OFF			Depending Parameter PI13, PI14, PI15					
PI16 = 2	R2 ON								
	R2 OFF			Depending Parameter PI15					
A4	A4 ON								
	A4 OFF								

<4> End of Bar signal R3

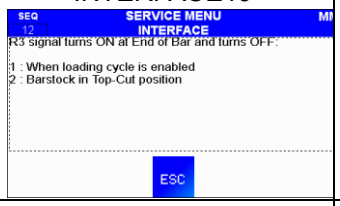
INTERFACE17



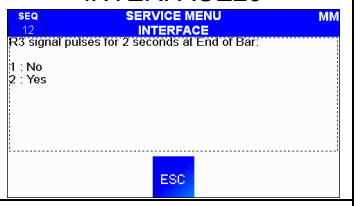
INTERFACE18



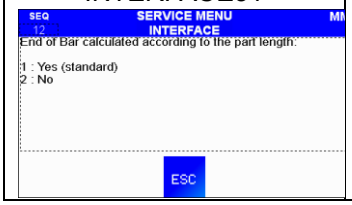
INTERFACE19



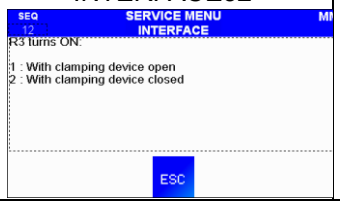
INTERFACE20



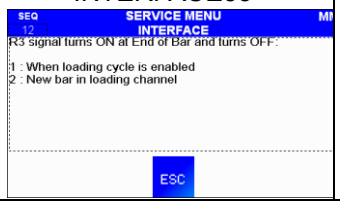
INTERFACE31



INTERFACE32



INTERFACE33



		Production				Loading			
PI17/PI18 /PI19/PI20 /PI31/PI32 /PI33	R3	Part 1 Clamp open	Part 2 Clamp open	Part ** Clamp open	Clamp Opening	Reverse pusher	New bar in the channel	Top Cut	Clamp Closing
PI17/PI18 /PI19/PI20 /PI31/PI32 /PI33 = 1	R3 ON								
	R3 OFF								
PI17 = 2 PI18/PI19 /PI20/PI31 /PI32/PI33 = 1	R3 ON								
	R3 OFF								
PI18 = 2 PI17//PI19 /PI20/PI31 /PI32/PI33 = 1	R3 ON								
	R3 OFF								
PI19 = 2 PI17/PI18 /PI20/PI31 /PI32/PI33 = 1	R3 ON								
	R3 OFF								
PI20 = 2 PI17/PI18 /PI19/PI31 /PI32/PI33 = 1	R3 ON								
	R3 OFF								
PI31 = 2 PI17/PI18 /PI19/PI20 /PI32/PI33 = 1	R3 ON								
	R3 OFF								
PI32 = 2 PI17/PI18 /PI19/PI20 /PI31/PI33 = 1	R3 ON								
	R3 OFF								
PI33 = 2 PI17/PI18 /PI19/PI20 /PI31/PI32 = 1	R3 ON								
	R3 OFF								
EOB	YES								
	NO								

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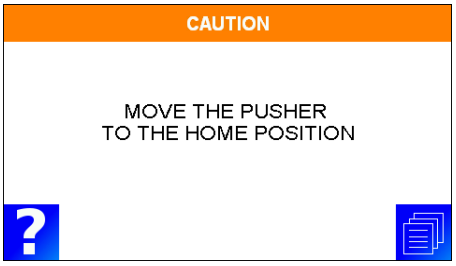
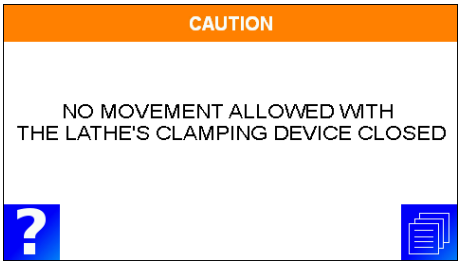
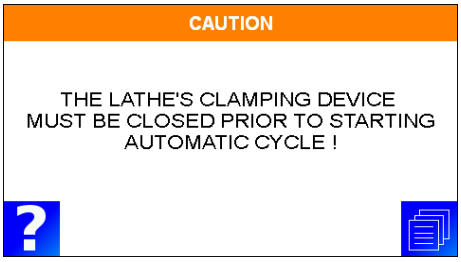
9 TROUBLE SHOOTING GUIDE

This chapter lists all the error messages, their description and a brief troubleshooting. The error messages aim to remind the operator that an abnormal situation is taking place or has happened. Whenever an error message is activated, please follow the description and troubleshooting to check the problem. If necessary, contact us or one of our representatives for technical support.

9.1 WARNING MESSAGES

Warning messages are designed to remind users of the bar feeder status. Under the following conditions there will be a warning message but the alarm signal output (Y04, R1) of the bar feeder will not send am alarm signal to the lathe. Please follow the help instructions guide to clear the warning messages.

Warning messages	
Description Pusher is at the wrong position. **Troubleshooting** Manually return pusher to its home position.	
Description Lathe chuck is closed, press ► or ◄ is invalid. **Troubleshooting** 1. Open lathe chuck. 2. Check INTERFACE00 setup related to lathe chuck signal.	
Description Bar feeder is unable to start in AUTO mode when the lathe chuck is open. **Troubleshooting** 1. Close the lathe chuck. 2. Check if INTERFACE00 setup corresponds to lathe chuck signal.	
Description Bar feeder detects the lathe door is open. Once receiving the signal, the servo motor will stop operating. **Troubleshooting** Close the lathe door.	

Warning messages

Description

When the bar feeder is in manual mode, main cover is opened, and the guiding channel is closed.

Troubleshooting

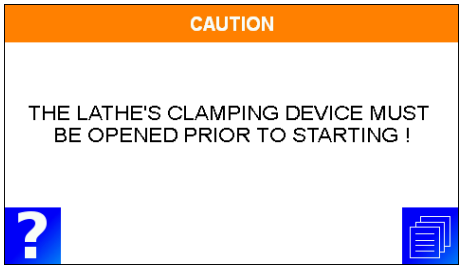
Manually close main access cover.

Description

Bar feeder unable to start in AUTO mode when the guiding channel is opened, and the lathe chuck is closed.

Troubleshooting

1. Open the lathe chuck.
2. Check if “INTERFACE00” setup corresponds to chuck signal.



Description

The bar measuring device (front stopper) is not ready when AUTO + START is pressed this message will be displayed.

Troubleshooting

Press channel open to clear this message.

Description

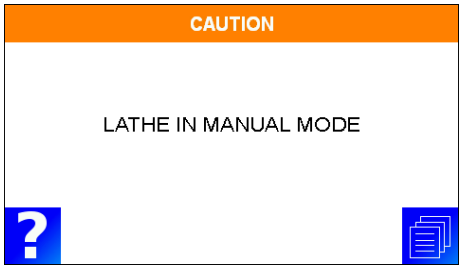
Bar feeder is already switched to AUTO mode, but it doesn’t receive the Lathe AUTO signal A2.

<Note> Only applied when “INTERFACE24: Automatic signal connected to (A2)” is set 1, and “INTERFACE49” is set 1.

Troubleshooting

1. Switch lathe to AUTO mode.
2. If A2 signal is not used, please change the INTERFACE24 setup.

Check if the “INTERFACE45: AUTO signal” setup is correct.

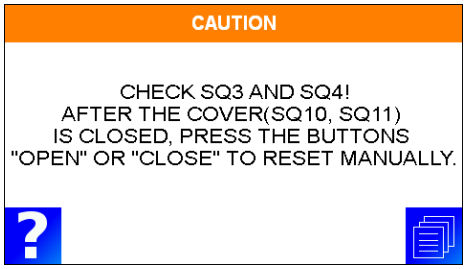


Description

There is no bar stock on loading magazine.

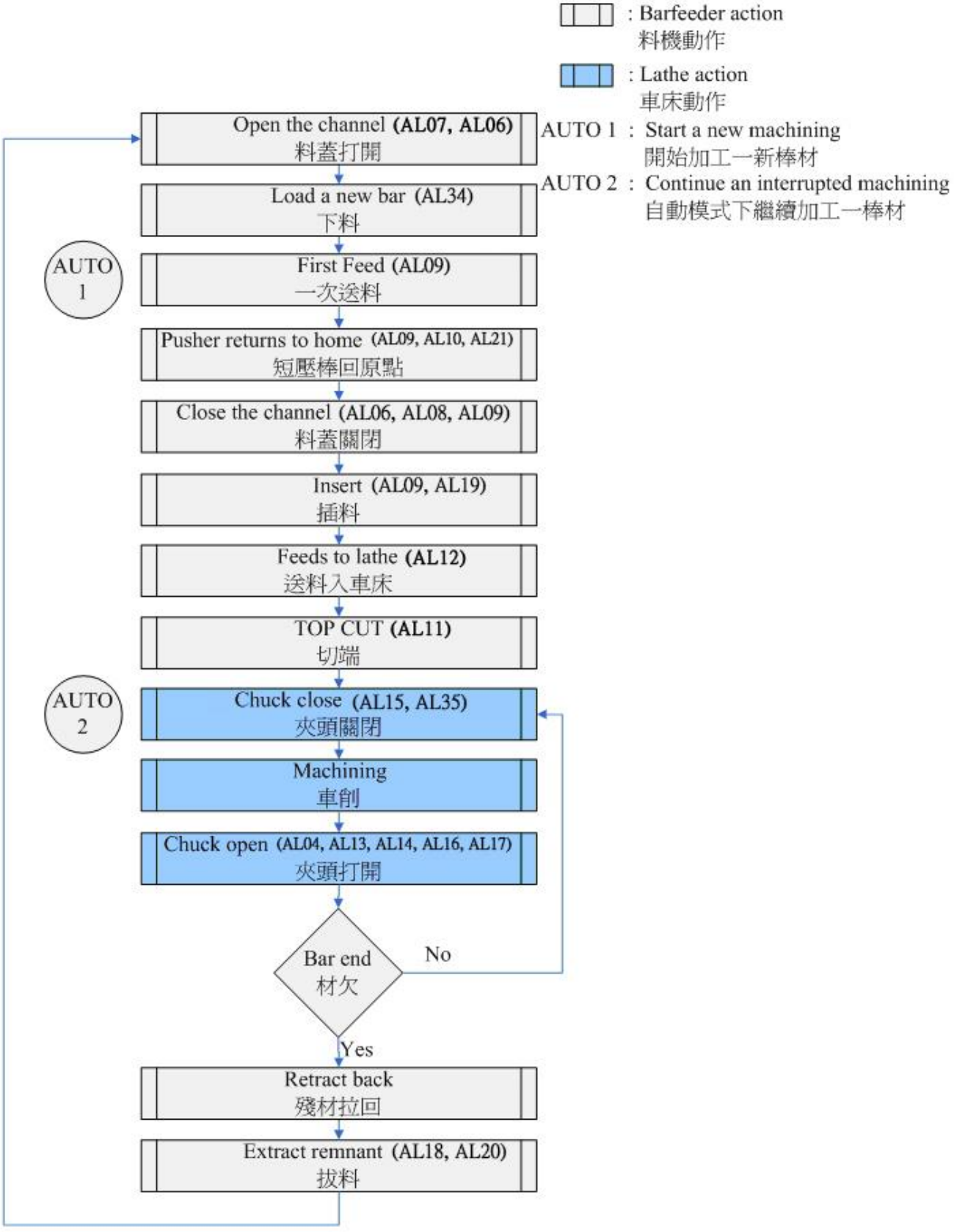
Troubleshooting

Fill new bar to loading magazine.

Warning messages	
Description The rise and fall detection sensor of pusher (SQ3, SQ4) are activated at the same time (light ON or OFF). **Troubleshooting** 1. Check if there is any interference by mechanism. 2. Close the cover. 3. Press “open” or “close” button to force bar feeder to activate.	

9.2 ERROR MESSAGE MAP

The following flow chart shows a basic sequence of event that includes the alarms that can occur during production operation (bar feeder + lathe).



9.3 ERROR MESSAGE & TROUBLE SHOOTING GUIDE

When an error occurs the corresponding alarm message will be displayed on the HMI screen. Follow the troubleshooting instructions below to solve the problems and clear the alarms.

To clear the alarm after troubleshooting press STOP.

If the alarm message remains active, please contact LNS or one of its representatives for further technical assistance.

AL01 Emergency Stop Line is open!

Description

The emergency stop circuit includes:

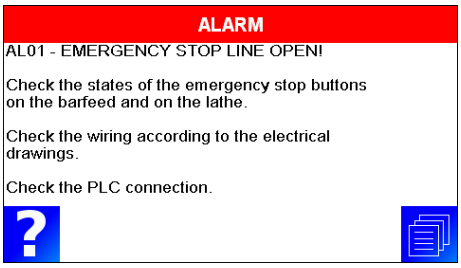
- Emergency stop button on HMI
- Emergency stop circuit of the lathe
- Main circuit-breaker QM1
- Contactor K1
- Retraction safety (Option)

During normal operation the contactor K1 is energized and continuously sending signal to PLC input X10. Whenever this circuit is open K1 will de-energize and the signal to PLC input contact X10 is Off.

Sequence of actions:

1. The 220V AC to the servo amplifier is interrupted.
2. All PLC output signals are interrupted except for Y20 (input signal of alarm relay R1).
3. The alarm AL01 is displayed on the HMI screen.

If the relay K8 (DCS relay) is installed press MANUAL button on the HMI after powering up the bar feeder otherwise this error message will be displayed.



Troubleshooting

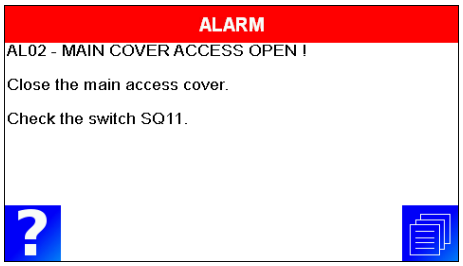
1. Check if the emergency stop on HMI (STP1) is pressed. If yes, release it.
2. Check if the emergency stop circuit on the lathe is open. If yes, clear all lathe alarms.
3. Check if circuit-breaker (QM1) has tripped. If yes, reset it.
4. Check if A1 and A2 of contactor (K1) have 24 VDC.
5. Press “STOP” button on HMI to clear the alarm.

AL02 Main access cover open!

Description

This alarm only applies when the main access cover safety switch SQ11 is installed.

When the guiding channel is opened, and the main access cover is opened, the CE safety switch SQ11 is disengaged. This alarm will be displayed.



Troubleshooting

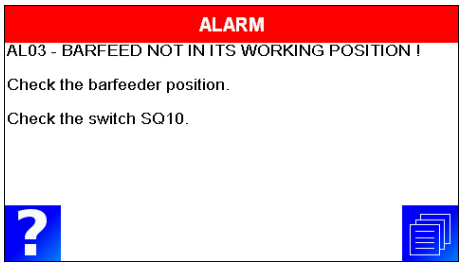
1. Close the main access cover.
2. If the cover is already closed:
   (1) Check if there is something blocking the cover or if the cover is bent to prevent the sensor SQ11 to operate.
   (2) Check if the switch SQ11 is defective.
3. Press “STOP” key on HMI to clear the alarm.

AL03 Bar Feeder Retracted or Not in Its Working Position

Description

Following the operation procedures described on 7.12.2, when the bar feeder is retracted and both retraction safety switches “SQ10” and “SQ10a” are engaged, the alarm message will be generated.

*This alarm only applies to bar feeder with optional Z-axis retraction.



Troubleshooting

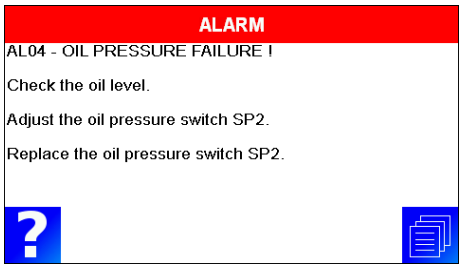
1. Position the bar feeder in its working position.
2. Check if the safety switches are defective or misadjusted.
3. Press the STOP button on the remote control to reset the alarm.

AL04 Oil Pressure Failure!

Description

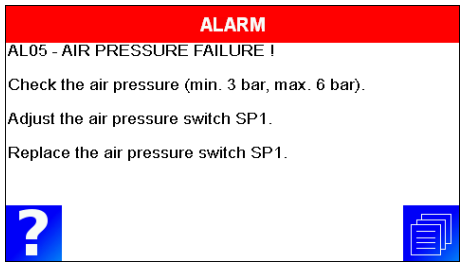
When oil pump is operating but switch SP2 doesn’t detect any oil pressure in 60 seconds (SP2 OFF). This alarm only shown after the lathe finishes machining, a workpiece and chuck is open.

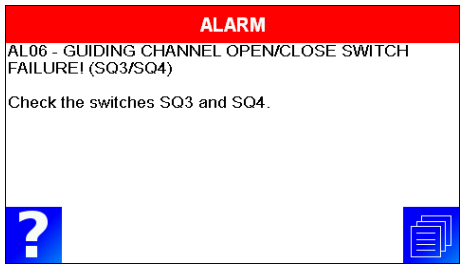
This switch is optional so this error message is only available when bar feeder installed this switch.

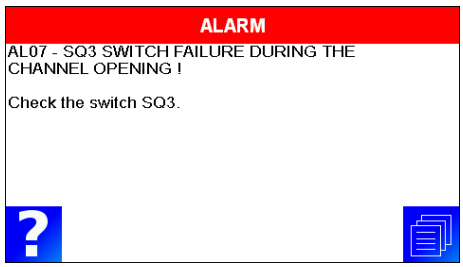


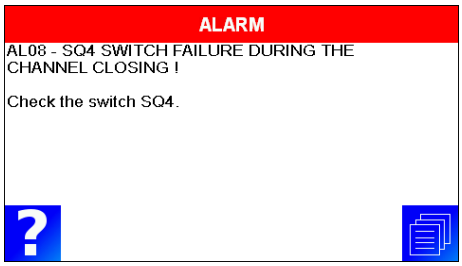
Troubleshooting

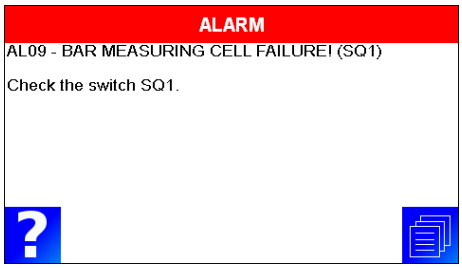
1. Check if oil pump can supply oil smoothly.
2. Replace oil pressure switch SP2 if it’s broken.
3. Press “STOP” button on remote control to remove the alarm.

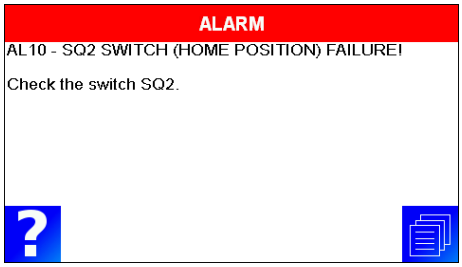
AL05 Air Pressure Failure!	
Description SP1 pressure switch does not detect any air pressure within 5 seconds. The problem is generated anytime, air pressure is not sufficient below 3 bar (45 psi).	
Troubleshooting 1. Adjust the air pressure between 3 bar and max. 6 bar 2. Adjust or replace the pressure switch SP1 if defective. 3. Press “STOP” button on HMI to clear the alarm.	

AL06 Guiding Channel Switch Failure! (SQ3/SQ4)	
Description Both guiding channel switches SQ3 and SQ4 are simultaneously activated or deactivated.	
Troubleshooting 1. Check if the SQ3 or SQ4 switches are defective or misadjusted. 2. Press “STOP” button on HMI to clear the alarm.	

AL07 Guiding Channel Open Failure! (SQ3)	
Description When the bar feeder guiding channel starts to open (PLC output Y05 ON) 5.0 seconds later the channel open switch SQ3 signal is not present or the channel close switch SQ4 signal remains ON.	
Trouble shooting 1. Check if there is something is preventing the guiding channel to open. 2. Check if switch SQ3 is defective or misadjusted. 3. Check if the air pressure is too low or if the guiding channel opening cylinder is too slow. 4. Press “STOP” button on HMI to clear the alarm.	

AL08 Guiding Channel Close Failure! (SQ4)	
Description When the bar feeder guiding channel starts closing (PLC Output Y06 ON) 5.0 seconds later the channel closed, switch SQ4 signal is not present or if the channel open and switch SQ3 signal remains ON.	
Troubleshooting 1. Check if there is something preventing the guiding channel to close. 2. Check if switch SQ4 is defective or misadjusted. 3. Check if the air pressure is too low or if the channel closing air cylinder is too slow. 4. Press “STOP” button on HMI to clear the alarm.	

AL09 Measuring Cell Failure!	
Description When the bar feeder is in automatic mode and ready for feeding the bar to TOP CUT position, and the switch SQ1 signal does not reset (SQ1 OFF).	
Troubleshooting 1. Check if the bar stock is present or for mechanical interference with the bar measuring device. 2. Check if the bar measuring device is defective. 3. Check if the bar measuring device cylinder is defective. 4. Check if the bar measuring device switch SQ1 is defective of misadjusted. 5. Press “STOP” button on HMI to clear the alarm.	

AL10 Home Position Switch Failure! (SQ2)	
Description When the pusher is at home position and the current position reading is “0”, switch SQ2 signal is not present.	
Troubleshooting 1. Verify if the pusher is physically at home position and then check if the switch SQ2 is operational. 2. If the pusher is not physically at home position, the servo motor encoder may be defective. 3. Press “STOP” button on HMI to clear the alarm.	

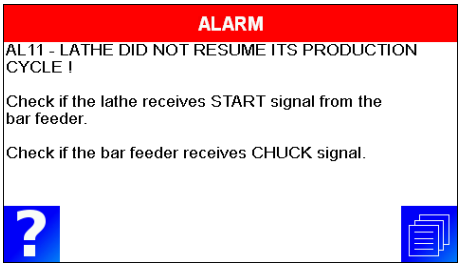
AL11 Lathe Did Not Resume Production Cycle!

Description

Once the bar stock reaches TOP CUT position and confirmation signal is sent to the lathe (R2), the chuck doesn't close within 60 sec. This alarm only applies to TOP CUT process rather than general bar feeding process.

Explanation

After TOP CUT position is reached and confirmation signal is sent to the lathe (R2) the chuck doesn't close within 60 seconds. This is only detected during TOP CUT process so this message will not be activated during general feeding process.



Troubleshooting

1. Check if the lathe receives START (R2) signal from the bar feeder.
2. Check if the bar feeder receives CHUCK signal.
3. Check if the interface cable connection status is functioning.
4. Press "STOP" button on HMI to clear the alarm.

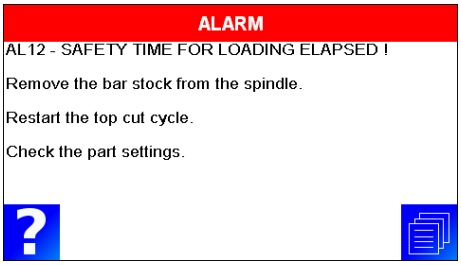
AL12 Bar Loading Time Elapsed!

Description

The pusher cannot advance the bar stock to TOP CUT position after 50 attempts.

Troubleshooting

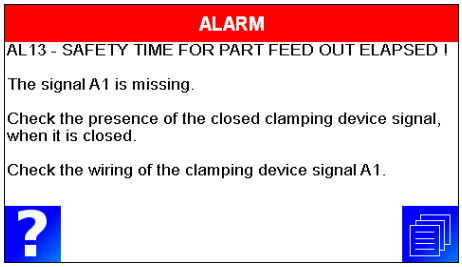
1. Check if the bar feeder alignment is correct.
2. Check if the channel and front tube size are correct or is obstructed.
3. Check if the front rest is clamping the bar.
4. Check if the lathe spindle is obstructed.
5. Check if the lathe chuck is too tight due to the size being incorrect or there are burrs inside the chuck or at the end of the bar.
6. Check if "TOP CUT POSITION" setup is incorrect.
7. Check if the bar measuring device of the bar feeder is malfunctioning.
8. Press "STOP" button on HMI to clear the alarm.



AL13 Part Feed Out Time Elapsed!

Description

If the PLC input X40 does not activate within 30 secs, receiving the CHUCK signal from the lathe will generate this alarm.



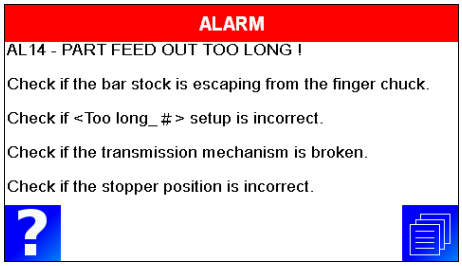
Troubleshooting

1. Check if the interface connected to the PLC input contact X40 is ON.
2. Press “STOP” button on HMI to clear the alarm.

AL14 Part Feed Out Too Long!

Description

The bar feeder continuously monitors the pusher moving distance while the chuck of the lathe is open (the bar feeder is currently feeding bar stock). If the distance exceeds the “Too long collet open” setup, this alarm will turn on.
Only valid with fixed headstock lathe.



Troubleshooting

1. Check if the bar stock is disconnected from the pusher collet.
2. Check if “Too long collet open” setup is incorrect.
3. Check if the transmission mechanism or chain is broken.
4. Check if the bar measuring device is defective.
5. Press “STOP” button on HMI to clear the alarm.

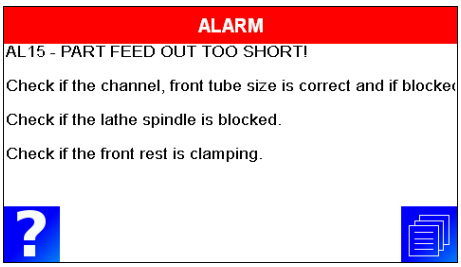
AL15 Part Feed Out Too Short!

Description

The bar feeder monitors the distance of pusher moved from the time of chuck opens to the time of chuck closes (the lathe is currently proceeding machining). Once the chuck closes and if the distance is shorter than the value of “Too Short” setup, this alarm will turn on.
Only valid with fixed headstock lathe.

Troubleshooting

1. Check if the alignment of the bar feeder is correct.
2. Check if the channel and front tube sizes are correct and if obstructed.
3. Check if the pusher is bent
4. Check if the lathe spindle is obstructed.
5. Check if the front rest is clamping on the bar.
6. Check if the lathe chuck is too tight due to the size being incorrect or for any burrs inside the chuck or on the bar.
7. Check if the timer for controlling the chuck open/close is too short.
8. Check if the measuring device is defective or malfunctioning.
9. Check if “End of Bar” position is setup correctly.
10. Press “STOP” button on HMI to clear the alarm.



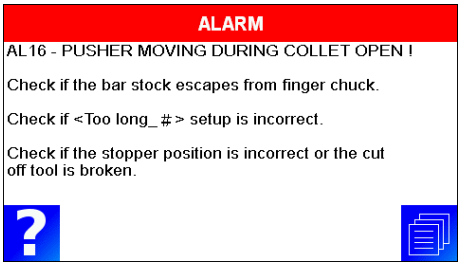
AL16 Pusher Moving During Collet Open!

Description

This check is activated when the chuck is open during the machining process. Detection starts by comparing the current position and the position of pusher while the chuck is open. If the pusher retracts 4mm back or exceeds “Too long collet open” setup, the alarm will be generated.

Troubleshooting

1. Check if the bar stock is disconnected from the pusher collet.
2. Check if “Too long collet open” setup is incorrect.
3. Check if the transmission mechanism or the chain is broken.
4. Check if the bar measuring device is malfunctioning or the cut off tool is broken (if the operator is using the cut off tool as a stopper).
5. Check if “End of Bar” position is setup correctly.
6. Press “STOP” button on HMI to clear the alarm.



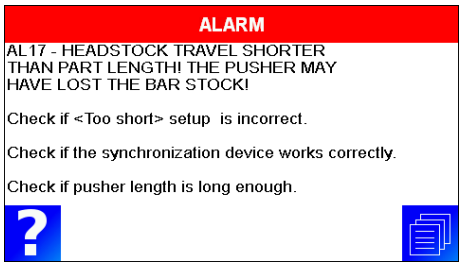
AL17 Headstock Travel Shorter Than Expected, The Pusher Lost the Barstock!

Description

The bar feeder monitors the pusher moving distance from the time of chuck closes to the time of chuck opens. If the distance is shorter than the “Too short” setup, this alarm will be generated.

Only valid with Swiss type lathe.

<Note> To disable this function “Too short”, set the value “0”.



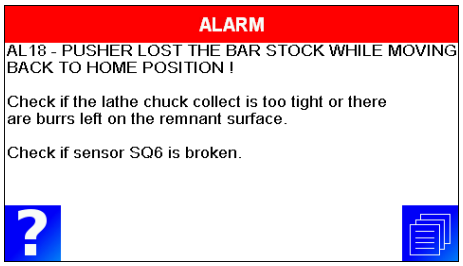
Troubleshooting

1. Check if the bar feed alignment is correct.
2. Check if the lathe chuck is too tight due to the incorrect size or there are burrs inside the chuck or on the bar.
3. Check if “Too short” setup on “PART SETUP” is incorrect.
4. Check if “End of Bar” position setup is incorrect.
5. Check if the headstock synchronization system works correctly.
6. Check pusher length.
7. Check if bar stock is disconnected from the pusher collet.
8. Press “STOP” button on HMI to clear the alarm.

AL18 The Pusher Lost the Barstock While Moving to Home Position!

Description

Material clamping device clamps and detects the bar stock by sensor SQ6. If SQ6 doesn’t detect any material, this alarm will arise.



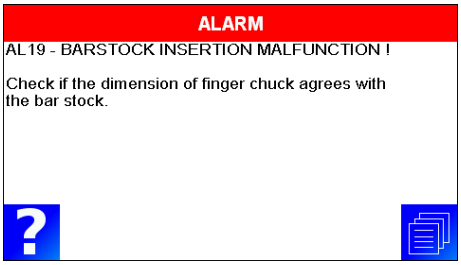
Troubleshooting

1. Check if the lathe chuck collect is too tight or for any burrs on the remnant surface.
2. Check pusher collet size
3. Check if switch SQ6 on clamping vise is defective of misadjusted.
4. Press “STOP” button on HMI to clear the alarm.

AL19 Barstock Insertion Malfunction!

Description

1. When it's on "Servo Mode," the pusher repeatedly tries to insert the bar stock for 20 times without reaching the 35 mm insertion position to insert the bar stock.
2. When it's on "Mechanism Mode," the pusher tries to insert the bar one time without reaching the 35 mm insertion position to insert the bar stock.
3. If "BAR INSERT CHECK" =NO and insertion procedure is completed the pusher will move back and forth and the clamping vise will detect the bar stock. If no bar is detected the alarm will be generated.



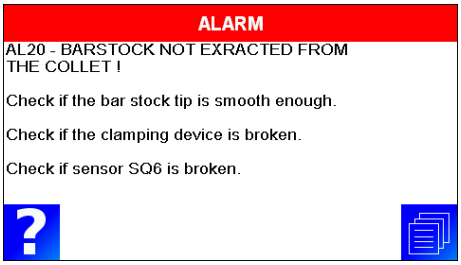
Troubleshooting

1. Check if the dimension of finger chuck agrees with the bar stock.
1. Press "STOP" button on HMI to clear the alarm.

AL20 Barstock Not Extracted from The Collet!

Description

The remnant did not drop down in the remnant tray. Once the bar extraction cycle is completed, SQ6 (vise switch) is still detecting bar stock presence in the clamping vise.



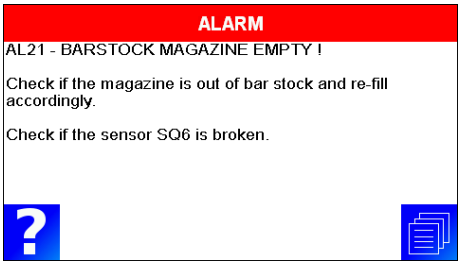
Troubleshooting

1. Check if the pusher collet fits the size of the bar stock.
2. Check if the bar end is clear of burrs.
3. Check if the clamping device is defective.
4. Check if the air pressure is too low resulting in insufficient clamping force.
5. Check if switch SQ6 is defective of misadjusted.
6. Press "STOP" button on HMI clear the alarm.

AL21 Barstock Magazine Empty!

Description

During the FIRST FEED, no bar presence is detected. This alarm will be generated if switch SQ6 is ON (no material).



Troubleshooting

1. Check if the magazine is out of bar stock and re-fill accordingly.
2. Check if the switch SQ6 is defective or misadjusted.
3. Press "STOP" button on HMI to clear the alarm.

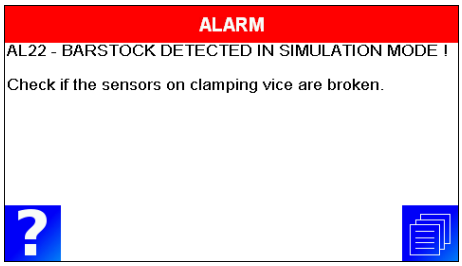
AL22 Barstock Detected in Simulation Mode!

Description

When switching the bar feeder in simulation mode, no material should be present.

Troubleshooting

1. Check if the switch SQ6 on the clamping vise is defective of misadjusted.
2. Remove material is present in the bar feeder
3. Press “STOP” button on HMI to clear the alarm.



AL24 Top Cut Positioning Error!

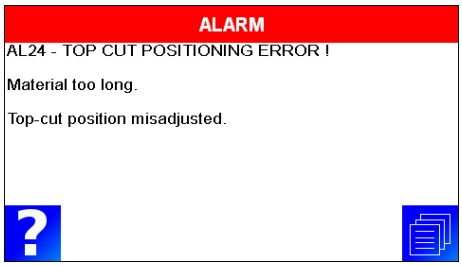
Description

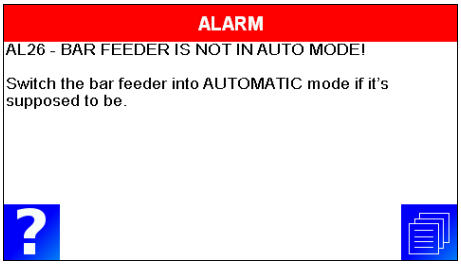
1. During the positioning of the bar in the insertion position, the front of bar already passed the TOP CUT position.
2. During the positioning of the bar in the insertion position and after the loading returns to its home position, the bar measuring device is abnormally activated.
3. During guiding channel closing the bar measuring device is abnormally activated.
4. During bar insertion the bar measuring device is abnormally activated.
5. During bar positioning to TOP CUT, the pusher keeps moving forward and exceeds the “TOP CUT” position (Top Cut position + 50mm).
6. This only applies when feeding with the turret is used ((“TOP CUT” = with turret).

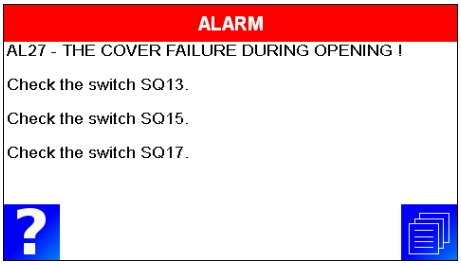
Troubleshooting

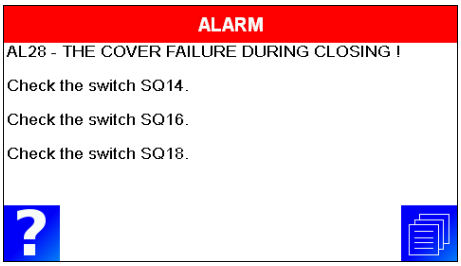
1. Check if the “TOP CUT” setup is correct.
2. Check if the bar measuring device is defective of SQ1 switch is misadjusted.
3. Check if the bar measuring device is functioning properly.
4. Press “STOP” button on HMI to clear the alarm.

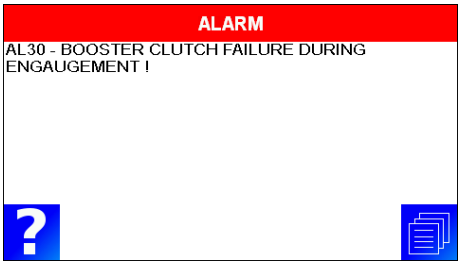
Note: If TOP CUT is positioned without turret stopper change “TOP CUT” setup.



AL26 Bar Feeder Isn't in AUTO Mode!	
Description To remind the operator that the lathe is possibly in AUTOMATIC mode, but the bar feeder is still in MANUAL mode. The bar feeder is in MANUAL mode when the lathe chuck is opened and closed 3 times without starting the bar feeder in Automatic mode.	
Troubleshooting Switch the bar feeder to AUTOMATIC mode.	

AL27 The Cover Failure During Opening!	
Description After channel cover has opened for 2.0 second, and the opening limit switch of channel cover doesn't been activated.	
Troubleshooting 1. Check channel cover opening cylinder 2. Check channel cover opening solenoid valve. 3. Check channel cover opening limit switch.	

