

CS-2160N  
CS-2161N  
CS-2162N  
單針上下送人字車  
( 全自動給油 )  
( 大釜 )



# 使用說明書

## INSTRUCTION MANUAL

No:2160N00

Read safety Instructions carefully and understand them before using.  
Retain this Instruction Manual for future reference.

爲了安全地使用，請您在使用之前仔細閱讀本使用說明書。  
另外，請您注意保管本使用說明書，以便隨時查閱。



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**金輪 GOLDEN WHEEL****操作手冊 INSTRUCTION MANUAL**

爲了提高機器的耐久性，請在使用前詳細閱讀使用說明書，並請妥善保存好說明書以便隨時使用。

Please read this Instruction Manual carefully before using the unit in order to get the most out of it and to enjoy using it for a long time. Please keep this Instruction Manual at hand taking care not to lose it.

CS-2160N	1-NEEDLE ZIGZAG LOCKSTITCH MACHINE WITH TOP AND BOTTOM FEED (AUTOMATIC LUBRICATION) (1-STEP 2-POINT ZIGZAG WITH LARGE HOOK)	單針上下送2點人字車 (全自動給油) (大釜)
CS-2161N	1-NEEDLE ZIGZAG LOCKSTITCH MACHINE WITH TOP AND BOTTOM FEED (AUTOMATIC LUBRICATION) (2-STEP 3-POINT ZIGZAG WITH LARGE HOOK)	單針上下送3點人字車 (全自動給油) (大釜)
CS-2162N	1-NEEDLE ZIGZAG LOCKSTITCH MACHINE WITH TOP AND BOTTOM FEED (AUTOMATIC LUBRICATION) (3-STEP 4-POINT ZIGZAG WITH LARGE HOOK)	單針上下送4點人字車 (全自動給油) (大釜)

**操作前應注意事項:****BEFORE OPERATION**

1. 機器未加油潤滑前，請勿啟動機台或試轉。
2. 請先確認工作場所使用之電壓及相數（單相或三相），並詳閱馬達銘牌上注明之規格，是否相符？
3. 機台安裝完畢，第一次試轉請先確認機頭上輪運轉方向。  
★ 開動電源，並保持低速運轉，從機頭上輪位置方向觀察，上輪運轉方向是反時針旋轉。
4. 機台開始使用第一個月，請保持或低於1800轉／每分鐘速度運轉。  
1. Do not operate the machine even for trial before lubrication it.  
2. Confirm that the voltage and phase (single or 3-phase) are correct by checking them against the ratings shown on the motor nameplate.  
3. When running your machine for the first time after the set-up, check the rotational direction of the handwheel. ★ Turn on the power switch. Run the machine at a low speed while checking the rotational direction of the handwheel. (The handwheel should turn counterclockwise as observe from the handwheel side.)  
4. For the first month, run the machine at speed of 1800 s.p.m or less.

**操作時應注意事項:****CAUTIONS IN OPERATION**

1. 啟動電源或機器運轉期間，請勿將手靠近機針位置，並保持距離。
2. 機台操作運轉期間，請勿將個人或讓其他人之頭、手指等靠近機頭上輪、V 型皮帶、繞線器或馬達，同時，亦請勿置其它物品靠近上述地方，以免發生危險。
3. 請勿於移除護指環、皮帶蓋、與任何其它的保護裝置之情況下，操作機器。
4. 移動V型皮帶前，務必先將電源關閉，及馬達確實已停止轉動，才可進行下一動作。  
1. Keep your hands away from the needle when you turn on the power switch or while the machine is operating.  
2. During operation, be careful not to allow your or any other person's head or fingers to come close the handwheel, V-belt, bobbin winder or motor. Also, do not place anything close to them.  
3. Do not turn the machine with the finger guard, belt cover or any other protectors removed.  
4. Be sure to turn off the power switch and confirm that the motor is completely stopped before removing the V-belt.

規格說明: SPECIFICATIONS

	CS-2160N	CS-2161N	CS-2162N
用途	中厚料到厚料		
縫速	最高 2,000 s.p.m.		
縫目長度	最長 5mm		
人字縫寬度	最寬 9mm		
旋梭	水平軸，自動給油，雙送料旋梭		
機針	DPx17#14 到 21# (標準 18#)		
壓腳提升量	手動提升 10mm，膝動提升 10mm		
縫目調整	由縫目刻度盤調整		
潤滑油	機油		

	CS-2160N	CS-2161N	CS-2162N
Usage	For medium-weight to heavy-weight materials		
Sewing speed	Max 2,000 s.p.m.		
Stitch length	Max 5 mm		
Zigzag width	Max 9 mm		
Hook	Horizontal-axis, automatic lubricating 2-fold hook		
Needle	DPx17 #14 through #21 (standard: #18)		
Lift of presser foot	Hand lifter: 10mm, Knee lifter: 10mm		
Stitch adjust	By dial		
Lubricating oil	Machine oil (white spindle oil)		

## 人字縫寬度與最大縫速的關係

**RELATIONSHIP BETWEEN ZIGZAG WIDTH AND MAXIMUM SPEED**

人字縫寬度	0mm~5mm	5mm~9mm
最大縫速	2,000 s.p.m.	1,800 s.p.m.

Zigzag width	0mm ~ 5mm	5mm ~ 9mm
Maximum speed	2,000 s.p.m.	1,800 s.p.m.

