

Softstart

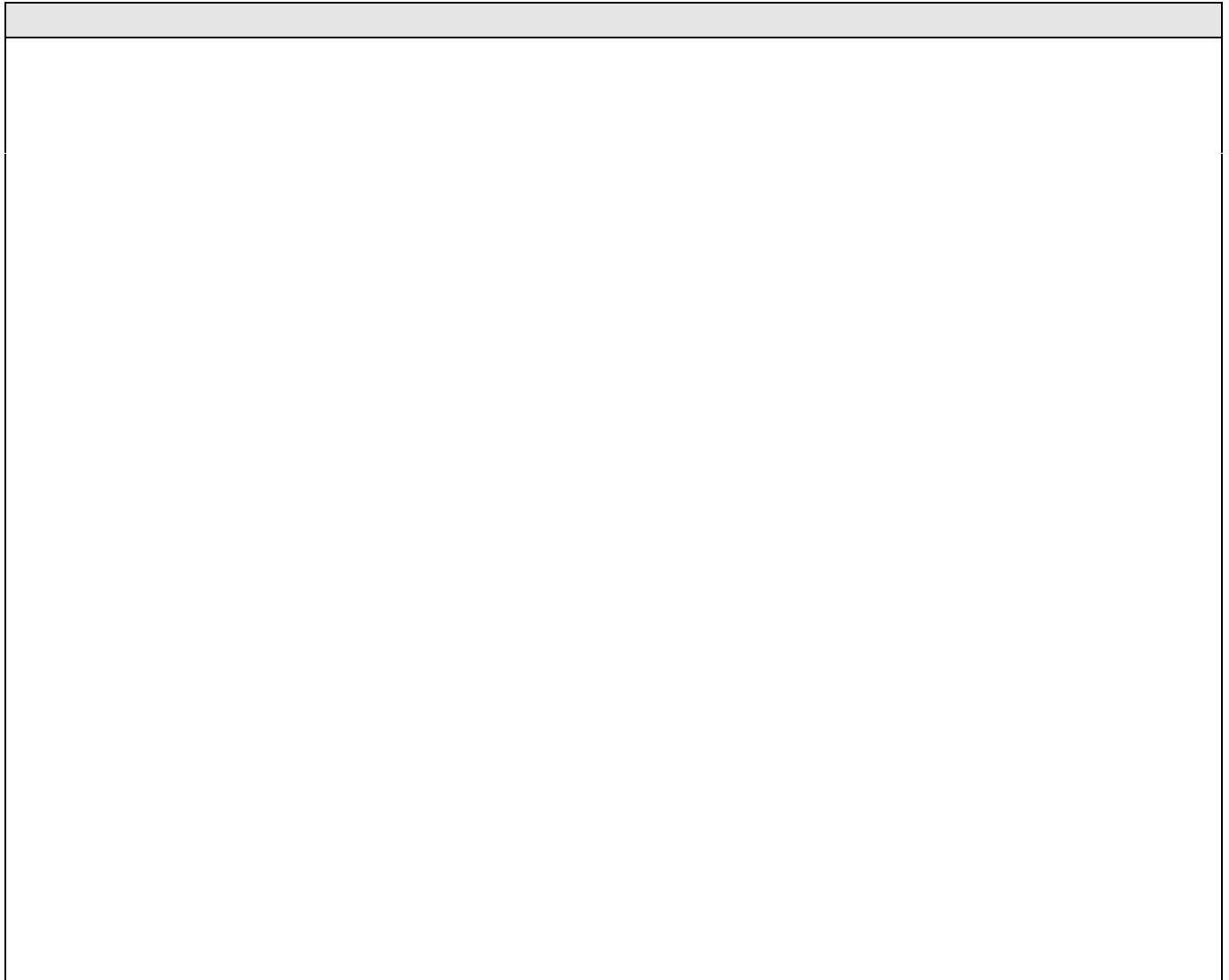
**Diagram for softstarters**

**PS A18...60**

**PS D75...840**

**PS DH30...720**

5309 698-1 Edition 4 Dec-01 (English)