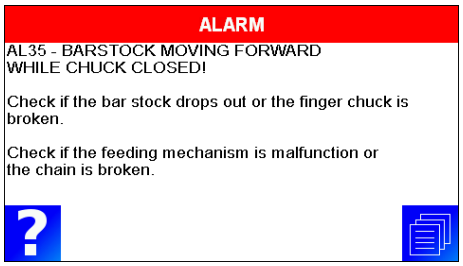
AL28 The Cover Failure During Closing!	
Description After channel cover has closed for 1.0 second, and the closing limit switch of channel cover doesn't been activated.	
Troubleshooting 1. Check channel cover closing cylinder 2. Check channel cover closing solenoid valve. 3. Check channel cover closing limit switch.	

AL30 Booster Clutch Failure During Engagement!	
Description Before insertion, the booster will connect with pusher by clutch, and move the pusher to extraction position. After finished the movement, PLC will check if the position of pusher is over 40mm. If not, the alarm will arise.	
Troubleshooting 1. Check if booster is broken. 2. Check if there is a problem with pusher.	

AL35 Barstock Moving Forward While Chuck Closed!

Description

During chuck close, bar feeder keeps reading the position of pusher. If the distance of pusher moving forwards is larger than “PART FEEDING: Too long collet closed” setup, the alarm will arise.



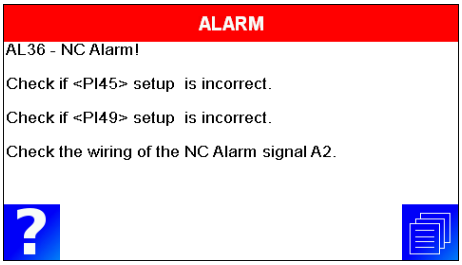
Troubleshooting

1. Check if the bar stock is separated from the pusher collet or if the collet is broken
2. Check if “PART FEEDING” setup is correct
3. Check if the feeding mechanism is malfunction or if the chain is broken.
4. Check if the lathe chuck is malfunctioning or the clamping force setup is incorrect.
5. Press “STOP” button on HMI to clear the alarm.

AL36 NC Alarm!

Description

Barfeed receives the alarm message from lathe during AUTO mode.



Troubleshooting

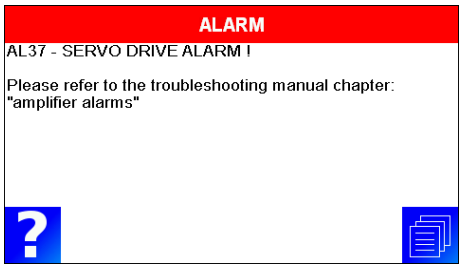
Please check the following setting and signal.

1. INTERFACE45: A2 signal logic setup.
2. INTERFACE49: A2 signal definition.
3. Interface cable A2

AL37 Servo Drive Alarm

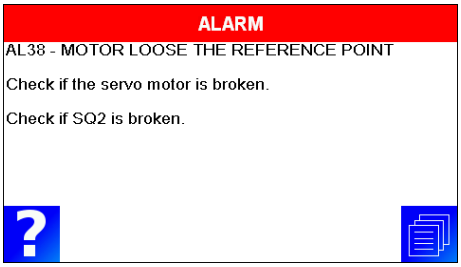
Description

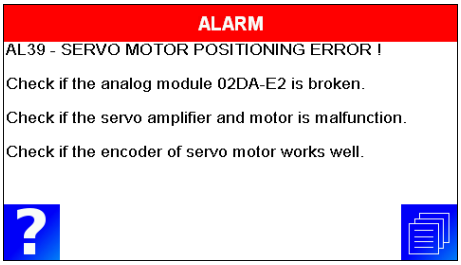
Servo motor or amplifier malfunction



Trouble shooting

1. Open the electric cabinet. Check the error code shown on the servo amplifier
2. Follow the trouble shooting guide to solve the problem or contact us for technical support.
3. Press “STOP” button on HMI to clear the alarm.

AL38 Motor Loose the Reference Point	
Description 1. If the home position of switch SQ2 is ON, but the current position of pusher is over more than 20mm, this alarm will be generated. 2. If pusher is at home position (-1.00mm<current position<1.00mm) but switch SQ2 is OFF, this alarm will be generated.	
Troubleshooting 1. Check if the servo motor is defective. 2. Check if switch SQ2 is defective of misadjusted. 3. Press “STOP” button on HMI to clear the alarm and press backward to bring the pusher to its home position.	

AL39 Servo Motor Positioning Error!	
Description The Servo motor positioning alarm occurs whenever the motor encounters some unexpected resistance.	
Solutions 1. Check if the analog module DAC is defective. 2. Check if lose wiring connection between the analog module and PCB. 3. Check if the servo amplifier and motor are malfunctioning. 4. Check if the encoder of servo motor is functional. 5. Check if the LED of encoder input on PLC is flickering. 6. Press “STOP” button on HMI to clear the alarm.	

9.4 SERVO AMPLIFIER ERROR MESSAGES

If a fault is detected on the servo drive or motor a corresponding fault code will be shown on the drive's LED display.

9.4.1 Fault Messages Table

Display	Fault Name	Fault Description
AL001	Overcurrent	Main circuit current is higher than 1.5 multiple of motor's instantaneous maximum current value.
AL002	Overvoltage	Main circuit voltage has exceeded its maximum allowable value.
AL003	Undervoltage	Main circuit voltage is below its minimum specified value.
AL004	Motor error	The motor does not match the drive. They are not correctly matched for size (power rating).
AL005	Regeneration error	Regeneration control operation is in error.
AL006	Overload	Servo motor and drive is overload.
AL007	Overspeed	Motor's control speed exceeds the limit of normal speed.
AL008	Abnormal pulse control command	Input frequency of pulse command exceeds the limit of its allowable setting value.
AL009	Excessive deviation	Position control deviation value exceeds the limit of its allowable setting value.
AL010	Reserve	Reserve
AL011	Encoder error	Pulse signal is in error.
AL012	Adjustment error	Adjusted value exceeds the limit of its allowable setting value when perform electrical adjustment.
AL013	Emergency stop activated	Emergency stop switch is activated.
AL014	Reverse limit switch error	Reverse limit switch is activated.
AL015	Forward limit switch error	Forward limit switch is activated.
AL016	IGBT temperature error	The temperature of IGBT is over high.
AL017	Memory error	EE-PROM write-in and read-out is in error.
AL018	Encoder output error	The encoder output exceeds the rated output frequency.
AL019	Serial communication error	RS232/485 communication is in error.
AL020	Serial communication time out	RS232/485 communication time out.
AL021	Reserve	Reserve

Display	Fault Name	Fault Description
AL022	Input power phase loss	One phase of the input power is loss.
AL023	Pre-overload warning	To warn that the servo motor and drive is going to overload. This alarm will display before ALM06. When the servo motor reaches the setting value of P1-56, the motor will send a warning to the drive. After the drive has detected the warning, the DO signal OLW will be activated and this fault message will display.
AL024	Encoder initial magnetic field error	The magnetic field of the encoder U, V, W signal is in error.
AL025	Encoder internal error	The internal memory of the encoder is in error. An internal counter error is detected.
AL026	Encoder data error	An encoder data error is detected for three times.
AL027	Motor internal error	The setting value of the encoder is in error.
AL028	Motor internal error	The encoder U, V, W signals are in error.
AL029	Motor internal error	The internal address of the encoder is in error.
AL030	Motor protection error	In order to protect the motor, this alarm will be activated when the setting value of P1-57 is reached after a period of time set by P1-58.
AL031	U, V, W, GND wiring error	The wiring connections of U, V, W (for servo motor output) and GND (for grounding) are in error.
AL035	Motor temperature error	Motor is working under temperature over 105°C (221°F).
AL048	Excessive encoder output error	The encoder output errors or output pulses exceed hardware tolerance.
AL067	Motor temperature warning	The temperature of motor is over 85°C (185°F).
AL099	DSP firmware upgrade	EE-PROM is not reset after the firmware version is upgraded. This fault can be cleared after setting P2-08 to 30 first, and then setting P2-08 to 28 next and restarting the servo drive.

9.4.2 Alarms cause and solutions

AL001	Over Current	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
Short-circuit at drive output (U, V, W)	1. Check the wiring connections between drive and motor. 2. Check if the wire is short-circuited.	Repair the short-circuited and avoid metal conductor being exposed.
Motor wiring error	Check if the wiring steps are all correct when connecting motor to drive.	Follow the wiring steps in the user manual to reconnect wiring.
IGBT error	Heat sink overheated	Please contact your distributor for assistance or contact with Delta.
Control parameter setting error	Check if the setting value exceeds the factory default setting.	Set the setting back to factory default setting and then reset and adjust the parameter setting again.
Control command setting error	Check if the control input command is unstable (too much fluctuation).	1. Ensure that input command frequency is stable (too much fluctuation). 2. Activate filter function.

AL002	Over Voltage	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
The main circuit voltage has exceeded its maximum allowable value.	Use voltmeter to check whether the input voltage falls within the rated input voltage.	Use correct power supply or stabilizing power.
Input power error (Incorrect power input)	Use voltmeter to check whether the input voltage is within the specified limit.	Use correct power supply or stabilizing power.

AL003	Under Voltage	
Clearing Method	This fault message can be removed automatically after the voltage has returned within its specification.	
Potential Cause	Checking Method	Corrective Actions
The main circuit voltage is below its minimum specified value.	Check whether the wiring of main circuit input voltage is normal.	Reconfirm voltage wiring.
No input voltage at main circuit.	Use voltmeter to check whether input voltage at main circuit is normal.	Reconfirm power switch.
Input power error (Incorrect power input)	Use voltmeter to check whether the input voltage is within the specified limit.	Use correct power supply or serial stabilizing power.

AL004	Motor Error	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
Encoder is damage.	Check Encoder for the damage.	Repair or replace the motor.
Encoder is loose.	Examine the Encoder connector.	Install the motor again.
The type of the servo motor is incorrect.	Check if the servo drive and servo motor are not correctly matched for size power rating.	Replace the motor.

AL005	Regeneration Error	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
Regenerative resistor is not connected.	Check the wiring connection of regenerative resistor.	Reconnect regenerative resistor.
Regenerative switch transistor fault	Check if regenerative switch transistor is short-circuited.	Please contact your distributor for assistance or contact with Delta.
Parameter setting is in error	Confirm the parameter setting and specifications of regenerative resistor.	Correctly reset parameter again.

AL006	Overload	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
The drive has exceeded its rated load during continuous operation.	Check if the drive is overloaded.	Increase motor capacity or reduce load.
Control system parameter setting is incorrect.	Check if there is mechanical vibration	Adjust gain value of control circuit.
	Accel/Decel time setting is too fast.	Decrease Accel/Decel time setting.
The wiring of drive and encoder is in error.	Check the wiring of U, V, W and encoder.	Ensure all wiring is correct.

AL007	Over Speed	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
Speed input command is not stable (too much fluctuation).	Use signal detector to detect if input signal is abnormal.	Ensure that input command frequency is stable (not fluctuate too much) and activate filter function (P1-06, P1-07 and P1-08).
Over-speed parameter setting is defective.	Check if over-speed parameter setting value is too low.	Correctly set over-speed parameter setting (P2-34).

AL008	Abnormal Pulse Control Command	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
Pulse command frequency is higher than rated input frequency.	Use pulse frequency detector to measure input frequency.	Correctly set the input pulse frequency.

AL009	Excessive deviation	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
Maximum deviation parameter setting is too small.	Check the maximum deviation parameter setting and observe the position error value when the motor is running.	Increases the parameter setting value of P2-35.
Gain value is too small.	Check for proper gain value.	Correctly adjust gain value.
Torque limit is too low.	Check torque limit value.	Correctly adjust torque limit value.
There is an overload.	Check for overload condition.	Reduce external applied load or re-estimate the motor capacity.

AL010	Reserved

AL011	Encoder error (Position detector fault)	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
The wiring of encoder is in error.	1. Check if all wiring is correct. 2. Check if the users conduct the wiring by the wiring information in the user manual.	Ensure all wiring is correct.
Encoder is loose	Examine the encoder connector.	Install the motor again.
The wiring of encoder is defective.	Check if all connections are tight.	Conduct the wiring again.
Encoder is damage	Check the encoder for the damage.	Repair or replace the motor.

AL012	Adjustment Error	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
The setting value of drift adjustment has exceeded its maximum allowable value.	1. Remove CN1 wiring. 2. Execute the drift adjustment again. (Set P2-08 to 20 first, and then set P4-10 to 5.)	If the error does not clear after executing the drift adjustment again, please contact your distributor for assistance or contact with Delta.

AL013	Emergency Stop Activated	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
Emergency stop switch is activated.	Check if emergency stop switch is ON or OFF.	Activate emergency stop switch.

AL014	Reverse (CWL) Limit Switch Error	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
Reverse limit switch is activated.	Check if reverse limit switch is ON or OFF.	Activate reverse limit switch.
Servo system is not stable.	Check the value of control parameter setting and load inertia.	Modify parameter setting and re-estimate motor capacity.

AL015	Forward (CCWL) Limit Switch Error	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
Forward limit switch is activated.	Check if forward limit switch is ON or OFF.	Activate forward limit switch.
Servo system is not stable.	Check the value of control parameter setting and load inertia.	Modify parameter setting and re-estimate motor capacity.

AL016	IGBT Temperature Error	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
The drive has exceeded its rated load during continuous operation.	Check if there is overload or the motor current is too high.	Increase motor capacity or reduce load.
Short-circuit at drive output.	Check the drive input wiring.	Ensure all wiring is correct.

AL017	Memory Error	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
Parameter data error when writing into EE-PROM.	Examine the parameter settings. Please do the following steps: 1. Press SHIFT key on the drive keypad, and examine the parameter shown on LED display. 2. If E320A is displayed (in hexadecimal format), it indicates it is parameter P2-10. Please examine the parameter settings of P2-10. 3. If E3610 is displayed (in hexadecimal format), it indicates it is parameter P6-16. Please examine the parameter settings of P6-16.	1. If this fault occurs when power is applied to the drive, it indicates that the setting value of one parameter has exceeded the specified range. Correct the setting value of the parameter to clear the fault and restart the servo drive. 2. If this fault occurs during normal operation, it indicates that the error occurs when writing data into EE-PROM. Turn ARST (DI signal) ON to clear the fault or restart the servo drive.
The setting value of hidden parameter is in error.	Press SHIFT key on the drive keypad and examine if E100X is displayed on LED display.	If this fault occurs when resetting the parameter settings, it indicates that the servo drive type is not set correctly. Correctly set the servo drive type again.
Data in EE-PROM is damaged.	Press SHIFT key on the drive keypad and examine if E0001 is displayed on LED display.	If this fault occurs when power is applied to the drive, it indicates that the data in EE-RPM is damaged or there is no data in EE-PROM. Please contact your distributor for assistance or contact with Delta.

AL018	Encoder Output Error	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
Encoder itself or the wiring of encoder is in error.	Check if the recent fault records (P4-00 ~ P4-05) display on the drive keypad in accordance with the fault codes AL011, AL024, AL025 and AL026.	Perform the corrective actions as described in AL011, AL024, AL025 and AL026.
The output frequency for pulse output may exceed the limit of its allowable setting value.	Check if the following conditions occur: Condition 1: Motor speed is above the value set by P1-76. Condition 2: $\frac{\text{Motor Speed}}{60} \times P1-46 \times 4 > 19.8 \times 10^6$	Correctly set P1-76 andP1-46. 1. Ensure that the motor speed is below the value set by P1-76. 2. $\frac{\text{Motor Speed}}{60} \times P1-46 \times 4 > 19.8 \times 10^6$

AL019	Serial Communication Error	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
Communication parameter setting is defective.	Check the communication parameter setting.	Correctly set parameter setting.
Communication address is incorrect.	Check the communication address.	Correctly set communication address.
Communication value is incorrect.	Check the communication value.	Correctly set communication value.

AL020	Serial Communication Time Out	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
Setting value in time out parameter is not correct.	Check communication time out parameter setting.	Correctly set P3-07.
Not receiving communication command for a long time.	Check whether communication cable is loose or broken.	Tighten the communication cable, make sure the communication cable is not damaged and ensure all wiring is correct.

AL021	Reserved

AL022	Input Power Phase Loss	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
Control power supply is in error.	Check the power cable and connections of R, S, and T. Check whether the power cable is loose or the possible loss of phase on input power.	If the fault does not clear even when the three-phase power is connected correctly, please contact your distributor for assistance or contact with Delta.

AL023	Pre-overload Warning	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
The drive is going to overload.	1. Check the load condition of the servo motor and drive. 2. Check the setting value of P1-56.Check whether the setting value of P1-56 is too small.	1. Please refer to the correction of ALE06 2. Increase the setting value of P1-56 or set P1-56 to100 and above.

AL024	Encoder Initial Magnetic Field Error	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
The magnetic field of the encoder U, V, W signal is in error.	1. Check if the servo motor is properly grounded. 2. Check if the encoder signal cables are placed in separate conduits from the cables connected to R, S, T and U, V, W terminals to prevent the interference. 3. Check if the shielded cables are used when performing encoder wiring.	If the error does not clear after each checking is done, please contact your distributor for assistance or contact with Delta.

AL025	Encoder Internal Error	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
The internal memory of the encoder is in error. An encoder counter error occurs.	1. Check if the servo motor is properly grounded. 2. Check if the encoder signal cables are placed in separate conduits from the cables connected to R, S, T and U, V, W terminals to prevent the interference. 3. Check if the shielded cables are used when performing encoder wiring.	1. Please connect the grounding (green color) of U, V, W terminal to the heat sink of the servo drive. 2. Ensure that the encoder signal cables are placed in separate conduits from the cables connected to R, S, T and U, V, W terminals to prevent the interference. 3. Please use shielded cables for Encoder wiring. 4. If the error does not clear after all the above actions are done, please contact your distributor for assistance or contact with Delta.

AL026	Encoder Data Error	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
An encoder data error occurs for three times.	1. Check if the servo motor is properly grounded. 2. Check if the encoder signal cables are placed in separate conduits from the cables connected to R, S, T and U, V, W terminals to prevent the interference. 3. Check if the shielded cables are used when performing encoder wiring.	1. Please connect the grounding (green color) of U, V, W terminal to the heat sink of the servo drive. 2. Ensure that the encoder signal cables are placed in separate conduits from the cables connected to R, S, T and U, V, W terminals to prevent the interference. 3. Please use shielded cables for Encoder wiring. 4. If the error does not clear after all the above actions are done, please contact your distributor for assistance or contact with Delta.

AL027	Motor Internal Error	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
The setting value of the encoder is in error.	1. Check if the servo motor is properly grounded. 2. Check if the encoder signal cables are placed in separate conduits from the cables connected to R, S, T and U, V, W terminals to prevent the interference. 3. Check if the shielded cables are used when performing encoder wiring.	1. Please connect the grounding (green color) of U, V, W terminal to the heat sink of the servo drive. 2. Ensure that the encoder signal cables are placed in separate conduits from the cables connected to R, S, T and U, V, W terminals to prevent the interference. 3. Please use shielded cables for Encoder wiring. 4. If the error does not clear after all the above actions are done, please contact your distributor for assistance or contact with Delta.

AL028	Motor Internal Error	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
The encoder U, V, W signals are in error.	1. Check if the servo motor is properly grounded. 2. Check if the encoder signal cables are placed in separate conduits from the cables connected to R, S, T and U, V, W terminals to prevent the interference. 3. Check if the shielded cables are used when performing encoder wiring.	1. Please connect the grounding (green color) of U, V, W terminal to the heat sink of the servo drive. 2. Ensure that the encoder signal cables are placed in separate conduits from the cables connected to R, S, T and U, V, W terminals to prevent the interference. 3. Please use shielded cables for Encoder wiring. 4. If the error does not clear after all the above actions are done, please contact your distributor for assistance or contact with Delta.

AL029	Motor Internal Error	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
The internal address of the encoder is in error.	1. Check if the servo motor is properly grounded. 2. Check if the encoder signal cables are placed in separate conduits from the cables connected to R, S, T and U, V, W terminals to prevent the interference. 3. Check if the shielded cables are used when performing encoder wiring.	1. Please connect the grounding (green color) of U, V, W terminal to the heat sink of the servo drive. 2. Ensure that the encoder signal cables are placed in separate conduits from the cables connected to R, S, T and U, V, W terminals to prevent the interference. 3. Please use shielded cables for Encoder wiring. 4. If the error does not clear after all the above actions are done, please contact your distributor for assistance or contact with Delta.

AL030	Motor Protection Error	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
The setting value of parameter P1-57 is reached after a period of time set by parameter P1-58.	1. Check if P1-57 is enabled. 2. Check if the setting values of P1-57 and P1-58 are both too small.	1. Set P1-57 to 0. 2. Correctly set P1-57 and P1-58. Please note that the over-low setting may result in malfunction, but over-high setting may let the motor protection function not operate.

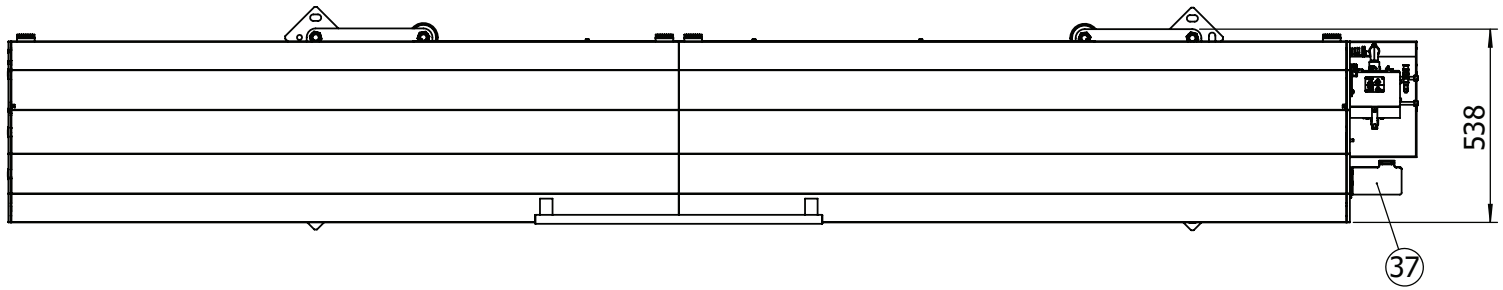
AL031	U, V, W, GND Wiring Error	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
The wiring connections of U, V, W (for servo motor output) and GND (for grounding) are in error.	Check if wiring connections of U, V, and W are not correct.	Follow the wiring steps in the user manual to reconnect the wiring and ground the servo drive and motor properly.
The ground connection is loose or not conducting properly.	Check if the ground connection is loose and ensure the ground is conducting properly.	

AL035	Motor Temperature Error	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
Motor is working under temperature over 105℃ (221℉).	Check if the environment temperature is too high.	Try to reduce environment temperature.

AL048	Excessive Encoder Output Error	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
Encoder error causes abnormal encoder output.	Exam error records (P4-00~P4-05) to check if encoder errors occurred. (AL011, AL024, AL025, AL026)	Please refer to AL011, AL024, AL025, AL026 and take corrective actions.
Output pulses exceed hardware tolerance.	Check if conditions below occur, P1-76 < Motor rotation speed, or $\frac{\text{Motor rotation speed}}{60} \times P1-46 \times 4 > 19.8 \times 10^6$	Correctly set P1-76 and P1-46: P1-76 > Motor rotation speed, and, $\frac{\text{Motor rotation speed}}{60} \times P1-46 \times 4 > 19.8 \times 10^6$

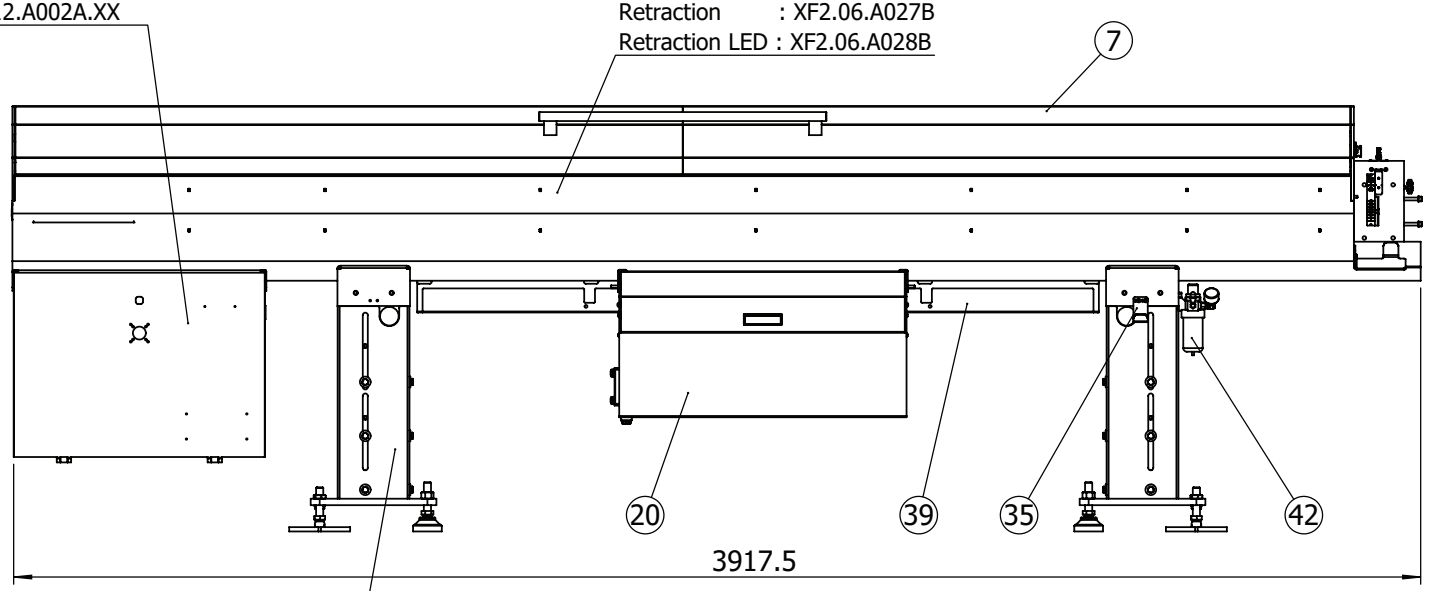
AL067	Motor Temperature Warning	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
Motor is working under temperature over 85℃ (185℉).	Check if the environment temperature is too high.	Try to reduce environment temperature.

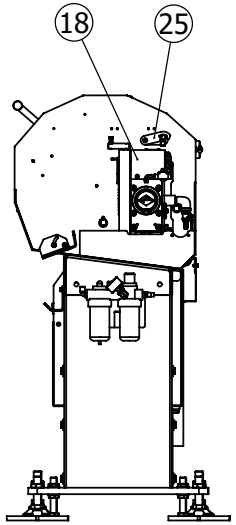
AL099	DSP Firmware Upgrade	
Clearing Method	Turn OFF the power supply and restart the servo drive	
Potential Cause	Checking Method	Corrective Actions
EE-PROM is not reset after the firmware version is upgraded.	Check if EE-PROM is reset after the firmware version is upgraded.	Set P2-08 to 30 first, and then 28 next and restart the servo drive.



電箱組(Electric Cabinet)
Standard：XF2.12.A001A.XX
FEDEK：XF2.12.A002A.XX

油槽組
Standard ：XF2.06.A001F
Standard LED ：XF2.06.A010B
Retraction ：XF2.06.A027B
Retraction LED：XF2.06.A028B





腳座組(Stand Set)
Standard：XF2.01.A002A
LNS type：XF2.01.A003B

B11 =1

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

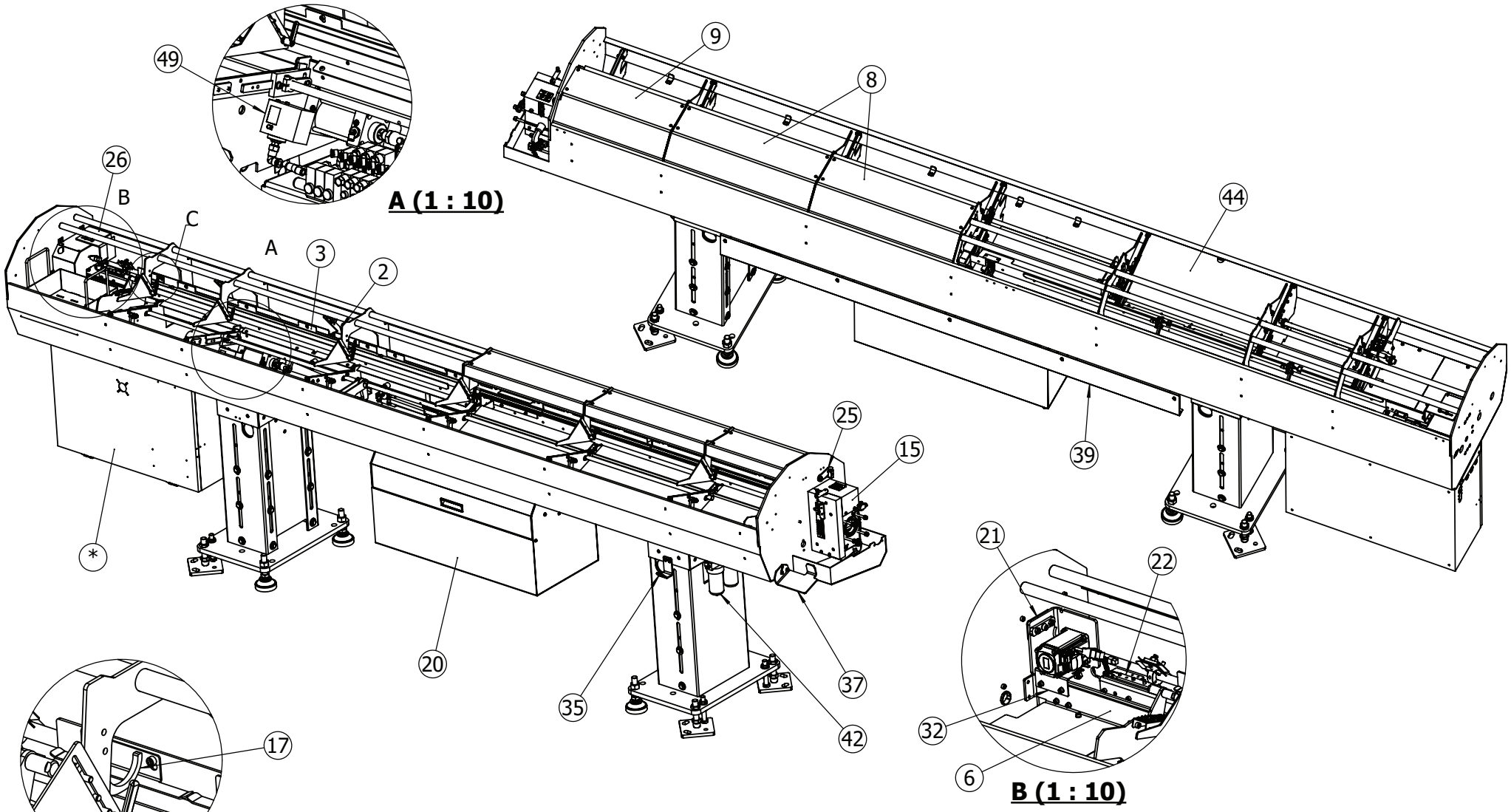
DESCRIPTION : / GT342-3M-LtoRF-LL

General Assembly

www.lns-group.com TW

SCALE	**1:50**	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2019.01.09	2023.04.14
DRAWN BY	Sam Lai	**Last modif.**
ECN	ECN-10832	B11

XF2.00.A001B



GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

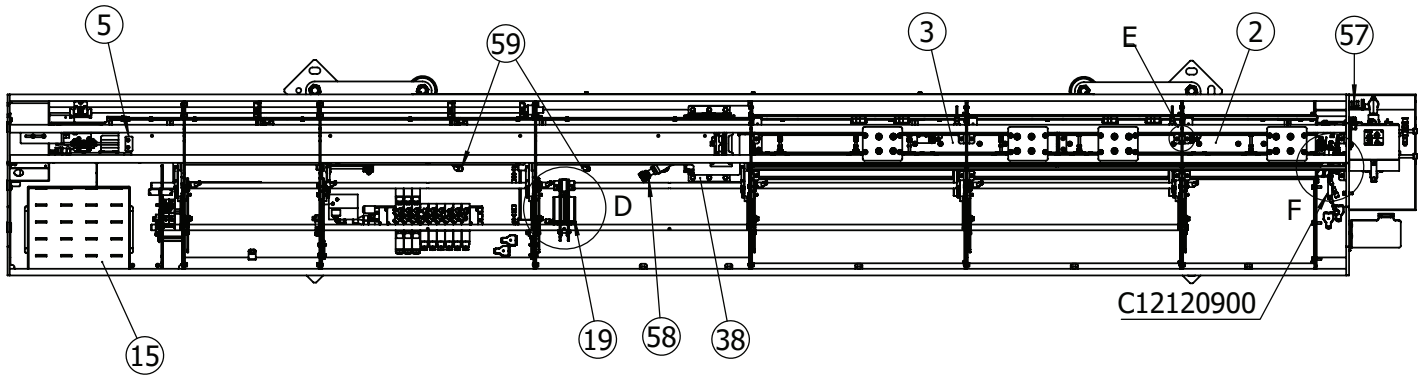
DESCRIPTION : / GT342-3M-LtoRF-LL

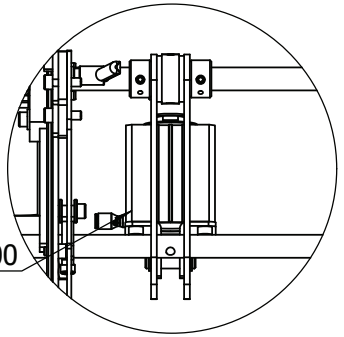
General Assembly

www.lns-group.com TW

SCALE	**1:50**	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2019.01.09	2023.04.14
DRAWN BY	Sam Lai	**Last modif.**
ECN	ECN-10832	B11

XF2.00.A001B





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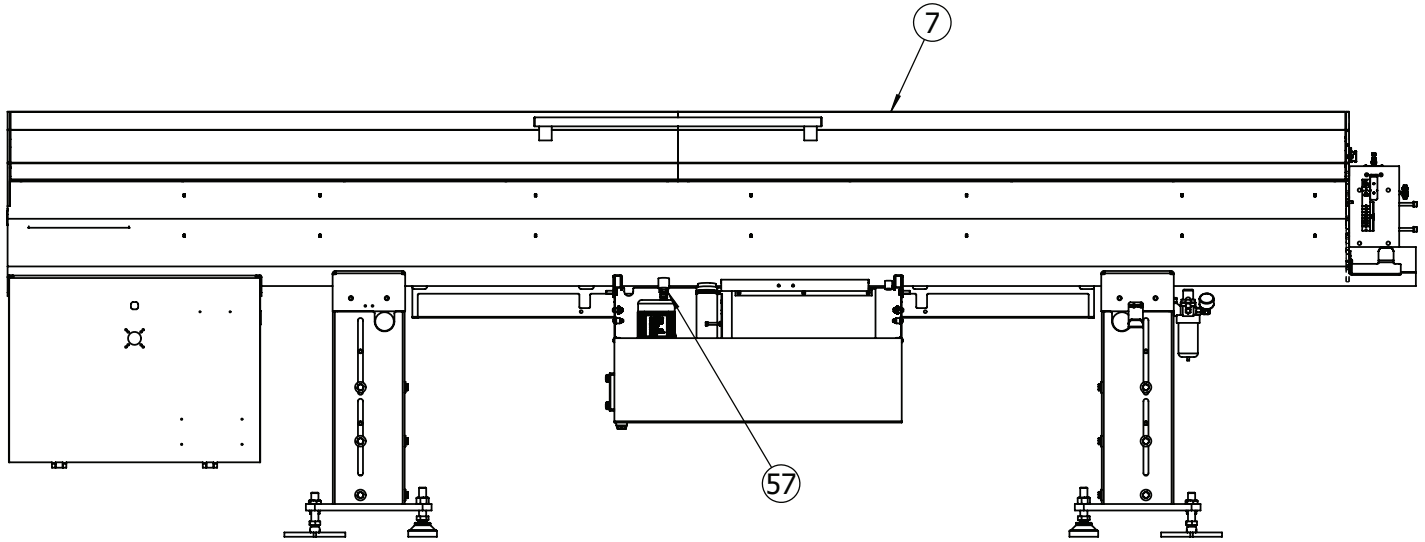