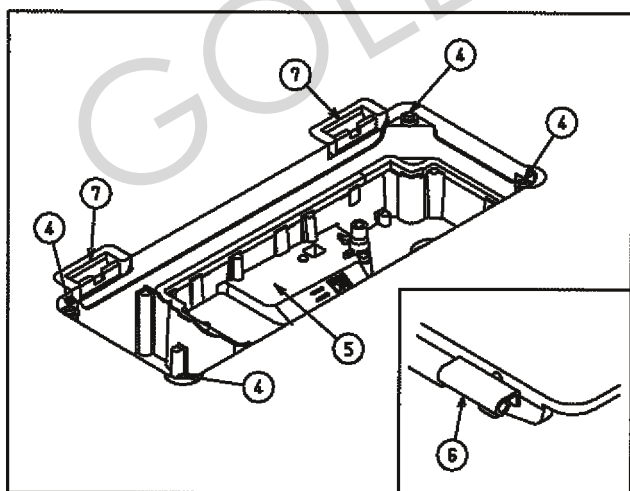
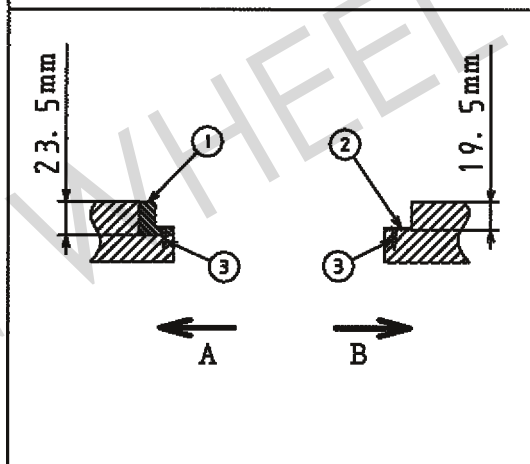
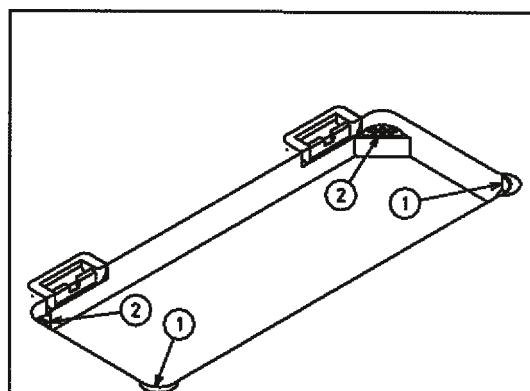


## 1. 油盤的安裝

**1. INSTALLING THE OIL PAN**

- 1) 根據圖解在A側用釘子③固定好兩個橡膠閘座①，在B側用橡膠粘合劑固定好兩個橡膠墊②。將油盤⑤裝在固定的基座上面。
- 2) 油盤應在放在機器抬板四個拐角的凹槽裏。
- 3) 把鉸鏈⑥放進機座打開的洞裏，並且在機頭固定在四個拐角膠墊④之前固定好機頭和橡膠鉸鏈⑦。

- 1) Fix two rubber seats ① on side A (operator's side) using nails ③ as illustrated above. Fix two cushion seats ② on side B (hinged side) using a rubber-based adhesive. Then place oil pan ⑤ on the fixed seats.
- 2) The oil pan should rest on the four corners of the machine table groove.
- 3) Fit hinge ⑥ into the opening hole in the machine bed and fit the machine head to table rubber hinge ⑦ before placing the machine head on cushions ④ on the four corners.



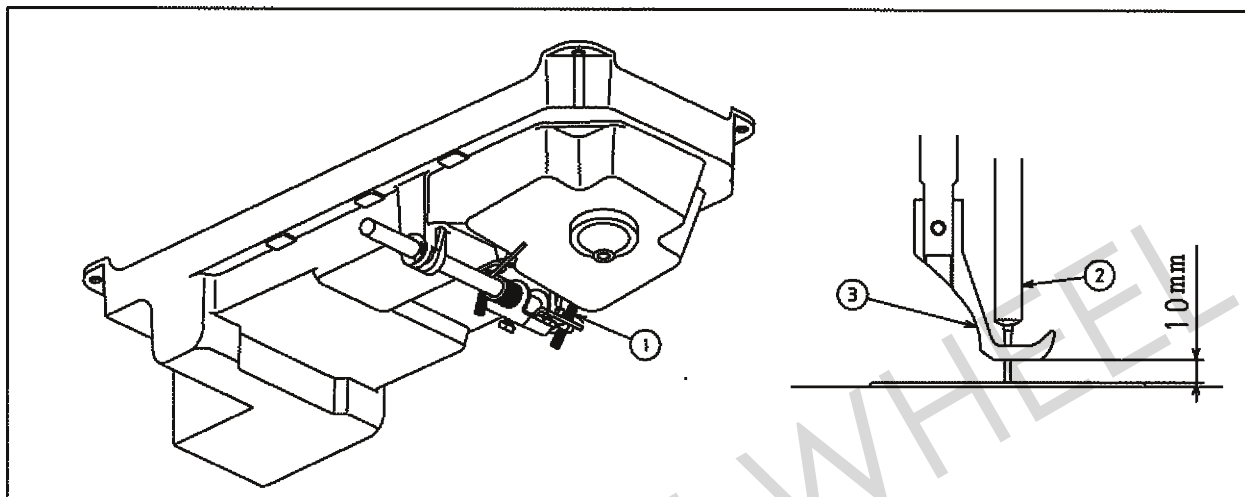
## 2. 調節膝靠提升高度

**2. ADJUSTING THE HEIGHT OF THE KNEE LIFTER**

\* 注意：進行此步驟時，務必將電源關掉，馬達確實停止轉動，以避免不必要之危險！

**CAUTION**

TURN THE SWITCH OFF THE POWER SUPPLY TO PREVENT FROM UNEXPECTED INJURY. BE SURE TO CONFIRM THE STOP OF ROTATION OF THE MOTOR BEFORE OPERATIONS.



- 1) 壓腳提升高度應採用膝靠提升高度10mm。
- 2) 使用壓腳提升螺絲①來調節壓腳提升高度到10mm。
- 3) 當壓腳提升超過10mm，請確認針棒②的最低面不能碰到壓腳③。

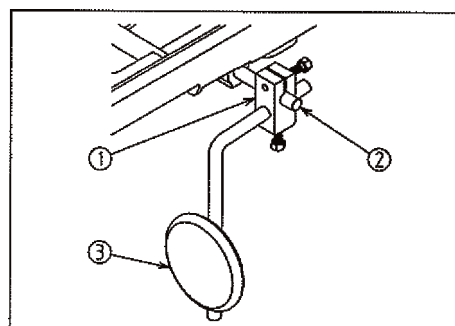
1) The standard height of the presser foot lift using the knee lifter is 10mm.  
 2) You can adjust the foot lift up to 10mm using knee lifter adjust screw ①.  
 3) When you have adjusted the presser foot lift to over 10mm, be sure that the bottom end of needle bar ② in its lowest position does hit presser foot ③.

