

SERVO-TOP

QE5542

CE

Type

P40SE04

Instruction Manual

Part 3

QUICK-ROTAN Elektromotoren GmbH
Königstraße 154
D-67655 Kaiserslautern
Tel.: 0631 / 200 38 80
Fax: 0631 / 200 38 62
E-Mail: tech.suppl@quick-rotan.com
www.quick-rotan.com

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Technical updatings reserved !

11. Survey and List of Parameters

11.1 Explanation of Parameter Survey

The parameter survey is designed as an aid for finding parameters quickly. It is a summary of references for the parameter list. Listed behind each reference are all parameters which exert an influence on the function described by the reference.

The parameter survey is divided into five columns:

Column 1 shows the references (functions) to which parameters are assigned.

Column 2 shows the abbreviations of the respective functions.

Column 3 shows all parameters (setting numbers) belonging to the respective reference.

Column 4 shows, for each function (reference) which controls inputs or outputs, the applicable indications such as Ex or Ax which can also be found on the connections diagram.

Column 5 shows, for each function (control inputs (Ex) or control outputs (Ax)), the respective plugs with the number of contacts (see connections diagram).

Example for searching a parameter:

Keyword (function): inverse rotation

The parameter survey shows in column 3 the parameter numbers 618, 623, 801.

Suppose that the inverse rotation function is to be enabled. The parameter list shows this function under parameter number 618.

11.2 Explanation of Parameter List

The parameter list is divided into 5 columns. These comprise, in

column 1: the parameter number,

column 2: is the explanation (meaning) of the parameters and the coding system of row 1 of the keys of the mini operator's panel, used when the parameter concerned can be programmed with the mini operator's panel,

column 3: the programming level (A, B, C) on which the parameter in question can be accessed,

column 4: the range of values within which the parameter in question can be set,

column 5: the value of the parameter in question is set on delivery ex factory.

Parameters having "either/or" validity (software switches) can merely be set to value I or II. In the case of such parameters, column 4 is empty.

Parameter numbers in acute brackets; e.g. <105>, mean the value (content) set for the parameter in question.

Example:

107 Speed for front backtack when <106> = I

I limited by <105>

II limited by <607>

Explanation:

Parameter 107 is valid only the the value (content) of parameter <106> = I.

If parameter 107 is set to I (<107> = I), then the speed for the front backtack is limited by parameter 105, e.g. <105> = 1500. If parameter 107 is set to II (<107> = II), then the speed for the front backtack is limited by the value of parameter 607, e.g. <607> = 4000.

11.3 Parameter survey P40SE 04 (2A_010_6.ENO)

Function	Abbrev'n	Parameter	Input Output	Connection Socket/Contacts
Accelerate	DRZAN	722		
Backtack	RIE	102/103/104 105/107/108 109/110/140 523/584/585 768		
Backtack inversion	RIV	419/617		
Backtack suppression	RIUNT	419		
Blower	BLA	668		
Brake	DRZAB	723/758/851		
Chopper	MESSER	105/110		
Control	REG	758/884/885 886/887/889 890/891/894 990		
Decorative backtack	ZRIE	505/506/507 508/522/523 530/775		
Defect search	HWT	797		
Delay	VERZ	231/623/730 731/732/739 740/761/770		
Direction of rotation	DRR	800		
Display	ANZ	605/933		
End backtack	ER	108/109/110 731/732/740		
Feed reverse	TUM	721/768	E1 A5	X5:3 X4:4
Front backtack	AR	102/103/104 105/106/107 140/739		
Hardware test	HWT	797		
Inverse rotation	RDR	618/623/801		
Machine class	MAKL	799		
Machine run	ML	118	A8	X6:6
Needle bar	NASTA	987		