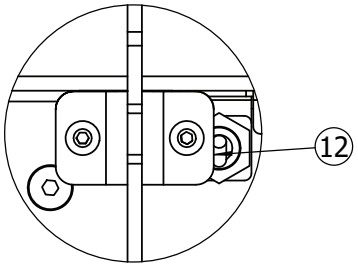

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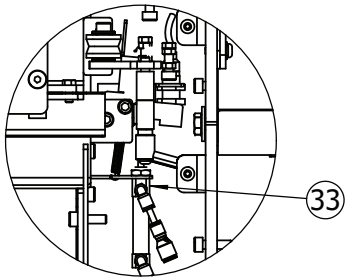


F (1 : 5)

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

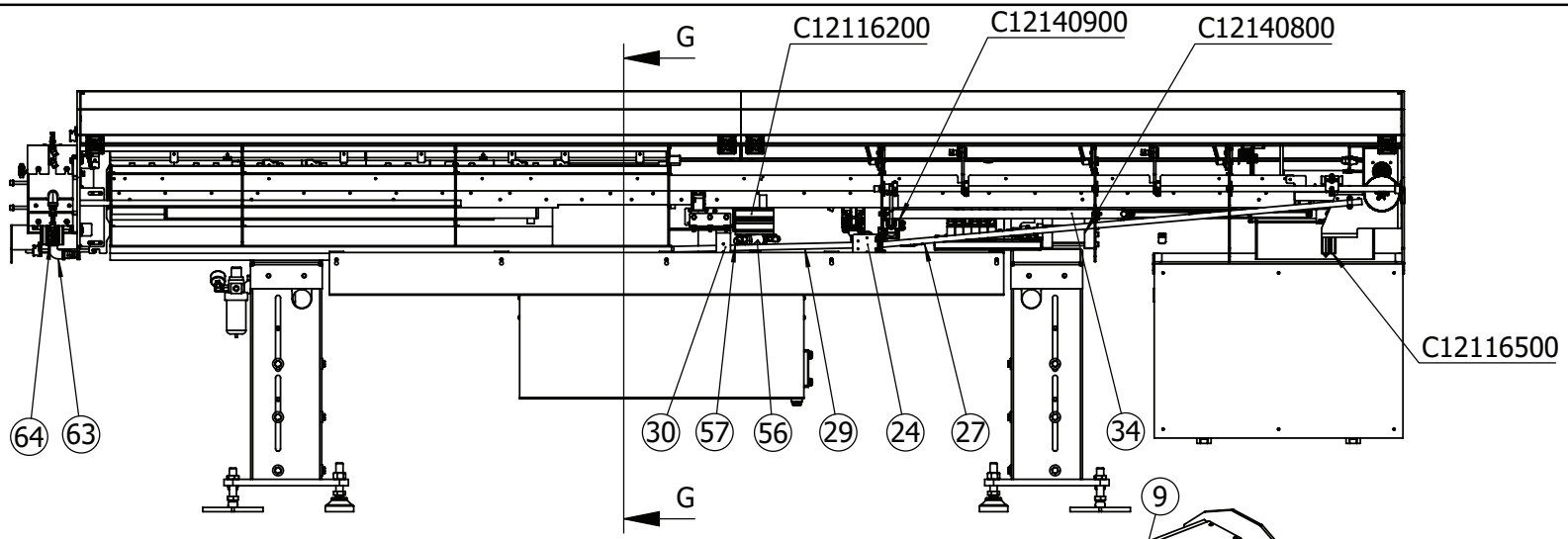
DESCRIPTION : / GT342-3M-LtoRF-LL

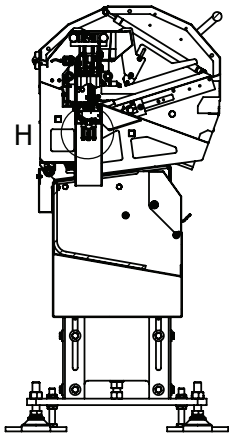
General Assembly

www.lns-group.com TW

SCALE	**1:50**	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2019.01.09	2023.04.14
DRAWN BY	Sam Lai	**Last modif.**
ECN	ECN-10832	B11

XF2.00.A001B





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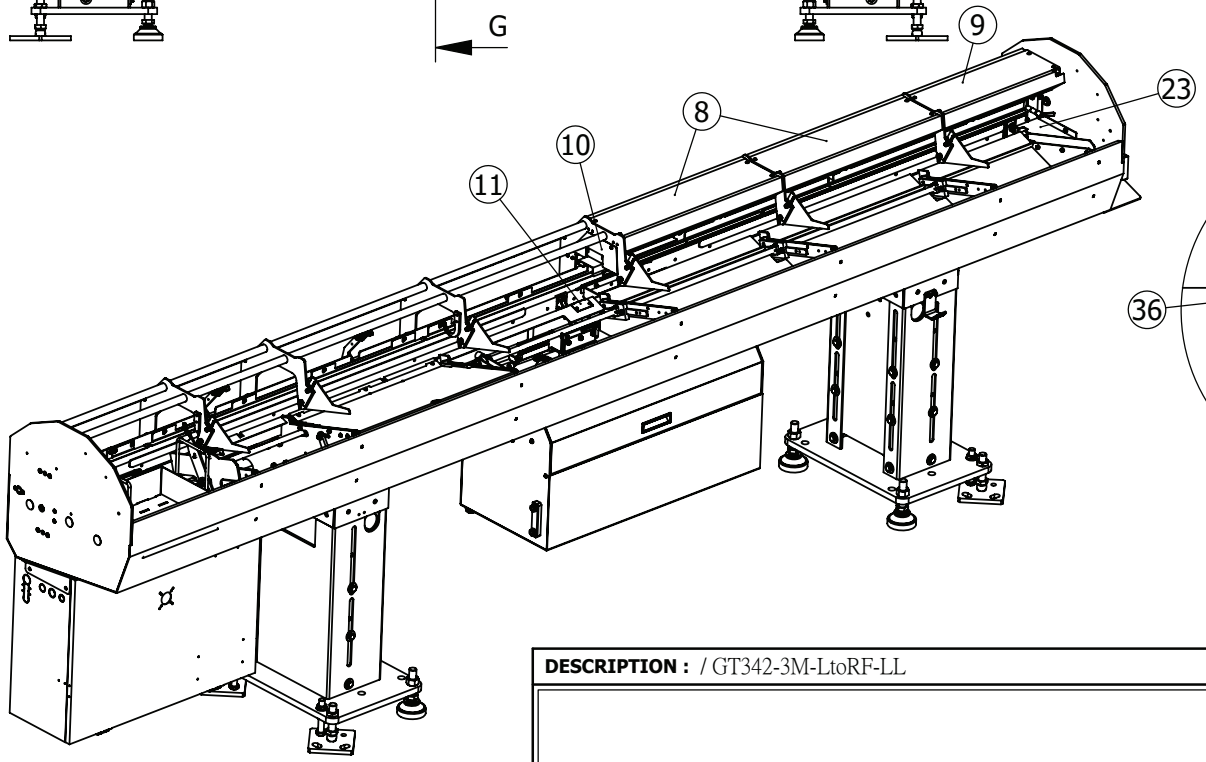
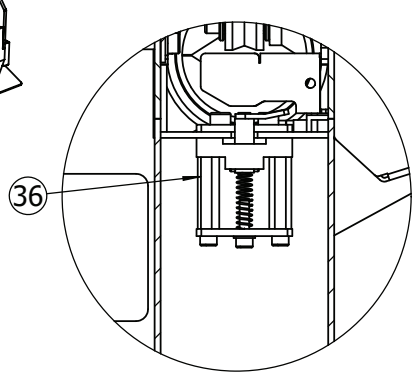




H (1 : 3)

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : / GT342-3M-LtoRF-LL

General Assembly

www.lns-group.com TW

SCALE	**1:50**	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2019.01.09	2023.04.14
DRAWN BY	Sam Lai	**Last modif.**
ECN	ECN-10832	B11

XF2.00.A001B

POS	ITEM NO	DESCRIPTION	QTY
1	XF2.03.A004C		1
2	XF2.03.A006D	Upper Channel Set-Front section-LtoRF	1
3	XF2.03.A007D	Channel cover set-3M-LtoRF-LL	1
4	XF2.03.A008B	Guiding Plate Set - LtoRF - 3M	1
5	XF2.03.A009A	Fixing Bracket Set	2
6	XF2.03.A010E	Adjustable Support - LtoRF	1
7	XF2.06.A002C	Main Cover - 3M	1
8	XF2.06.P109C.02	Cylinder Cover - Big	2
9	XF2.06.P110D.02	Cylinder Cover - Small	1
10	XF2.06.P112D.02	Cover	1
11	XF2.06.P115B.02	Blade Cover	1
12	XF2.06.P116A	Cover Bracket	12
13	XF2.06.P336A	Cable Channel Bracket-LtoRF	3
14	XF2.06.P068B	Sensor Bracket	2
15	XF2.06.P081B.02	Channel Box	1
16	XF2.06.P132C.02	Cable Channel	1
17	XF2.06.P174B	Long Pusher Storage Hook	2
18	XF2.07.A029A	Front Rest/LtoRF	1
19	XF2.08.A003C	Bar Loading Set - LtoRF - 3M	1
20	XF2.09.A001B	Oil Tank - LtoRF	1
21	XF2.13.A002D	Motor Set-LtoRF	1
22	XF2.13.A003B	Chain Connector Set	1
23	XF2.03.A076A	pusher holder	1
24	XF2.13.A004A	Pulley set	1
25	XF2.13.A008A	Chain Tensioning Set(LtoRF)	1
26	XF2.13.A014A	Motor Cover set -LtoRF	1
27	XF2.13.P023B	Alumium Square tube	1
28	XF2.13.P025A	Holder of Alumium Tube	1
29	XF2.13.P026B	Alumium Square tube	1
30	XF2.13.P036B	Bracket	1
31	XF2.13.P039A	06B chain - 772 P - 3M	1
32	XF2.13.P083A	Sensor Bracket	1
33	XF2.21.A005A	Measurement-LtoRF	1
34	XF2.22.A002B	Booster	1

POS	ITEM NO	DESCRIPTION	QTY
35	XF2.12.P004B	Hook	1
36	XF2.03.A024B	Front Channel Lock	1
37	XF2.12.P003B	Fixed seat(LtoRF)	1
38	XF2.22.A001H	Vice	1
39	C17121200	Pipe 2"xL350mm	1
40	C17111000	Stainless Clip 2"	1
41	B20130125		3
42	XT032020210	pneumatic - RtoLF	1
43	912.05.25.Z		2
44	912.06.08.Z		4
45	912.05.08.Z		15
46	912.05.16.Z		8
47	912.04.08.Z		10
48	912.05.06.Z		3
49	C11121400		1
50	7380.05.08		12
51	7380.05.06		2
52	7380.04.06		2
53	7380.06.12		2
54	934.05.Z		8
55	C16163300	1/2"PT Joint	1
56	C16150200		1
57	C16110700		3
58	C13132300		1
59	C13110600		2
60	J13110004		1
61	125A.06		2
62	125A.05		2
63	C16140400		1
64	C16111100		1
65	C13130400		8
66	C13131100		1
67	C13112100		1
68	XF2.27.A001B	electrical pneumatic	1
69	XF2-SCREW PACK		1

B11

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

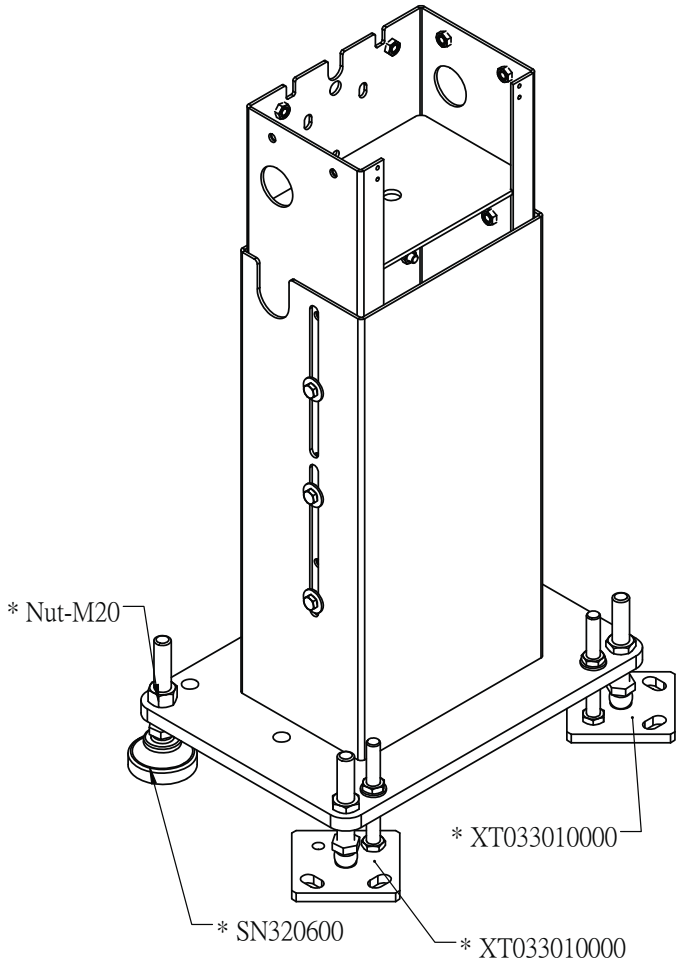
DESCRIPTION : / GT342-3M-LtoRF-LL

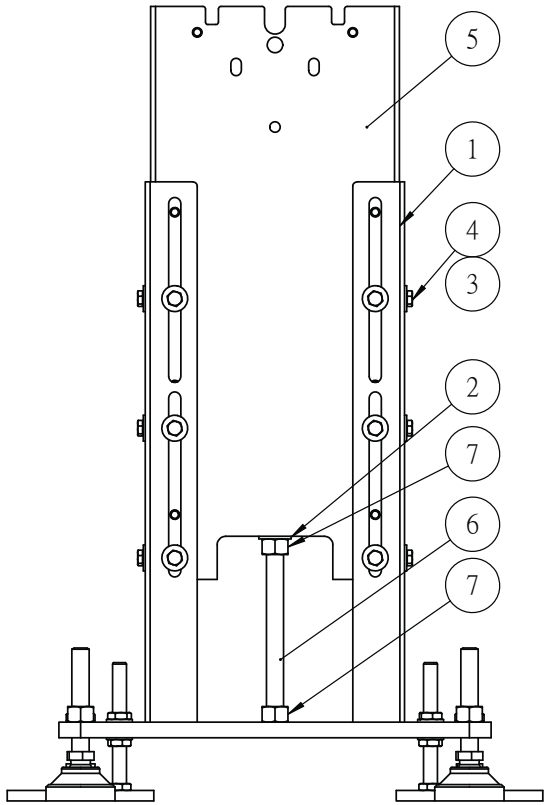
General Assembly

www.lns-group.com TW

SCALE	**1:50**	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2019.01.09	2023.04.14
DRAWN BY	Sam Lai	**Last modif.**
ECN	ECN-10832	B11

XF2.00.A001B





ITEM NO.	QTY.	PART NO.
1	1	XF2.01.P001A.02
2	1	Washer DIN125-A 21_ELEC
3	12	Washer DIN 9021 - 10.5
4	12	OUT Hex JIS M10x25
5	1	XF2.01.P005B.02
6	1	332.01.014
7	2	Nut_DIN 934 M20-D_ELEC

" * "在標準附件內/ In Stander Accessory

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 腳座組/ Stand Set

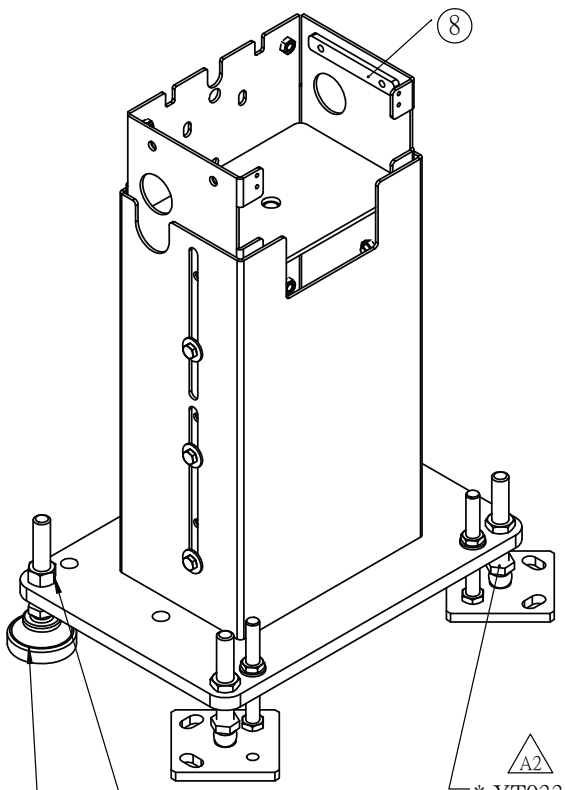
GT 342
Stand

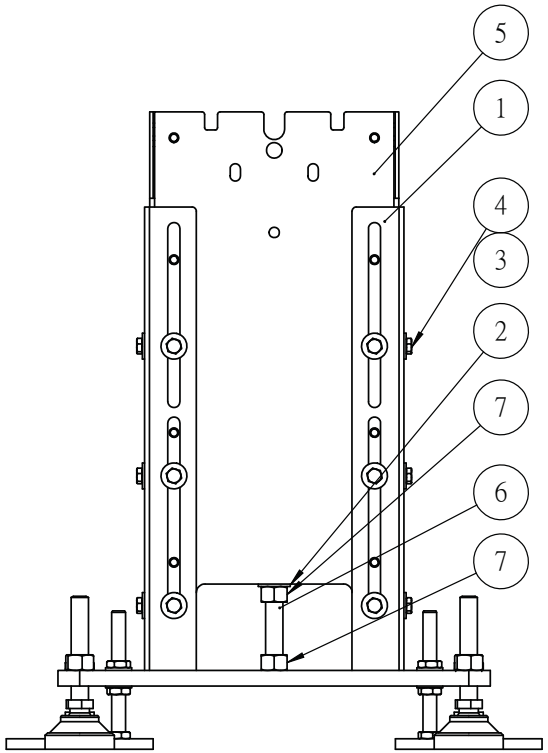
www.lns-group.com TW

SCALE	**1:8**	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2018.07.13	2018.07.19
DRAWN BY	Sam Lai	**Last modif.**
ECN		B

XF2.01.A001B

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	XF2.01.P007A.02	
2	1	Washer DIN125-A 21_ELEC	
3	12	Washer DIN 9021 - 10.5	
4	12	OUT Hex JIS M10x25	
5	1	XF2.01.P009B.02	
6	1	332.01.014	Tige filetée M20
7	2	Nut_DIN 934 M20-D_ELEC	
8	2	XF2.01.P011A	





" * "在標準附件內/ In Stander Accessory

A2=2

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

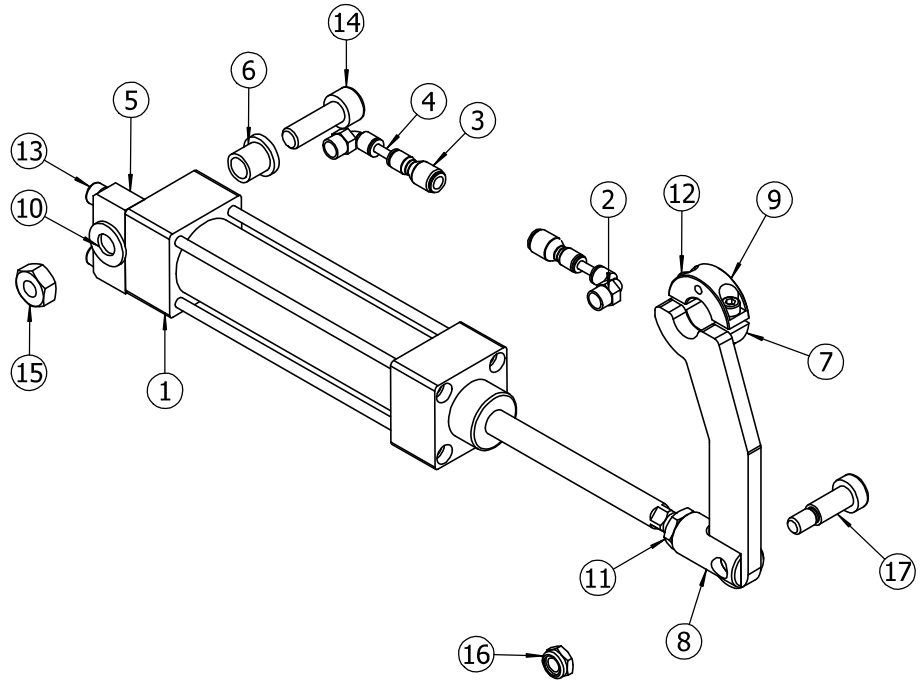
DESCRIPTION : 腳座組/ Stand Set

XF2
Stand

www.lns-group.com TW

SCALE	**1:8**	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2018.07.13	2020.01.31
DRAWN BY	Sam Lai	**Last modif.**
ECN	ECN.XF2.024	A2

XF2.01.A002A



POS	ITEM NO	DESCRIPTION	QTY
1	C12140900	SC 32x100S Airtac	1
2	C13110301		2
3	C13122200		2
4	ST3401500	axis shaftSTM	2
5	XF2.03.P010A	Connector	1
6	XF2.03.P011B	Bushings	1
7	XF2.03.P032A	Lever	1
8	XF2.03.P041A	Knuckle Joint	1
9	XT161050100	Clip Ring(Upper)	1
10	125A.10		1
11	439B.10		1
12	912.05.16.Z		2
13	912.06.30.Z		2
14	912.10.30.Z.TU		1
15	934.10.1.Z		1
16	985.08.Z		1
17	ISO 7379 10x20		1

對應左向件:XF2.03.A013
Related RtoLF set:XF2.03.A013

B2
移除銷 XF2.03.P042B 改用軸頸螺絲

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 開蓋氣缸組 - 右向/ Cover opening cylinder set - LtoRF

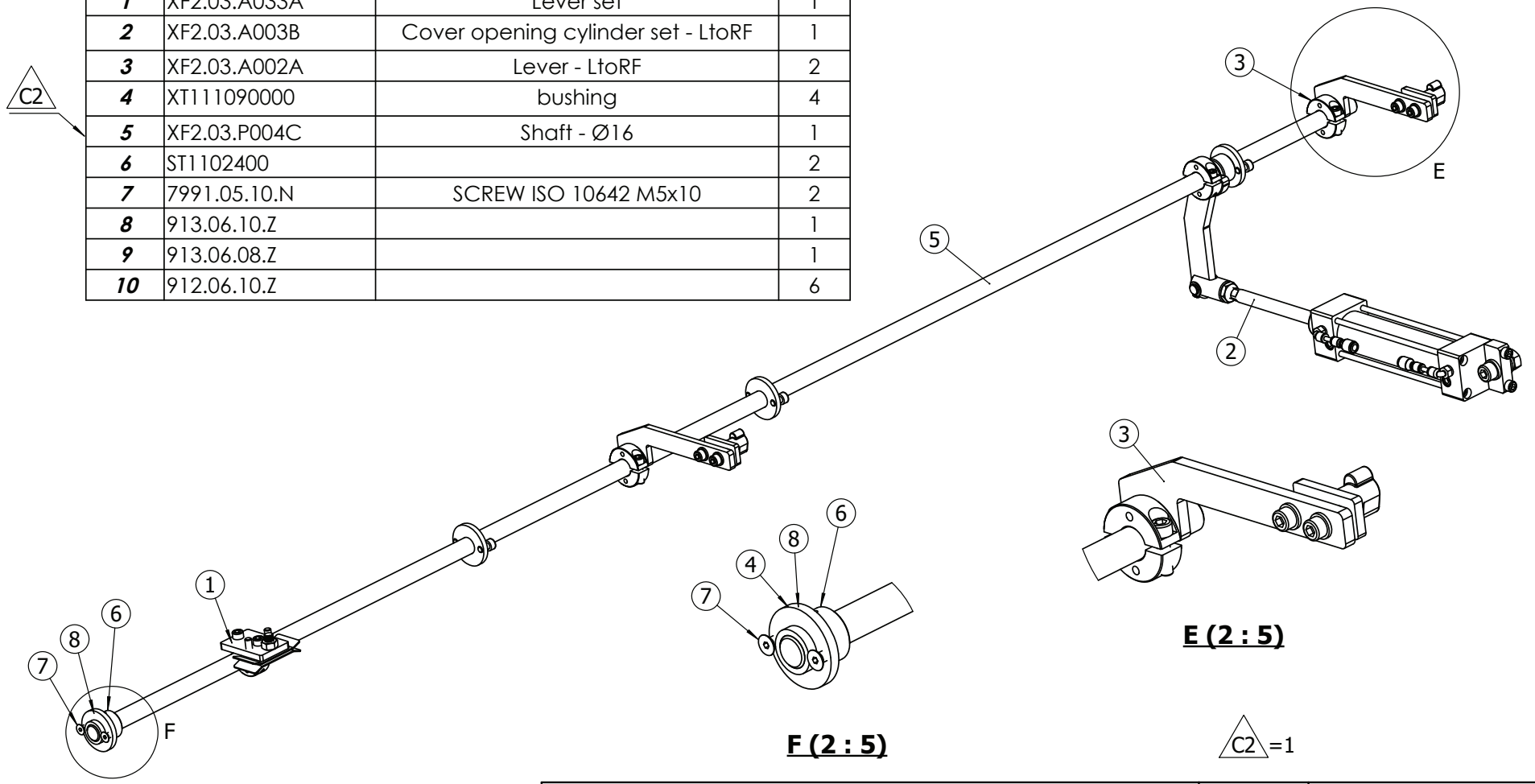
XF2
Guiding Modules

www.lns-group.com TW

SCALE	1:3	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2018.07.30	2023.09.01
DRAWN BY	林 義 碧	Last modif.
ECN	ECN-10926	B2

XF2.03.A003B

POS	ITEM NO	DESCRIPTION	QTY
1	XF2.03.A033A	Lever set	1
2	XF2.03.A003B	Cover opening cylinder set - LtoRF	1
3	XF2.03.A002A	Lever - LtoRF	2
4	XT111090000	bushing	4
5	XF2.03.P004C	Shaft - Ø16	1
6	ST1102400		2
7	7991.05.10.N	SCREW ISO 10642 M5x10	2
8	913.06.10.Z		1
9	913.06.08.Z		1
10	912.06.10.Z		6



E (2 : 5)

F (2 : 5)

C2 =1

對應左向組件:XF2.03.A016
(Related RtoLF set:XF2.03.A016)

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

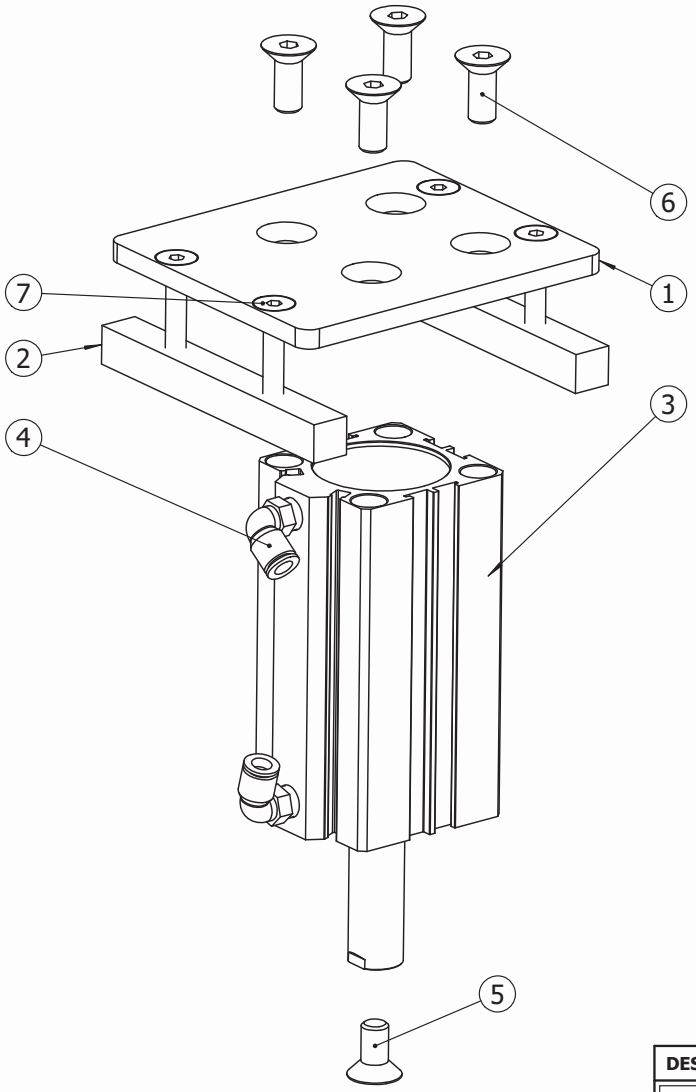
DESCRIPTION : 押棒舉升組 - 右向 - LL/ Pusher Lifting Set - LtoRF - LL

Guiding Modules

www.lns-group.com TW

SCALE	1:5	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2018.07.30	2023.05.15
DRAWN BY	Sam Lai	Last modif.
ECN	ECN-10858	C2

XF2.03.A004C



POS	ITEM NO	DESCRIPTION	QTY
1	XF2.03.P007C	Base Plate	1
2	XF2.03.P029C	Plate	2
3	C12116400	SDA 40x80/Airtac	1
4	C13110200		2
	7991.08.16.N	SCREW ISO 10642 M8x16	1
6	7991.08.20.N	SCREW ISO 10642 M8x20	4
7	7991.06.40.N	SCREW ISO 10642 M6x40	4

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 氣缸組/ Cylinder Set

XF2
Guiding Modules

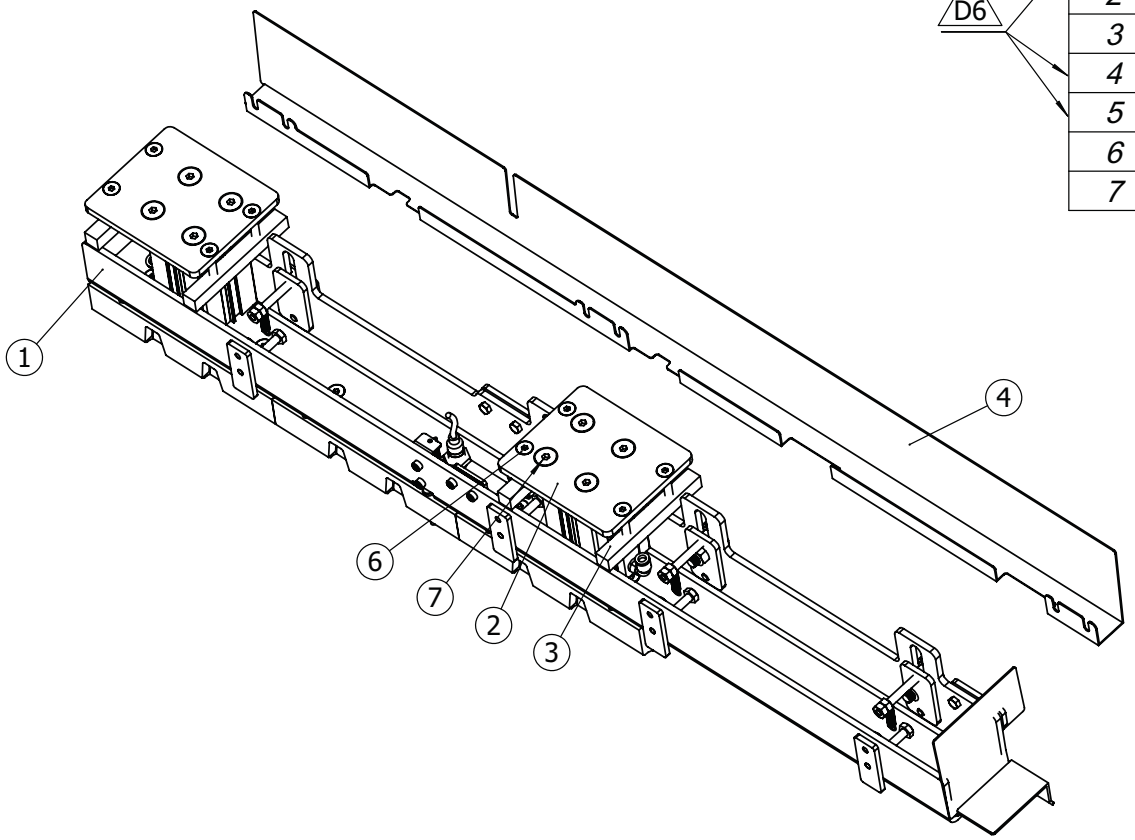
www.lns-group.com TW

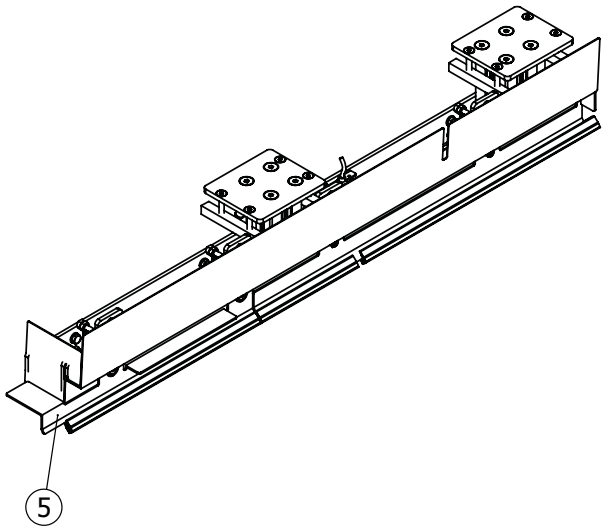
SCALE	1:2	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2018.07.30	
DRAWN BY	Neo Lin	Last modif.
ECN		A0

XF2.03.A005A

POS	ITEM NO	DESCRIPTION	QTY
1	XF2.03.A073E	Channel cover set-3M-LtoRF-LL	1
2	XF2.03.P007C	Base Plate	2
3	XF2.03.P029C	Plate	4
4	XF2.03.P088C	Cover	1
5	XF2.03.P233A	Cover-LL & LLL - LtoRF	1
6	7991.06.40.N	SCREW ISO 10642 M6x40	8
7	7991.08.20.N	SCREW ISO 10642 M8x20	8

D6





D6 =3

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : / Channel cover set-3M-LtoRF-LL

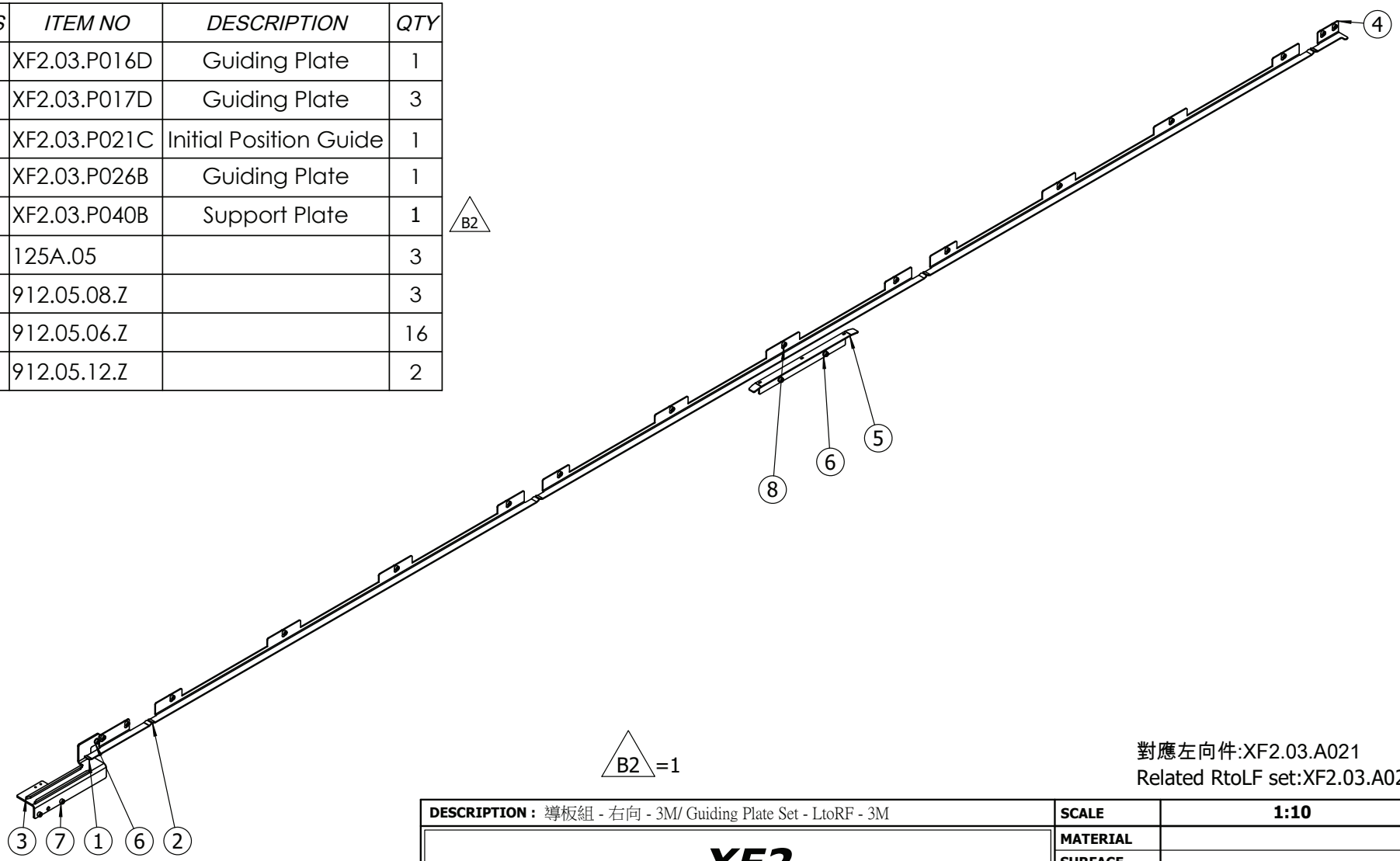
Guiding Modules

www.lns-group.com TW

SCALE	**1:5**	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2018.08.06	2021.09.30
DRAWN BY	Sam Lai	**Last modif.**
ECN	ECN-10469	D6