## 3. 固定好膝靠的位置

**3. MOUNTING POSITION OF THE KNEE LIFTER**

- 1) 插入膝靠提升曲柄①到膝靠提升軸②裏。
- 2) 將膝靠板③裝到膝靠曲柄上①。

1) Insert knee lifter crank ① in the knee lifter shaft ②.  
 2) Attach knee lifter plate rod asm. ③ to the knee lifter crank ①.



## 4. 皮帶蓋和繞綫器的安裝

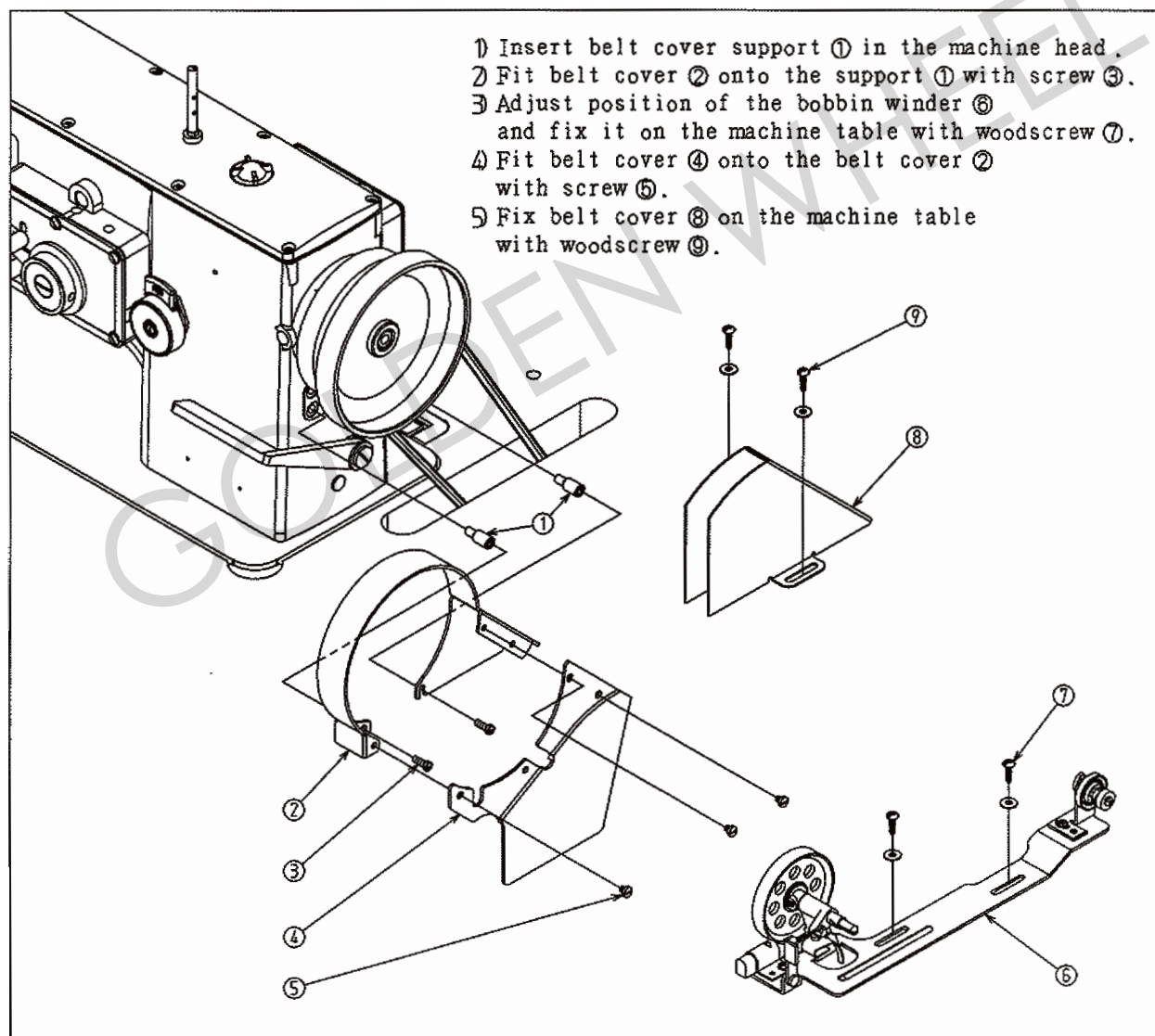
## 4. INSTALLING THE BELT COVER AND THE BOBBIN WINDER

\* 注意：進行此步驟時，務必將電源關掉，馬達確實停止轉動，以避免不必要之危險！

# ⚠ CAUTION

TURN THE SWITCH OFF THE POWER SUPPLY TO PREVENT FROM UNEXPECTED INJURY. BE SURE TO CONFIRM THE STOP OF ROTATION OF THE MOTOR BEFORE OPERATIONS.

- 1) 在機頭上插入皮帶蓋的固定銷①。
- 2) 將皮帶蓋②用螺絲③裝在固定銷①上。
- 3) 調整繞綫器⑥的位置，并用木制螺釘⑦把它固定在機器臺板上。
- 4) 用螺絲⑤將皮帶蓋④固定在皮帶蓋②上。
- 5) 將皮帶蓋⑧用木制螺⑨釘固定在機器臺板上。

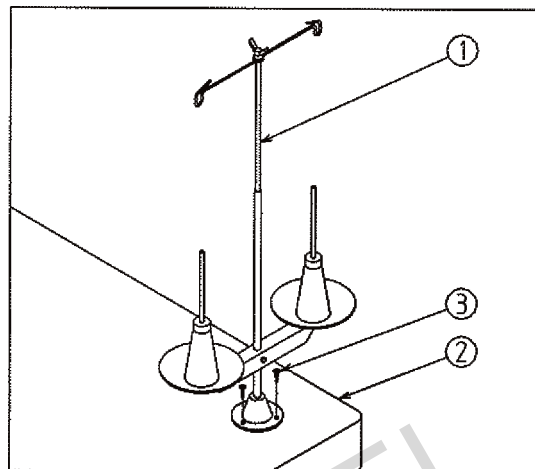


## 5. 綫架的安裝

### 5. INSTALLING THE THREAD STAND

- 1) 安裝好綫架的支撐軸①。
- 2) 用木制螺釘③將支撐軸①固定在機器臺板②上。

- 1) Assemble the thread stand ①.
- 2) Fix the thread stand ① on the machine table ② with woodscrew ③.