Needle cooling	NAKU	118/119		
Needle position	NAPO	522/700/701 702/703/705 706/710/768		
Needle position change-over	NPW	616	E2	X1:1
Needle up without trimming	NHOS	616/710		
Number of stitches	STZA	102/103/108 109/111/112 505/506/507 508		
ON period	EINZ	119/231/715 889		
Operator panel	BDF	681		
Photocell	LS	111/112/113 199/615		
Presser foot	PF	554/624/651 719/729/730 770	A4	X4:5
Program	PR	114/206/221 304/313/554 851		
Programming level C	EBC	798		
Repeat backtack	WRIE	731/740		
Residual brake	STBR	718		
Seam end	NE	110/114/206 602		
Seam start	NA	105		
Single stitch	EST	617	E3	X1:3
Soft start	SANL	116/117		
Speed	DRZ	105/106/107 110/117/199 221/530/585 605/606/607 608/609/676 850/901		
Speed decrease	DRZAB	723/758/851		
Speed increase	DRZAN	722		
Speed limitation	DB	221/585/676		
Start	START	113/603		
Start delay	STVERZ	729		

Starting block	ANLSP	624/665		
Stitch condensation	STVD	102/105/106 107/108/110 419/617/739		
Stop	STOP	114/206/624 665	E4	X4:3
Stop time	STOPZ	775		
Target stitch	PEIPO	653/789		
Thread puller	FZ	761		
Thread tension release	FSL	761		
Thread trimming	SN	601/609/705 706/732/901		
Thread wiper	WI	668/715	A3	X3:5
Time needed to switch on	EINZ	119/231/715 889		
Timing output	TA	705/719/721		
Vacuum	SAUG	105/110		
Zigzag machine	ZZ	711		

11.4 List of Parameters P40SE 04 (2A_010_6.EN)

No.	Function (Meaning)	Level	Range Values	of Value	Standard
102	(AR/RIE/STVD/STZA) Front backtack stitches forward (10000000)	C	0 - 9	3	Kl. 1
103	(AR/RIE/STZA) Front backtack stitches backward (01000000)	C	0 - 9	3	Kl. 1
104	(AR/RIE) Front backtack correction (delayed disabling of feed reverse)	B,C	0 - 16	8	Kl. 1
105	(AR/RIE/DRZ/MESSER/NA/SAUG/STVD) Speed for front backtack / stitch condensation (11000000)	B,C	100 - 6400	1200	Kl. 1
106	(AR/DRZ/STVD) Speed for front backtack/stitch condensation 1 variable (treadle-controlled) 0 constant (corresponding to <105>)	B,C		0	Kl. 1
107	(AR/RIE/DRZ/STVD) Speed for front backtack/stitch condensation when <106> = I 1 limited by <105> 0 limited by <607>	B,C		0	Kl. 1
108	(ER/RIE/STVD/STZA) End backtack stitches backward (00100000)	C	0 - 9	3	Kl. 1
109	(ER/RIE/STZA) End backtack stitches forward (10100000)	C	0 - 9	3	Kl. 1
110	(ER/RIE/DRZ/MESSER/NE/SAUG/STVD) Speed for end backtack / stitch condensation (01100000)	B,C	100 - 6400	1200	Kl. 1
111	(LS/STZA) Light barrier compensation stitches 1 (stitches from light barrier clear to seam end)	A,B,C	1 - 255	6	Kl. 1
112	(LS/STZA) Number of stitches for light barrier fade-out on knit fabrics (according to stitch size)		A,B,C	0 - 255	0 Kl. 1
113	(LS/START) Start with light barrier 1 when light barrier is dark only 0 also when light barrier is clear	B,C		0	Kl. 1
114	(PR/STOP/NE) Stop before seam end after stitch count (last seam section) 1 yes 0 no	B,C		0	Kl. 1
116	(SANL) Soft start stitches (11100000)	A,B,C	0 - 255	0	Kl. 1
117	(SANL/DRZ) Speed for soft start stitches (00010000)	B,C	30 - 640	400	Kl. 1
118	(NAKU/ML) Signal on output is 1 = needle cooling 2 = motor run (sewing cycle) 3 = Edge trimmer 4 = blower on at treadle -1 and during sewing off 5 = blower on at treadle -1 and during sewing on	B,C	1 - 5	2	Kl. 1
119	(EINZ/NAKU) Time for needle cooling including time after stop	B,C	0 - 2550	120	Kl. 1
140	(AR/RIE) Front backtack correction (delayed enabling of feed reverse)	B,C	0 - 16	0	Kl. 1
199	(DRZ/LS) Speed for light barrier compensation stitches	B,C	300 - 6400	1200	Kl. 1
206	(NE/PR/STOP) Interrupt/discontinue seam sections at speed = constant (<203> = II) 1 with treadle -2 0 with treadle 0	B,C		0	Kl. 1
221	(PR/DB/DRZ) Speed limitation for sewing program 1 (or for all sewing programs)	B,C	300 - 6400	1200	Kl. 1