XF2.03.A007D

POS	ITEM NO	DESCRIPTION	QTY
1	XF2.03.P016D	Guiding Plate	1
2	XF2.03.P017D	Guiding Plate	3
3	XF2.03.P021C	Initial Position Guide	1
4	XF2.03.P026B	Guiding Plate	1
5	XF2.03.P040B	Support Plate	1
6	125A.05		3
7	912.05.08.Z		3
8	912.05.06.Z		16
9	912.05.12.Z		2



B2 =1

對應左向件:XF2.03.A021
Related RtoLF set:XF2.03.A021

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 導板組 - 右向 - 3M/ Guiding Plate Set - LtoRF - 3M

XF2
Guiding Modules

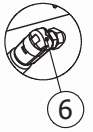
www.lns-group.com TW

SCALE	1:10	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2018.07.30	2023.06.07
DRAWN BY	Sam Lai	Last modif.
ECN	ECN-10877	B2

XF2.03.A008B

Item	Qty.	Part No.	Descr.
1	1	AT134130000	
2	4	D6411200	
3	2	XF2.06.P071D.01	
4	8	XF13642000000	
5	3	933.08.14.Z	
6	7	934.08.Z	
7	16	7991.05.16	

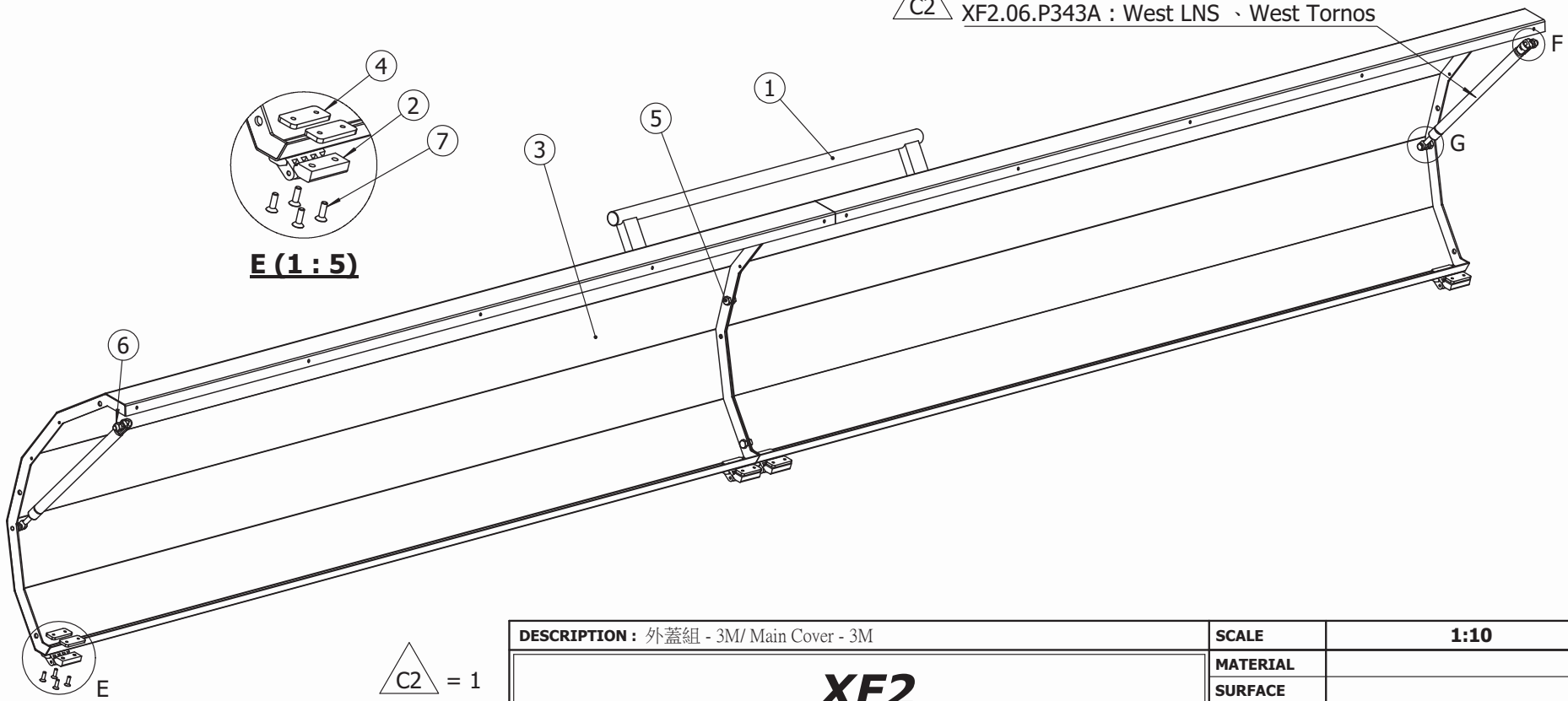
G (1 : 5)



F (1 : 5)

C2 XF2.06.P072B : Asia
XF2.06.P343A : West LNS 、West Tornos

E (1 : 5)



C2 = 1

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 外蓋組 - 3M/ Main Cover - 3M

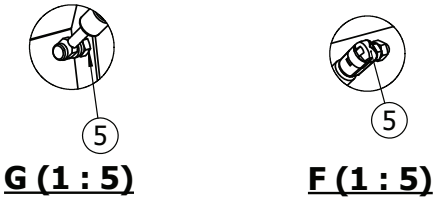
XF2
Main Cover & Case

www.lns-group.com TW

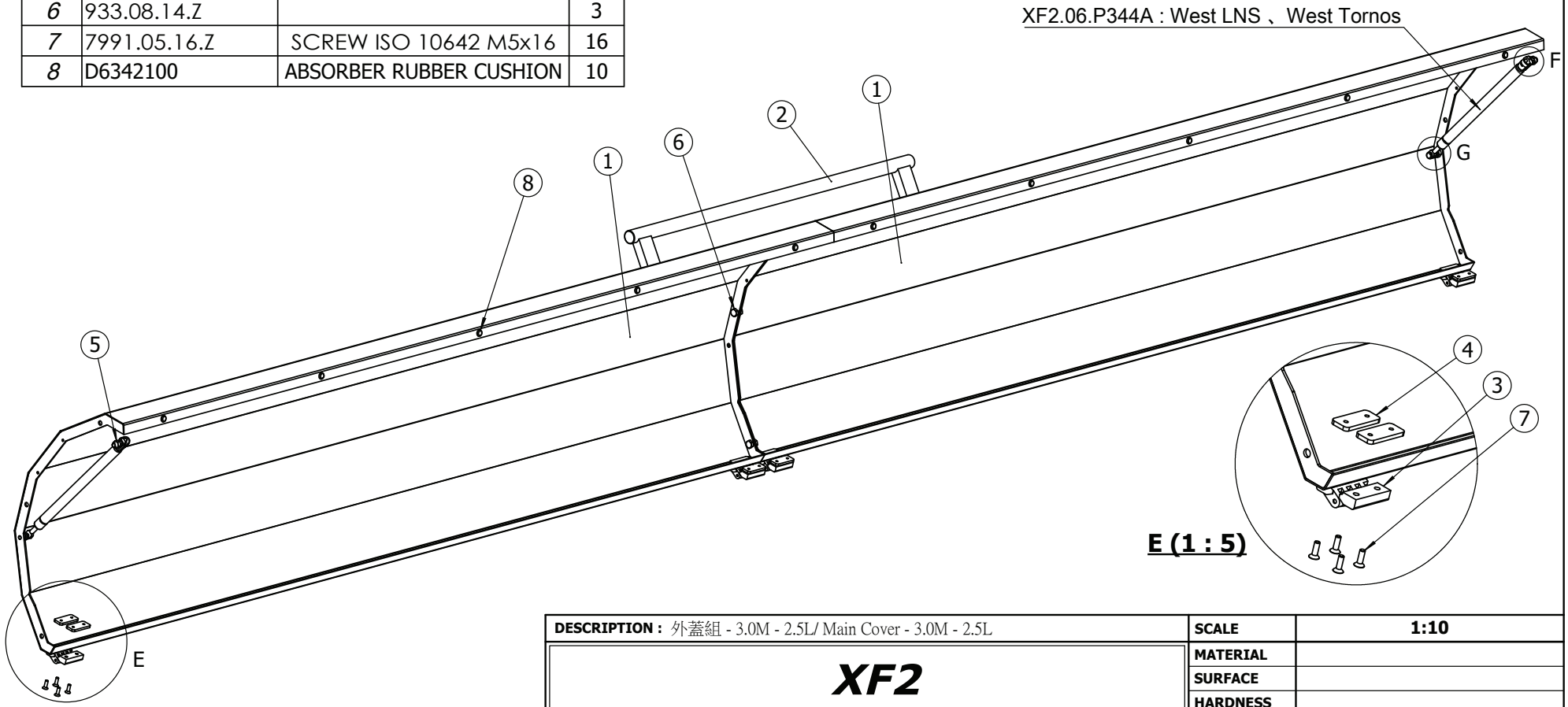
SCALE	1:10	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2018.08.07	2021.05.11
DRAWN BY	林 義 碧	Last modif.
ECN	ECN-10359	C2

XF2.06.A002C

POS	ITEM NO	DESCRIPTION	QTY
1	XF2.06.P449A.01	Main Cover - 3.0m - 2.5L	2
2	AT134130000	Handle	1
3	D6411200		4
4	XF13642000000	Hinge fix plate	8
5	934.08.Z		7
6	933.08.14.Z		3
7	7991.05.16.Z	SCREW ISO 10642 M5x16	16
8	D6342100	ABSORBER RUBBER CUSHION	10



G (1 : 5) **F (1 : 5)**



E (1 : 5)

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 外蓋組 - 3.0M - 2.5L/ Main Cover - 3.0M - 2.5L

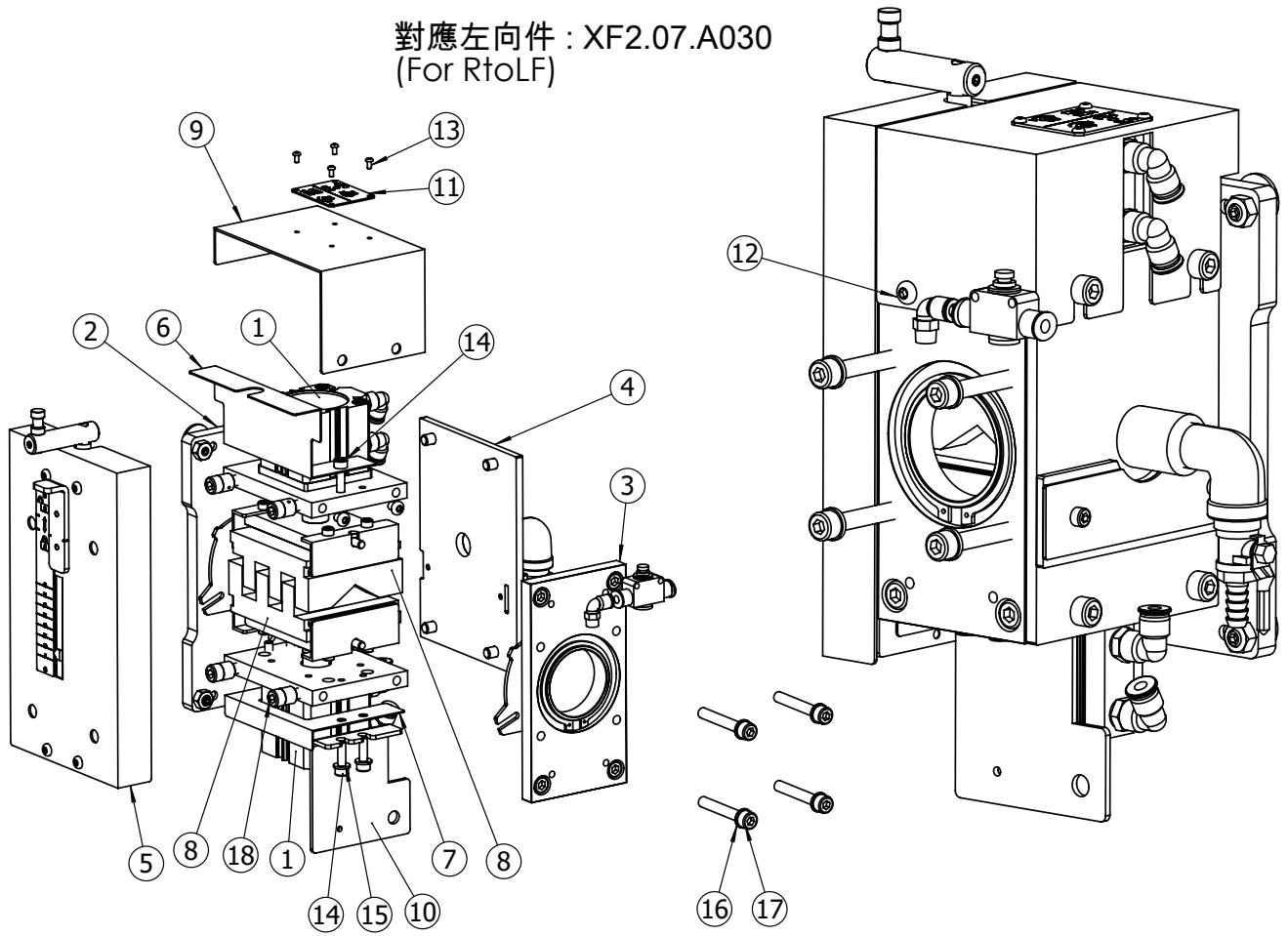
XF2
Main Cover & Case

www.lns-group.com TW

SCALE	1:10	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2022.10.21	
DRAWN BY	Sam Lai	Last modif.
ECN	ECN-10503	A0

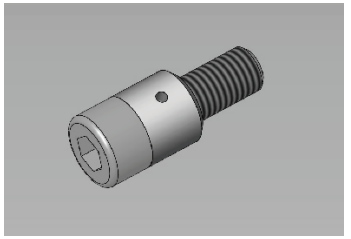
XF2.06.A095A

對應左向件 : XF2.07.A030
(For RtoLF)



POS	ITEM NO	DESCRIPTION	QTY
1	XF2.07.A031A		2
2	XF2.07.A032A		1
3	XF2.07.A033A		1
4	XF2.07.A034A		1
5	XF2.07.A036A		1
6	XF2.07.P106B		1
7	XF2.07.P107B		1
8	XF2.07.P077B		2
9	XF2.07.P089B.02		1
10	XF2.13.P091A		1
11	XA1.07.P052A		1
12	7380.06.08		2
13	7380.03.06		4
14	912.06.20.Z		6
15	125A.06		2
16	128A.08		4
17	912.08.55.Z		4
18	912.08.20.Z		4

現配 ∅2X6L 彈簧銷
M8X25L 內六角螺絲



GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 防震組/右向/ Front Rest/LtoRF

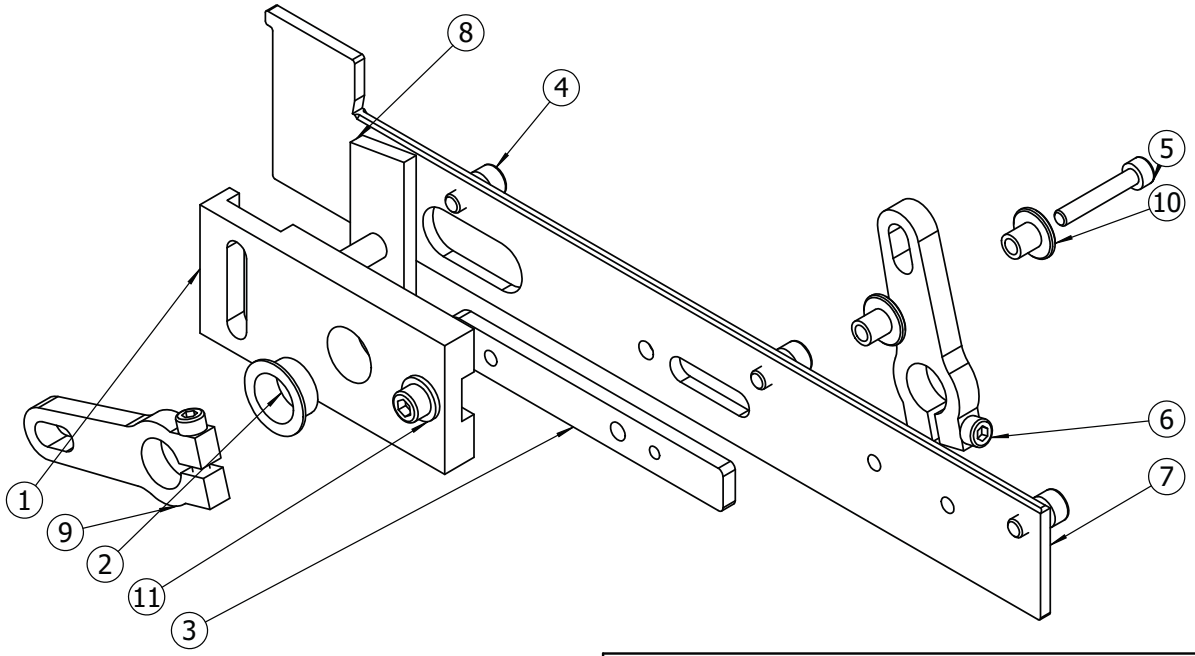
Front Rest

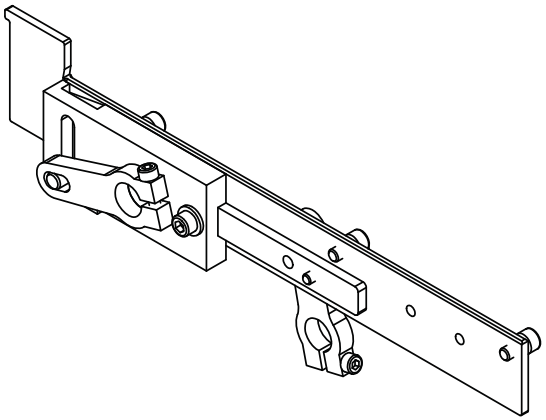
www.lns-group.com TW

SCALE	**1:5**	
MATERIAL	-	
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2023.04.14	
DRAWN BY	Sam Lai	**Last modif.**
ECN	ECN-10832	A0

XF2.07.A029A

ITEM NO.	PART NO.	Description	QTY.
1	XF2.08.P001B		1
2	11.3503.1618.09		1
3	XF2.08.P004C		1
4	912.06.12.Z.TU		4
5	912.05.30.Z		1
6	912.05.20.Z		2
	XF2.08.P003C		1
8	XF2.08.A002A		1
9	XF2.08.P005C		2
10	XF2.08.P006A		2
11	125A.07		1





對應左向件:XF2.08.A015
Related RtoLF set:XF2.08.A015

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 下料組 - 右向/ Loading Set - LtoRF

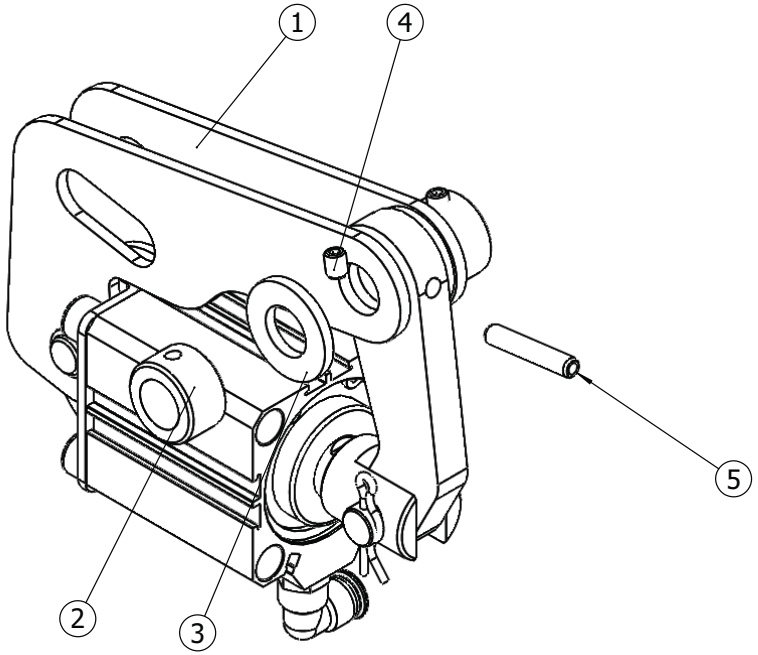
XF2
Bar Loading

www.lns-group.com TW

SCALE	**1:2**	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2018.08.08	
DRAWN BY	Neo Lin	**Last modif.**
ECN		B0

XF2.08.A001B

Item	Qty.	Part No.	Descr.
1	1	XF2.08.A014A	
2	2	ST1102400	
3	2	XF2.08.P017A	
4	2	DIN913-M6x8_ELEC	
5	1	12785.06.34	



GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 下料汽缸組/ Loading Cylinder Set

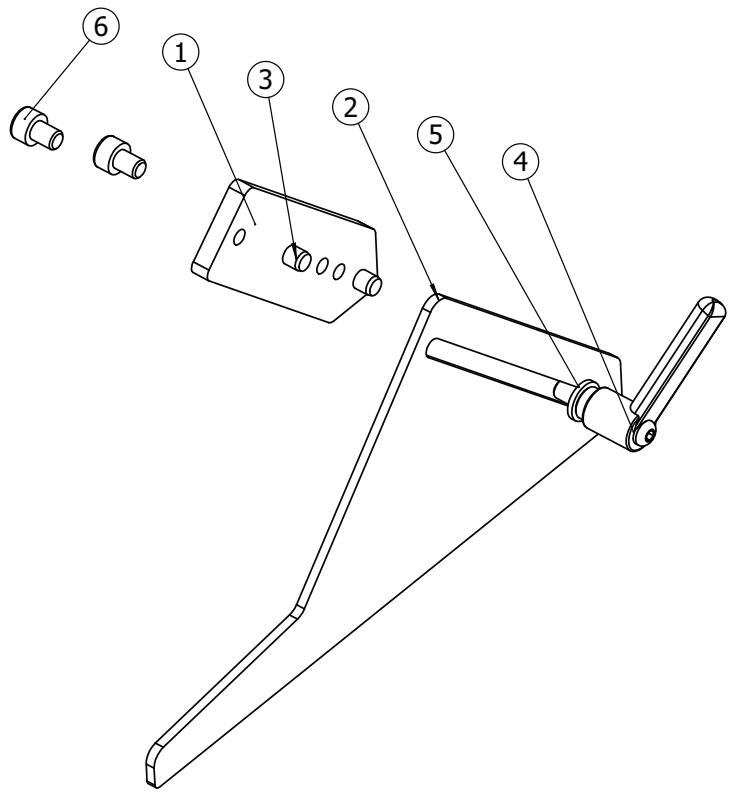
GT 342
Bar Loading

www.lns-group.com TW

SCALE	**1:2**	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)	0.74	
DATE	2012.04.19	2018.11.05
DRAWN BY	Dennis Luo	**Last modif.**
ECN		B1

XF2.08.A005B

ITEM NO.	PART NO.	Description	QTY.
1	XH13705000000		1
A1 2	XF2.08.P016A		1
3	ISO2338- 6 m6x12-St		2
4	J12110007		1
5	125A.06		1
6	912.06.08.Z		2



A1=1

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

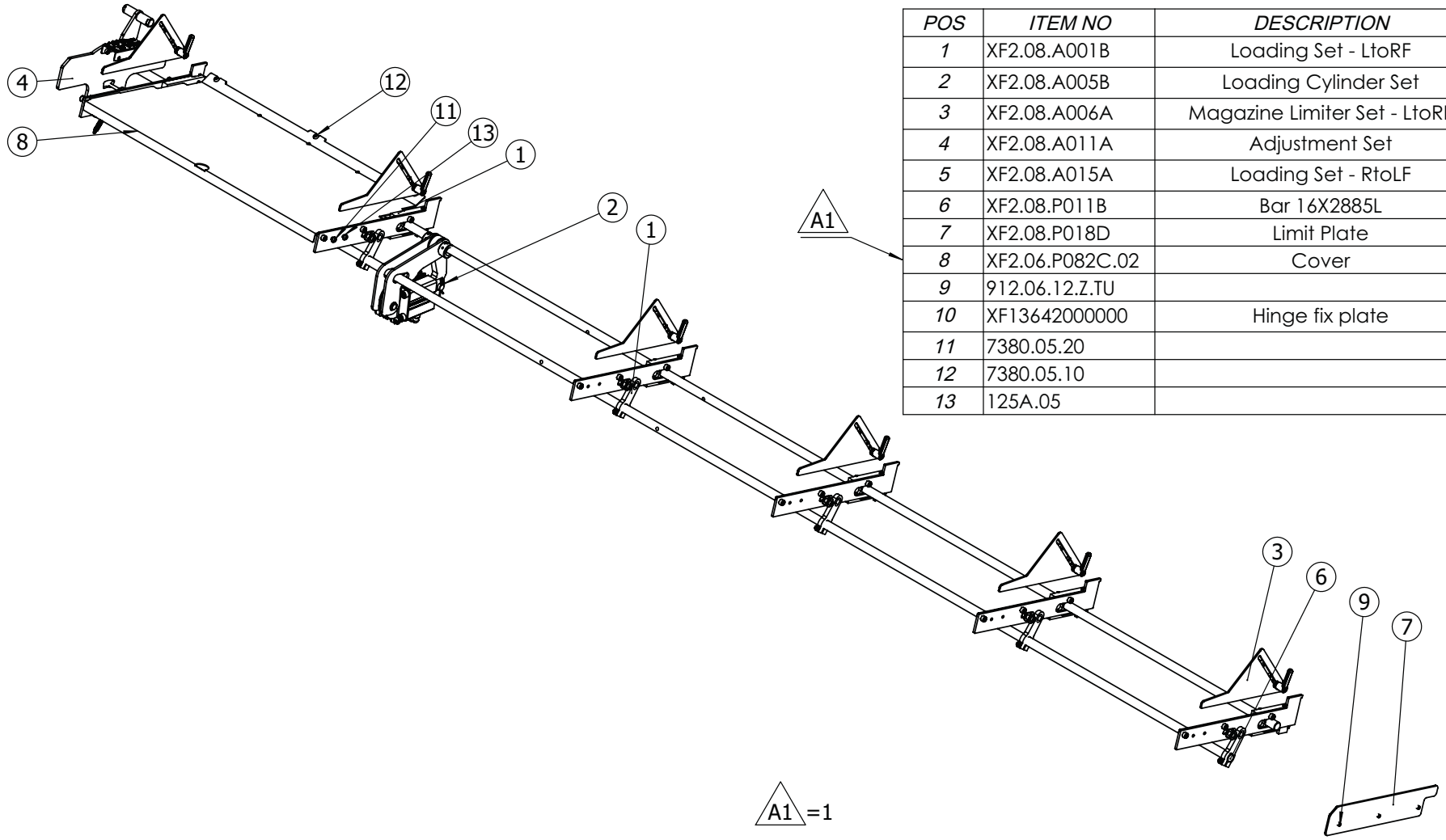
DESCRIPTION : 調整板組 - 右/ Magazine Limiter Set - LtoRF

XF2
Bar Loading

www.lns-group.com TW

SCALE	**1:2**	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2018.08.08	2020.02.12
DRAWN BY	Sam Lai	**Last modif.**
ECN	ECN.XF2.026	A1

XF2.08.A006A



POS	ITEM NO	DESCRIPTION	QTY
1	XF2.08.A001B	Loading Set - LtoRF	5
2	XF2.08.A005B	Loading Cylinder Set	1
3	XF2.08.A006A	Magazine Limiter Set - LtoRF	6
4	XF2.08.A011A	Adjustment Set	1
5	XF2.08.A015A	Loading Set - RtoLF	1
6	XF2.08.P011B	Bar 16X2885L	2
7	XF2.08.P018D	Limit Plate	1
8	XF2.06.P082C.02	Cover	1
9	912.06.12.Z.TU		3
10	XF13642000000	Hinge fix plate	2
11	7380.05.20		4
12	7380.05.10		3
13	125A.05		4

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

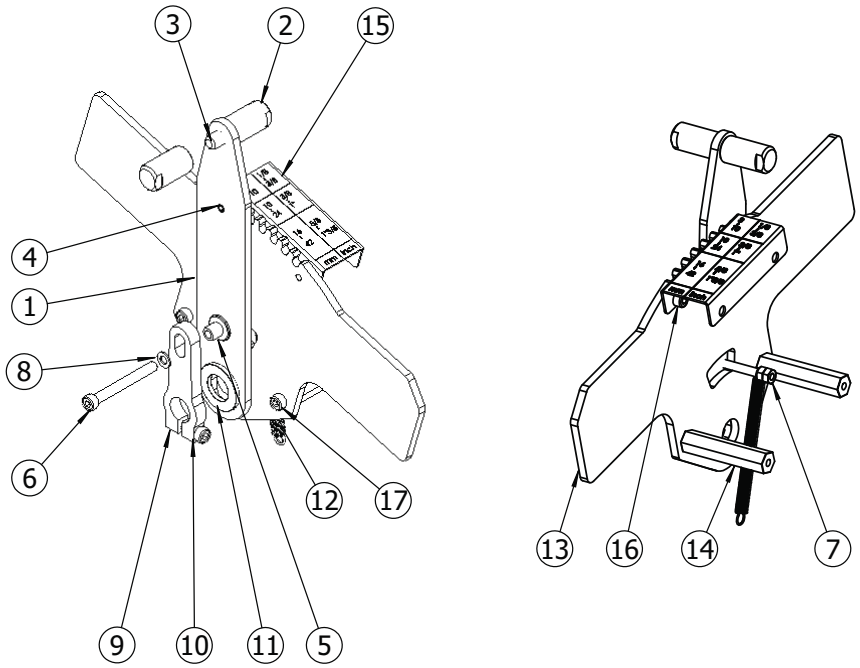
DESCRIPTION : / Bar Loading set - 3M -L

XF2
Bar Loading

www.lns-group.com TW

SCALE	**1:10**	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2019.01.17	2021.09.30
DRAWN BY	Sam Lai	**Last modif.**
ECN	ECN-10469	A1

XF2.08.A010A



ITEM NO.	PART NO.	Descr.	QTY.
1	XF2.08.P023B	拉棒	1
2	XH11224000000	把手	2
3	DIN913-M8x25_ELEC		1
4	12785.05.10		1
5	XF2.08.P006A	間距襯套	1
6	912.05.50.Z		1
7	934.05.Z		2
8	DIN_125A_M5		1
9	XF2.08.P005C	勾料塊	1
10	912.05.20.Z		1
11	DIN_125A_M16		1
12	XF2.08.P025A	拉伸彈簧	1
13	XF2.08.P022B	規格板	1
14	XA1.08.P029B	支撐軸	2
15	XF2.08.P026A	刻度板	1
16	912.05.06.Z		2
17	912.05.12.Z		2

對應左向件:XF2.08.A016
Related RtoLF set:XF2.08.A016

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

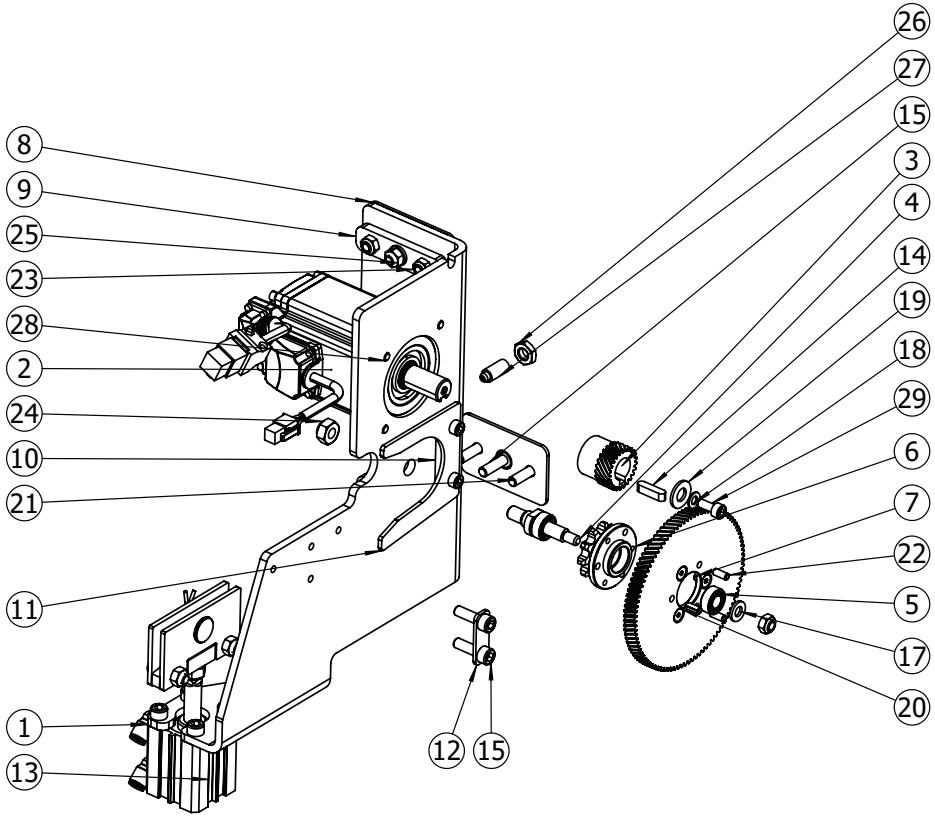
DESCRIPTION : 棒材調整組/ Adjustment Set

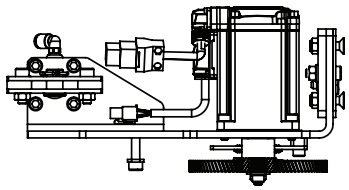
GT 342
Bar Loading

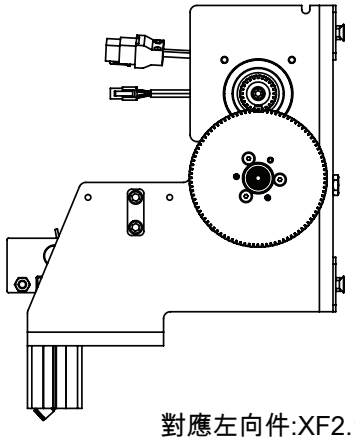
www.lns-group.com TW

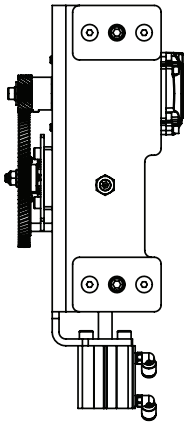
SCALE	**1:2**	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2018.10.08	
DRAWN BY	Dennis Luo	**Last modif.**
ECN		A0

XF2.08.A011A









對應左向件:XF2.13.A006
Related RtoLF:XF2.13.A006

D0 =1

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 馬達座組-右向/ Motor Set-LtoRF

XF2
Drive

www.lns-group.com TW

SCALE	**1:4**	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2018.07.12	2023.04.11
DRAWN BY	Sam Lai	**Last modif.**
ECN	ECN-10821	D0

XF2.13.A002D

ITEM NO.	PART NO.	Description	QTY.	ITEM NO.	PART NO.	Description	QTY.
1	XF2.13.P009C		1	21	7991.06.25.N		4
D0 2	B14120208		1	22	12785.04.10		3
3	XT141100000		1	23	985.06		5
4	XF2.13.P010A		1	24	985.08		1
5	11.4856.08.16.6		2	25	934.06.Z		2
6	XF2.13.P008A		1	26	Hexagon Thin Nut M8		1
7	XF2.13.P014B		1	27	XF2.13.P018B		1
8	XF2.13.P015A		2	28	912.05.14.Z	SCREW ISO 4762	6
9	XF2.13.P017A		2	29	912.05.12.Z	SCREW ISO 4762	1
10	XF2.13.P021A		1				
11	XF2.13.P022A		1				
12	XF2.13.P025A		1				
13	XF2.22.A003A		1				
14	6885A.5x5x20		1				
15	912.06.20.Z		4				
16	DIN 913 - M4 x 4		1				
17	125A.06		3				
18	125A.05		1				
19	125A.08		1				
20	7991.04.08.Z		3				