## 6. 注油

### 6. LUBRICATION

\* 注意：進行此步驟時，務必將電源關掉，馬達確實停止轉動，以避免不必要之危險！



**CAUTION**

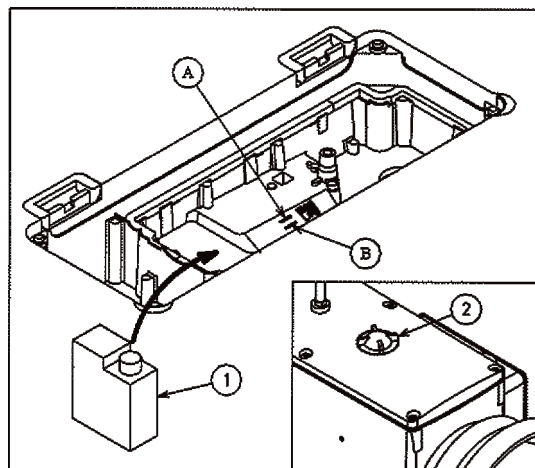
TURN THE SWITCH OFF THE POWER SUPPLY TO PREVENT FROM UNE-EXPECTED INJURY. BE SURE TO CONFIRM THE STOP OF ROTATION OF THE MOTOR BEFORE OPERATIONS.

#### (1) 注油的詳細步驟如下：

- 1) 將機油①和錠子油注到標記(A)位置。
- 2) 當油面低于最低位置標記(B)處，要重新注入規定的機油。
- 3) 當機油注入充足時，打開機器時，油就會通過油孔②飛濺。
- 4) 飛濺的機油是不會影響潤滑油的總量。

#### (1) Information on lubrication

- 1) Fill oil ① with white spindle oil up to HIGH mark (A).
- 2) When the oil level lower below LOW mark (B), re-fill the oil pan with the specified oil.
- 3) When you operate the machine after lubrication, you will see splashing oil through oil sight window ② if the lubrication is adequate.
- 4) Note that the amount of the splashing oil is unrelated to the amount of the lubricating oil.



## 7. 旋梭注油的調節

## 7. ADJUSTING THE AMOUNT OF OIL (OIL SPLASHES) IN THE HOOK

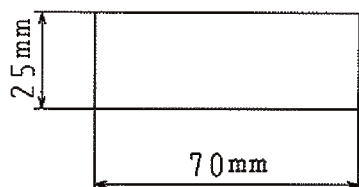
\* 注意：進行此步驟時，務必將電源關掉，馬達確實停止轉動，以避免不必要之危險！

**CAUTION**

TURN THE SWITCH OFF THE POWER SUPPLY TO PREVENT FROM UNEXPECTED INJURY. BE SURE TO CONFIRM THE STOP OF ROTATION OF THE MOTOR BEFORE OPERATIONS.

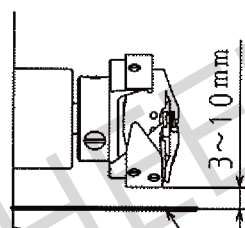
## ① 測試油紙

① Amount of oil (oil splashes) confirmation paper



## ② 確認供油總量的位置

② Position to confirm the amount of oil (oil splashes)



Closely fit the paper against the wall surface of the bed.

將測試油紙固定在一側

Oil splashes confirmation paper

出油測試油紙

\* 當執行第 2) 項操作，移除滑動板，請勿用手指觸摸旋梭。

- 1) 如果機器沒有充分的預熱，應使機器空車運轉3分鐘。（適度間歇運行）
- 2) 當機器運行時將測試油紙放在旋梭下面。
- 3) 確認油池裏的油面高度應在“HIGH”和“LOW”範圍內。
- 4) 確認旋梭供油的總量，時間應在往旋梭內正常注油滴入5秒鐘以內。

\* When carrying out the procedure described below in 2), remove the slide plate and take extreme caution not to allow your fingers to come in contact with the hook.

- 1) If the machine has not been sufficiently warmed up for operation, make the machine run idle for approximately three minutes. (Moderate intermittent operation)
- 2) Place the amount of oil (oil splashes) confirmation paper under the hook while the sewing machine is in operation.
- 3) Confirm the height of the oil surface in the oil reservoir is within the range between "HIGH" and "LOW".
- 4) Confirmation of the amount of oil should be completed in five seconds. (Check the period of time with a watch)



## ● 旋梭注油的示範

### ● Sample showing the appropriate amount of oil

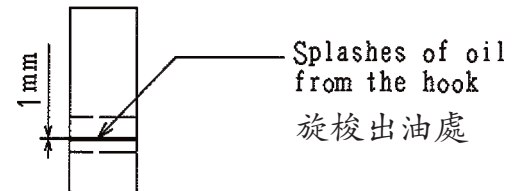
- 1) 左邊圖示，根據機器運轉的過程對注油總量進行調節。注意不能過度的增加和減少旋梭注油總量。
- 2) 對注油總量的調節檢查過三次以後不應再進行調節。

**注意：**當注油總量太少時會出現旋梭卡死的情況，當太多時縫制物料會出現被油污。

- 1) The amount of oil shown in the samples on the left should be finely adjusted in accordance with sewing processes. Be careful not to excessively increase/decrease the amount of oil in the hook.
- 2) Adjust the amount of oil in the hook so that the oil amount (oil splashes) should not change while checking the oil amount three times (on the three sheets of paper).