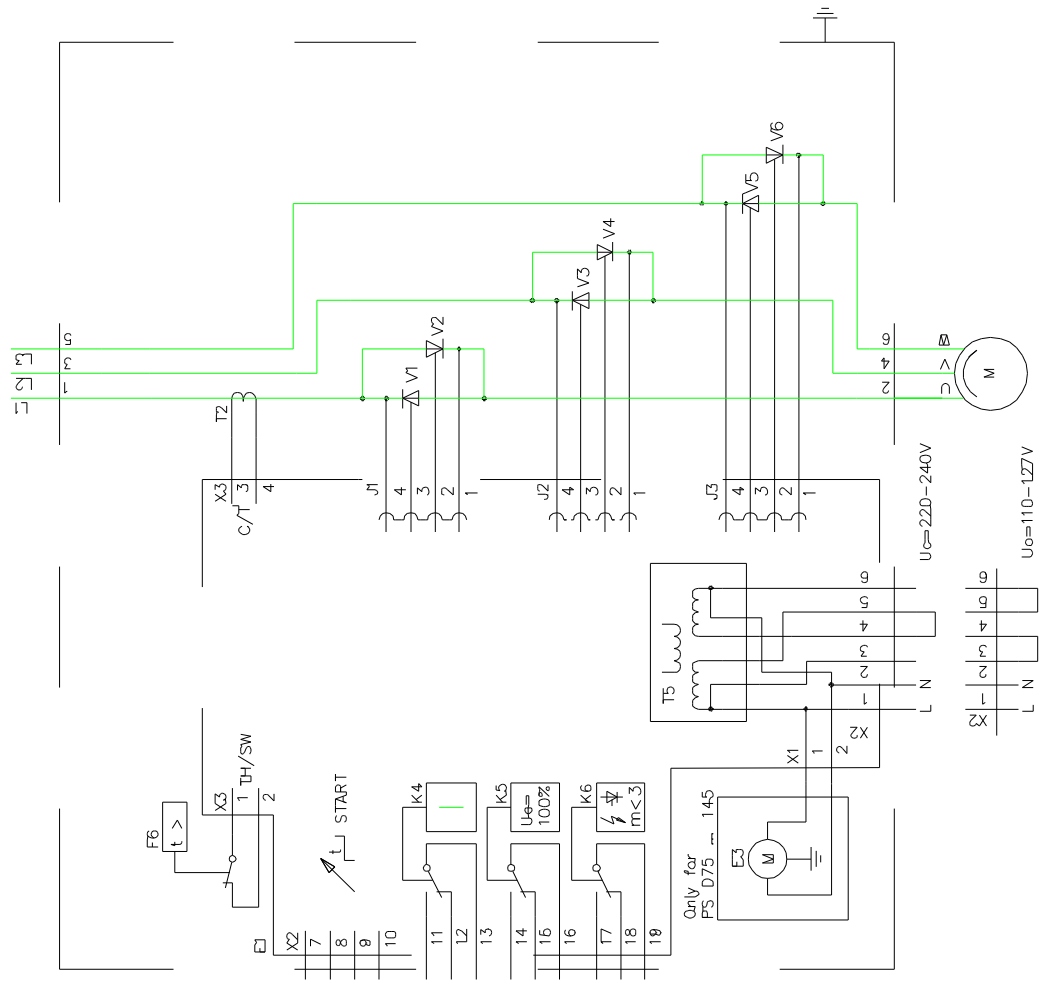
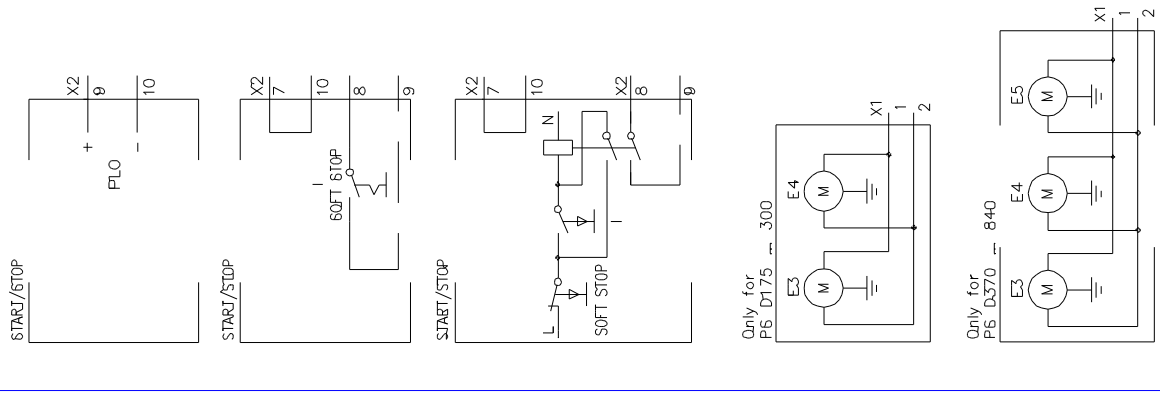