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 馬達座組-右向/ Motor Set-LtoRF

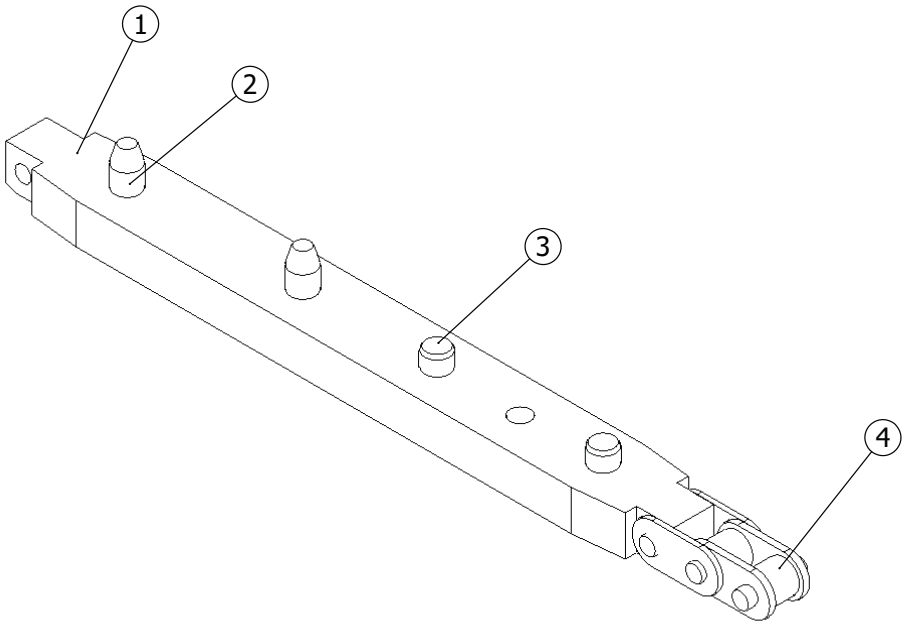
XF2
Drive

www.lns-group.com TW

SCALE	**1:4**	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2018.07.12	2023.04.11
DRAWN BY	Sam Lai	**Last modif.**
ECN	ECN-10821	D0

XF2.13.A002D

ITEM NO.	PART NO.	Descr.	QTY.
1	XF2.13.P019C	鏈條連接塊	1
2	12771A.05.16	導角實心銷	2
3	12771A.05.12		2
4	XF2.13.P039A	06B歐規鍊條 - 772P	1



GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 鏈條連結組/ Chain Connector Set

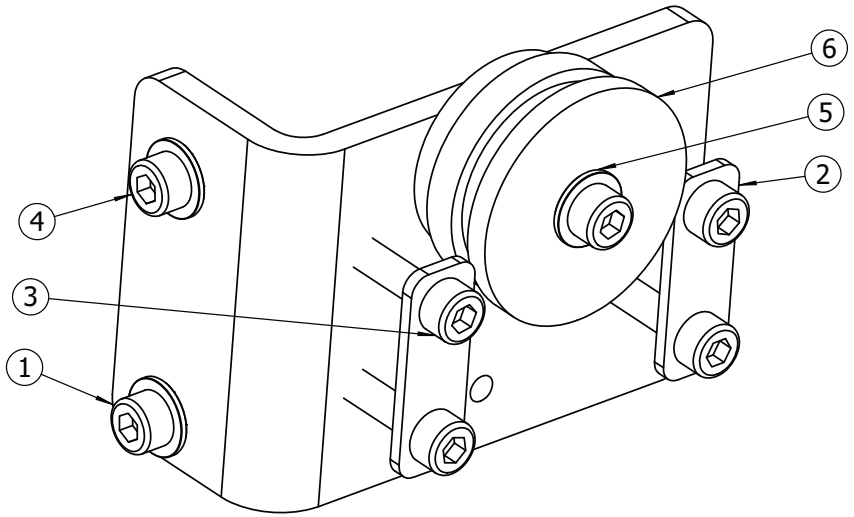
XF2
Drive

www.lns-group.com TW

SCALE	**1:1**	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2018/8/9	
DRAWN BY	Dennis Luo	**Last modif.**
ECN		

XF2.13.A003B

ITEM NO.	PART NO.	Descr.	QTY.
1	XF2.13.P024A	支架	1
2	XF2.13.P025A	鋁管固定板	2
3	912.05.25.Z		5
4	912.05.12.Z		2
5	DIN_125A_M4.5		3
6	XF2.13.P027A	滑輪	1



GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

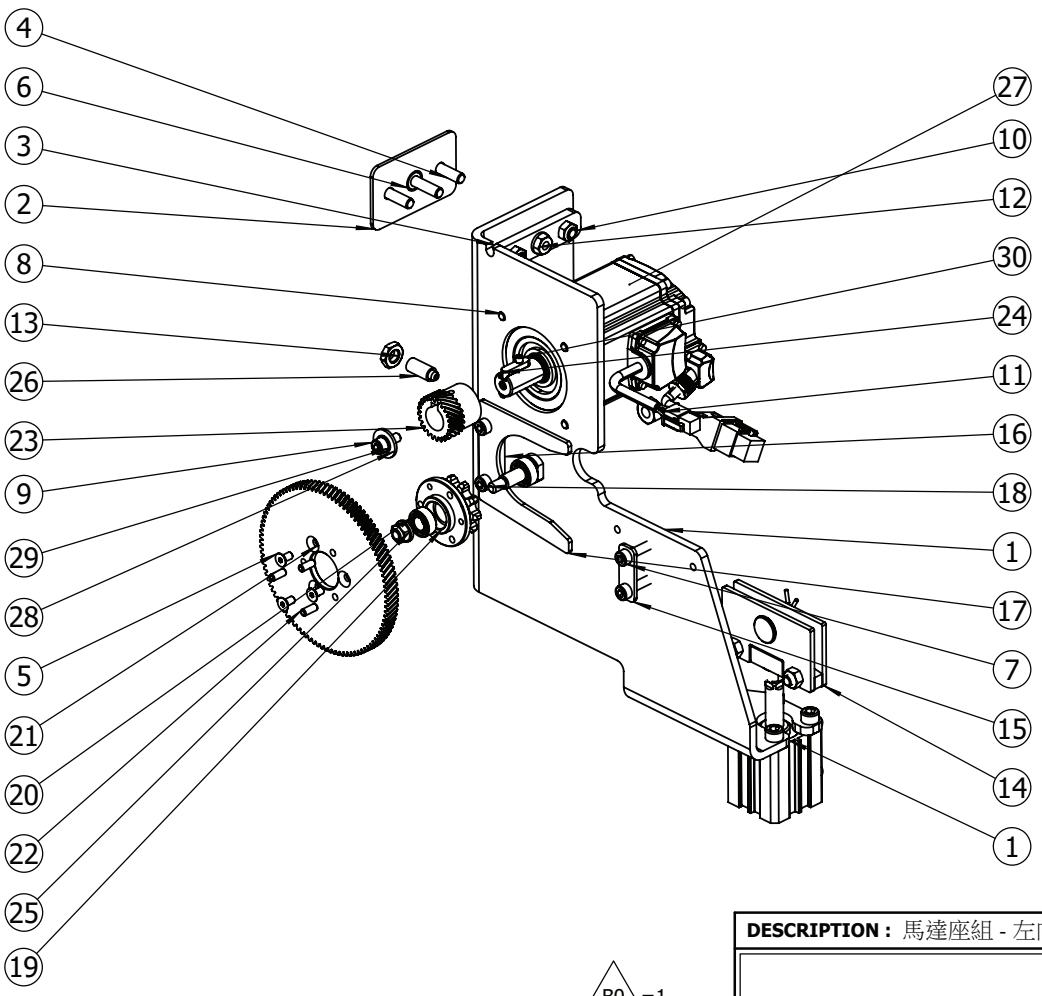
DESCRIPTION : 滑輪組/ Pulley set

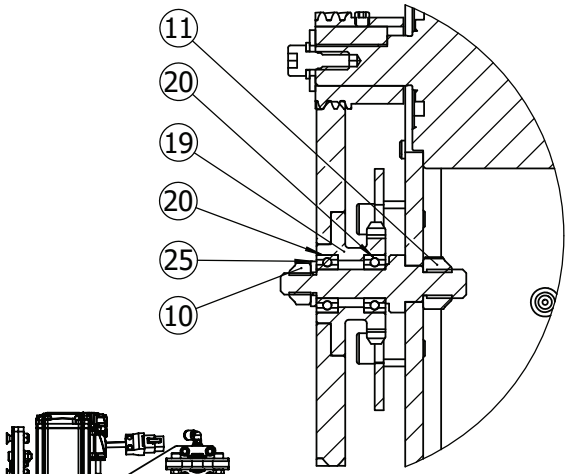
XF2
Drive

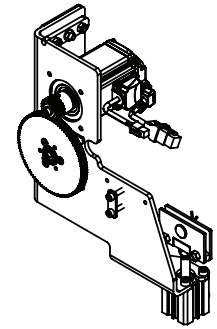
www.lns-group.com TW

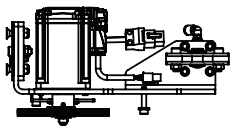
SCALE	**1:1**	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2018.11.06	
DRAWN BY	Sam Lai	**Last modif.**
ECN		

XF2.13.A004A

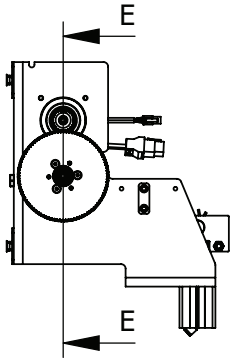


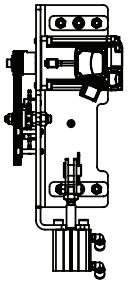


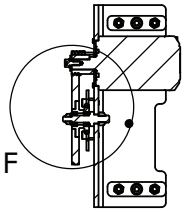




F (1 : 2)







E-E (1 : 8)

對應右向件:XF2.13.A002
Related LtoRF:XF2.13.A002

B0 =1

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 馬達座組 - 左向/ Motor Set - RtoLF

XF2
Drive

www.lns-group.com TW

SCALE	**1:4**	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2018.07.31	2023.04.11
DRAWN BY	Sam Lai	**Last modif.**
ECN	ECN-10821	B0

XF2.13.A006B

ITEM NO.	PART NO.	Description	QTY.
1	XF2.13.P040A		1
2	XF2.13.P015A		2
3	XF2.13.P017A		2
4	7991.06.25.N		4
5	7991.04.08.Z		3
6	912.06.20.Z		2
7	912.05.25.Z		2
8	912.05.14.Z		6
9	912.05.12.Z		1
10	985.06		5
11	985.08		1
12	934.06.Z		2
13	Hexagon Thin Nut M8		1
14	XF2.22.A003A		1
15	XF2.13.P025A		1
16	XF2.13.P021A		1
17	XF2.13.P022A		1
18	XF2.13.P010A		1
19	XF2.13.P008A		1
20	11.4856.08.16.6		2

ITEM NO.	PART NO.	Description	QTY.	
21	XF2.13.P014B		1	
22	12785.04.10		3	
23	XT141100000		1	
24	6885A.5x5x20		1	
25	125A.06		3	
26	XF2.13.P018B		1	
27	B14120208		1	B0
28	125A.08		1	
29	125A.05		1	
30	DIN 913 - M4 x 4		1	

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

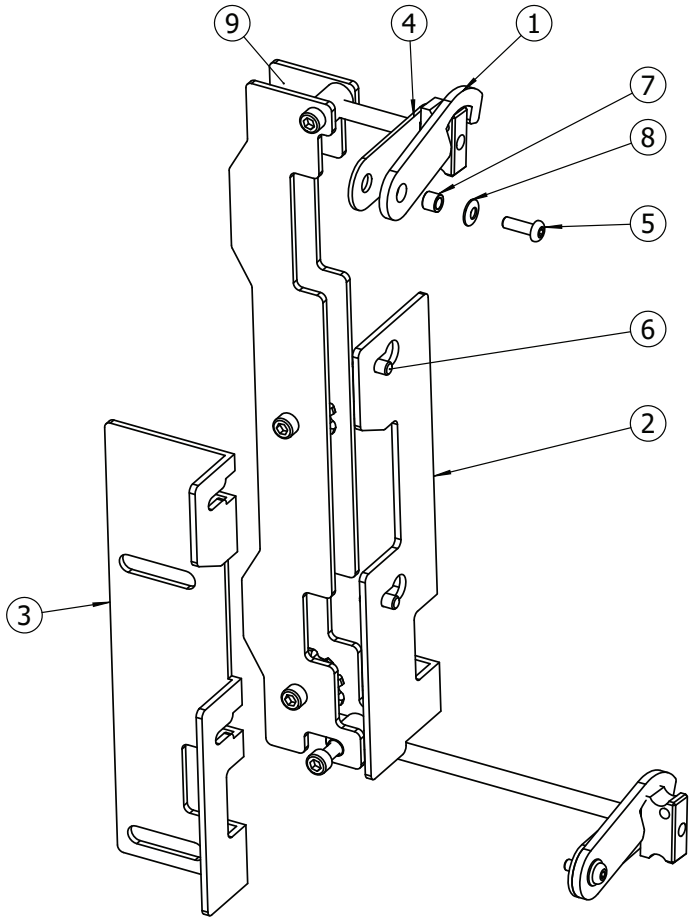
DESCRIPTION : 馬達座組 - 左向/ Motor Set - RtoLF

XF2
Drive

www.lns-group.com TW

SCALE	**1:4**	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2018.07.31	2023.04.11
DRAWN BY	Sam Lai	**Last modif.**
ECN	ECN-10821	B0

XF2.13.A006B



POS	ITEM NO	DESCRIPTION	QTY
1	XF2.13.P052B	Plate	2
2	XF2.13.P053C	Guide plate	1
3	XF2.13.P054C	Guide plate	1
4	XF2.13.P055B	Fix plate	2
5	7380.05.16		2
6	933.06.12.Z		2
7	XF2.13.P060B	Space	2
8	212745.05		2
9	XF2.13.A012A	Chain Tensioning Set	1

A1

A1=2

對應左向件:XF2.13.A010
Related RtoLF:XF2.13.A010

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

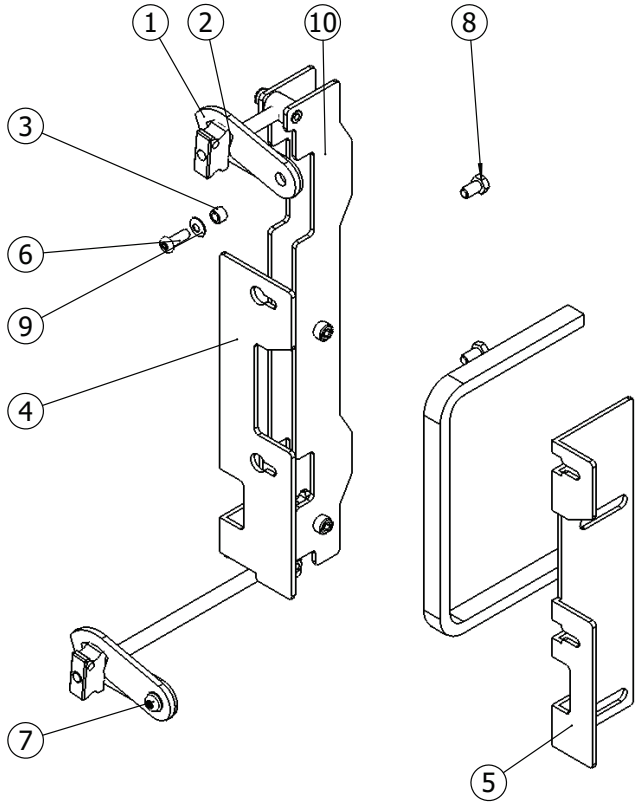
DESCRIPTION : 鏈條張力調整組/ Chain Tensioning Set(LtoRF)

XF2
Drive

www.lns-group.com TW

SCALE	1:3	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2018/8/7	2023.04.24
DRAWN BY	Sam Lai	Last modif.
ECN	ECN-10844	A1

XF2.13.A008A



POS	ITEM NO	DESCRIPTION	QTY
1	XF2.13.P052B	Plate	2
2	XF2.13.P055B	Fix plate	2
3	XF2.13.P060B	Space	2
4	XF2.13.P067B	Guide plate(RtoLF)	1
5	XF2.13.P068B	Guide plate(RtoLF)	1
6	7380.05.16		1
7	7380.05.12		1
8	933.06.12.Z		2
9	212745.05		2
10	XF2.13.A012A	Chain Tensioning Set	1

A1

A1=2

對應右向件:XF2.13.A008
Related LtoRF:XF2.13.A008

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 鏈條張力調整組/ Chain Tensioning Set(RtoL)

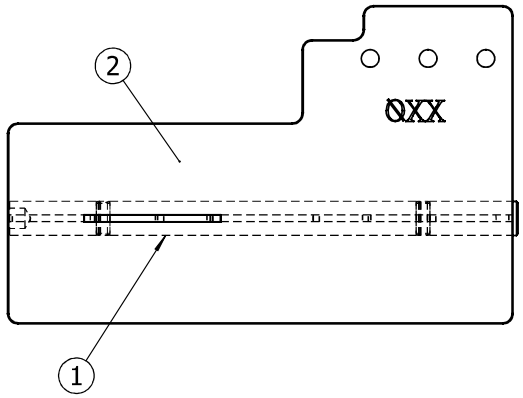
XF2
Drive

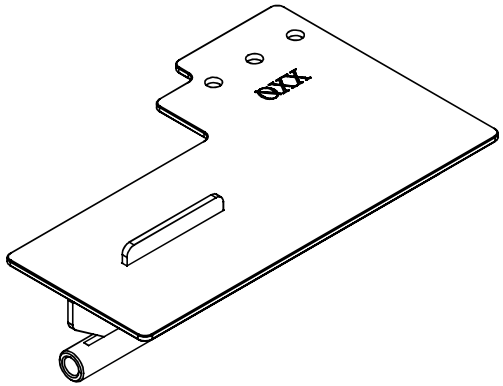
www.lns-group.com TW

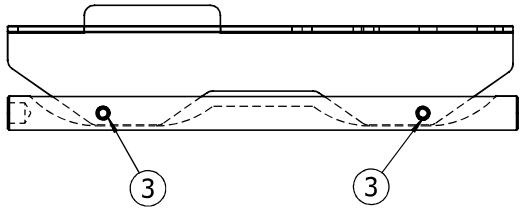
SCALE	1:3	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2018/8/7	2023.04.24
DRAWN BY	Sam Lai	Last modif.
ECN	ECN-10844	A1

XF2.13.A010A

Item	1	2	3
XF2.15.A090A.10	XF2.15.P013D.10	XF2.15.P080A	Spring Ping 4 X 10
XF2.15.A090A.13	XF2.15.P013D.13	XF2.15.P080A	Spring Ping 4 X 12
XF2.15.A090A.16	XF2.15.P013D.16	XF2.15.P080A	Spring Ping 4 X 15
XF2.15.A090A.18	XF2.15.P013D.18	XF2.15.P080A	Spring Ping 4 X 18







A1 =1

POS	ITEM NO	DESCRIPTION	QTY
1	XF2.15.P013D.10	Short Pusher	1
2	XF2.15.P080A	Flag of Short Pusher - LtoRF	1
3	12785.04.10		2

Page:1 /3 (∅10~ ∅18)

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 一次推塊組 - 右向/ Short Pusher Set - LtoRF

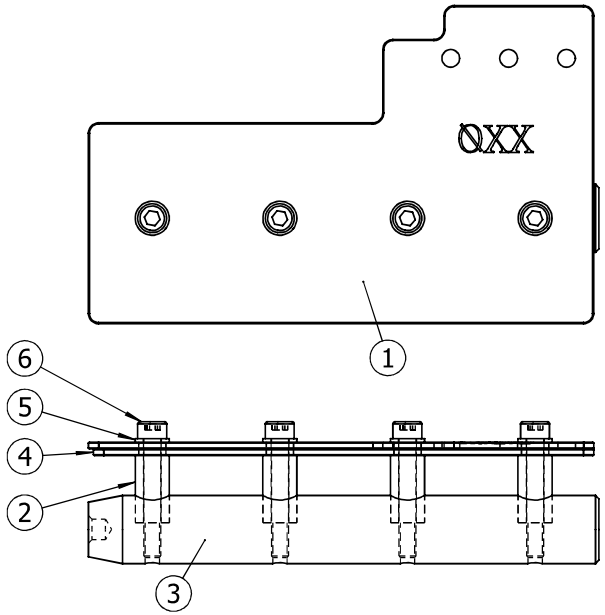
Pusher

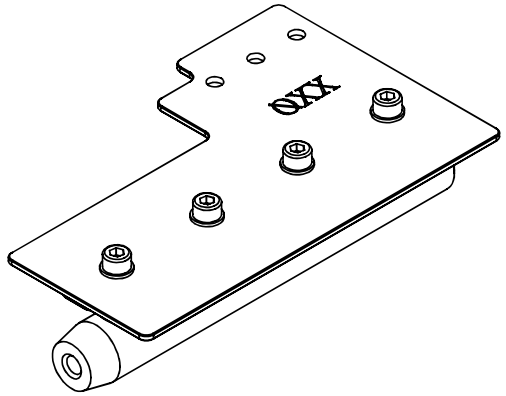
www.lns-group.com TW

SCALE	1:2	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2021.09.30	2023.07.12
DRAWN BY	Sam Lai	Last modif.
ECN	ECN-10899	A1

XF2.15.A090A.XX

Item	1	2	3	4	5	6
XF2.15.A090A.20	XF2.15.P079A	XF2.15.P012B	XF2.15.P026B.20	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A090A.21	XF2.15.P079A	XF2.15.P012B	XF2.15.P026B.21	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A090A.22	XF2.15.P079A	XF2.15.P012B	XF2.15.P026B.22	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A090A.23	XF2.15.P079A	XF2.15.P012B	XF2.15.P026B.23	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A090A.24	XF2.15.P079A	XF2.15.P012B	XF2.15.P026B.24	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A090A.25	XF2.15.P079A	XF2.15.P012B	XF2.15.P026B.25	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A090A.26	XF2.15.P079A	XF2.15.P012B	XF2.15.P026B.26	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A090A.27	XF2.15.P079A	XF2.15.P012B	XF2.15.P026B.27	XF2.15.P077A	W5 washer	912 M5 X 35
A1 XF2.15.A090A.28	XF2.15.P079A	XF2.15.P012B	XF2.15.P026B.28	XF2.15.P077A	W5 washer	912 M5 X 35





POS	ITEM NO	DESCRIPTION	
1	XF2.15.P079A	Flag of Short Pusher	1
2	XF2.15.P012B	Pin	4
3	XF2.15.P026B.XX	Short Pusher	1
4	XF2.15.P077A	Base	1
5	125A.05.N		4
6	912.05.35.Z		4

Page:2 / 3 (∅20~ ∅31)

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 一次推塊組 - 右向/ Short Pusher Set - LtoRF

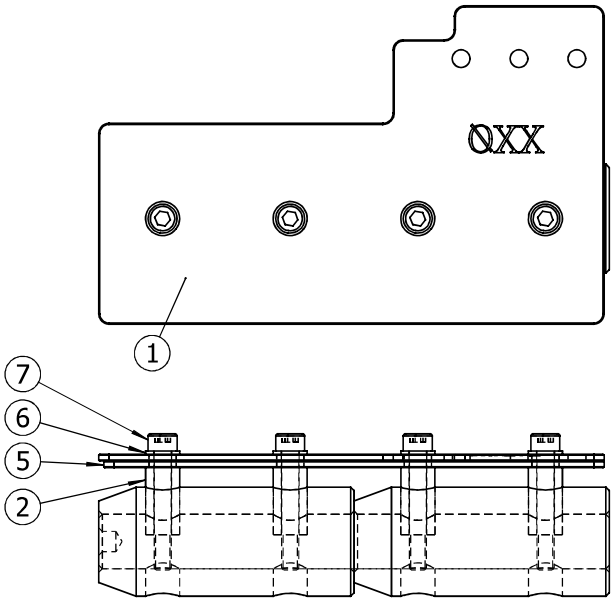
Pusher

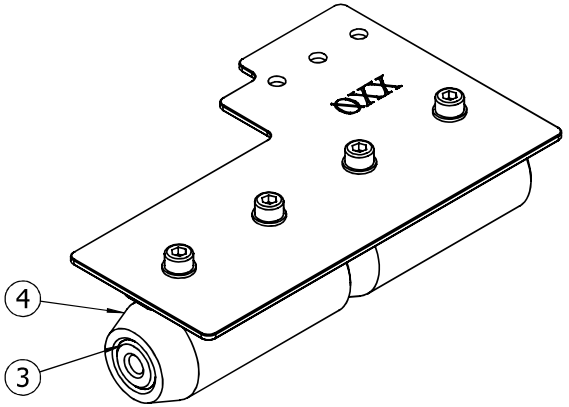
www.lns-group.com TW

SCALE	1:2	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2021.09.30	2023.07.12
DRAWN BY	Sam Lai	Last modif.
ECN	ECN-10899	A1

XF2.15.A090A.XX

Item	1	2	3	4	5	6	7
XF2.15.A090A.31	XF2.15.P079A	XF2.15.P012B	XF2.15.P016B	XF2.15.P015C.31	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A090A.32	XF2.15.P079A	XF2.15.P012B	XF2.15.P016B	XF2.15.P015C.32	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A090A.34	XF2.15.P079A	XF2.15.P012B	XF2.15.P016B	XF2.15.P015C.34	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A090A.35	XF2.15.P079A	XF2.15.P012B	XF2.15.P016B	XF2.15.P015C.35	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A090A.36	XF2.15.P079A	XF2.15.P012B	XF2.15.P016B	XF2.15.P015C.36	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A090A.38	XF2.15.P079A	XF2.15.P012B	XF2.15.P016B	XF2.15.P015C.38	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A090A.40	XF2.15.P079A	XF2.15.P012B	XF2.15.P016B	XF2.15.P015C.40	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A090A.42	XF2.15.P079A	XF2.15.P012B	XF2.15.P016B	XF2.15.P015C.42	XF2.15.P077A	W5 washer	912 M5 X 35





POS	ITEM NO	DESCRIPTION	
1	XF2.15.P079A	Flag of Short Pusher	1
2	XF2.15.P012B	Pin	4
3	XF2.15.P016B	Core of Short Pusher	1
4	XF2.15.P015C.XX		2
5	XF2.15.P077A	Base	1
6	125A.05.N		4
7	912.05.35.Z		4

Page:3 / 3 (∅32~∅42)

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 一次推塊組 - 右向/ Short Pusher Set - LtoRF

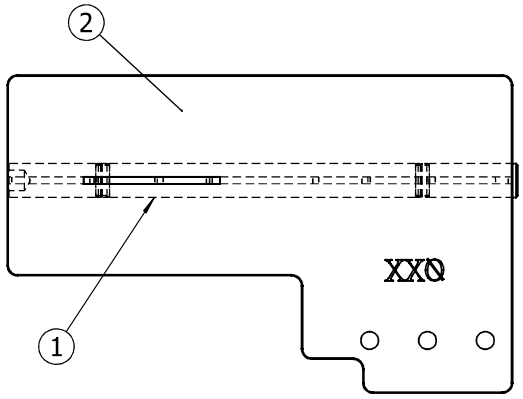
Pusher

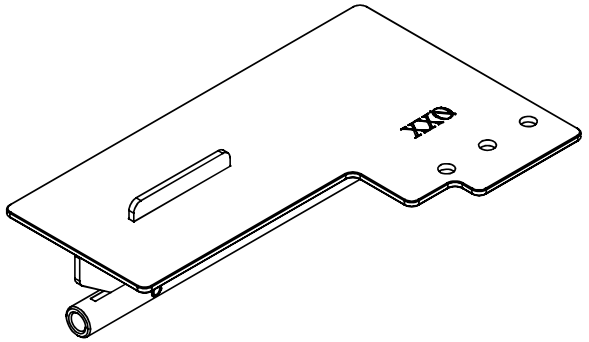
www.lns-group.com TW

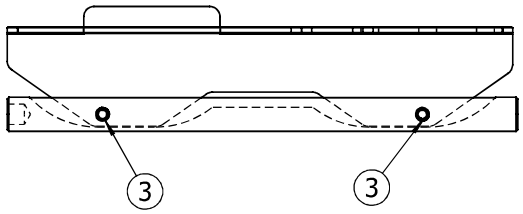
SCALE	1:2	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2021.09.30	2023.07.12
DRAWN BY	Sam Lai	Last modif.
ECN	ECN-10899	A1

XF2.15.A090A.XX

Item	1	2	3
XF2.15.A091A.10	XF2.15.P013D.10	XF2.15.P081A	Spring Ping 4 X 10
XF2.15.A091A.13	XF2.15.P013D.13	XF2.15.P081A	Spring Ping 4 X 12
XF2.15.A091A.16	XF2.15.P013D.16	XF2.15.P081A	Spring Ping 4 X 15
XF2.15.A091A.18	XF2.15.P013D.18	XF2.15.P081A	Spring Ping 4 X 18







A1=1

POS	ITEM NO	DESCRIPTION	QTY
1	XF2.15.P013D.10	Short Pusher	1
2	XF2.15.P081A	Flag of Short Pusher - RtoLF	1
3	12785.04.10		2

Page:1 /3 (∅10~ ∅18)

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 一次推塊組 - 左向/ Short Pusher Set - RtoLF

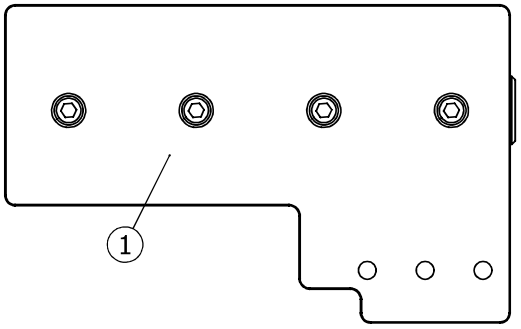
Pusher

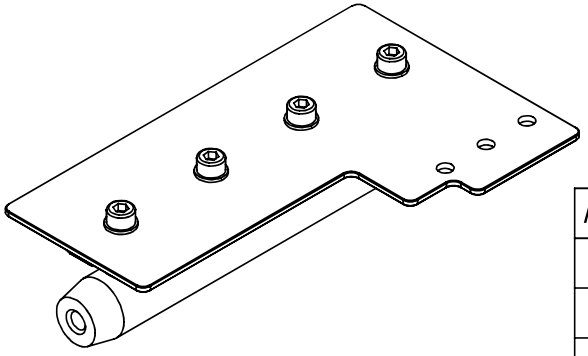
www.lns-group.com TW

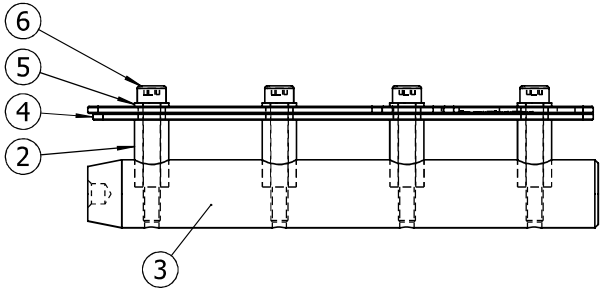
SCALE	1:2	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2021.09.30	2023.07.12
DRAWN BY	Sam Lai	Last modif.
ECN	ECN-10899	A1

XF2.15.A091A.XX

Item	1	2	3	4	5	6
XF2.15.A091A.20	XF2.15.P079A	XF2.15.P012B	XF2.15.P026B.20	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A091A.21	XF2.15.P079A	XF2.15.P012B	XF2.15.P026B.21	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A091A.22	XF2.15.P079A	XF2.15.P012B	XF2.15.P026B.22	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A091A.23	XF2.15.P079A	XF2.15.P012B	XF2.15.P026B.23	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A091A.24	XF2.15.P079A	XF2.15.P012B	XF2.15.P026B.24	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A091A.25	XF2.15.P079A	XF2.15.P012B	XF2.15.P026B.25	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A091A.26	XF2.15.P079A	XF2.15.P012B	XF2.15.P026B.26	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A091A.27	XF2.15.P079A	XF2.15.P012B	XF2.15.P026B.27	XF2.15.P077A	W5 washer	912 M5 X 35
A1 XF2.15.A091A.28	XF2.15.P079A	XF2.15.P012B	XF2.15.P026B.28	XF2.15.P077A	W5 washer	912 M5 X 35







POS	ITEM NO	DESCRIPTION	QTY
1	XF2.15.P079A	Flag of Short Pusher	1
2	XF2.15.P012B	Pin	4
3	XF2.15.P026B.XX	Short Pusher	1
4	XF2.15.P077A	Base	1
5	125A.05.N		4
6	912.05.35.Z		4

Page:2 / 3 (∅20~ ∅31)

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 一次推塊組 - 左向/ Short Pusher Set - RtoLF

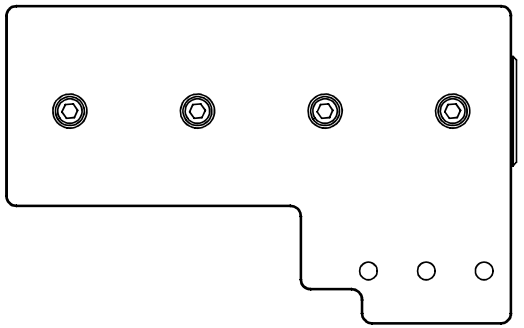
Pusher

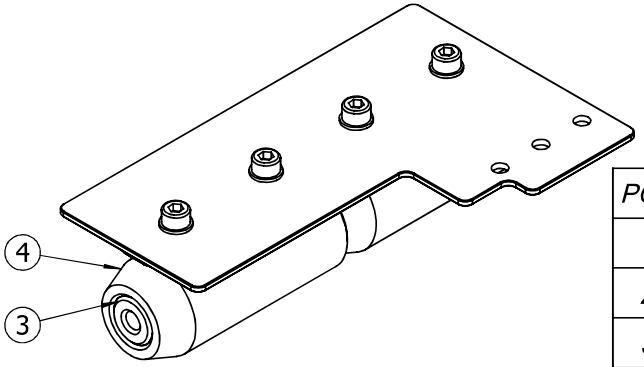
www.lns-group.com TW

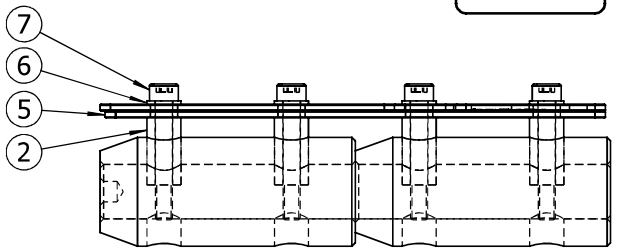
SCALE	1:2	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2021.09.30	2023.07.12
DRAWN BY	Sam Lai	Last modif.
ECN	ECN-10899	A1

XF2.15.A091A.XX

Item	1	2	3	4	5	6	7
XF2.15.A091A.31	XF2.15.P079A	XF2.15.P012B	XF2.15.P016B	XF2.15.P015C.31	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A091A.32	XF2.15.P079A	XF2.15.P012B	XF2.15.P016B	XF2.15.P015C.32	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A091A.34	XF2.15.P079A	XF2.15.P012B	XF2.15.P016B	XF2.15.P015C.34	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A091A.35	XF2.15.P079A	XF2.15.P012B	XF2.15.P016B	XF2.15.P015C.35	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A091A.36	XF2.15.P079A	XF2.15.P012B	XF2.15.P016B	XF2.15.P015C.36	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A091A.38	XF2.15.P079A	XF2.15.P012B	XF2.15.P016B	XF2.15.P015C.38	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A091A.40	XF2.15.P079A	XF2.15.P012B	XF2.15.P016B	XF2.15.P015C.40	XF2.15.P077A	W5 washer	912 M5 X 35
XF2.15.A091A.42	XF2.15.P079A	XF2.15.P012B	XF2.15.P016B	XF2.15.P015C.42	XF2.15.P077A	W5 washer	912 M5 X 35







POS	ITEM NO	DESCRIPTION	QTY
1	XF2.15.P079A	Flag of Short Pusher	1
2	XF2.15.P012B	Pin	4
3	XF2.15.P016B	Core of Short Pusher	1
4	XF2.15.P015C.XX		2
5	XF2.15.P077A	Base	1
6	125A.05.N		4
7	912.05.35.Z		4

Page:3 / 3 (∅32~∅42)

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 一次推塊組 - 左向/ Short Pusher Set - RtoLF