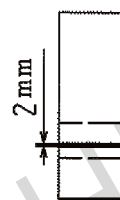
#### 油量調節（小）

Appropriate amount of oil (small)



#### 油量調節（大）

Appropriate amount of oil (large)



## CAUTION

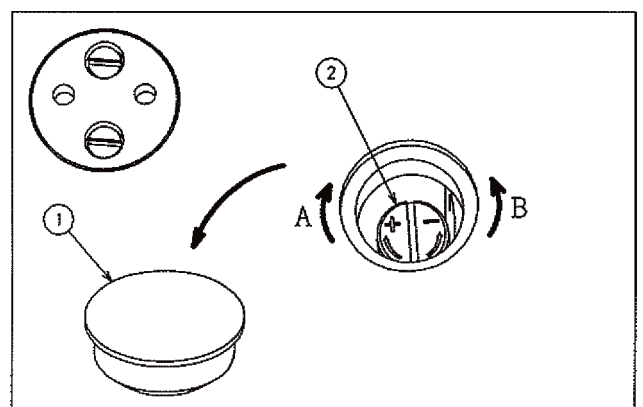
If the amount of oil is too small, the hook will be seized. If the amount of oil is too much, the sewing product may be stained with oil.

## ● 對旋梭內油量的調節

### ● Adjusting the amount of oil (oil spots) in the hook

- 1) 拔掉機器上的橡膠塞①。
- 2) 往“+”的方向轉動旋梭調節螺絲②（方向A）會增加旋梭內油量，反之，往“-”的方向調節（方向B）會減少旋梭內油量。
- 3) 當調節好後，應使機器空車運轉30秒鐘。

- 1) Take off the rubber plug ① on the machine bed.
- 2) Turning the oil adjustment screw ② in the "+" direction (in direction A) will increase the amount of oil (oil spot) in the hook, or in the "-" direction (in direction B) will decrease it.
- 3) After the amount of oil in the hook has been properly adjusted, make the sewing machine run idle for approximately 30 seconds to check the amount of oil in the hook.



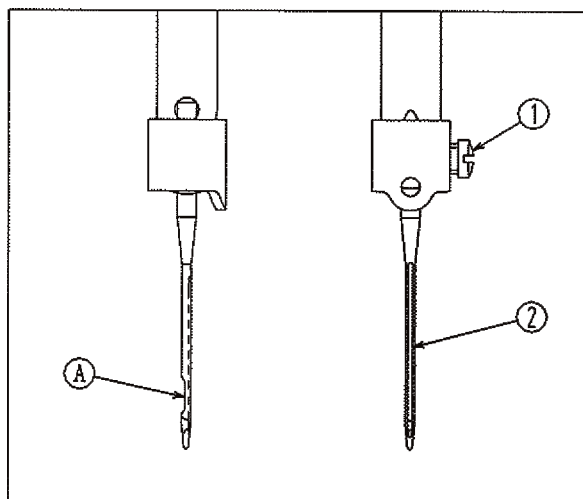
## 8. 固定機針

## 8. ATTACHING THE NEEDLE

\* 注意：進行此步驟時，務必將電源關掉，馬達確實停止轉動，以避免不必要之危險！



**TURN THE SWITCH OFF THE POWER SUPPLY TO PREVENT FROM UNE-EXPECTED INJURY. BE SURE TO CONFIRM THE STOP OF ROTATION OF THE MOTOR BEFORE OPERATIONS.**



☆ 請確認馬達開關是處於關閉狀態。  
機針標準規格應為“DPX17”。

- 1) 轉動手輪，提升針棒到最高位置。
- 2) 鬆動螺絲①，將針②插入針孔底部直到不能晃動為止。插入針的同時應注意針部凹處A應朝向旋梭的方向。
- 3) 鎖緊針棒螺絲即可。

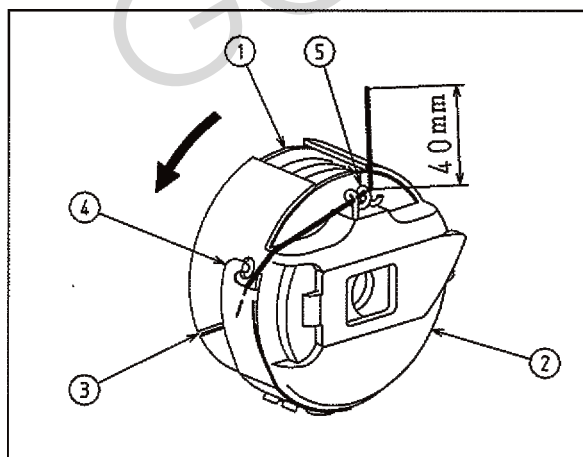
## ★ BE SURE TO POWER-OFF THE MOTOR

The normal needle system is 'DPX17'.

- 1) Turn the handwheel by hand and raise the needle bar to its top position
- 2) Loosen screw ① and insert the needle ② into the hole until it will go no further.  
◇ Insert the needle with its recess facing  
Ⓐ directly to the hook-point side  
(to the rear side)
- 3) Securely tighten the screw in the needle bar.

## 9. 梭仔的裝入

## 9. SETTING THE BOBBIN INTO THE BOBBIN CASE



- 1) 將梭子①裝入梭殼②內。
- 2) 將線穿過梭殼凹槽③處并穿過梭殼彈簧片缺口④。
- 3) 最後將線穿過導線彈簧⑤并將線拉出留約40mm長度在外。

注意：梭子放入梭殼內，當拉底線時，梭子轉動方向要如圖箭記號所示。

- 1) Put the bobbin ① into the bobbin case ②.
- 2) Pass the thread through the threading groove ③ and under of tension spring ④ in the bobbin case
- 3) Pass the end of thread through bobbin case thread guide ⑤ and pull it out a length of about 40mm.

**CAUTION:** Fit the bobbin in the bobbin case so that the bobbin turns in the direction of the arrow when the bobbin thread is pulled



## 10. 縫目長度的調節

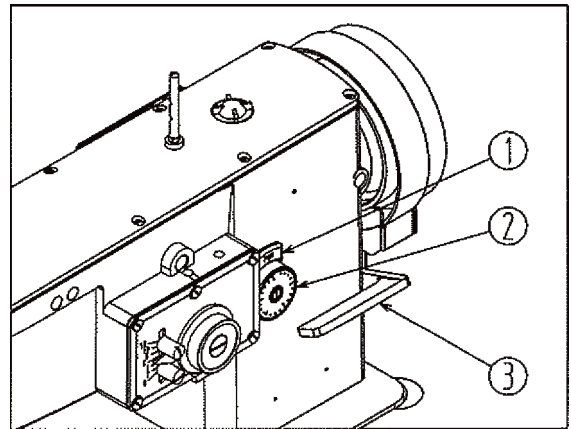
**10. ADJUSTING THE STITCH LENGTH**

轉動縫目長度選針盤①，順向或逆向轉動，將②所須針碼數字對準針盤①鎖合即可，縫目數字以mm為單位長度。

**○反倒縫**

- 1) 將送料倒縫杆③朝下
- 2) 朝下壓時，車縫方向是倒退送料
- 3) 鬆開送料倒縫杆，即恢復到順送料狀態

To adjusting the stitch length, push the lock plate ①. Align the stitch length dial ② indicator to the line of the lock plate ① turning stitch length dial counterclockwise or clockwise.