## STANDARD DIAGRAM

5366 104-1	PS A18...60	Standard.
5366 104-2	PS D75...840	Standard.
5366 104-3	PS D75...840	Standard.
	PS DH30...720	



# Soft Starter PS D75...840 standard diagram.



- E1 - E5
  - F6
  - J1 - J3
  - K4
  - K5
  - K6
  - T2
  - T5
  - V1 - V6
  - X1 - X3
- Circuit board
  - Fan
  - Temperature monitor
  - Contact blocks
  - Relay, actuated in operational position
  - Relay, actuated at full voltage (U<sub>0</sub>=100%)
  - Relay, fault signal
  - Current transformer
  - Control transformer
  - Thyristor
  - Terminal block

4	Approved	TP	95	07	Year	Week
	Rev. int.	Appl.				
Design checked by: T PERSSON Drawing checked by: T PERSSON Drawn by: TP						
Circuit diagram: SOFT STARTERS MJKSTARTARE ABB Control						
Issued by: ISS/ED Rev. int. Sheet: 4 Logg. Sheet: 1 Rev. int. Cont.: 4						
5366 104-2						
ST04-2						

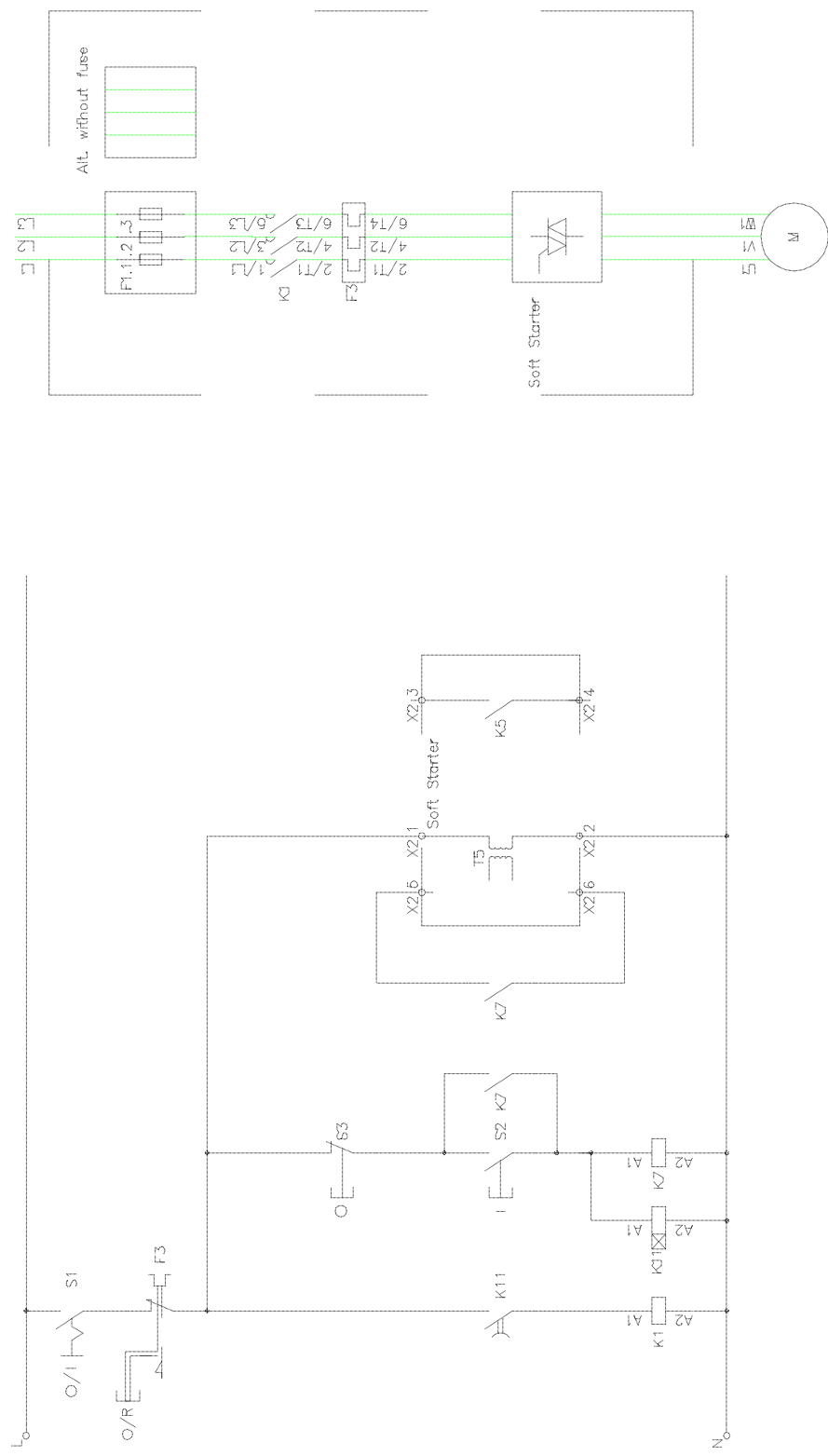


## APPLICATION DIAGRAM

5366 105-1	PS A18...60	With motor protection and softstop.
5366 105-2	PS D75...300	With motor protection and softstop.
5366 105-3	PS D370...840	With motor protection and softstop.
5366 105-4	PS D75...300	With motor protection and softstop.
	PS DH30...250	
5366 105-5	PS D370...840	With motor protection and softstop.
	PS DH300...720	
5366 105-6	PS A18...60	With softstop and By-pass.
5366 105-7	PS D75...300	With softstop and By-pass.
5366 105-8	PS D370...840	With softstop and By-pass.
5366 105-9	PS D75...145	With softstop and By-pass.
	PS DH30...110	
5366 105-10	PS D175...300	With softstop and By-pass.
	PS DH145...250	The internal overload relay is working also together with By-pass.
5366 105-11	PS D370...840	With softstop and By-pass.
	PS DH300...720	The internal overload relay is working also together with By-pass.
5366 105-12	PS A18...60	With motor protection, softstop and By-pass.
5366 105-13	PS D75...300	With motor protection, softstop and By-pass.
5366 105-14	PS D370...840	With motor protection, softstop and By-pass.
5366 105-15	PS D75...145	With motor protection, softstop and By-pass.
	PS DH30...110	
5366 105-16	PS D175...300	With motor protection, softstop and By-pass.