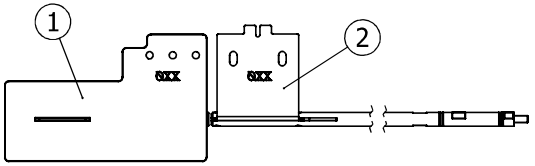
Pusher

www.lns-group.com TW

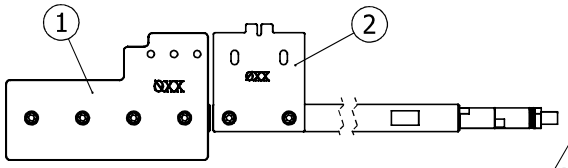
SCALE	1:2	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2021.09.30	2023.07.12
DRAWN BY	Sam Lai	Last modif.
ECN	ECN-10899	A1

XF2.15.A091A.XX

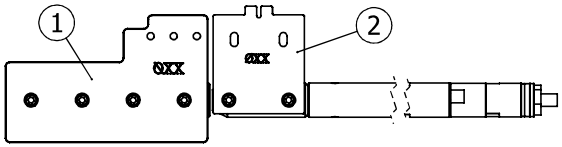
POS	ITEM NO	DESCRIPTION	QTY
1	XF2.15.A090A.10	Short Pusher Set - LtoRF	1
2	XF2.15.A060B.XX	Long Pusher - L - LtoRF	1



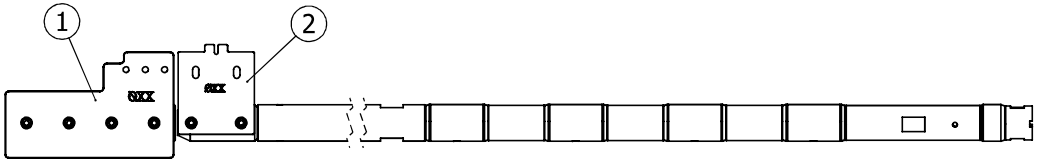
∅10~∅18



∅19~∅24



∅25~∅28



∅31~∅42

Item	1	2
XF2.15.A092A.10	XF2.15.A090A.10	XF2.15.A060B.10
XF2.15.A092A.13	XF2.15.A090A.13	XF2.15.A060B.13
XF2.15.A092A.16	XF2.15.A090A.16	XF2.15.A060B.16
XF2.15.A092A.18	XF2.15.A090A.18	XF2.15.A060B.18
XF2.15.A092A.20	XF2.15.A090A.20	XF2.15.A060B.20
XF2.15.A092A.22	XF2.15.A090A.22	XF2.15.A060B.22
XF2.15.A092A.24	XF2.15.A090A.24	XF2.15.A060B.24
XF2.15.A092A.26	XF2.15.A090A.26	XF2.15.A060B.26
XF2.15.A092A.28	XF2.15.A090A.28	XF2.15.A060B.28
XF2.15.A092A.31	XF2.15.A090A.31	XF2.15.A060B.31
XF2.15.A092A.32	XF2.15.A090A.32	XF2.15.A060B.32
XF2.15.A092A.34	XF2.15.A090A.34	XF2.15.A060B.34
XF2.15.A092A.35	XF2.15.A090A.35	XF2.15.A060B.35
XF2.15.A092A.36	XF2.15.A090A.36	XF2.15.A060B.36
XF2.15.A092A.38	XF2.15.A090A.38	XF2.15.A060B.38
XF2.15.A092A.40	XF2.15.A090A.40	XF2.15.A060B.40
XF2.15.A092A.42	XF2.15.A090A.42	XF2.15.A060B.42

A1

A1=1

註：不包含中軸

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : / Pusher - L - LtoRF

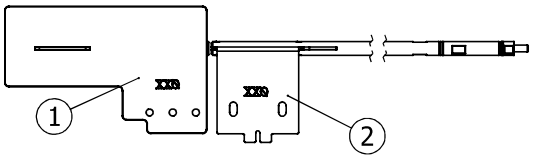
Pusher

www.lns-group.com TW

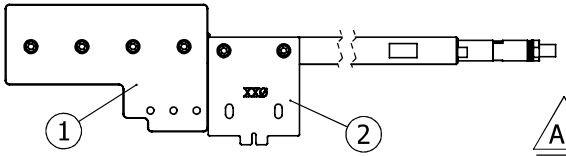
SCALE	1:20	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2021.09.30	2023.07.12
DRAWN BY	Sam Lai	Last modif.
ECN	ECN-10899	A1

XF2.15.A092A.XX

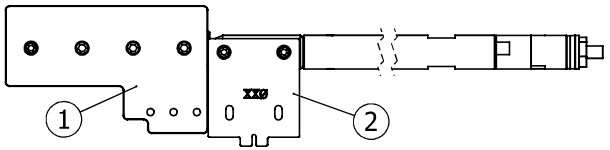
POS	ITEM NO	DESCRIPTION	QTY
1	XF2.15.A091A.XX	Short Pusher Set - RtoLF	1
2	XF2.15.A064B.XX	Long Pusher - L - RtoLF	1



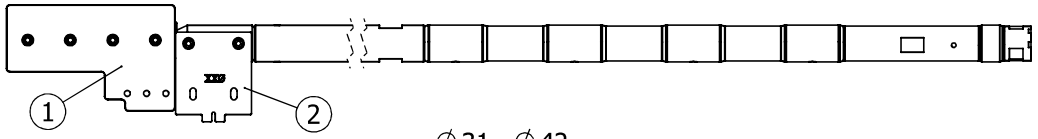
∅10~∅18



∅19~∅24



∅25~∅28



∅31~∅42

Item	1	2
XF2.15.A093A.10	XF2.15.A091A.10	XF2.15.A064B.10
XF2.15.A093A.13	XF2.15.A091A.13	XF2.15.A064B.13
XF2.15.A093A.16	XF2.15.A091A.16	XF2.15.A064B.16
XF2.15.A093A.18	XF2.15.A091A.18	XF2.15.A064B.18
XF2.15.A093A.20	XF2.15.A091A.20	XF2.15.A064B.20
XF2.15.A093A.22	XF2.15.A091A.22	XF2.15.A064B.22
XF2.15.A093A.24	XF2.15.A091A.24	XF2.15.A064B.24
XF2.15.A093A.26	XF2.15.A091A.26	XF2.15.A064B.26
XF2.15.A093A.28	XF2.15.A091A.28	XF2.15.A064B.28
XF2.15.A093A.31	XF2.15.A091A.31	XF2.15.A064B.31
XF2.15.A093A.32	XF2.15.A091A.32	XF2.15.A064B.32
XF2.15.A093A.34	XF2.15.A091A.34	XF2.15.A064B.34
XF2.15.A093A.35	XF2.15.A091A.35	XF2.15.A064B.35
XF2.15.A093A.36	XF2.15.A091A.36	XF2.15.A064B.36
XF2.15.A093A.38	XF2.15.A091A.38	XF2.15.A064B.38
XF2.15.A093A.40	XF2.15.A091A.40	XF2.15.A064B.40
XF2.15.A093A.42	XF2.15.A091A.42	XF2.15.A064B.42

A1

A1=1

註：不包含中軸

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 押棒組 - L - 左向/ Pusher - L - RtoLF

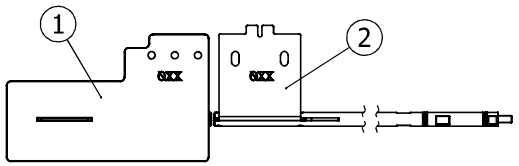
Pusher

www.lns-group.com TW

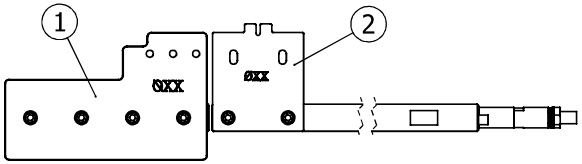
SCALE	1:20	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2021.09.30	2023.07.12
DRAWN BY	Sam Lai	Last modif.
ECN	ECN-10899	A1

XF2.15.A093A.XX

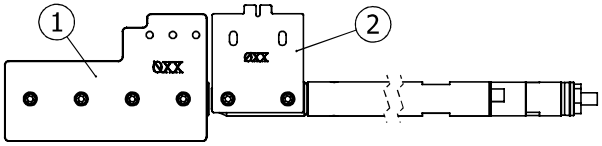
POS	ITEM NO	DESCRIPTION	QTY
1	XF2.15.A090A.10	Short Pusher Set - LtoRF	1
2	XF2.15.A059B.XX	Long Pusher - LL - LtoRF	1



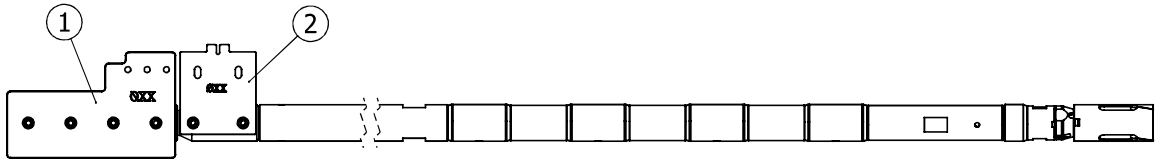
∅10~∅18



∅19~∅24



∅25~∅28



∅32~∅42

Item	1	2
XF2.15.A094A.10	XF2.15.A090A.10	XF2.15.A059B.10
XF2.15.A094A.13	XF2.15.A090A.13	XF2.15.A059B.13
XF2.15.A094A.16	XF2.15.A090A.16	XF2.15.A059B.16
XF2.15.A094A.18	XF2.15.A090A.18	XF2.15.A059B.18
XF2.15.A094A.20	XF2.15.A090A.20	XF2.15.A059B.20
XF2.15.A094A.22	XF2.15.A090A.22	XF2.15.A059B.22
XF2.15.A094A.24	XF2.15.A090A.24	XF2.15.A059B.24
XF2.15.A094A.26	XF2.15.A090A.26	XF2.15.A059B.26
XF2.15.A094A.28	XF2.15.A090A.28	XF2.15.A059B.28
XF2.15.A094A.31	XF2.15.A090A.31	XF2.15.A059B.31
XF2.15.A094A.32	XF2.15.A090A.32	XF2.15.A059B.32
XF2.15.A094A.34	XF2.15.A090A.34	XF2.15.A059B.34
XF2.15.A094A.35	XF2.15.A090A.35	XF2.15.A059B.35
XF2.15.A094A.36	XF2.15.A090A.36	XF2.15.A059B.36
XF2.15.A094A.38	XF2.15.A090A.38	XF2.15.A059B.38
XF2.15.A094A.40	XF2.15.A090A.40	XF2.15.A059B.40
XF2.15.A094A.42	XF2.15.A090A.42	XF2.15.A059B.42

A1

A1=1

註：不包含中軸

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 押棒組 - LL - 右向/ Pusher - LL - LtoRF

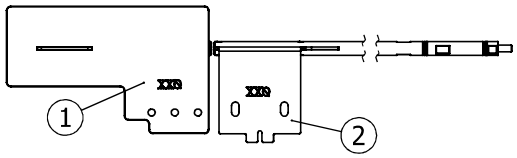
Pusher

www.lns-group.com TW

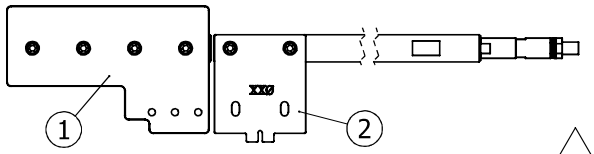
SCALE	1:20	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2021.09.30	2023.07.12
DRAWN BY	Sam Lai	Last modif.
ECN	ECN-10899	A1

XF2.15.A094A.XX

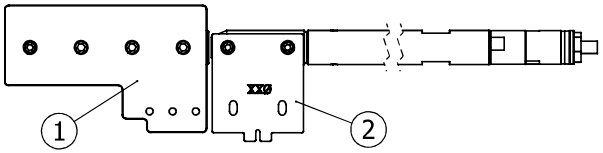
POS	ITEM NO	DESCRIPTION	QTY
1	XF2.15.A091A.XX	Short Pusher Set - RtoLF	1
2	XF2.15.A063B.XX	Long Pusher - LL - RtoLF	1



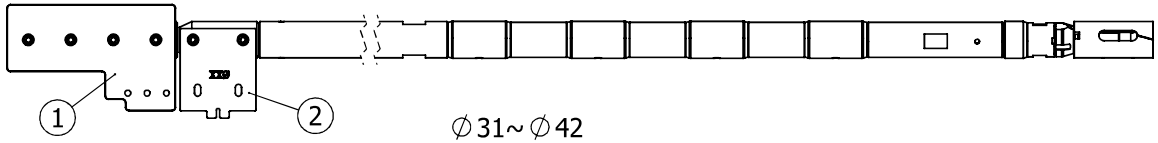
∅10~∅18



∅19~∅24



∅25~∅28



∅31~∅42

Item	1	2
XF2.15.A095A.10	XF2.15.A091A.10	XF2.15.A063B.10
XF2.15.A095A.13	XF2.15.A091A.13	XF2.15.A063B.13
XF2.15.A095A.16	XF2.15.A091A.16	XF2.15.A063B.16
XF2.15.A095A.18	XF2.15.A091A.18	XF2.15.A063B.18
XF2.15.A095A.20	XF2.15.A091A.20	XF2.15.A063B.20
XF2.15.A095A.22	XF2.15.A091A.22	XF2.15.A063B.22
XF2.15.A095A.24	XF2.15.A091A.24	XF2.15.A063B.24
XF2.15.A095A.26	XF2.15.A091A.26	XF2.15.A063B.26
XF2.15.A095A.28	XF2.15.A091A.28	XF2.15.A063B.28
XF2.15.A095A.31	XF2.15.A091A.31	XF2.15.A063B.31
XF2.15.A095A.32	XF2.15.A091A.32	XF2.15.A063B.32
XF2.15.A095A.34	XF2.15.A091A.34	XF2.15.A063B.34
XF2.15.A095A.35	XF2.15.A091A.35	XF2.15.A063B.35
XF2.15.A095A.36	XF2.15.A091A.36	XF2.15.A063B.36
XF2.15.A095A.38	XF2.15.A091A.38	XF2.15.A063B.38
XF2.15.A095A.40	XF2.15.A091A.40	XF2.15.A063B.40
XF2.15.A095A.42	XF2.15.A091A.42	XF2.15.A063B.42

A1

A1 =1

註：不包含中軸

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 押棒組 - LL - 左向/ Pusher - LL - RtoLF

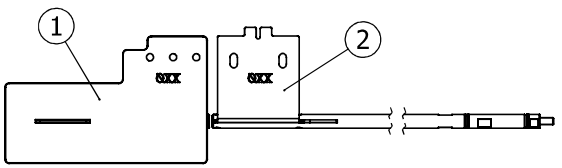
Pusher

www.lns-group.com TW

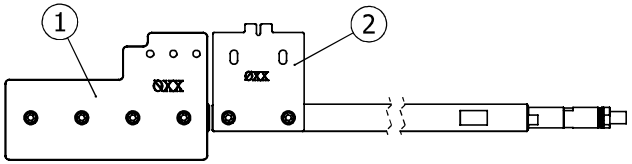
SCALE	1:20	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2021.09.30	2023.07.12
DRAWN BY	Sam Lai	Last modif.
ECN	ECN-10899	A1

XF2.15.A095A.XX

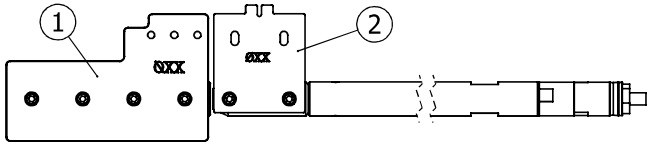
POS	ITEM NO	DESCRIPTION	QTY
1	XF2.15.A090A.10	Short Pusher Set - LtoRF	1
2	XF2.15.A122A.XX	Long Pusher - 2.5L - LtoRF	1



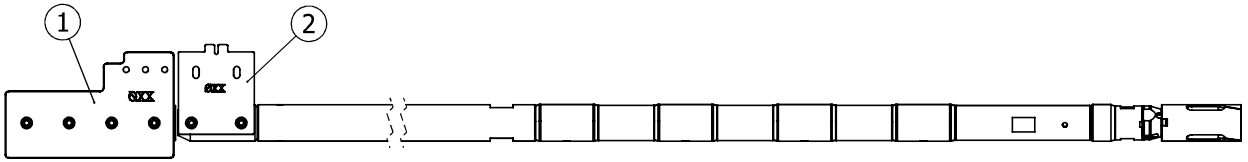
∅10~∅18



∅19~∅24



∅25~∅27



∅32~∅42

Item NO.	1	2
XF2.15.A121A.10	XF2.15.A090A.10	XF2.15.A122A.10
XF2.15.A121A.13	XF2.15.A090A.13	XF2.15.A122A.13
XF2.15.A121A.16	XF2.15.A090A.16	XF2.15.A122A.16
XF2.15.A121A.18	XF2.15.A090A.18	XF2.15.A122A.18
XF2.15.A121A.20	XF2.15.A090A.20	XF2.15.A122A.20
XF2.15.A121A.22	XF2.15.A090A.22	XF2.15.A122A.22
XF2.15.A121A.24	XF2.15.A090A.24	XF2.15.A122A.24
XF2.15.A121A.26	XF2.15.A090A.26	XF2.15.A122A.26
XF2.15.A121A.28	XF2.15.A090A.28	XF2.15.A122A.28
XF2.15.A121A.31	XF2.15.A090A.31	XF2.15.A122A.31
XF2.15.A121A.32	XF2.15.A090A.32	XF2.15.A122A.32
XF2.15.A121A.34	XF2.15.A090A.34	XF2.15.A122A.34
XF2.15.A121A.35	XF2.15.A090A.35	XF2.15.A122A.35
XF2.15.A121A.36	XF2.15.A090A.36	XF2.15.A122A.36
XF2.15.A121A.38	XF2.15.A090A.38	XF2.15.A122A.38
XF2.15.A121A.40	XF2.15.A090A.40	XF2.15.A122A.40
XF2.15.A121A.42	XF2.15.A090A.42	XF2.15.A122A.42

A1

A1=1

註：不包含中軸

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 押棒組 - 2.5L - 右向/ Pusher - 2.5L - LtoRF

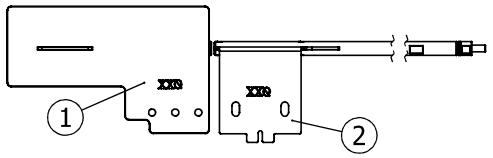
Pusher

www.lns-group.com TW

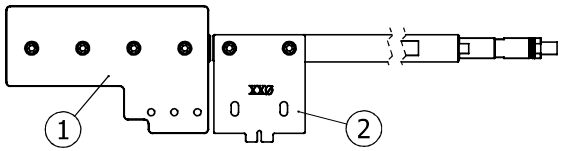
SCALE	1:20	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2023.06.14	2023.07.12
DRAWN BY	Sam Lai	Last modif.
ECN	ECN-10899	A1

XF2.15.A121A.XX

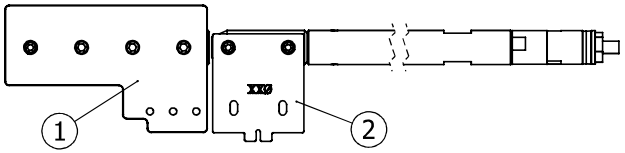
POS	ITEM NO	DESCRIPTION	QTY
1	XF2.15.A091A.XX	Short Pusher Set - RtoLF	1
2	XF2.15.A124A.XX	Long Pusher - 2.5L - RtoLF	1



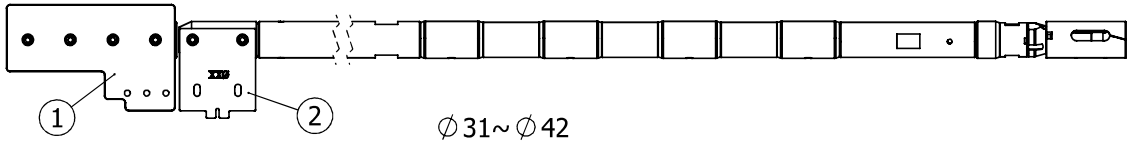
∅10~∅18



∅19~∅24



∅25~∅28



∅31~∅42

Item NO.	1	2
XF2.15.A123A.10	XF2.15.A091A.10	XF2.15.A124A.10
XF2.15.A123A.13	XF2.15.A091A.13	XF2.15.A124A.13
XF2.15.A123A.16	XF2.15.A091A.16	XF2.15.A124A.16
XF2.15.A123A.18	XF2.15.A091A.18	XF2.15.A124A.18
XF2.15.A123A.20	XF2.15.A091A.20	XF2.15.A124A.20
XF2.15.A123A.22	XF2.15.A091A.22	XF2.15.A124A.22
XF2.15.A123A.24	XF2.15.A091A.24	XF2.15.A124A.24
XF2.15.A123A.26	XF2.15.A091A.26	XF2.15.A124A.26
XF2.15.A123A.28	XF2.15.A091A.28	XF2.15.A124A.28
XF2.15.A123A.31	XF2.15.A091A.31	XF2.15.A124A.31
XF2.15.A123A.32	XF2.15.A091A.32	XF2.15.A124A.32
XF2.15.A123A.34	XF2.15.A091A.34	XF2.15.A124A.34
XF2.15.A123A.35	XF2.15.A091A.35	XF2.15.A124A.35
XF2.15.A123A.36	XF2.15.A091A.36	XF2.15.A124A.36
XF2.15.A123A.38	XF2.15.A091A.38	XF2.15.A124A.38
XF2.15.A123A.40	XF2.15.A091A.40	XF2.15.A124A.40
XF2.15.A123A.42	XF2.15.A091A.42	XF2.15.A124A.42

A1

A1 =1

註：不包含中軸

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 押棒組 - 2.5L - 左向/ Pusher - 2.5L - RtoLF

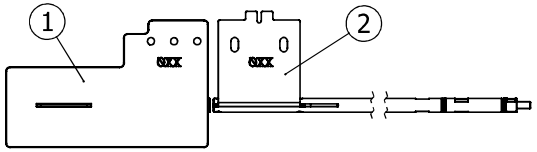
Pusher

www.lns-group.com TW

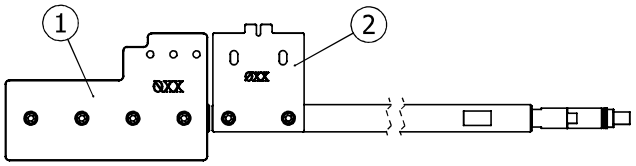
SCALE	1:20	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2023.06.14	2023.07.12
DRAWN BY	Sam Lai	Last modif.
ECN	ECN-10899	A1

XF2.15.A123A.XX

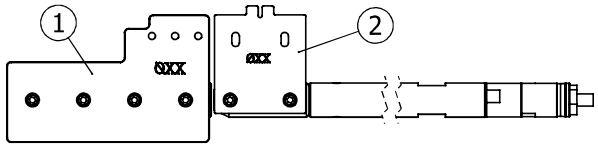
POS	ITEM NO	DESCRIPTION	QTY
1	XF2.15.A090A.10	Short Pusher Set - LtoRF	1
2	XF2.15.A061B.XX	Long Pusher - LLL - LtoRF	1



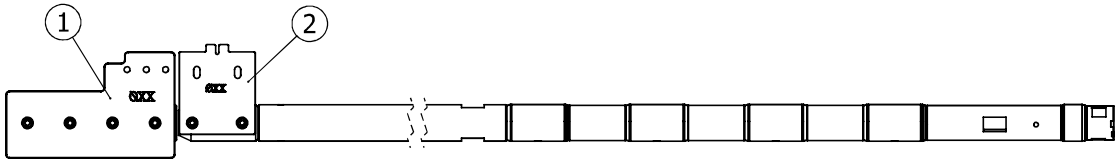
∅10~∅18



∅19~∅24



∅25~∅28



∅32~∅42

Item	1	2
XF2.15.A096A.10	XF2.15.A090A.10	XF2.15.A061B.10
XF2.15.A096A.13	XF2.15.A090A.13	XF2.15.A061B.13
XF2.15.A096A.16	XF2.15.A090A.16	XF2.15.A061B.16
XF2.15.A096A.18	XF2.15.A090A.18	XF2.15.A061B.18
XF2.15.A096A.20	XF2.15.A090A.20	XF2.15.A061B.20
XF2.15.A096A.22	XF2.15.A090A.22	XF2.15.A061B.22
XF2.15.A096A.24	XF2.15.A090A.24	XF2.15.A061B.24
XF2.15.A096A.26	XF2.15.A090A.26	XF2.15.A061B.26
XF2.15.A096A.28	XF2.15.A090A.28	XF2.15.A061B.28
XF2.15.A096A.31	XF2.15.A090A.31	XF2.15.A061B.31
XF2.15.A096A.32	XF2.15.A090A.32	XF2.15.A061B.32
XF2.15.A096A.34	XF2.15.A090A.34	XF2.15.A061B.34
XF2.15.A096A.35	XF2.15.A090A.35	XF2.15.A061B.35
XF2.15.A096A.36	XF2.15.A090A.36	XF2.15.A061B.36
XF2.15.A096A.38	XF2.15.A090A.38	XF2.15.A061B.38
XF2.15.A096A.40	XF2.15.A090A.40	XF2.15.A061B.40
XF2.15.A096A.42	XF2.15.A090A.42	XF2.15.A061B.42

A1

A1=1

註：不包含中軸

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 押棒組 - LLL - 右向/ Pusher - LLL - LtoRF

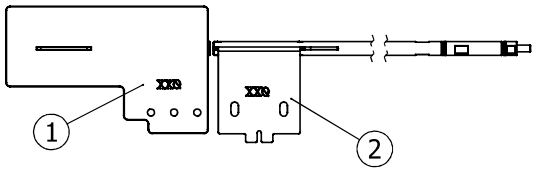
Pusher

www.lns-group.com TW

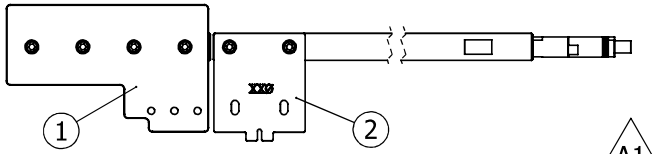
SCALE	1:20	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2021.09.30	2023.07.12
DRAWN BY	Sam Lai	Last modif.
ECN	ECN-10899	A1

XF2.15.A096A.XX

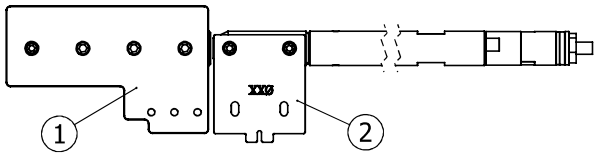
POS	ITEM NO	DESCRIPTION	QTY
1	XF2.15.A091A.XX	Short Pusher Set - RtoLF	1
2	XF2.15.A065B.XX	Long Pusher - LLL - RtoLF	1



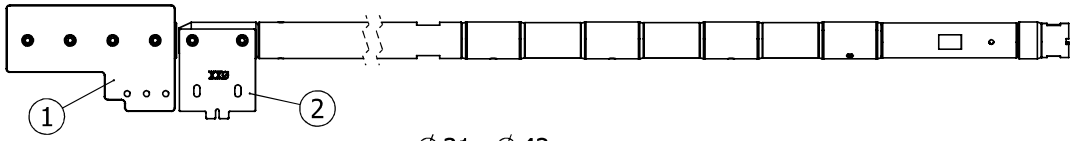
∅10~∅18



∅19~∅24



∅25~∅28



∅31~∅42

Item	1	2
XF2.15.A097A.10	XF2.15.A091A.10	XF2.15.A065B.10
XF2.15.A097A.13	XF2.15.A091A.13	XF2.15.A065B.13
XF2.15.A097A.16	XF2.15.A091A.16	XF2.15.A065B.16
XF2.15.A097A.18	XF2.15.A091A.18	XF2.15.A065B.18
XF2.15.A097A.20	XF2.15.A091A.20	XF2.15.A065B.20
XF2.15.A097A.22	XF2.15.A091A.22	XF2.15.A065B.22
XF2.15.A097A.24	XF2.15.A091A.24	XF2.15.A065B.24
XF2.15.A097A.26	XF2.15.A091A.26	XF2.15.A065B.26
XF2.15.A097A.28	XF2.15.A091A.28	XF2.15.A065B.28
XF2.15.A097A.31	XF2.15.A091A.31	XF2.15.A065B.31
XF2.15.A097A.32	XF2.15.A091A.32	XF2.15.A065B.32
XF2.15.A097A.34	XF2.15.A091A.34	XF2.15.A065B.34
XF2.15.A097A.35	XF2.15.A091A.35	XF2.15.A065B.35
XF2.15.A097A.36	XF2.15.A091A.36	XF2.15.A065B.36
XF2.15.A097A.38	XF2.15.A091A.38	XF2.15.A065B.38
XF2.15.A097A.40	XF2.15.A091A.40	XF2.15.A065B.40
XF2.15.A097A.42	XF2.15.A091A.42	XF2.15.A065B.42

A1

A1 =1

註：不包含中軸

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

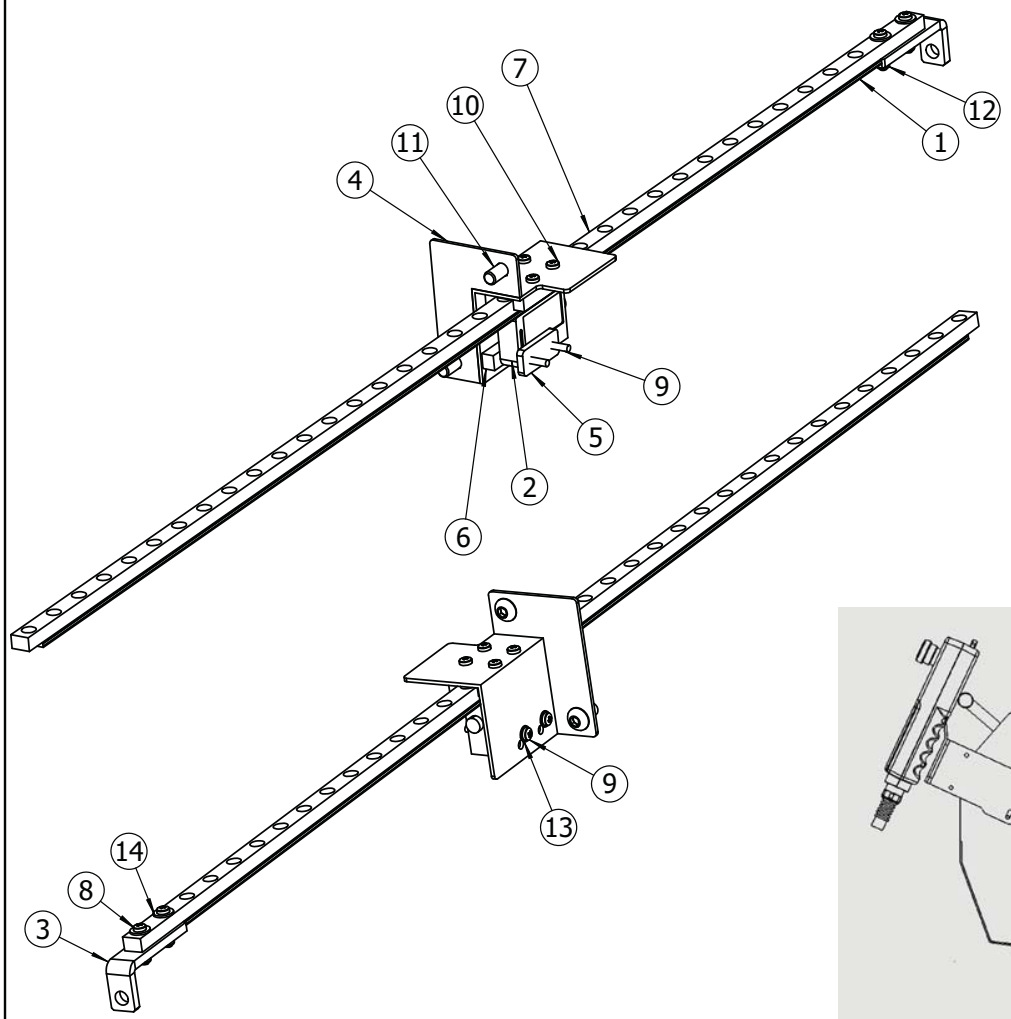
DESCRIPTION : 押棒組 - LLL - 左向/ Pusher - LLL - RtoLF

Pusher

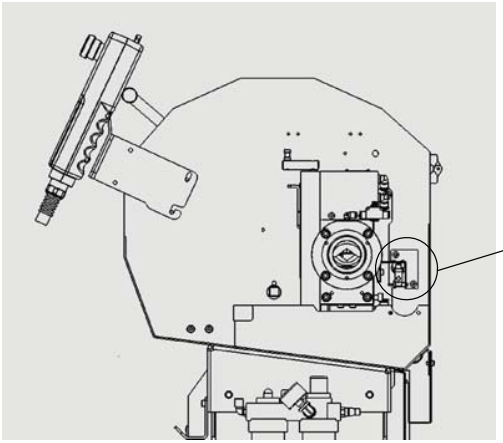
www.lns-group.com TW

SCALE	1:20	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2021.09.30	2023.07.12
DRAWN BY	Sam Lai	Last modif.
ECN	ECN-10899	A1

XF2.15.A097A.XX



	Item	Qty.	Part No.	Descr.
A2	1	1	B16130107	
A2	2	1	B16130301	
			B13200452	
	3	1	ST4400200	
A2	4	1	XF2.16.P032B	
	5	1	XF2.16.P033A	
	6	1	XH14402000000	
	7	1	XH14405000000	
	8	2	ISO 7045 - M3 x 16	
	9	2	ISO 7045 - M3 x 30	
	10	4	ISO 7045 - M3 x 6	
	11	2	JIS B 1174_M6x12	
	12	2	Lock Nut-M3	
	13	2	Washer DIN 125 - A 3.2	
	14	2	Washer DIN 9021 - 3.2	



安裝於此位置

A2 =3

同步行程 : 600 mm
synchro travel : 600 mm

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

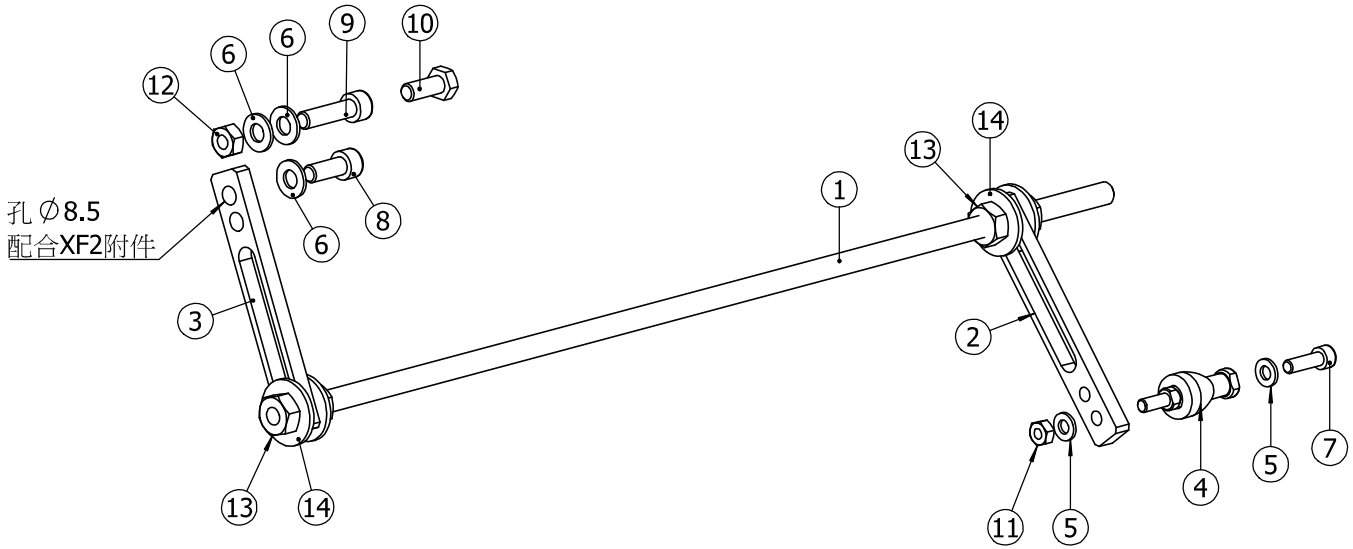
DESCRIPTION : 同步裝置組-右向/ Synchronization set-LtoRF

XF2
Synchronization

www.lns-group.com TW

SCALE	**1:4**	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2018.12.05	2021.01.11
DRAWN BY	Sam Lai	**Last modif.**
ECN	ECN.XT1.378	A2