**○How to engage the reverse feed stitching.**

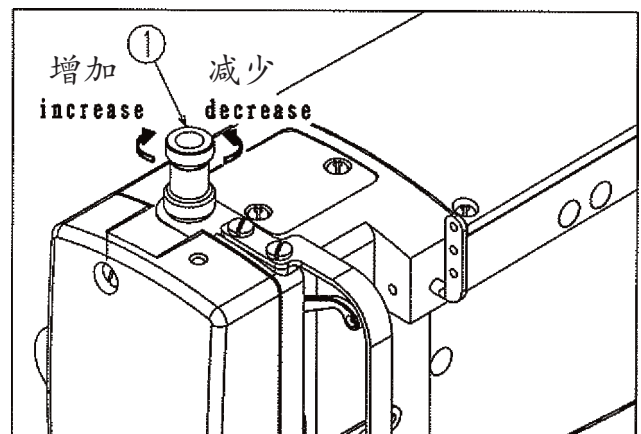
- 1) Push feed lever ③ down.
- 2) The machine performs reverse feed stitching as long as the lever is held depressed.
- 3) The moment you release the lever, the machine resumes the normal stitching mode.

## 11. 押腳壓力的調整

**11. ADJUSTING THE PRESSER FOOTPRESSURE**

- 1) 轉動壓腳彈簧校準器①，向右即為增加，向左即為減少。

1) Turn the presser spring regulator ① to the right to increase and to the left to decrease pressure.

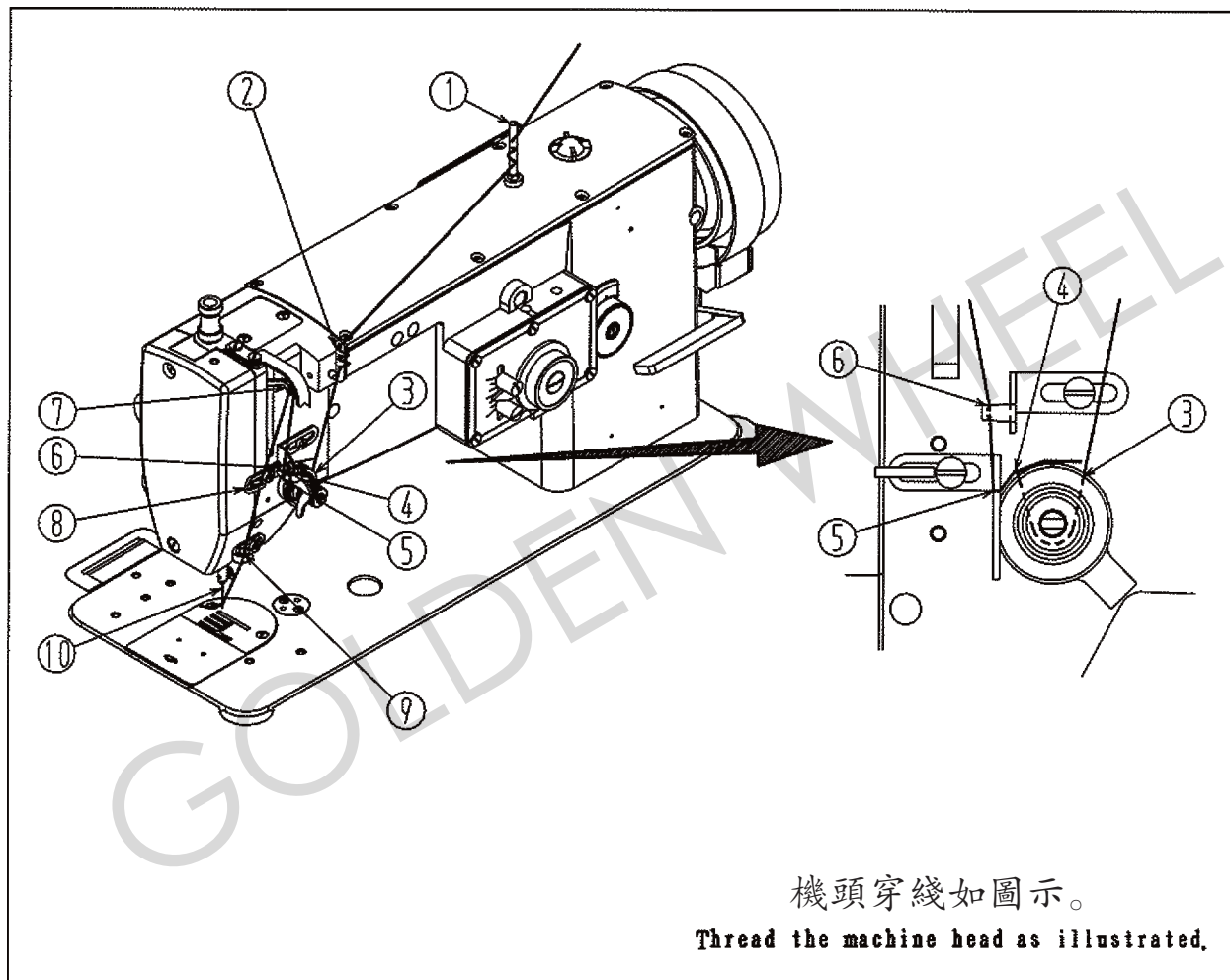


## 12. 機頭穿線的操作方法

### 12. HOW TO THREAD THE MACHINE HEAD

\* 注意：進行此步驟時，務必將電源關掉，馬達確實停止轉動，以避免不必要之危險！

**⚠ CAUTION** TURN THE SWITCH OFF THE POWER SUPPLY TO PREVENT FROM UNEXPECTED INJURY. BE SURE TO CONFIRM THE STOP OF ROTATION OF THE MOTOR BEFORE OPERATIONS.