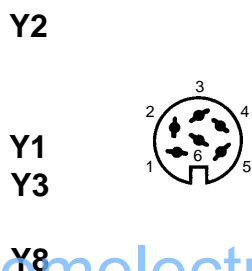
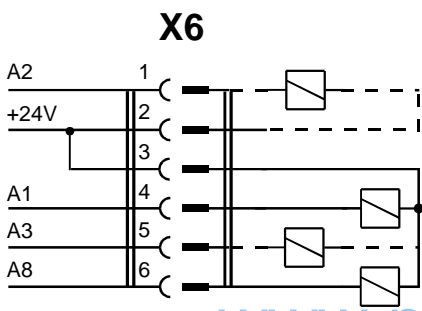
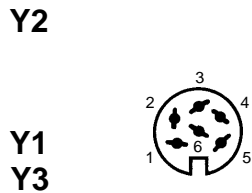
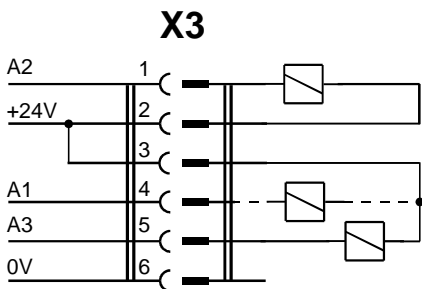
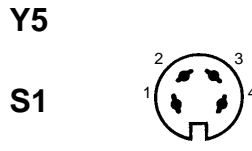
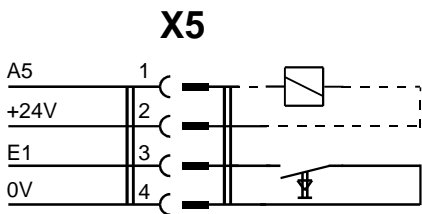
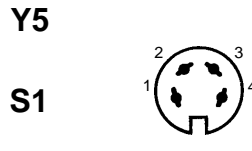
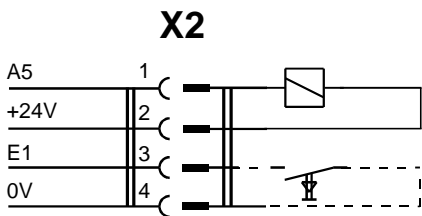
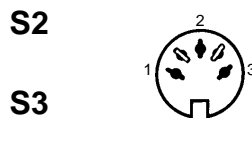
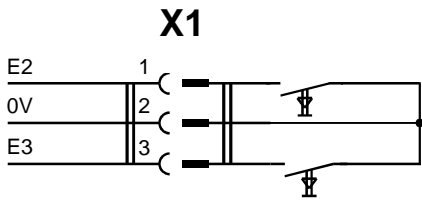
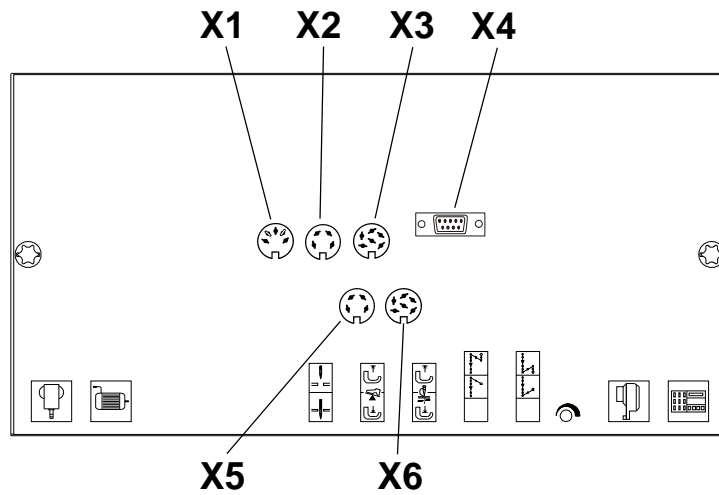
231	(VERZ/EINZ) Delay/on time t11	B,C	0 - 2550	50	Kl. 1
304	(PR) Stitch compensation at feed reverse for a seam section	B,C	0 - 255	3	Kl. 1
313	(PR) Programs are backtack programs (darning programs) 1 yes 0 no	B,C		0	Kl. 1
419	(RIV/RIUNT/STVD) Function of external key 1 backtack / stitch condensation inversion 0 backtack / stitch condensation suppression (flip-flop function)	B,C		1	Kl. 1
505	(ZRIE/STZA) Number of stitches for front decorative backtack forward (stitch in stitch, speed = <530>) (10010000)	C	0 - 9	3	Kl. 1
506	(ZRIE/STZA) Number of stitches for front decorative backtack backward (stitch in stitch, speed = <530>) (01010000)	C	0 - 9	3	Kl. 1
507	(ZRIE/STZA) Number of stitches for end decorative backtack backward (stitch in stitch, speed = <530>) (11010000)	C	0 - 9	3	Kl. 1