	PS DH145...250	The internal overload relay is working also together with By-pass.
5366 105-17	PS D370...840	With motor protection, softstop and By-pass.
	PS DH300...720	The internal overload relay is working also together with By-pass.
5366 105-18	PS A18...60	With reversing and softstop.
5366 105-19	PS D75...300	With reversing and softstop.
5366 105-20	PS D370...840	With reversing and softstop.
5366 105-21	PS D75...840	With reversing and softstop.
	PS DH30...720	
5366 105-22	PS A18...60	With reversing, By-pass and softstop.
5366 105-23	PS D75...300	With reversing, By-pass and softstop.
5366 105-24	PS D370...840	With reversing, By-pass and softstop.
5366 105-25	PS D75...145	With reversing, By-pass and softstop.
	PS DH30...110	
5366 105-26	PS D175...300	With reversing, By-pass and softstop.
	PS DH145...250	The internal overload relay is working also together with By-pass.
5366 105-27	PS D370...840	With reversing, By-pass and softstop.
	PS DH300...720	The internal overload relay is working also together with By-pass.

5366 105-28	PS A18...60	With pole-changing and softstop. For motor with two winding.
5366 105-29	PS D75...300	With pole-changing and softstop. For motor with two winding.
5366 105-30	PS D370...840	With pole-changing and softstop. For motor with two winding.
5366 105-31	PS A18...60	With pole-changing, By-pass and softstop. For motor with two winding.
5366 105-32	PS D75...300	With pole-changing, By-pass and softstop. For motor with two winding.
5366 105-33	PS D370...840	With pole-changing, By-pass and softstop. For motor with two winding.
5366 105-34	PS A18...60	With pole-changing and softstop.
5366 105-35	PS D75...300	For motor with one winding (Dallander). With pole-changing and softstop.
5366 105-36	PS D370...840	For motor with one winding (Dallander). With pole-changing and softstop.
5366 105-37	PS A18...60	For motor with one winding (Dallander). With pole-changing, By-pass and softstop.
5366 105-38	PS D75...300	For motor with one winding (Dallander). With pole-changing, By-pass and softstop.
5366 105-39	PS D370...840	For motor with one winding (Dallander). With pole-changing, By-pass and softstop.