### 13. 綫張力的調節

#### 13. THREAD TENSION

\* 注意：進行此步驟時，務必將電源關掉，馬達確實停止轉動，以避免不必要之危險！



**TURN THE SWITCH OFF THE POWER SUPPLY TO PREVENT FROM UNE-EXPECTED INJURY. BE SURE TO CONFIRM THE STOP OF ROTATION OF THE MOTOR BEFORE OPERATIONS.**

##### 1) 面綫壓力的調節

轉動夾綫器螺母①，順時針方向轉時面綫張力增加，逆向轉時減弱。

##### 2) 底綫壓力的調節

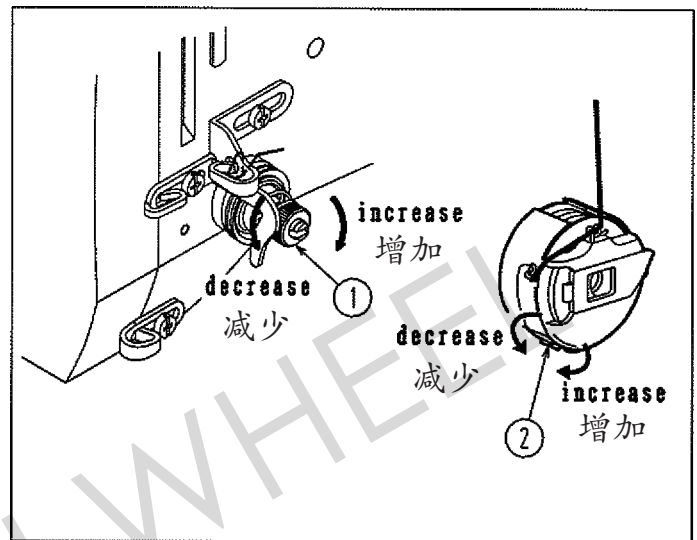
轉動梭殼夾綫螺絲②，順時針方向轉時面綫張力增加，逆向轉時減弱。

##### (1) Adjusting the needle thread tension

Turn the thread tension nut ① clockwise to increase or counterclockwise to decrease the needle thread tension.

##### (2) Adjusting the bobbin thread tension

Turn the tension screw ② clockwise to increase or counterclockwise to decrease the bobbin thread tension.



### 14. 縫目寬度的調節

#### 14. STITCH WIDTH REGULATOR

人字縫寬度由偏心縫寬調節杆①控制。  
當針插在布料上時請勿做任何位置的調整。  
如何控制人字縫寬度

- 1) 爲了獲得從最小到最大的人字縫寬度首先應鬆開把手螺絲②，做縫目寬度的調整①，將其回歸到最小值位置，并鎖緊把手螺絲②。
- 2) 鬆開把手螺絲③，將其調到最大值，并鎖緊把手螺絲③。
- 3) 人字縫寬度的調節範圍爲0mm~9mm。

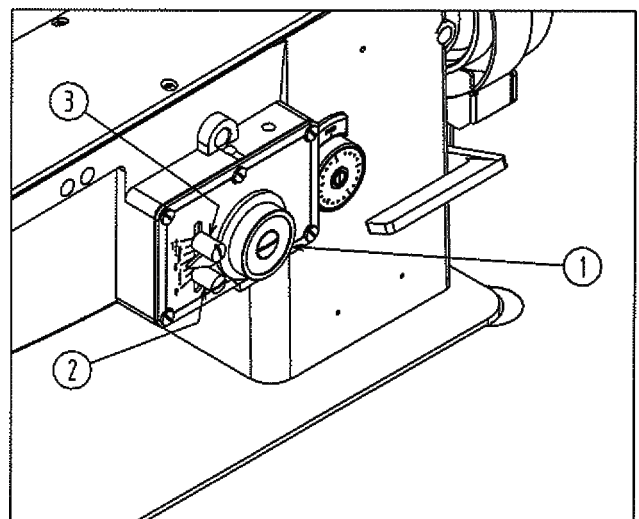
The width of zigzag stitch is controlled with biased stitch width regulating dial ①.  
Do not make any needle position adjustment while the needle is in the fabric.

##### How to control the width of zigzag stitch

- 1) To obtain minimum to maximum width zigzag stitches, first loosen thumb screw ②, to permit the stitch width regulator ①, to return to its minimum position and retighten thumb screw ②.

- 2) Then loosen thumb screw ③, to return to its maximum position and retighten thumb screw ③.

- 3) You can now regulate the stitch width regulator within the range of 0mm to 9mm.



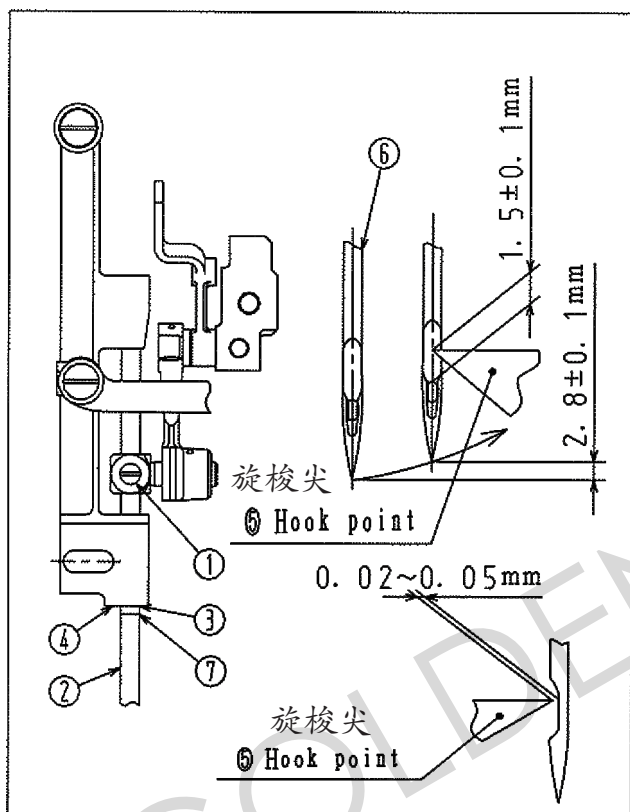
## 15. 針與旋梭的關係

## 15. NEEDLE-TO-HOOK RELATIONSHIP

\* 注意：進行此步驟時，務必將電源關掉，馬達確實停止轉動，以避免不必要之危險！



**CAUTION** TURN THE SWITCH OFF THE POWER SUPPLY TO PREVENT FROM UNEXPECTED INJURY. BE SURE TO CONFIRM THE STOP OF ROTATION OF THE MOTOR BEFORE OPERATIONS.