508	(ZRIE/STZA) Number of stitches for end decorative backtack forward (stitch in stitch, speed = <530>) (00110000)	C	0 - 9	3	Kl. 1
522	(NAPO/ZRIE) Needle position when stop occurs during decorative backtack (stitch in stitch) 1 position 2 (up) 0 position 1 (down) (10110000)	B,C		0	Kl. 1
523	(RIE/ZRIE) Backtack 1 decorative backtack (stitch in stitch) 0 standard backtack (01110000)	A,B,C		0	Kl. 1
530	(DRZ/ZRIE) Speed (max.) for decorative backtack (11110000)	B,C	100 - 6400	1000	Kl. 1
554	(PF/PR) Presser foot position after seam section stitch count and treadle position > +1 1 up 0 down	B,C		1	Kl. 1
584	(RIE) Backtack 1 four times 0 double	A,B,C		0	Kl. 1
585	(DRZ/DB/RIE) Speed limitation	B,C	300 - 6400	2000	Kl. 1
601	(SN) Trimming 1 yes 0 no (00001000)	B,C		1	Kl. 1
602	(NE) Seam end at treadle position 1 slightly heeled (-1) 0 fully heeled (-2)	B,C		0	Kl. 1
603	(START) Start after seam end 1 after treadle 0 only 0 immediate start of operation	B,C		1	Kl. 1
605	(DRZ/ANZ) Actual speed in display 1 yes 0 no	B,C		0	Kl. 1
606	(DRZ) Speed: level 1 (min.) (10001000)	B,C	30 - 640	180	Kl. 1
607	(DRZ) Speed: level 12 (max.) (01001000)	B,C	100 - 10000	1200	Kl. 1
608	(DRZ) Speed level curve (treadle characteristic) 1 linear 0 not linear	B,C		1	Kl. 1
609	(SN/DRZ) Trimming speed 1 (11001000)	B,C	30 - 300	180	Kl. 1