Soft Starter PS A18...60 with motor protection and softstop.  
 Main contactor open during pause

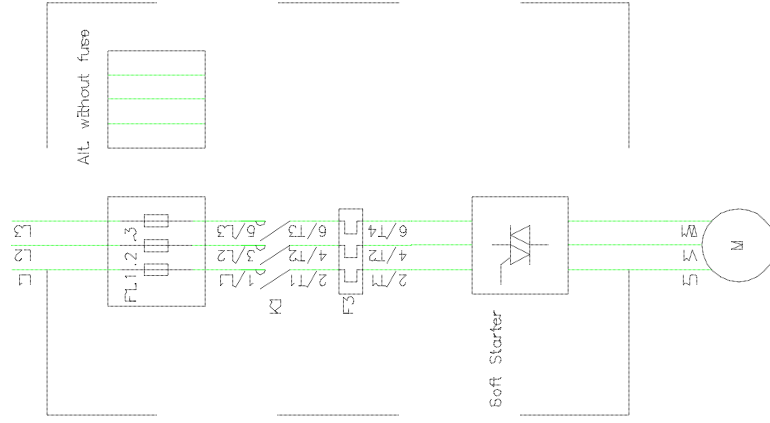
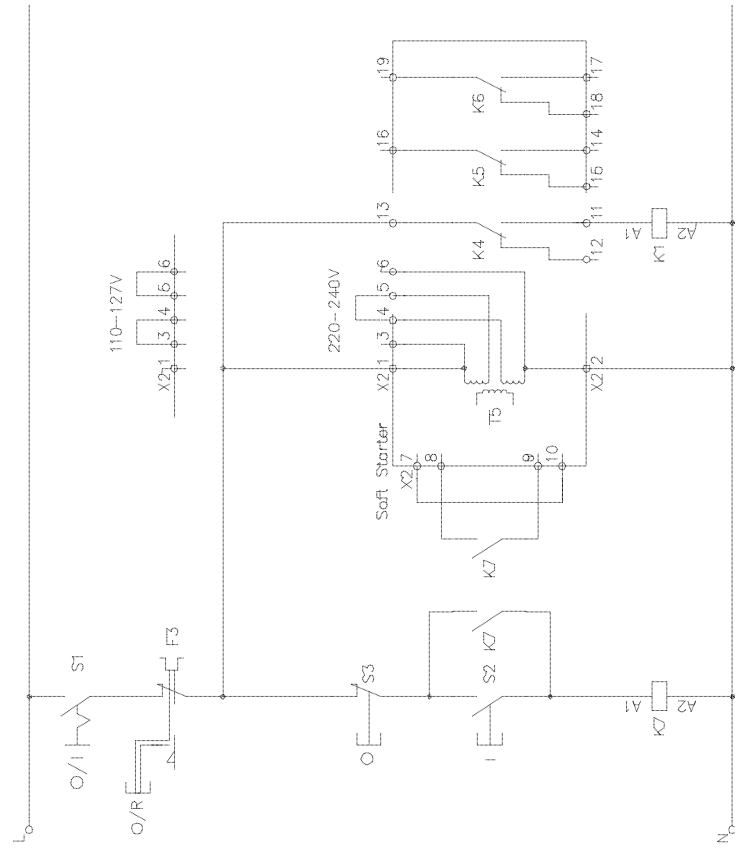


A105-1

APPLICATION DIAGRAM		ISSUED	
Soft Starter		82	
Mjuksttartare		5366 105-1	
T Persson		SECUR/B00 B6 B5	
T Persson		1	
TP		1	
1 K11 InsetL and FuseL moved		1	
TP: 06 40		1	
App: Yarr		1	
Risk: 40		1	