XF2.16.A005A



Item	Qty.	Part No.	Descr.
1	1	M20560800	
2	1	ST9203500	
3	1	XF2.16.P037A	
4	1	XT144190000	
5	2	125A.06	
6	3	125A.08	
7	1	912.06.20.Z	
8	1	912.08.20.Z	
9	1	912.08.30.Z	
10	1	933.08.20.Z	
11	1	934.06.Z	
12	1	934.08.Z	
13	4	934.10.Z	
14	4	9021.10	

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

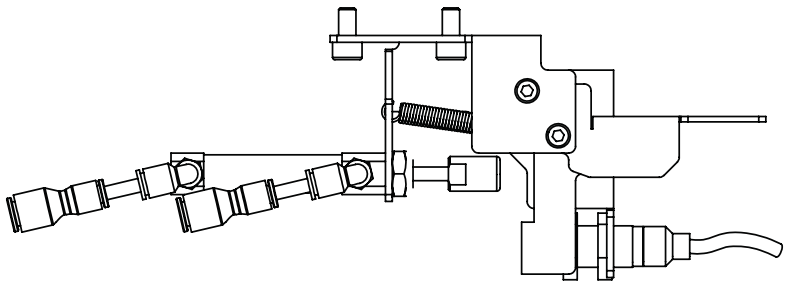
DESCRIPTION : 同步附件/ Synchronizer accessory

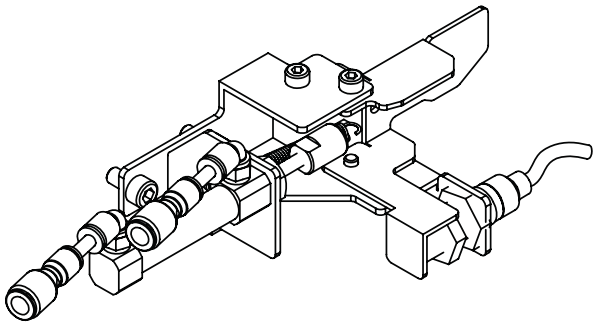
XF2
Synchronization

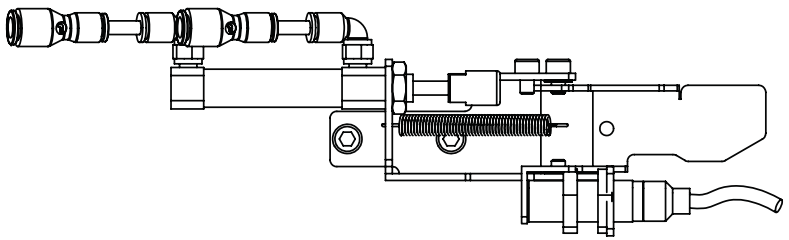
www.lns-group.com TW

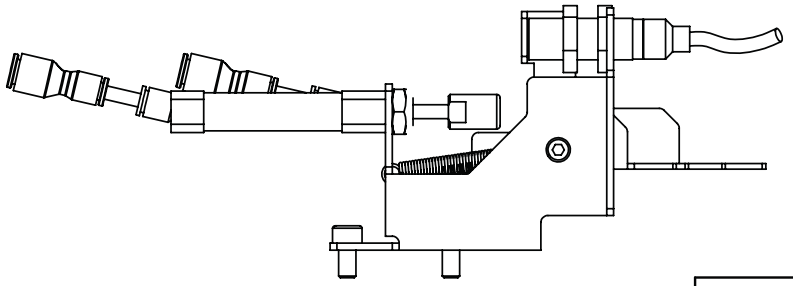
SCALE	1:3	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2019.11.28	
DRAWN BY	林 義 碧	Last modif.
ECN	ECN.XT1.347	A0

XF2.16.A007A

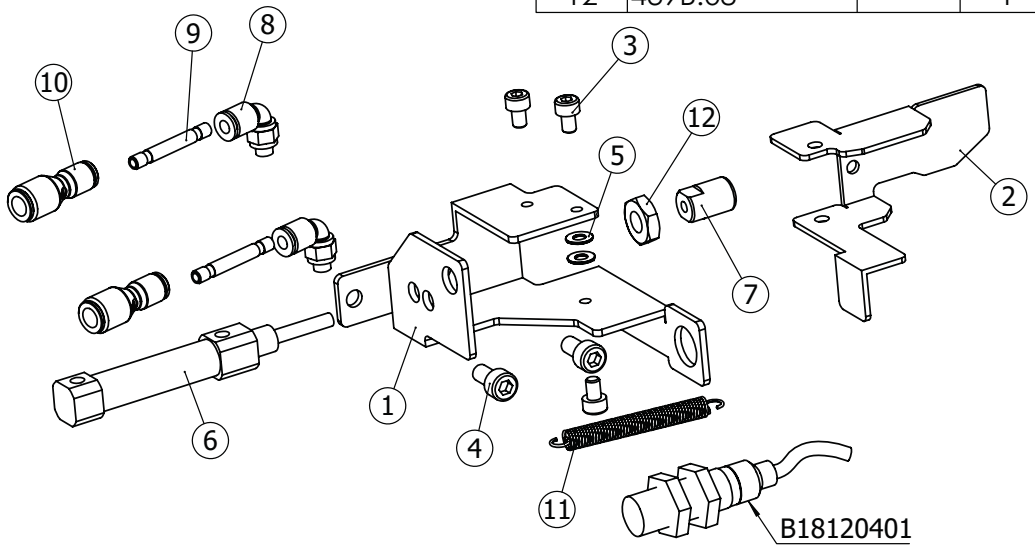








ITEM NO.	PART NUMBER	DESC.	QTY.
1	XF2.21.P010A		1
2	XF2.21.P009B		1
3	912.04.06.Z		3
4	912.05.10.Z		2
5	DIN_125A_M3.5		2
6	C12120900		1
7	XA1.21.P003B		1
8	C13111000		2
9	ST3401500		2
10	C13122200		2
11	XF2.21.P011B		1
12	439B.08		1



對應左向件：XF2.21.A006A
(For RtoLF)

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

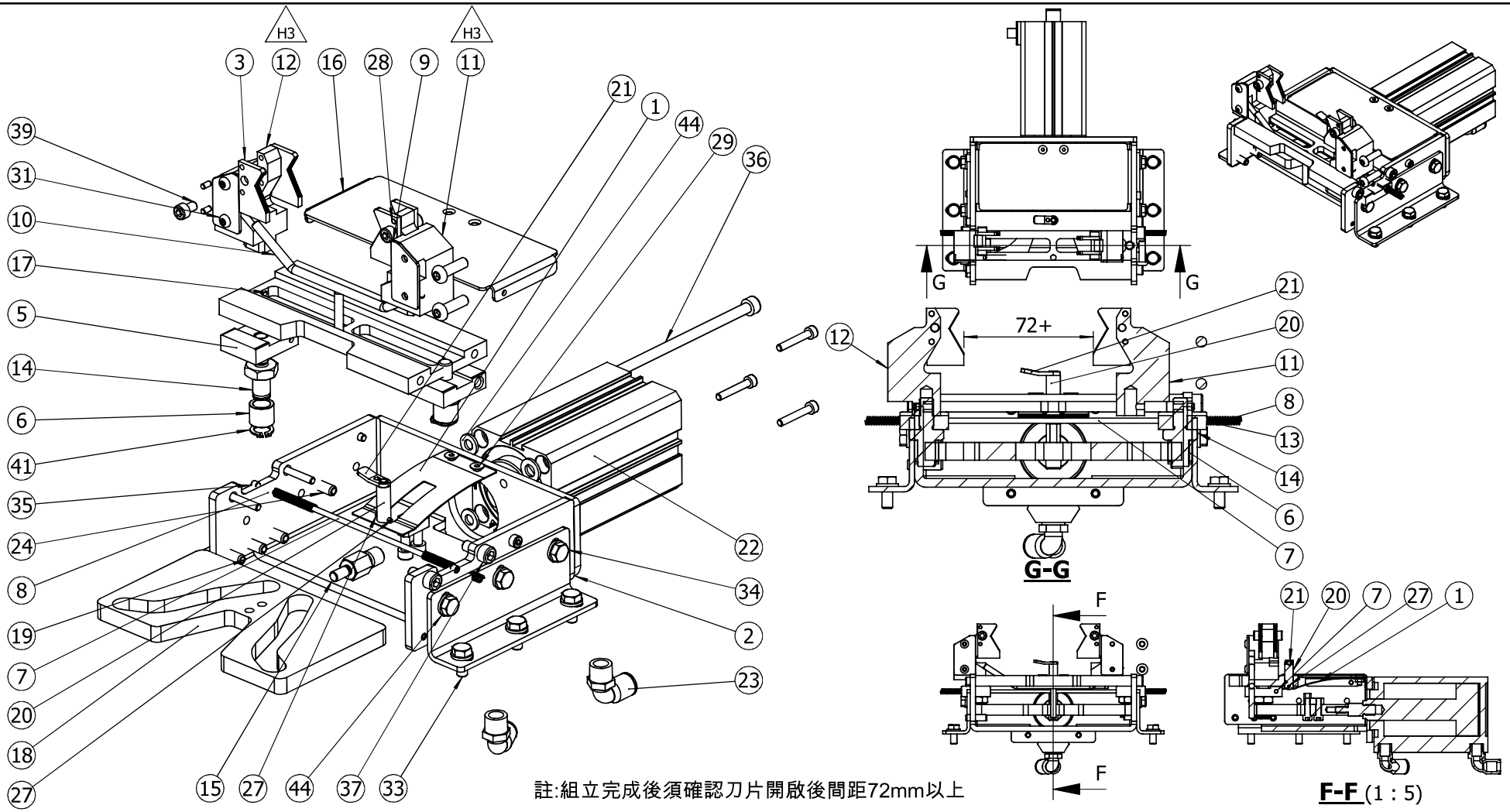
DESCRIPTION : 切端組-右向/ Measurement-LtoRF

XF2
Measurement

www.lns-group.com TW

SCALE	**1:5**	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2018.07.26	
DRAWN BY	Sam Lai	**Last modif.**
ECN		

XF2.21.A005A



註:組立完成後須確認刀片開啟後間距72mm以上

H3 =2

Page1/2

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 夾料座/ Vice

XF2
Insert-Extract

www.lns-group.com TW

SCALE	1:3	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2018.07.30	2023.08.03
DRAWN BY	Sam Lai	Last modif.
ECN	ECN-10907	H3

XF2.22.A001H

POS	ITEM NO	DESCRIPTION	QTY
1	XF2.22.P044B	Flat Spring	1
2	XF2.22.P002C	Vice Frame	1
3	XF2.22.P046A	Vice Blade	4
4	XF2.22.P045B	Block	1
5	XF2.22.P037A	Slider	1
6	XF2.22.P036A	Bushing	2
7	XF2.22.P035A	Spring Shaft	1
8	XF2.22.P034A	Compression Spring	2
9	XF2.22.P033A	Cover	2
10	XF2.22.P032C	Lifting Arm	1
11	XF2.22.P031D	Blade Seat	1
12	XF2.22.P030D	Blade Seat	1
13	XF2.22.P022B	Slider	1
14	XF2.22.P009C	Axle	2
15	XF2.22.P008B	Adaptor	1
16	XF2.22.P006C	Cover	1
17	XF2.22.P004I	Roller Guide	1
18	XF2.22.P003D	Roller Guide	1
19	XF2.22.P001B	Bracket	2
20	XF2.03.P141B	Pin	1
21	XF2.03.P140D	Handle	1
22	C12116200	SDA32x70/ Airtac	1
23	C13110600		2
24	12785.06.20		4

POS	ITEM NO	DESCRIPTION	QTY
25	DIN_912		5
26	12785.04.12		4
27	12785.02.12		1
28	12771A.03.06		8
29	7991.04.10	SCREW ISO 10642 M4x10	2
30	7380.06.20.Z		2
31	7380.04.06		2
32	934.04.Z		2
33	933.06.14.Z		6
34	933.06.10.Z		6
35	913.04.04.Z		2
36	912.06.110.Z		1
37	912.06.14.Z		2
38	912.05.16.Z		2
39	912.05.08.Z		4
40	912.04.08.Z		2
41	471.10		2
42	125A.07		1
43	125A.06		2
44	125A.06.Z		13
45	125A.04		2

H3

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GENERAL TOLERANCE

1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 夾料座/ Vice

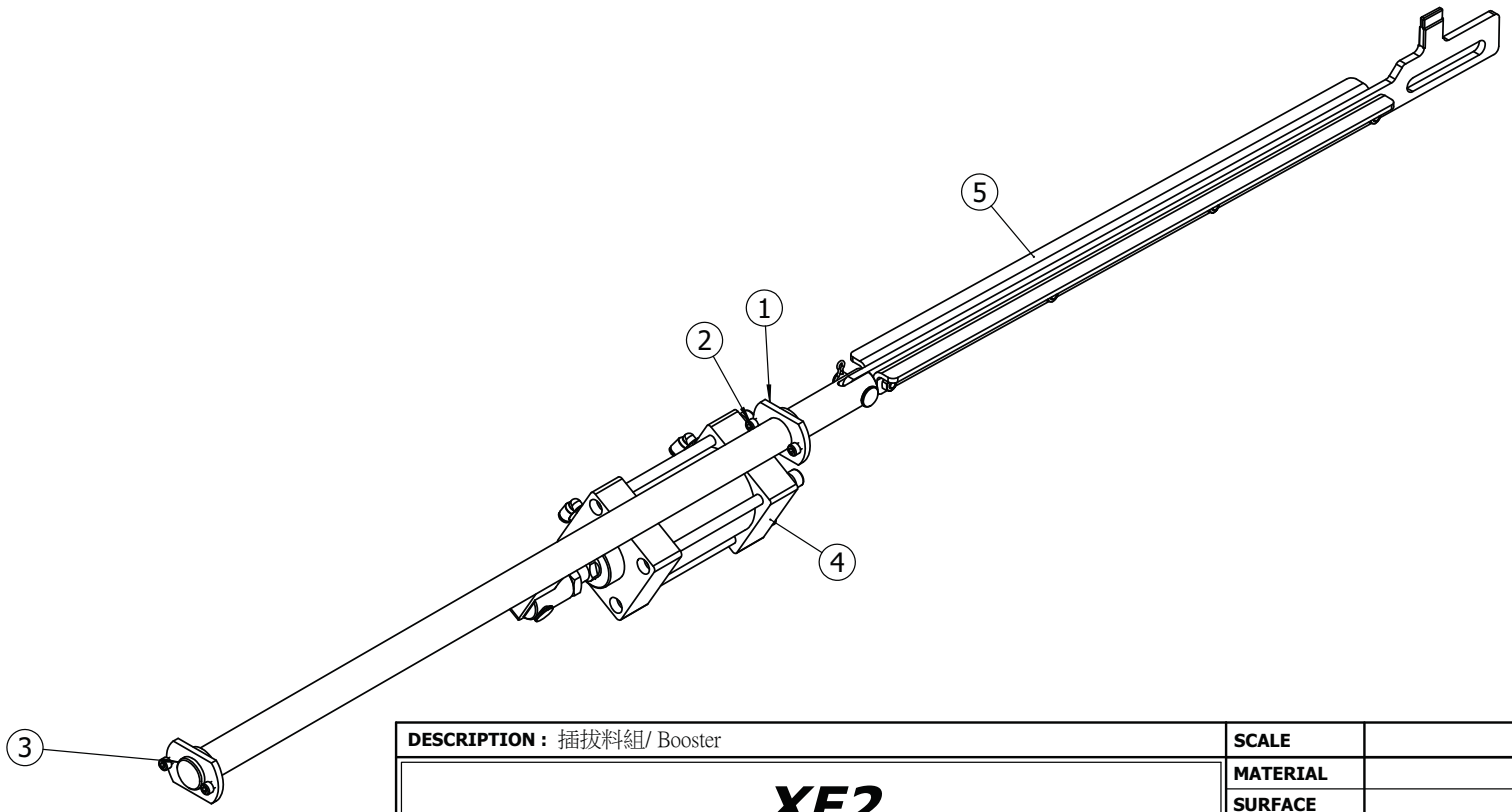
XF2
Insert-Extract

www.lns-group.com TW

SCALE	1:3	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2018.07.30	2023.08.03
DRAWN BY	Sam Lai	Last modif.
ECN	ECN-10907	H3

XF2.22.A001H

ITEM NO.	PART NO.	Description	QTY.
1	SN110500		2
2	912.05.10.Z		4
3	XF2.22.P010B		1
4	XF2.22.A004B		1
5	XF2.22.A005B		1



GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 插拔料組/ Booster

XF2
Insert-Extract

www.lns-group.com TW

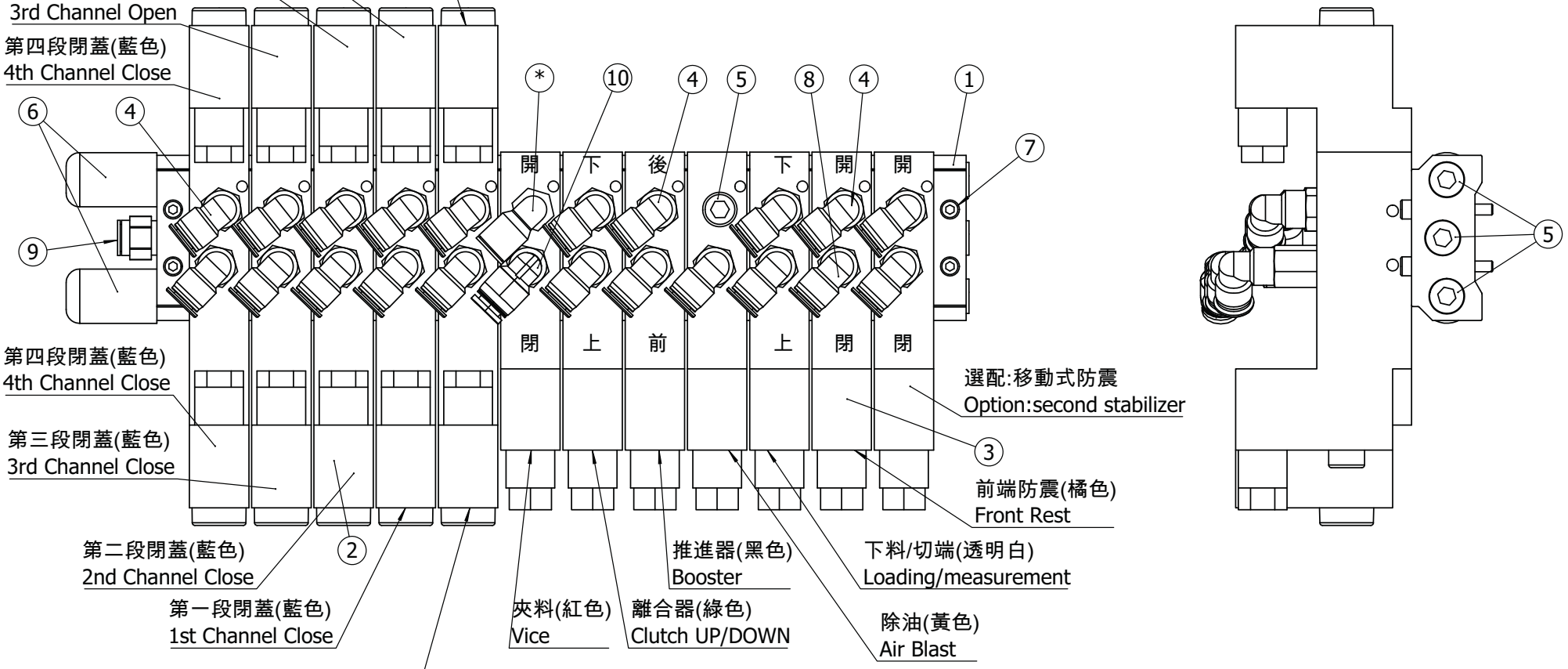
SCALE	**1:5**	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2018.7.27	
DRAWN BY	Dennis Luo	**Last modif.**
ECN		B0

XF2.22.A002B

ITEM	PART NO.	DESC.	QTY.
1	C11110112		1
2	C11110210		4
3	C11110100		6
4	C13110100		8

ITEM	PART NO.	DESC.	QTY.
5	C14110100		4
6	C14120200		2
7	912.04.30.Z		4
8	C13110400		9

ITEM	PART NO.	DESC.	QTY.
9	C13121800		1
10	C13112500		1
11	C11111200		2



GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

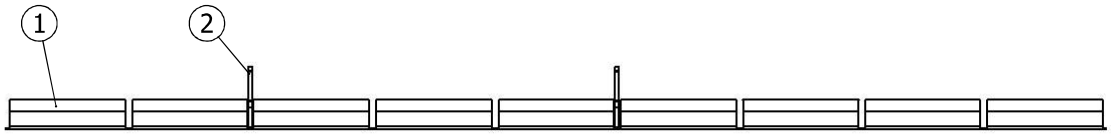
DESCRIPTION : 電磁閥組/ electrical pneumatic

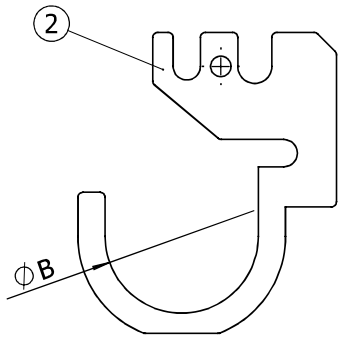
XF2
Electrical Pneumatic

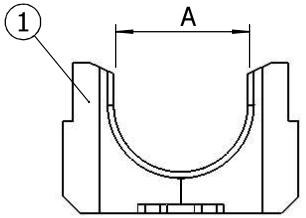
www.lns-group.com TW

SCALE	1:5	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2021.0830	
DRAWN BY	Sam Lai	Last modif.
ECN		A0

XF2.27.A007A







Item NO.	A	ϕB	1	2
XF2.31.A025A.11	11	15	XF2.31.P006C.11x13	XF2.03.P232B.13x2
XF2.31.A025A.14	14	18	XF2.31.P006C.14x13	XF2.03.P232B.16x2
XF2.31.A025A.17	17	21	XF2.31.P006C.17x13	XF2.03.P232B.19x2
XF2.31.A025A.19	19	21	XF2.31.P006C.19x13	XF2.03.P232B.19x2
XF2.31.A025A.21	21	24	XF2.31.P006C.21x13	XF2.03.P232B.22x2
XF2.31.A025A.23	23	27	XF2.31.P006C.23x13	XF2.03.P232B.25x2
XF2.31.A025A.25	25	27	XF2.31.P006C.25x13	XF2.03.P232B.25x2
XF2.31.A025A.27	27	30	XF2.31.P006C.27x13	XF2.03.P232B.28x2
XF2.31.A025A.29	29	33	XF2.31.P006C.29x13	XF2.03.P232B.31x2
XF2.31.A025A.32	32	36	XF2.31.P006C.32x13	XF2.03.P232B.34x2
XF2.31.A025A.33	33	36	XF2.31.P006C.33x13	XF2.03.P232B.34x2
XF2.31.A025A.35	35	39	XF2.31.P006C.35x13	XF2.03.P232B.37x2
XF2.31.A025A.36	36	39	XF2.31.P006C.36x13	XF2.03.P232B.37x2
XF2.31.A025A.37	37	39	XF2.31.P006C.37x13	XF2.03.P232B.37x2
XF2.31.A025A.39	39	42	XF2.31.P006C.39x13	XF2.03.P232B.40x2
XF2.31.A025A.41	41	45	XF2.31.P006C.41x13	XF2.03.P232B.43x2
XF2.31.A025A.43	43	45	XF2.31.P006C.43x13	XF2.03.P232B.43x2

A1

A1=1

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

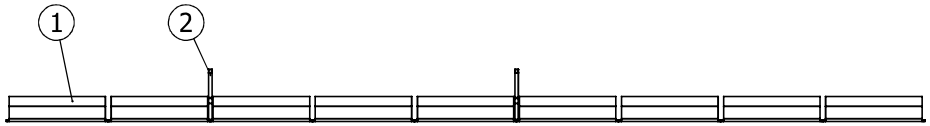
DESCRIPTION : / Channel set XX-2.5M

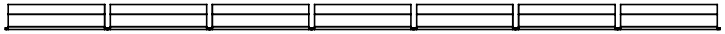
Channel

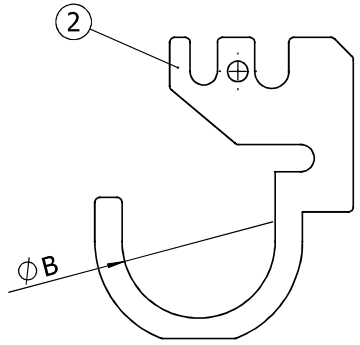
www.lns-group.com TW

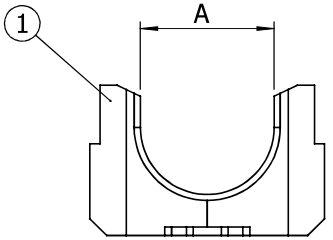
SCALE	1:10	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2021.09.30	2023.07.12
DRAWN BY	Sam Lai	Last modif.
ECN	ENC-10899	A1

XF2.31.A025A.XX









Item NO.	A	∅B	1	2
XF2.31.A026A.11	11	15	XF2.31.P006C.11x16	XF2.03.P232B.13x2
XF2.31.A026A.14	14	18	XF2.31.P006C.14x16	XF2.03.P232B.16x2
XF2.31.A026A.17	17	21	XF2.31.P006C.17x16	XF2.03.P232B.19x2
XF2.31.A026A.19	19	21	XF2.31.P006C.19x16	XF2.03.P232B.19x2
XF2.31.A026A.21	21	24	XF2.31.P006C.21x16	XF2.03.P232B.22x2
XF2.31.A026A.23	23	27	XF2.31.P006C.23x16	XF2.03.P232B.25x2
XF2.31.A026A.25	25	27	XF2.31.P006C.25x16	XF2.03.P232B.25x2
XF2.31.A026A.27	27	30	XF2.31.P006C.27x16	XF2.03.P232B.28x2
XF2.31.A026A.29	29	33	XF2.31.P006C.29x16	XF2.03.P232B.31x2
XF2.31.A026A.32	32	36	XF2.31.P006C.32x16	XF2.03.P232B.34x2
XF2.31.A026A.33	33	36	XF2.31.P006C.33x16	XF2.03.P232B.34x2
XF2.31.A026A.35	35	39	XF2.31.P006C.35x16	XF2.03.P232B.37x2
XF2.31.A026A.36	36	39	XF2.31.P006C.36x16	XF2.03.P232B.37x2
XF2.31.A026A.37	37	39	XF2.31.P006C.37x16	XF2.03.P232B.37x2
XF2.31.A026A.39	39	42	XF2.31.P006C.39x16	XF2.03.P232B.40x2
XF2.31.A026A.41	41	45	XF2.31.P006C.41x16	XF2.03.P232B.43x2
XF2.31.A026A.43	43	45	XF2.31.P006C.43x16	XF2.03.P232B.43x2

A1

A1=1

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

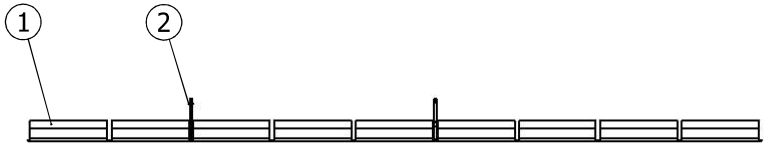
DESCRIPTION : / Channel set XX-3M

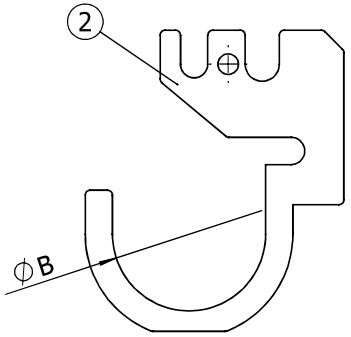
Channel

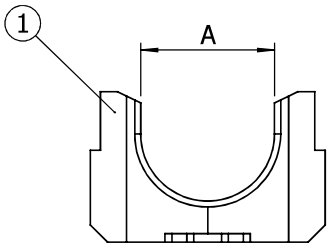
www.lns-group.com TW

SCALE	1:12	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2021.09.30	2023.07.12
DRAWN BY	Sam Lai	Last modif.
ECN	ECN-10899	A1

XF2.31.A026A.XX







Item NO.	A	ϕB	1	2
XF2.31.A027A.11	11	15	XF2.31.P006C.11x19	XF2.03.P232B.13x2
XF2.31.A027A.14	14	18	XF2.31.P006C.14x19	XF2.03.P232B.16x2
XF2.31.A027A.17	17	21	XF2.31.P006C.17x19	XF2.03.P232B.19x2
XF2.31.A027A.19	19	21	XF2.31.P006C.19x19	XF2.03.P232B.19x2
XF2.31.A027A.21	21	24	XF2.31.P006C.21x19	XF2.03.P232B.22x2
XF2.31.A027A.23	23	27	XF2.31.P006C.23x19	XF2.03.P232B.25X2
XF2.31.A027A.25	25	27	XF2.31.P006C.25x19	XF2.03.P232B.25X2
XF2.31.A027A.27	27	30	XF2.31.P006C.27x19	XF2.03.P232B.28x2
XF2.31.A027A.29	29	33	XF2.31.P006C.29x19	XF2.03.P232B.31x2
XF2.31.A027A.32	32	36	XF2.31.P006C.32x19	XF2.03.P232B.34x2
XF2.31.A027A.33	33	36	XF2.31.P006C.33x19	XF2.03.P232B.34x2
XF2.31.A027A.35	35	39	XF2.31.P006C.35x19	XF2.03.P232B.37x2
XF2.31.A027A.36	36	39	XF2.31.P006C.36x19	XF2.03.P232B.37x2
XF2.31.A027A.37	37	39	XF2.31.P006C.37x19	XF2.03.P232B.37x2
XF2.31.A027A.39	39	42	XF2.31.P006C.39x19	XF2.03.P232B.40x2
XF2.31.A027A.41	41	45	XF2.31.P006C.41x19	XF2.03.P232B.43x2
XF2.31.A027A.43	43	45	XF2.31.P006C.43x19	XF2.03.P232B.43x2

A1

A1 =1

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

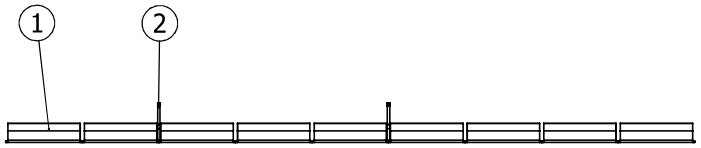
DESCRIPTION : / Channel set XX-3.7M

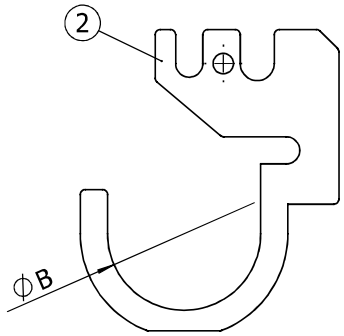
Channel

www.lns-group.com TW

SCALE	1:15	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2021.09.30	2023.07.12
DRAWN BY	Sam Lai	Last modif.
ECN	ECN-10899	A1

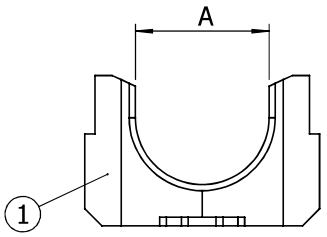
XF2.31.A027A.XX





Item NO.	A	ϕB	1	2
XF2.31.A028A.11	11	15	XF2.31.P006C.11x22	XF2.03.P232B.13x2
XF2.31.A028A.14	14	18	XF2.31.P006C.14x22	XF2.03.P232B.16x2
XF2.31.A028A.17	17	21	XF2.31.P006C.17x22	XF2.03.P232B.19x2
XF2.31.A028A.19	19	21	XF2.31.P006C.19x22	XF2.03.P232B.19x2
XF2.31.A028A.21	21	24	XF2.31.P006C.21x22	XF2.03.P232B.22x2
XF2.31.A028A.23	23	27	XF2.31.P006C.23x22	XF2.03.P232B.25x2
XF2.31.A028A.25	25	27	XF2.31.P006C.25x22	XF2.03.P232B.25x2
XF2.31.A028A.27	27	30	XF2.31.P006C.27x22	XF2.03.P232B.28x2
XF2.31.A028A.29	29	33	XF2.31.P006C.29x22	XF2.03.P232B.31x2
XF2.31.A028A.32	32	36	XF2.31.P006C.32x22	XF2.03.P232B.34x2
XF2.31.A028A.33	33	36	XF2.31.P006C.33x22	XF2.03.P232B.34x2
XF2.31.A028A.35	35	39	XF2.31.P006C.35x22	XF2.03.P232B.37x2
XF2.31.A028A.36	36	39	XF2.31.P006C.36x22	XF2.03.P232B.37x2
XF2.31.A028A.37	37	39	XF2.31.P006C.37x22	XF2.03.P232B.37x2
XF2.31.A028A.39	39	42	XF2.31.P006C.39x22	XF2.03.P232B.40x2
XF2.31.A028A.41	41	45	XF2.31.P006C.41x22	XF2.03.P232B.43x2
XF2.31.A028A.43	43	45	XF2.31.P006C.43x22	XF2.03.P232B.43x2

A1



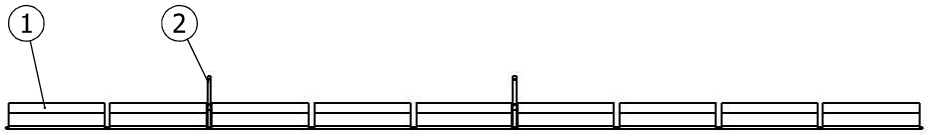
A1 =1

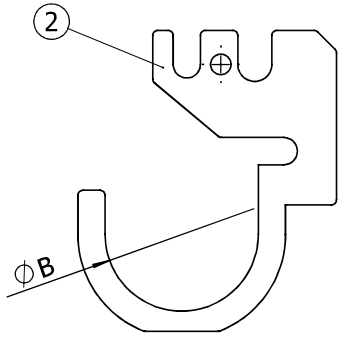
GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

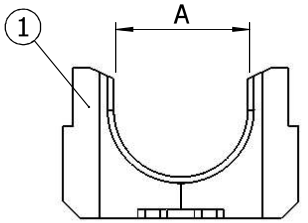
DESCRIPTION : / Channel set XX-4M	**SCALE**	**1:16**
	MATERIAL	
	SURFACE	
	HARDNESS	
	WEIGHT (Kg)	
	DATE	2021.09.30 / 2023.07.12
	DRAWN BY	Sam Lai / **Last modif.**
	ECN	ECN-10899 / A1

LNS GROUP www.lns-group.com TW

XF2.31.A028A.XX







Item NO.	A	⌀B	1	2
XF2.31.A029A.11	11	15	XF2.31.P006C.11x14	XF2.03.P232B.13x2
XF2.31.A029A.14	14	18	XF2.31.P006C.14x14	XF2.03.P232B.16x2
XF2.31.A029A.17	17	21	XF2.31.P006C.17x14	XF2.03.P232B.19x2
XF2.31.A029A.19	19	21	XF2.31.P006C.19x14	XF2.03.P232B.19x2
XF2.31.A029A.21	21	24	XF2.31.P006C.21x14	XF2.03.P232B.22x2
XF2.31.A029A.23	23	27	XF2.31.P006C.23x14	XF2.03.P232B.25x2
XF2.31.A029A.25	25	27	XF2.31.P006C.25x14	XF2.03.P232B.25x2
XF2.31.A029A.27	27	30	XF2.31.P006C.27x14	XF2.03.P232B.28x2
XF2.31.A029A.29	29	33	XF2.31.P006C.29x14	XF2.03.P232B.31x2
XF2.31.A029A.32	32	36	XF2.31.P006C.32x14	XF2.03.P232B.34x2
XF2.31.A029A.33	33	36	XF2.31.P006C.33x14	XF2.03.P232B.34x2
XF2.31.A029A.35	35	39	XF2.31.P006C.35x14	XF2.03.P232B.37x2
XF2.31.A029A.36	36	39	XF2.31.P006C.36x14	XF2.03.P232B.37x2
XF2.31.A029A.37	37	39	XF2.31.P006C.37x14	XF2.03.P232B.37x2
XF2.31.A029A.39	39	42	XF2.31.P006C.39x14	XF2.03.P232B.40x2
XF2.31.A029A.41	41	45	XF2.31.P006C.41x14	XF2.03.P232B.43x2
XF2.31.A029A.43	43	45	XF2.31.P006C.43x14	XF2.03.P232B.43x2

A1

A1 =1

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

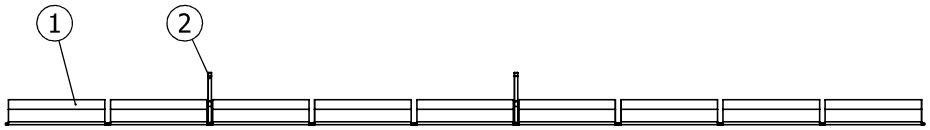
DESCRIPTION : / Channel set XX-2.5M-2.5L