615	(LS) End recognition when photocell goes 1 from light to dark 0 from dark to light	B,C		0	Kl. 1
616	(NPW/NHOS) Function of external key (input E2) 1 needle position change-over (NPW) 0 needle up without trimming (NHOS)	B,C		0	Kl. 1
617	(EST/RIV/STVD) Function of external key (input E3) 1 single stitch (EST) 0 backtack / stitch condensation inverted (RIV)	B,C		1	Kl. 1
618	(RDR) Inverse rotation after seam end 1 yes 0 no (00101000)	B,C		0	Kl. 1
623	(RDR/VERZ) Delay in start-up time (ms) for inverse rotation	B,C	0 - 2550	40	Kl. 1
624	(ANLSP/STOP/PF) Function of external key (input E4) 1 stop / safety switch no run 0 presser foot	B,C		0	Kl. 1
651	(PF) Presser foot with automatic descent on machine stop 1 yes 0 no	B,C		1	Kl. 1
653	(PEIPO) Target stitch before sewing 1 yes 0 no	B,C		0	Kl. 1
665	(ANLSP/STOP) Run locking/stop 1 contact closed 0 contact open	C		1	Kl. 1
668	(BLA/WI) Thread wiper/thread clearer 1 yes 0 no (10101000)	B,C		1	Kl. 1
676	(DRZ/DB) Speed limitation via potentiometer at the SERVO-TOP control or via the keys V+ / V- at the MINI-STOP control 1 yes 0 no	B,C		1	Kl. 1
681	(BDF) Operator panel push-button locked 1 yes 0 no	B,C		0	Kl. 1
700	(NAPO) Needle position 0 (reference position of the needle) (01101000)	B,C	0 - 239	0	Kl. 1 *
701	(NAPO) Angular adjustment 1 with handwheel (teach-in) 0 by keys (+/-)	B,C		1	Kl. 1
702	(NAPO) Needle position 1 (needle down) (11101000)	B,C	0 - 239	75	Kl. 1
703	(NAPO) Needle position 2 (thread take-up lever up) (00011000)	B,C	0 - 239	213	Kl. 1
705	(NAPO/SN/TA) Needle position 5 (end of trimming signal 1 (magnetic thread trimmer) / clock pulses start of the trimming signal 1) (10011000)	B,C	0 - 239	125	Kl. 1
706	(NAPO/SN) Needle position 6 (start trimming signal 2 (pneumatic thread trimmer)) (01011000)	B,C	0 - 239	119	Kl. 1
710	(NAPO/NHOS) Needle position 3 (needle up) (11011000)	B,C	0 - 239	200	Kl. 1
711	(ZZ) Machine with Zigzag 1 yes 0 no	B		0	Kl. 1
715	(EINZ/WI) Duration (ms) of thread wipe	B,C	0 - 2550	120	Kl. 1