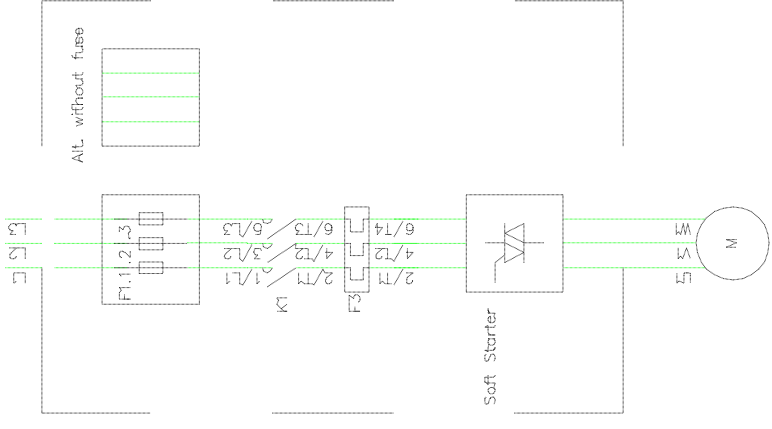
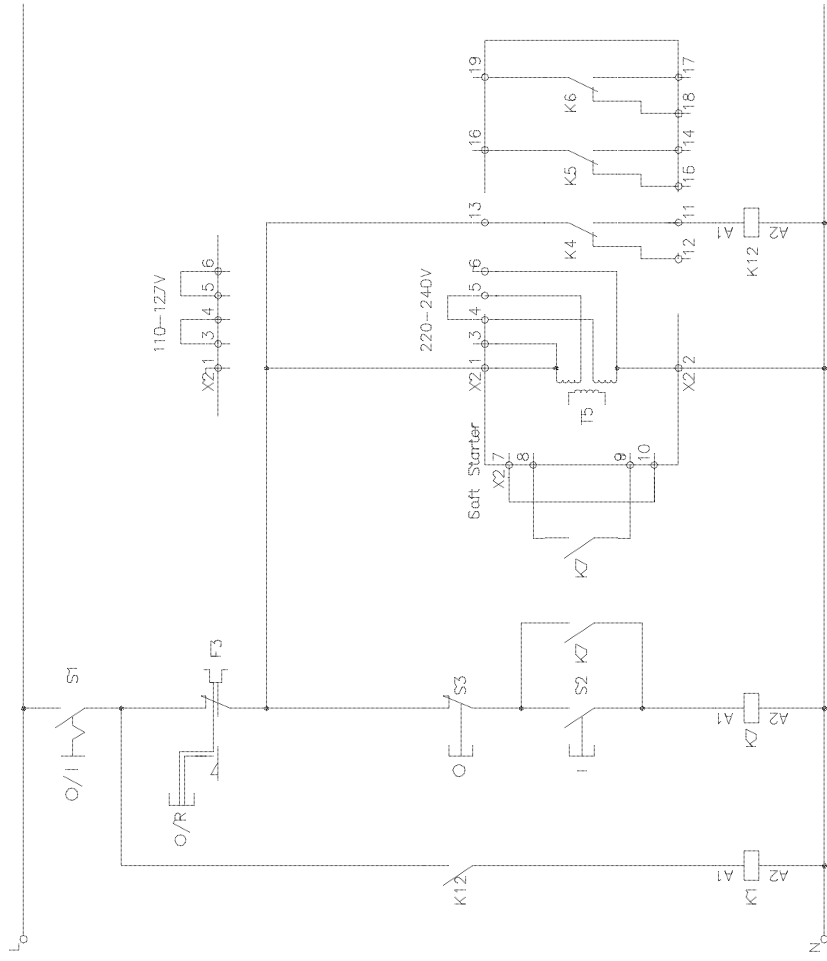
Soft Starter PS D75...300 with motor protection and softstop.  
 Main contactor open during pause



A105-2

Revision		Date		Description	
1	K1 and fuses moved	TP	06	40	
		Appd	Yarr	Week	
Design checked by: I. PERISSOC Drawing checked by: I. PERISSOC Drawn by: TP					
APPLICATION DIAGRAM Soft Starter Mjpkstarktare					
Issued by: I. PERISSOC Year: 06 Week: 05					
5366 105-2					
Rev. no. Sheet 82 1 Rev. no. Cont. 1 1 ...					