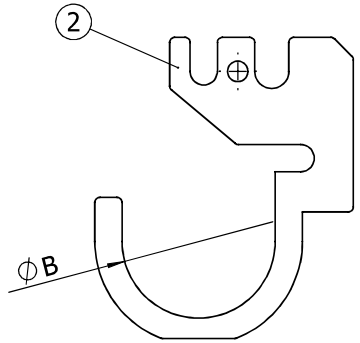
Channel

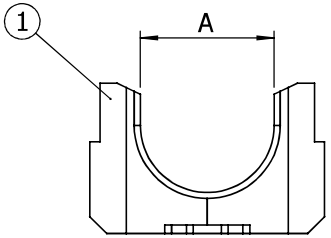
www.lns-group.com TW

SCALE	1:10	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2022.10.21	2023.07.12
DRAWN BY	Sam Lai	Last modif.
ECN	ECN-10899	A1

XF2.31.A029A.XX







Item NO.	A	∅B	1	2
XF2.31.A030A.11	11	15	XF2.31.P006C.11x17	XF2.03.P232B.13x2
XF2.31.A030A.14	14	18	XF2.31.P006C.14x17	XF2.03.P232B.16x2
XF2.31.A030A.17	17	21	XF2.31.P006C.17x17	XF2.03.P232B.19x2
XF2.31.A030A.19	19	21	XF2.31.P006C.19x17	XF2.03.P232B.19x2
XF2.31.A030A.21	21	24	XF2.31.P006C.21x17	XF2.03.P232B.22x2
XF2.31.A030A.23	23	27	XF2.31.P006C.23x17	XF2.03.P232B.25x2
XF2.31.A030A.25	25	27	XF2.31.P006C.25x17	XF2.03.P232B.25x2
XF2.31.A030A.27	27	30	XF2.31.P006C.27x17	XF2.03.P232B.28x2
XF2.31.A030A.29	29	33	XF2.31.P006C.29x17	XF2.03.P232B.31x2
XF2.31.A030A.32	32	36	XF2.31.P006C.32x17	XF2.03.P232B.34x2
XF2.31.A030A.33	33	36	XF2.31.P006C.33x17	XF2.03.P232B.34x2
XF2.31.A030A.35	35	39	XF2.31.P006C.35x17	XF2.03.P232B.37x2
XF2.31.A030A.36	36	39	XF2.31.P006C.36x17	XF2.03.P232B.37x2
XF2.31.A030A.37	37	39	XF2.31.P006C.37x17	XF2.03.P232B.37x2
XF2.31.A030A.39	39	42	XF2.31.P006C.39x17	XF2.03.P232B.40x2
XF2.31.A030A.41	41	45	XF2.31.P006C.41x17	XF2.03.P232B.43x2
XF2.31.A030A.43	43	45	XF2.31.P006C.43x17	XF2.03.P232B.43x2

A1

A1=1

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

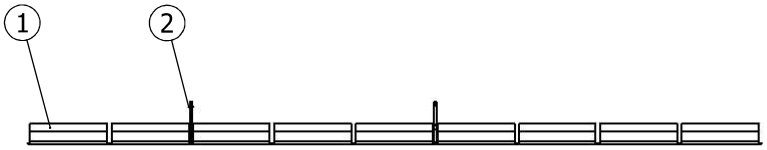
DESCRIPTION : / Channel set XX-3.0M-2.5L

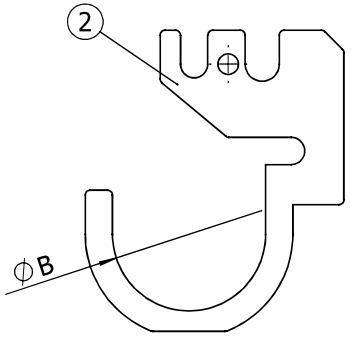
Channel

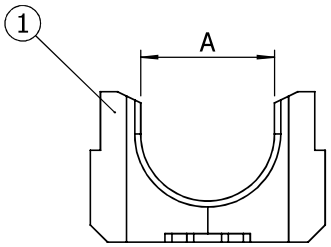
www.lns-group.com TW

SCALE	1:12	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2022.10.21	2023.07.12
DRAWN BY	Sam Lai	Last modif.
ECN	ECN-10899	A1

XF2.31.A030A.XX







Item NO.	A	∅B	1	2
XF2.31.A031A.11	11	15	XF2.31.P006C.11x20	XF2.03.P232B.13x2
XF2.31.A031A.14	14	18	XF2.31.P006C.14x20	XF2.03.P232B.16x2
XF2.31.A031A.17	17	21	XF2.31.P006C.17x20	XF2.03.P232B.19x2
XF2.31.A031A.19	19	21	XF2.31.P006C.19x20	XF2.03.P232B.19x2
XF2.31.A031A.21	21	24	XF2.31.P006C.21x20	XF2.03.P232B.22x2
XF2.31.A031A.23	23	27	XF2.31.P006C.23x20	XF2.03.P232B.25X2
XF2.31.A031A.25	25	27	XF2.31.P006C.25x20	XF2.03.P232B.25X2
XF2.31.A031A.27	27	30	XF2.31.P006C.27x20	XF2.03.P232B.28x2
XF2.31.A031A.29	29	33	XF2.31.P006C.29x20	XF2.03.P232B.31x2
XF2.31.A031A.32	32	36	XF2.31.P006C.32x20	XF2.03.P232B.34x2
XF2.31.A031A.33	33	36	XF2.31.P006C.33x20	XF2.03.P232B.34x2
XF2.31.A031A.35	35	39	XF2.31.P006C.35x20	XF2.03.P232B.37x2
XF2.31.A031A.36	36	39	XF2.31.P006C.36x20	XF2.03.P232B.37x2
XF2.31.A031A.37	37	39	XF2.31.P006C.37x20	XF2.03.P232B.37x2
XF2.31.A031A.39	39	42	XF2.31.P006C.39x20	XF2.03.P232B.40x2
XF2.31.A031A.41	41	45	XF2.31.P006C.41x20	XF2.03.P232B.43x2
XF2.31.A031A.43	43	45	XF2.31.P006C.43x20	XF2.03.P232B.43x2

A1

A1=1

GENERAL TOLERANCE

1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : / Channel set XX-3.7M-2.5L

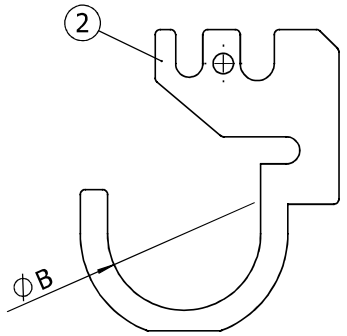
Channel

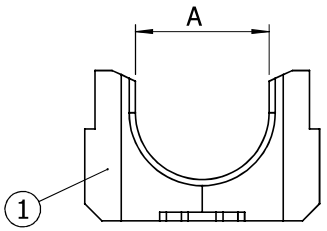
www.lns-group.com TW

SCALE	1:15	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2022.10.21	2023.07.12
DRAWN BY	Sam Lai	Last modif.
ECN	ECN-10899	A1

XF2.31.A031A.XX

Item NO.	A	∅B	1	2
XF2.31.A032A.11	11	15	XF2.31.P006C.11x23	XF2.03.P232B.13x2
XF2.31.A032A.14	14	18	XF2.31.P006C.14x23	XF2.03.P232B.16x2
XF2.31.A032A.17	17	21	XF2.31.P006C.17x23	XF2.03.P232B.19x2
XF2.31.A032A.19	19	21	XF2.31.P006C.19x23	XF2.03.P232B.19x2
XF2.31.A032A.21	21	24	XF2.31.P006C.21x23	XF2.03.P232B.22x2
XF2.31.A032A.23	23	27	XF2.31.P006C.23x23	XF2.03.P232B.25x2
XF2.31.A032A.25	25	27	XF2.31.P006C.25x23	XF2.03.P232B.25x2
XF2.31.A032A.27	27	30	XF2.31.P006C.27x23	XF2.03.P232B.28x2
XF2.31.A032A.29	29	33	XF2.31.P006C.29x23	XF2.03.P232B.31x2
XF2.31.A032A.32	32	36	XF2.31.P006C.32x23	XF2.03.P232B.34x2
XF2.31.A032A.33	33	36	XF2.31.P006C.33x23	XF2.03.P232B.34x2
XF2.31.A032A.35	35	39	XF2.31.P006C.35x23	XF2.03.P232B.37x2
XF2.31.A032A.36	36	39	XF2.31.P006C.36x23	XF2.03.P232B.37x2
XF2.31.A032A.37	37	39	XF2.31.P006C.37x23	XF2.03.P232B.37x2
XF2.31.A032A.39	39	42	XF2.31.P006C.39x23	XF2.03.P232B.40x2
XF2.31.A032A.41	41	45	XF2.31.P006C.41x23	XF2.03.P232B.43x2
XF2.31.A032A.43	43	45	XF2.31.P006C.43x23	XF2.03.P232B.43x2





A1

A1 =1

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : / Channel set XX-4.0M-2.5L

SCALE	**1:16**	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2022.10.21	2023.07.12
DRAWN BY	Sam Lai	**Last modif.**
ECN	ECN-10899	A1

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XF2.31.A032A.XX

【GT342 2.5M LL】【GT342 3M LLL】

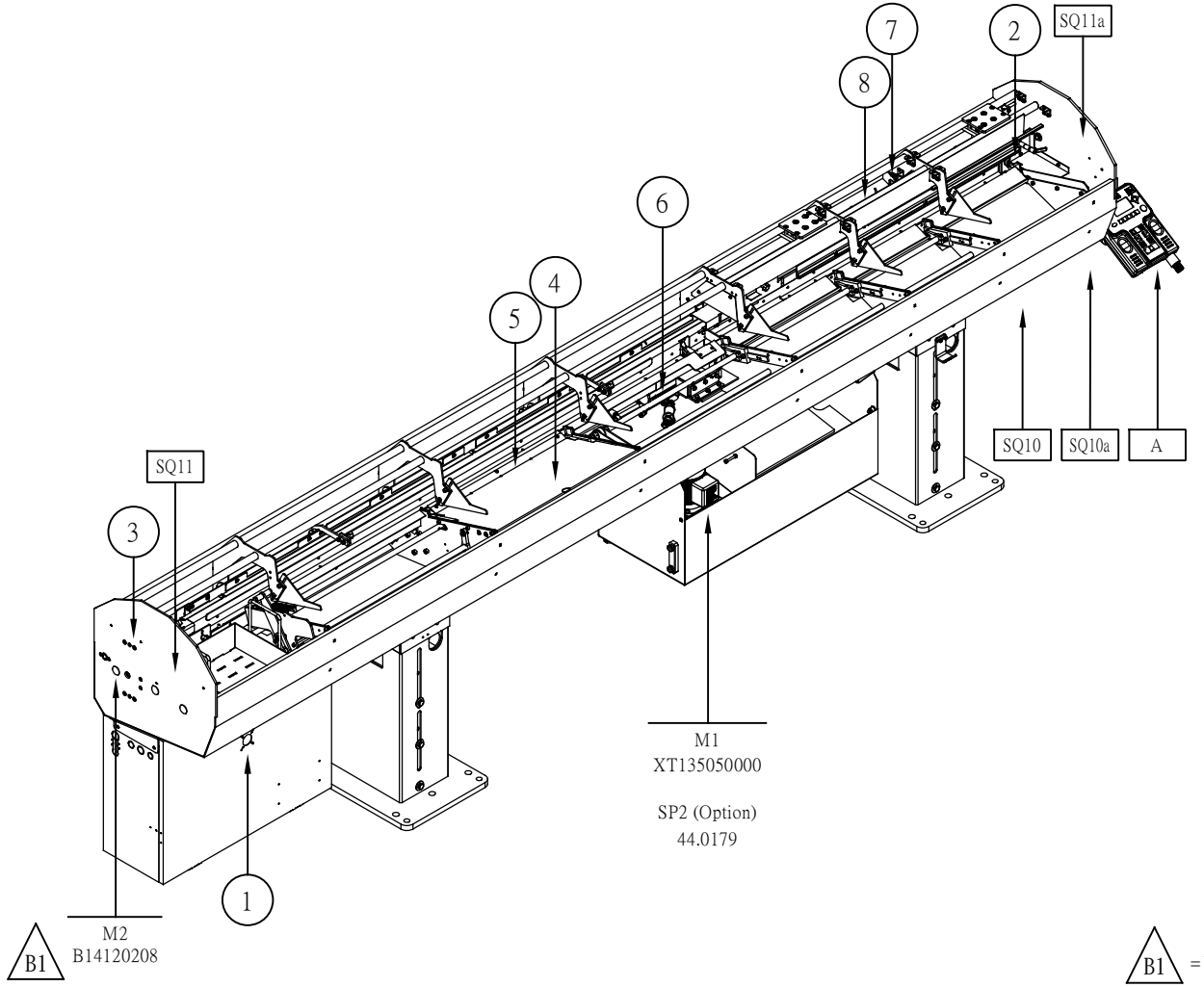
Item	Name	Input	Description	Item number
1	QS1		Main disconnect switch	B55000003
2	SQ1	X03	Positionned stop	B18120710
3	SQ2	X13	Home position	B18120700
4	SQ3	X14	Pusher UP (Sensor)	C11111900
			Pusher UP (Sensor Fixed)	C11112000
5	SQ4	X15	Pusher DOWN (Sensor)	C11111900
			Pusher DOWN (Sensor Fixed)	C11112000
6	SQ6	X17	Vice system	C11111100
7	SQ13	X22	1' Cover open	B18120700
8	SQ14	X23	1' Cover close	B18120700
			Ground cable	4.728
			Cable fixure head PG13.5	B55000054
			PVC wave tube fixture head	B66000144
			Cable channel 40*40	B77000001
			Cable channel 33*33	B22000051

Touch Remote for 2.5M & 3.0M (DOP, with connector, 5.5M)_XF2.78.A011B

Name	Description	Item number
A	Big Remote(DOP, with connector)	X51.40.A004A
	Big remote cable with connector(5.5M)	B13202001

Touch Remote for 2.5M & 3.0M (DOP, without connector, 5.5M)_XF2.78.A013B

Name	Description	Item number
A	Big Remote(DOP, without connector)	XM1.40.A001A
	Big remote cable without connector(5.5M)	B13201992



Option

Name	Input	Description	Item number
SQ10	X21	Standard retraction safety (Option)	4.484
SQ10a		2 position retraction safety (Option)	4.484
SQ11	X20	Main cover Safety	4.894
SQ11a		Main cover Safety	4.894

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : / Parts components

Parts components

www.lns-group.com TW

SCALE		
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2019.05.23	2023.03.23
DRAWN BY	Arvin	Last modif.
ECN	ECN-10821	B1

XF2.78.A020B

【GT342 2.5M L】【GT342 3M L&LL】【GT342 12F LL&LLL】

Item	Name	Input	Description	Item number
1	QS1		Main disconnect switch	B55000003
2	SQ1	X03	Positionned stop	B18120710
3	SQ2	X13	Home position	B18120700
4	SQ3	X14	Pusher UP (Sensor)	C11111900
			Pusher UP (Sensor Fixed)	C11112000
5	SQ4	X15	Pusher DOWN (Sensor)	C11111900
			Pusher DOWN (Sensor Fixed)	C11112000
6	SQ6	X17	Vice system	C11111100
7	SQ13	X22	1' Cover open	B18120700
8	SQ14	X23	1' Cover close	B18120700
9	SQ15	X24	2' Cover open	B18120700
10	SQ16	X25	2' Cover close	B18120700
			Ground cable	4.728
			Cable fixure head PG13.5	B55000054
			PVC wave tube fixture head	B66000144
			Cable channel 40*40	B77000001
			Cable channel 33*33	B22000051

Touch Remote for 2.5M & 3.0M (DOP, with connector, 5.5M)_XF2.78.A011B

Name	Description	Item number
A	Big Remote(DOP, with connector)	X51.40.A004A
	Big remote cable with connector(5.5M)	B13202001

Touch Remote for 12F & 4.0M (DOP, with connector, 6.5M)_XF2.78.A012B

Name	Description	Item number
A	Big Remote(DOP, with connector)	X51.40.A004A
	Big remote cable with connector(6.5M)	B13202002

Touch Remote for 2.5M & 3.0M (DOP, without connector, 5.5M)_XF2.78.A013B

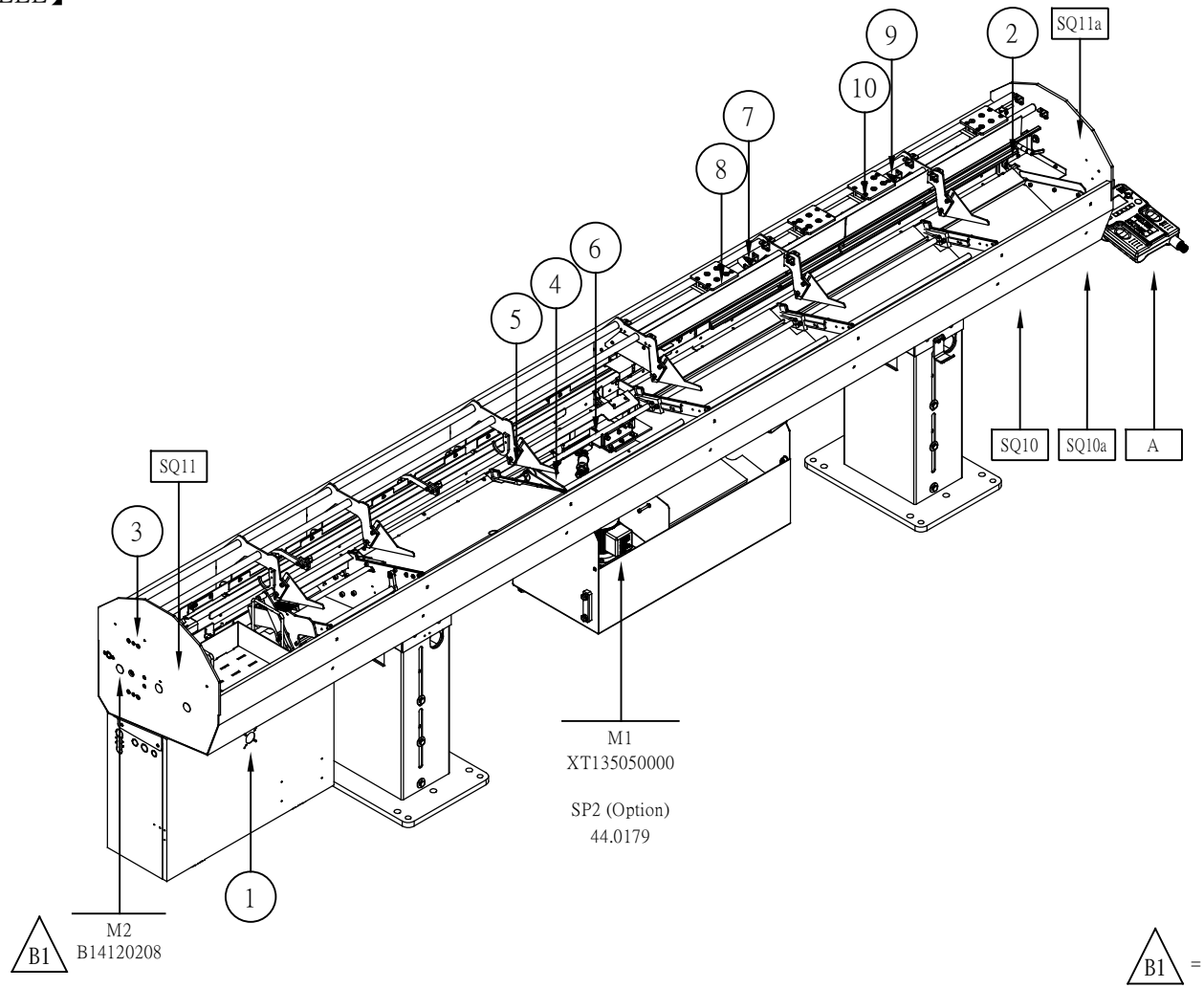
Name	Description	Item number
A	Big Remote(DOP, without connector)	XM1.40.A001A
	Big remote cable without connector(5.5M)	B13201992

Touch Remote for 12F & 4.0M (DOP, without connector, 6.5M)_XF2.78.A014B

Name	Description	Item number
A	Big Remote(DOP, without connector)	XM1.40.A001A
	Big remote cable without connector(6.5M)	B13201993

Option

Name	Input	Description	Item number
SQ10	X21	Standard retraction safety (Option)	4.484
SQ10a		2 position retraction safety (Option)	4.484
SQ11	X20	Main cover Safety	4.894
SQ11a		Main cover Safety	4.894



GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : / Parts components

Parts components

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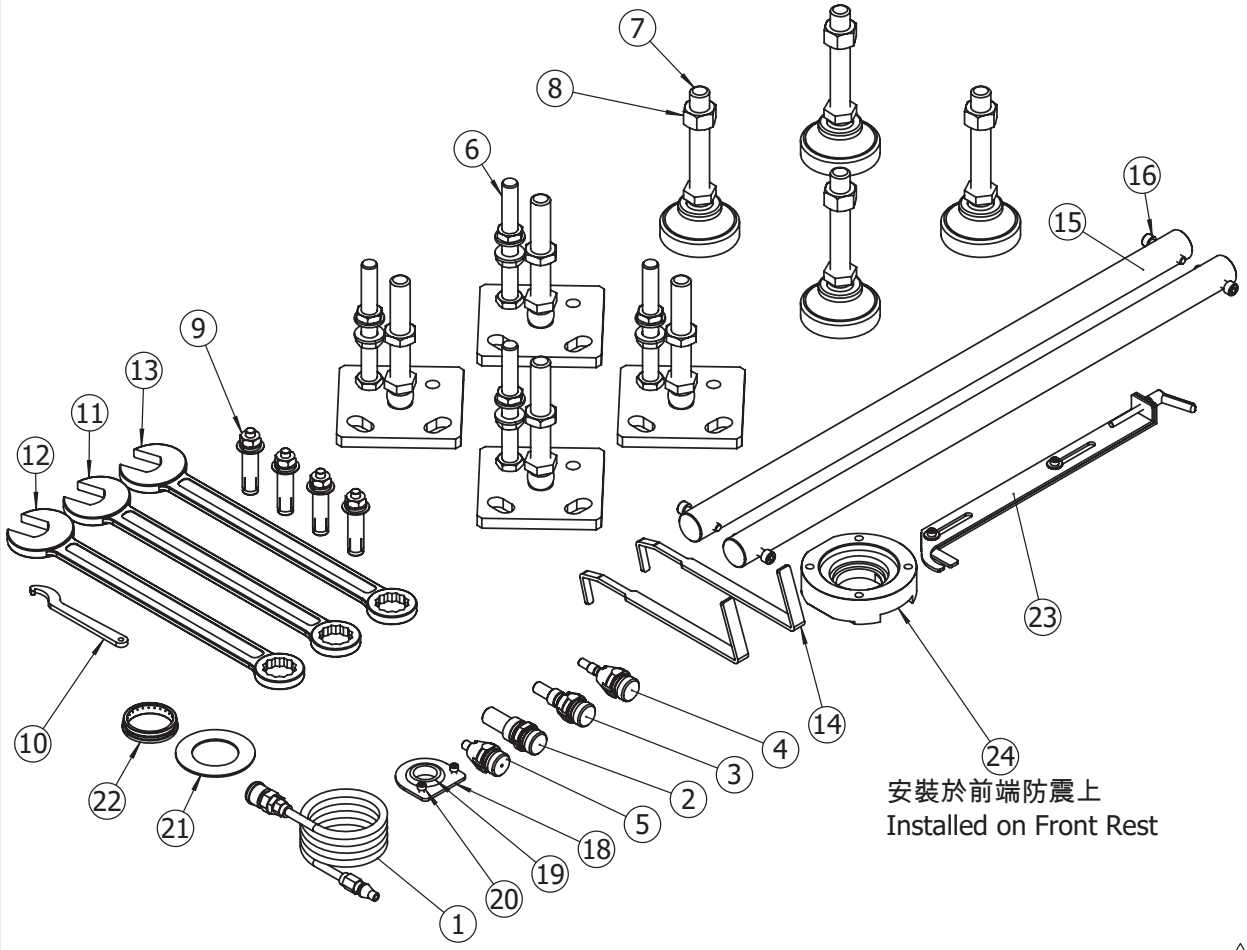
SCALE		
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2019.05.23	2023.03.23
DRAWN BY	Arvin	Last modif.
ECN	ECN-10821	B1

XF2.78.A021B



ITEM NO.	PART NUMBER	CN_Description	QTY.
1	C15120100		1
2	SNF42200		1
3	SNF42201		1
4	SNF42203		1
5	SNF42205		1
6	XT033010000		4
7	SN320600		4
8	Nut_DIN 934 M20		4
9	地螺絲		4
10	SN350100		1
11	SN350200		1
12	SN350300		1
13	SN350400		1
14	XF2.08.P029A	棒材取出工具	2
15	SN926600	吊機棒 Ø32x700	2
16	912.08.45.Z	內六角M8X45L	4
18	XF2.06.P147A	油管固定板	1
19	ST3400700		1
20	912.05.08.Z		2
21	XF2.07.P001A	密封板	1
22	XF2.07.P027B	除油環	1
23	XF2.85.A005A	殘材取出工具組	1
24	XF2.07.P023D	除油座	1

C1

C1 =1

GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 標準附件-亞洲 / Standard Accessories-Asia

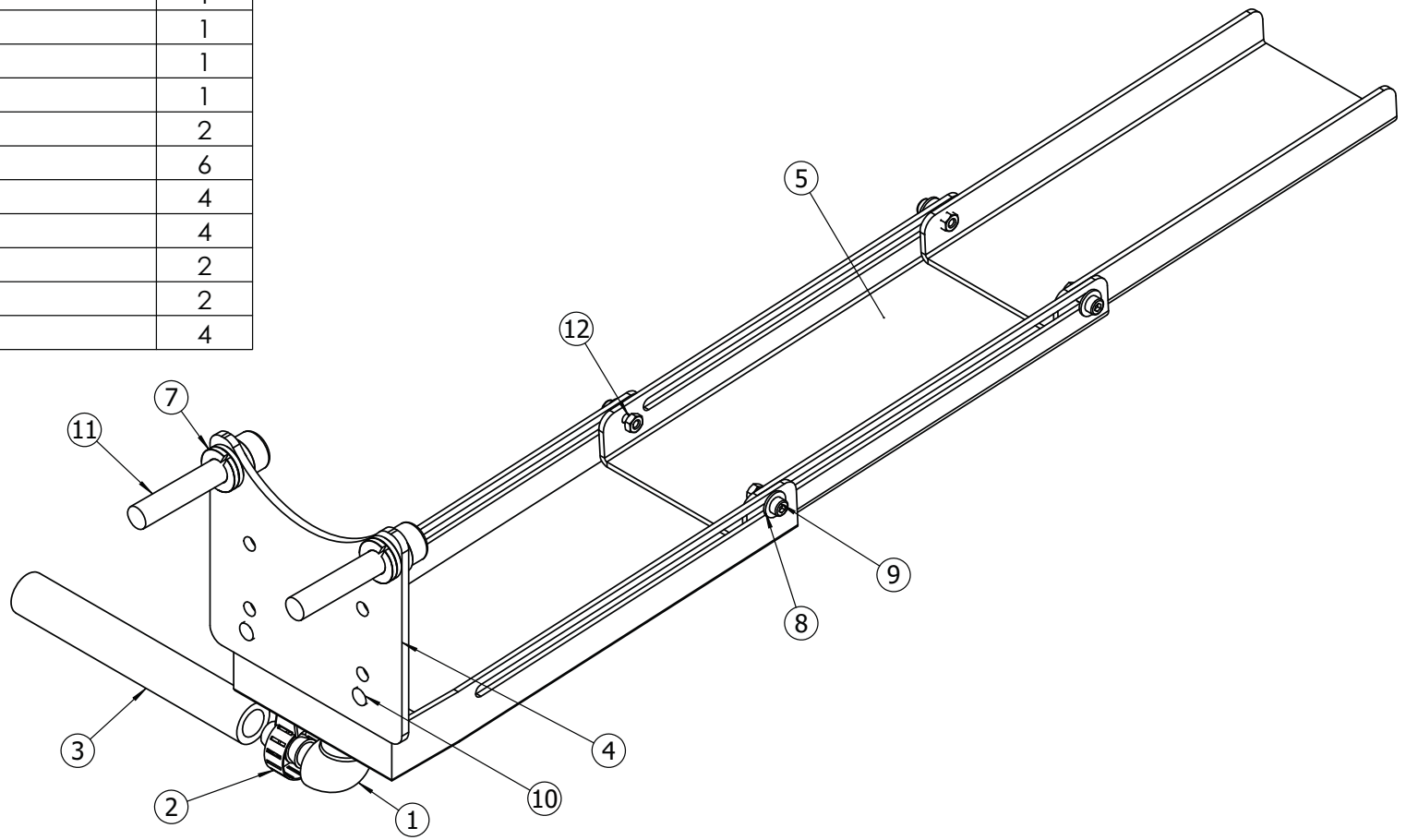
XF2
Accessories

www.lns-group.com TW

SCALE	**1:5**	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2018.11.05	2022.07.19
DRAWN BY	Sam Lai	**Last modif.**
ECN	ECN-10678	C1

XF2.85.A001C

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C16120300		1
2	C17110600		1
3	C17120208		1
4	SN913500		1
5	SN913600 B1		1
6	SPW6		2
7	SPW8		6
8	W3 (大型)		4
9	內M3x8		4
10	內M6x8		2
11	內M8x45		2
12	帽M3		4



GENERAL TOLERANCE								
1 - 4	± 0.05	± 0.1	17 - 63	± 0.1	± 0.3	251 - 1000	± 0.3	± 0.8
5 - 16	± 0.07	± 0.2	64 - 250	± 0.2	± 0.5	>1001	± 0.8	± 1

DESCRIPTION : 集油盤-2/

SN542

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SCALE	**1:2**	
MATERIAL		
SURFACE		
HARDNESS		
WEIGHT (Kg)		
DATE	2019.03.05	
DRAWN BY	Sam Lai	**Last modif.**
ECN		A1

SN910020

LNS Asia Contact Information 艾恩司亚洲联络信息

Official Website 官方网站：www.lns-asia.com

LNS Taiwan Co., Ltd

Taichung 台中	Taipei 台北	Tainan 台南
No. 133, Ln. 418, Sec. 3, Xinan Rd., Wuri Dist., Taichung City 414022, Taiwan 414022 台中市乌日区溪南路三段418巷133号 Tel: +886-4-2335-4920 Fax: +886-4-2335-2056 Service Mailbox: service.tw@lns-asia.com	No. 450, Sec. 3, Mingzhi Rd., Taishan Dist., New Taipei City 243092, Taiwan 243092 新北市泰山区明志路三段450号 Tel: +886-2-2906-1800 Fax: +886-2-2906-1801	No. 533, Sec. 2, Yian Rd., Annan Dist., Tainan City 709003, Taiwan 709003 台南市安南区怡安路二段533号 Tel: +886-6-256-6986 Fax: +886-6-256-6948

LNS (China) Co., Ltd

Suzhou 苏州	Dongguan 东莞	Ningbo 宁波
No. 289, Quande Rd., Economic & Techinical Development Zone (KETD) Wujiang, Suzhou City, Jiangsu Province, P. R. C. 江苏省苏州市吴江经济开发区泉德路289号 Tel: +86-512-6327-0828 Fax: +86-512-6327-0827 Service Mailbox: service.cn@lns-asia.com	Rm.307, 3rd Floor, Building 4, No, 689 JianAn Road, Shatou, ChangAn ShaTou, Dongguan City, Guangdong Province 广东省东莞市长安沙头建安路689号4栋3楼307 Tel: +86-769-8509-0466 Fax: +86-769-8509-0499	Rm. 206, No.125, Ln. 688, South of Huancheng West Rd., Haishu Dist., Ningbo City, Zhejiang Province, P.R.C. 浙江省宁波市海曙区环城西路南段688弄125号206室 Tel: +86-574-8717-2907 Fax: +86-574-8717-2907
Xiamen 厦门	**Tianjin 天津**	**Changzhou 常州**
Rm. 304, No. 2099-5, Guankou Ave., Guankou Town, Jimei Dist., Xiamen City, Fujian Province 福建省厦门市集美区灌口镇灌口大道 2099 号之五304室 Tel: +86-592-625-2390 Fax: +86-592-625-2390	Rm. 6-11-302, North Bank of Shengli Rd., Hebei Dist., Tianjin City, P. R. C. 天津市河北区胜利路北岸华庭6-11-302室 Tel: +86-22-2445-1473 Fax: +86-22-2445-1473	Rm. 22-1804, Lvdu Wanhe, Huanlong Rd., Xinbei Dist, Changzhou City, Jiangsu Province, P. R .C. 江苏省常州市新北区环龙路绿都万和城三区 22-1804室 Tel: +86-519-8812-8635 Fax: +86-519-8812-8635
Taizhou 台州	**Qingdao 青岛**	**Dalian 大连**
The XinShengJiaYuan Community, Building 4, Rm. 1-603, No. 379 LongXi St., TongYu Community of Luqiao Dist., Taizhou city, Zhejiang Province, P. R. C. 浙江省台州市路桥区桐屿街道龙西街 379 号新盛佳苑4幢1-603 Tel: +86-577-8865-4553 Fax: +86-577-8865-4553	Rm. 1301, Unit 2, Building 1, Venice Mall, No.6 Chongqing South Rd., Shibei Dist., Qingdao City, Shandong Province, P. R. C. 山东省青岛市市北区重庆南路6号威尼斯商城1号楼2单元1301室 Tel: +86-532-8563-8363 Fax: +86-532-8563-8363	Rm. 2-3-1, Building 12, Songyu, Dalian Economic and Technological Development Zone, Liaoning Province, P. R. C. 辽宁省大连经济技术开发区松屿里12栋2-3-1号 Tel: +86-411-8817-3973 Fax: +86-411-6289-8915
Chongqing 重庆	**Xian 西安**	**Luoyan 洛阳**
8-3, No. 20, Mingmen Shanzhuang, Jiangbei Dist., Chongqing 重庆市江北区名门山庄20号8-3 Tel: +86-23-6789-7447 Fax: +86-23-6789-7447	Rm. 2303, Unit 1, No. 5, Sky City, Shenzhou 6th Rd., Changan Dist., Xian City, Shanxi Province, P. R. C. 陕西省西安市长安区神舟六路航天城5号楼一单元2303室 Tel: +86-29-8419-7644 Fax: +86-29-8419-7644	Tel: +86-181-2009-4769

LNS Asia (Malaysia) SDN. BHD

Johor Bahru 柔佛新山	Kuala Lumpur 吉隆坡	Ho Chi Minh 胡志明市
No.29, Jalan Permas 9/12, Bandar Baru Permas Jaya, 81750 Masai, Johor, Malaysia Tel: +60-7-388-5414 Fax: +60-7-388-5597 Service Mailbox: service.ma@lns-asia.com	Tel:+60-7-388-5414; +60-7-355-5597 Mob: +60-16-263-9101 **Penang 槟城** Tel:+60-7-388-5414; +60-7-355-5597	(Vietnam Service Representative) Tel: +60-7-388-5414; +84- 989180520 Service Mailbox: service.vn@lns-asia.com

LNS MACHINE TOOL PERIPHERALS (India) LLP

Chennai 清奈	Pune 浦那	New Delhi 新德里
No. 210, 2nd Flr., SIDCO AIEMA Tower,1st Main Rd., Ambattur Industrial Estate, Chennai - 600 058, Tamil Nadu, India Tel: +91-996-262-3434 Service Mailbox: service.in@lns-asia.com	Sahyadri Shruberry, C Building ,Flat No. 1005, Gat No. 123, Borahdewadi Moshi, Pimpri 412105, Pune, Maharashtra, India Tel: +91-807-391-5461	Tel: +91-807-391-5461 **Bangaluru 班加罗尔** Tel: +91-807-391-5461 **Gujarat 古吉拉特邦** Tel: +91-807-391-5461

LNS (Thailand) Co., Ltd

Bangkok 曼谷
801/66-67 (Wangthong Trade Center Village), Phahonyothin Rd., Kukot, Lamlukka, Pathumthanee 12130, Thailand Tel: +66-2-992-6066 Fax: +66-2-992-6068 Service Mailbox: service.th@lns-asia.com

LNS (Korea) Co., Ltd

Seoul 首尔	Busan 釜山
A-502, 88, Bugwang-ro, Guro-gu, Seoul 08362, Republic of Korea Tel: +82-2-3436-6187 Fax: +82-2-3436-6189 Service Mailbox: service.ko@lns-asia.com	Rm. 502, Tootoos2 Building, Bugok-dong 809-7, Gimhae-si, Gyeongsangnam-do, Korea Tel: +82-2-3436-6187 Fax: +82-55-311-7615