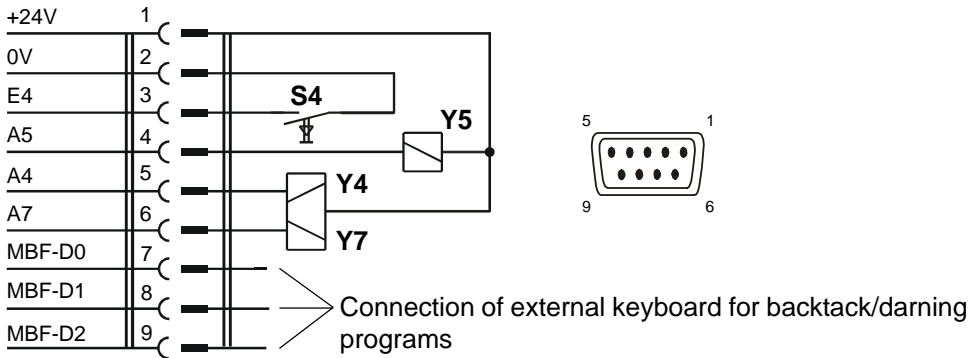
718	(STBR) Timing of residual brake (0 = brake off) (00111000)	B,C	0 - 100	0	Kl. 1
719	(PF/TA) Timing output A4 (lifting presser foot) (0 = 100% switched on)	B,C	0 - 100	40	Kl. 1
721	(TUM/TA) Timing output A5 (feed reverse) (0 = 100% switched on)	B,C	0 - 100	40	Kl. 1
722	(DRZAN) Acceleration ramp 1 gradual 50 steep	B,C	1 - 50	45	Kl. 1
723	(DRZAB) Brake ramp 1 gradual 50 steep	B,C	1 - 50	25	Kl. 1
729	(STVERZ/PF) Start delay after lowering presser foot	B,C	0 - 2550	120	Kl. 1
730	(PF/VERZ) Lift delay for presser foot after seam end	B,C	0 - 2550	50	Kl. 1
731	(ER/WRIE/VERZ) Delay before stitch counting for end backtack (ERV)	B,C	0 - 2550	60	Kl. 1
732	(SN/ER/VERZ) Delay (ms) for trimming after single end backtack	B,C	0 - 2550	30	Kl. 1
739	(AR/STVD/VERZ) Delay (ms) for speed after front backtack / stitch condensation	B,C	0 - 2550	120	Kl. 1
740	(ER/WRIE/VERZ) Delay before stitch counting for end backtack backward	B,C	0 - 2550	80	Kl. 1
756	(WINK) angle 4	B,C	0 - 2550	0	Kl. 1
758	(REG/DRZAB) Deceleration ramp 1 braking as per <723> 0 braking with maximal moment	B,C		0	Kl. 1
761	(FSL/FZ/VERZ) Prolongation Thread tension release/ Thread puller	B,C	0 - 2550	0	Kl. 1
768	(TUM/NAPO/RIE/ERIE) Needle position for backtack correction	B,C	0 - 239	60	Kl. 1
770	(PF/VERZ) Lifting delay of presser foot at threadle- position „-1“	B,C	0 - 250	60	Kl. 1
775	(ZRIE/STOPZ) Stop time (ms) with stitch in stitch backtack (decorative backtack)	B,C	0 - 2550	100	Kl. 1
789	(PEIPO) Needle position 10 (target stitch)	B,C	0 - 239	225	Kl. 1
797	(HWT) Hardware test 1 yes 0 no	B,C		0	Kl. 1
798	(EBC) Programming level C 1 yes 0 no	B,C		0	Kl. 1
799	(MAKL) Machine class which has been selected (10111000)	B,C	1 - 1	1	Kl. 1
800	(DRR) Direction of motor rotation viewed from belt pulley 1 left-hand rotation 0 right-hand rotation (01111000)	B,C		0	Kl. 1 *
801	(RDR) Reverse rotation angle after seam end	B,C	5 - 200	30	Kl. 1
850	(DRZ) Maximum motor speed	C		4500	Kl. 1
851	(PR/DRZAB) Brake ramp for stitch-count seams 1 steep 0 gradual	B,C		1	Kl. 1
884	(REG) Proportional amplification of the speed control (in general)	B,C	4 - 255	12	Kl. 1
885	(REG) Integral amplification of the speed control	C	0 - 100	30	Kl. 1
886	(REG) Proportional amplification of the order controllers	C	1 - 255	20	Kl. 1
887	(REG) Differential amplification of the order controllers	C	1 - 100	30	Kl. 1
889	(EINZ/REG) Time required for order controlling (0 = always)	B,C	0 - 2550	400	Kl. 1