◇ 請按照下面次序調整針棒到適度高點：

- 1) 移開面板。
- 2) 將縫目寬度調整器設定在直線狀態。
- 3) 轉動車頭上輪，直到針降到其最低點。
- 3) 鬆開針棒固定螺絲①，此時祇有針棒②可以任意上下移動。
- 4) 視需求上下移動針棒②的位置，針棒時間指示板④的下端與針棒上端下止點刻綫記號③排齊成一條綫，然後針棒固定螺絲①鎖緊。

◇ 針與旋梭時間調整

- 1) 在針的中心點位置，機器設定為直線縫狀態。
- 2) 在上述狀態下，當針棒從其最低點往上提升2.8mm，旋梭勾綫尖⑤會對準針⑥的中心，然後鎖緊旋梭固定螺絲即可。(此調整方式粗略解釋針棒時間指示板④下端與針棒上刻綫⑦對準成一直綫，即可調整下面勾綫時間動作。)
- 3) 針⑥與旋梭勾綫尖⑤的間隙調整範圍應為0.02mm~0.05mm。

◇ Set the needle bar at the proper height first as follows

- 1) Remove face plate.
- 2) Set stitch width regulator for straight stitching.
- 3) Turn machine pulley over toward you until needle descends to its lowest position.
- 3) Loosen needle bar screw ① so that only the needle bar ② will move up and down freely.
- 4) Move needle bar ② up or down as required, and align its upper timing mark ③ with underside of needle bar frame ④. Then securely tighten needle bar set screw ①.

◇ Adjust the timing between the needle and the hook as follows

- 1) Set machine for straight stitching at center needle position.
- 2) Adjust so that, when the needle bar goes up to 2.8mm above its lowest position, hook point ⑤ nearly meets the center of needle ⑥. Then tighten hook setscrew. (As a rough indication of this adjustment, marker line ⑦ on needle bar aligns with the bottom face of the needle bar frame ④.)
- 3) Adjust the clearance between needle ⑥ and hook point ⑤ to 0.02 to 0.05mm.

## 16.常見故障問題排解

問題	原因	解決方法
1.斷線或磨損	1 線穿過的區域，梭殼勾線尖，針尖是否磨損。 2 針部穿線的壓力是否太大。 3 針是否碰到旋梭勾線尖。 4 針部穿線是否太鬆，壓力是否太小。 5 彈簧張力是否太大。 6 機針與旋梭尖的差動調節是否正確。	1 用砂紙去除旋梭尖的磨損痕迹，進行拋光擦亮。 2 調整好針部穿線的壓力。 3 見第 15 項針與旋梭的關係。 4 調整好針部穿線的壓力。 5 調整好彈簧張力。 6 見第 15 項針與旋梭的關係。
2.跳針	1 針與旋梭尖的空隙是否太大。 2 機針與旋梭尖的差動調節是否正確。 3 押腳壓力是否太小。 4 針眼的最高點與旋梭尖的間隙是否正確。 5 針的規格是否適合	1 見第 15 項針與旋梭的關係。 2 見第 15 項針與旋梭的關係。 3 增加押腳的壓力。 4 見第 15 項針與旋梭的關係。 5 選配適合工作物料的機針。
3.機針鬆動	1 線是否穿過梭殼壓力彈簧的凹口處。 2 穿線路徑完成的是否很差。 3 梭子運轉是否平順。 4 梭子穿線壓力太小。 5 梭子穿線是否因為太緊導致斷裂。	1 將線正確的穿過梭殼壓力彈簧的凹口處。 2 用砂紙去除磨損痕迹。 3 替換旋梭或者梭子。 4 適當調節梭子穿線壓力。 5 減小梭子穿線的壓力。



## 16. TROUBLE AND CORRECTIVE MEASURES

Trouble	Causes	Corrective measures
1. Thread breakage (Thread frays or wears out.)  Needle thread remains 2 to 3 cm on the wrong side of the cloth)	① The thread path, needle point, hook point or bobbin case positioning finger has scratches. ② The needle thread tension is too high. ③ The needle hits the hook point. ④ The needle thread tension is too low. ⑤ The thread take-up spring has an excessively high tension while it has an excessively small stroke. ⑥ The timing between the needle and hook is too early or late.	○ Remove the scratches on the hook point using a fine sand paper. Buff the bobbin case positioning finger. ○ Properly adjust the needle thread tension. ○ See "15. NEEDLE-TO-HOOK RELATIONSHIP". ○ Properly adjust the needle thread tension. ○ Decrease the tension, and increase the stroke. ○ See "15. NEEDLE-TO-HOOK RELATIONSHIP".
2. Stitch skipping	① The clearance between the needle and the hook point is too large. ② The timing between the needle and hook is too early or late. ③ The presser foot pressure is too low. ④ The clearance between the top edge of the needle eyelet and the hook point is not correct. ⑤ The size of the needle is wrong.	○ See "15. NEEDLE-TO-HOOK RELATIONSHIP". ○ See "15. NEEDLE-TO-HOOK RELATIONSHIP". ○ Increase the presser foot pressure. ○ See "15. NEEDLE-TO-HOOK RELATIONSHIP". ○ Replace the needle by one which one grade thicker.
3. Loose stitches	① The thread has not been passed through the notch of the bobbin case tension spring. ② The thread path is poorly finished. ③ The bobbin does not rotate smoothly. ④ The bobbin thread tension is too low. ⑤ The bobbin thread has been wound too tight.	○ Properly thread the bobbin case. ○ Grind it using a fine sand paper of a buff. ○ Replace the bobbin or hook. ○ Properly adjust the tension. ○ Decrease the bobbin thread winding tension.

GOLDEN WHEEL

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