890	(REG) Proportional amplification of the superior order controllers for the residual brake	C	1 - 50	25	Kl. 1
891	(REG) Proportional amplification of the lower speed controllers for the residual brake	C	1 - 50	20	Kl. 1
894	(REG) Rotational direction of motor and synchronizer 1 different 0 same	C		1	Kl. 1
901	(DRZ/SN) Trimming release speed	C	30 - 500	300	Kl. 1
933	(ANZ) Display change-over 1 diagnosis 0 normal display	C		0	Kl. 1
987	(NASTA) Switch-off position for needle bars	B,C		0	Kl. 1
990	(REG) Removal of setpoint position upon change-over from speed control to position control	B,C	1 - 255	16	Kl. 1

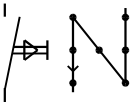
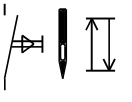
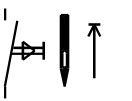
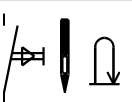
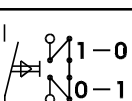
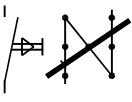

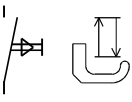
12. Electrical Connections Diagramm P40SE04



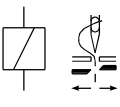
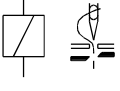
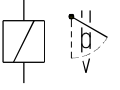
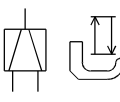
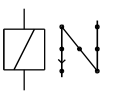
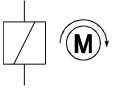
X4



Bedeutung der Magnete bzw. Magnetventile, Taster / Meaning of magnets and/or solenoids and keys
 Signification des aimants resp. solenoides et touches / Significação dos imãs e/ou as solenoidas e teclas
 Significato dei magneti, delle valvole magnetiche e dei tasti / Significación de los imanes y/o los solenoides
 y pulsadores / Betekenis van de magneten resp. magneetkleppen, toetsen

S1 	Transportumstellung von Hand / manual feed reverse / renversement de marche manuel / mudança do transporte manual / commutazione trasporto a mano / inversión de transporte manual / handmatige transportomschakeling
S2  <616> = I	Nadelpositionswechsel / needle position change-over / changement de position d'aiguille / troca de posição da agulha / cambio di posizione dell'ago / cambio de posición de aguja / naaldpositie-verwisseling
S2  <616> = II	Nadel hoch ohne Schneiden / needle up without thread trimming / aiguille en haut sans coupe / agulha para cima sem corte de linhas / ago su senza taglio / aguja arriba sin corte / naald omhoog zonder snijden
S3  <617> = I	Einzelstich / single stitch / point unique / ponto individual / punto singolo / puntada individual / enkele steek
S3  <617> = II <419> = I	Nachfolgende Riegelfunktion invertieren / invert subsequent backtack function / inverser la prochaine fonction de bridage / inverter o próximo remate / invertire la funzione d'affr. successiva / invertir la próxima
S3  <617> = II <419> = II	Riegelunterdrückung / backtack suppression / suppression de bridage / supressão do remate / soppressione dell'affrancatura / supresión del remate / onderdrukking van het strookje
S4  <624> = I	STOP
S4  <624> = II	Presserfuß heben / lifting presser foot / relevage du pied presseur / levantar do calcador / sollevamento del alzapiedino / elevación de prensatelas / drukvoet optillen

Bedeutung der Magnete bzw. Magnetventile, Taster / Meaning of magnets and/or solenoids and keys
 Signification des aimants resp. solenoides et touches / Significação dos imãs e/ou as solenoidas e teclas
 Significato dei magneti, delle valvole magnetiche e dei tasti / Significación de los imanes y/o los solenoides
 y pulsadores / Betekenis van de magneten resp. magneetkleppen, toetsen

Y1 I max 10 A *		Fadenschneider pneumatisch / pneum. thread trimmer / coupe-fil pneumatique / corte de linhas pneumático / rasafilo pneumático / cortahilos neumático / draadsnijder pneumatisch
Y2 I max 10 A *		Fadenschneider magnet. / magn. thread trimmer / coupe-fil magnétique / corte de linhas magnético / rasafilo magnético / cortahilos magnético / draadsnijder magnetisch
Y3 I max 10 A *		Fadenwischer / thread wiper / écarteur de fil / retira-linhas / scartafilo / retirahilos / draadwischer
Y4/Y7 I max 10 A *		Y4: Presserfuß heben / lifting presser foot / relevage du pied presseur / levantar do calcador / sollevamento del alzapiedino / elevación de prensatelas / drukvoet optillen Y7: Presserfuß senken / lowering presser foot / descente du pied presseur / baixar o calcador / abbassare del alzapiedino / bajar el prensatelas / drukvoet laten zakken
Y5 I max 10 A *		Transportumsteller / feed reverse / renversement de marche / mudança do transporte / commutazione trasporto / inversión de transporte / transportomschakeling
Y8 I max 300 mA		Maschinenlauf / motor runs / moteur en marche / motor em movimento / motore in moto / motor en marcha / loop van de machine

* Die Summe der Lastströme aller gleichzeitig eingeschalteten Stellglieder (Magnete, Magnetventile) darf den Wert von 4A nicht überschreiten (siehe hierzu Kapitel 2. Technische Daten).

The total of load currents of all servos activated simultaneously (solenoids, solenoid valves) is not allowed to exceed 4 amps (see also section 2. Technical Specifications).

Le total des courants de charge de tous les vérins (aimants, électro-vannes) activés simultanément ne doit pas dépasser 4 A (voir aussi le chapitre 2. "caractéristiques techniques").

A soma das correntes sob carga de todos os atuadores ligados ao mesmo tempo (ímãs, solenóides) não pode ultrapassar o valor de 4A (ver também capítulo 2. Dados Técnicos).

La somma delle correnti di carico di tutti gli attuatori inseriti contemporaneamente (magneti, elettrovalvole) non deve essere superiore a 4 A (vedere il capitolo 2. Dati Tecnici).

La suma de las corrientes bajo carga de todos los elementos de todos los componentes de regulación conectados simultáneamente (imanes, válvula magnética) no podrá sobrepasar el valor de 4A (véase también el capítulo 2. de datos técnicos).

De belastingsstroom van alle tegelijkertijd ingeschakelde bedieningsschakels (magneten, magneetventielen) mag in totaal niet meer dan 4 A bedragen (zie hiervoor hoofdstuk 2. Technische gegevens).

13. Maintenance and Repair



!! Before starting maintenance or repair work, switch off the SERVO-TOP, separate the drive system from mains power (for instance by pulling out the mains plug) and wait for the motor to come to a complete stop.

General maintenance work must only be done by specially trained personnel paying close attention to the operating instructions.

The SERVO-TOP is largely maintenance-free.

However, make sure to perform the following maintenance work:

Depending on the operating conditions, clean the drive system regularly, at least once a week, from any dust or lint. Make sure in particular that the ventilation louvres and cooling fins of the motor, especially the cooling fins between the motor and the control box, are perfectly clean (Fig. 13).

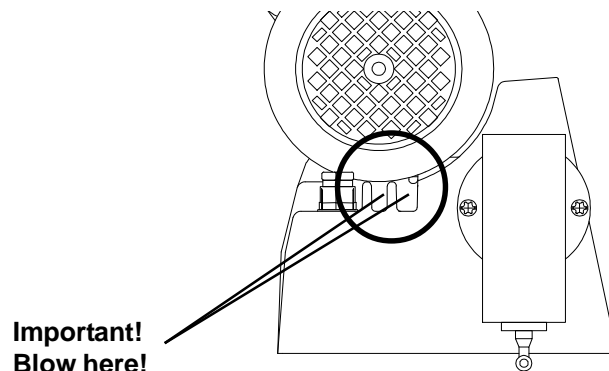


Fig. 13

Remove any threads caught on the synchronizer shaft or on the belt pulley and/or motor shaft.

Check if the drive system is perfectly secured to the stand and that the accessories (synchronizer on machine shaft, speed control unit on control box) are safely mounted in their respective positions.

Check the drive belt for any wear and for correct tension. Incorrect belt tension can increase noise and vibrations.



When opening covers or removing parts, apart from those removable by hand, live elements can be exposed. Connections can also be electrically live.

If you require to open the drive system before starting maintenance or repair work or before replacing any parts, disconnect the drive system from any and all power sources.

If maintenance or repair work on the open unit is unavoidable, this may only be done by qualified personnel familiar with the risks involved. Observe all regulations as per EN 50110.

There can still be capacitors carrying a charge in the power electronics system, even when the drive system has been disconnected from all power sources. To avoid injury by electrical shock, it is therefore essential to wait at least 10 minutes between mains power shutoff and opening the control box.

In order to protect semi-conductor components from overvoltage, use only high-resistivity measuring equipment when making checks on the control system.

Any repair or servicing work requiring skilled knowhow may only be done by qualified personnel authorized by Quick-Rotan.

We emphasize that in accordance with the product liability law we are under no responsibility for damages caused by our products if these are due to

- unqualified repair
- the use of components not authorized by us
- actions made by any persons not authorized by us.

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