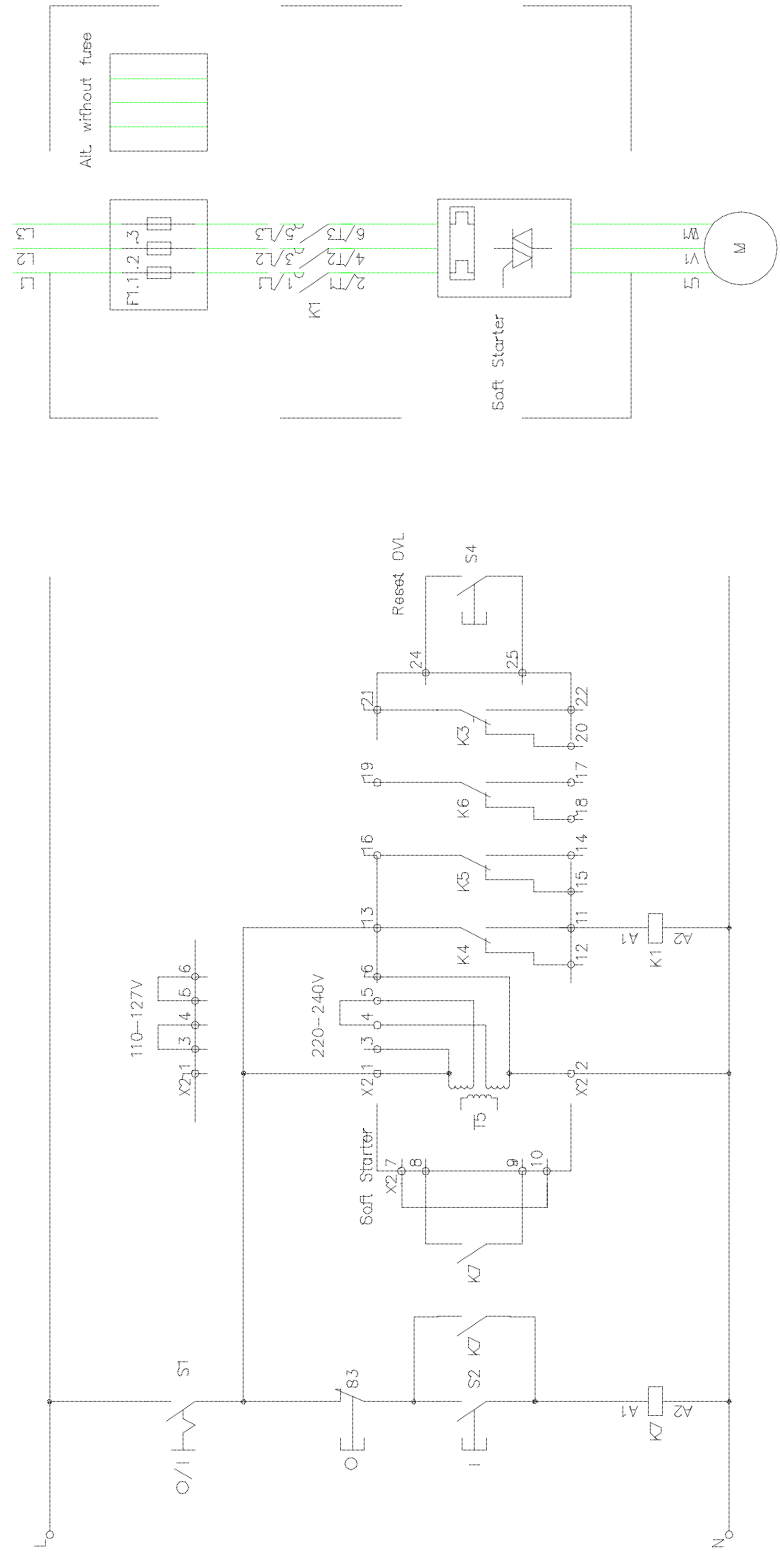
Soft Starter PS D370...840 with motor protection and softstop.  
 Main contactor onen during pause



AI05-3

5366 105-3		82	1
ISSUED		1	...
SECUR/B00 B05			
APPLICATION DIAGRAM			
Soft Starter			
Mjakstartare			
T Perissoc			
T Perissoc			
TP			
Rev: int		TP: 06	40
		App: int	Rev: int

Soft Starter PS D75...300, PS DH30...250 with motor protection and softstop.  
 Main contactor open during pause



AI05-4

Rev Int		Year	Week	Issue
2	K1 and fuses moved	TP	96	40
1	Adjusted	TP	96	09
Rev Int	Appd	Year	Week	Issue

Design checked by	APPLICATION DIAGRAM
T. Persson	Soft Starter
Drawing checked by	Mjukstare
T. Persson	ABB Control
Drawn by	TP

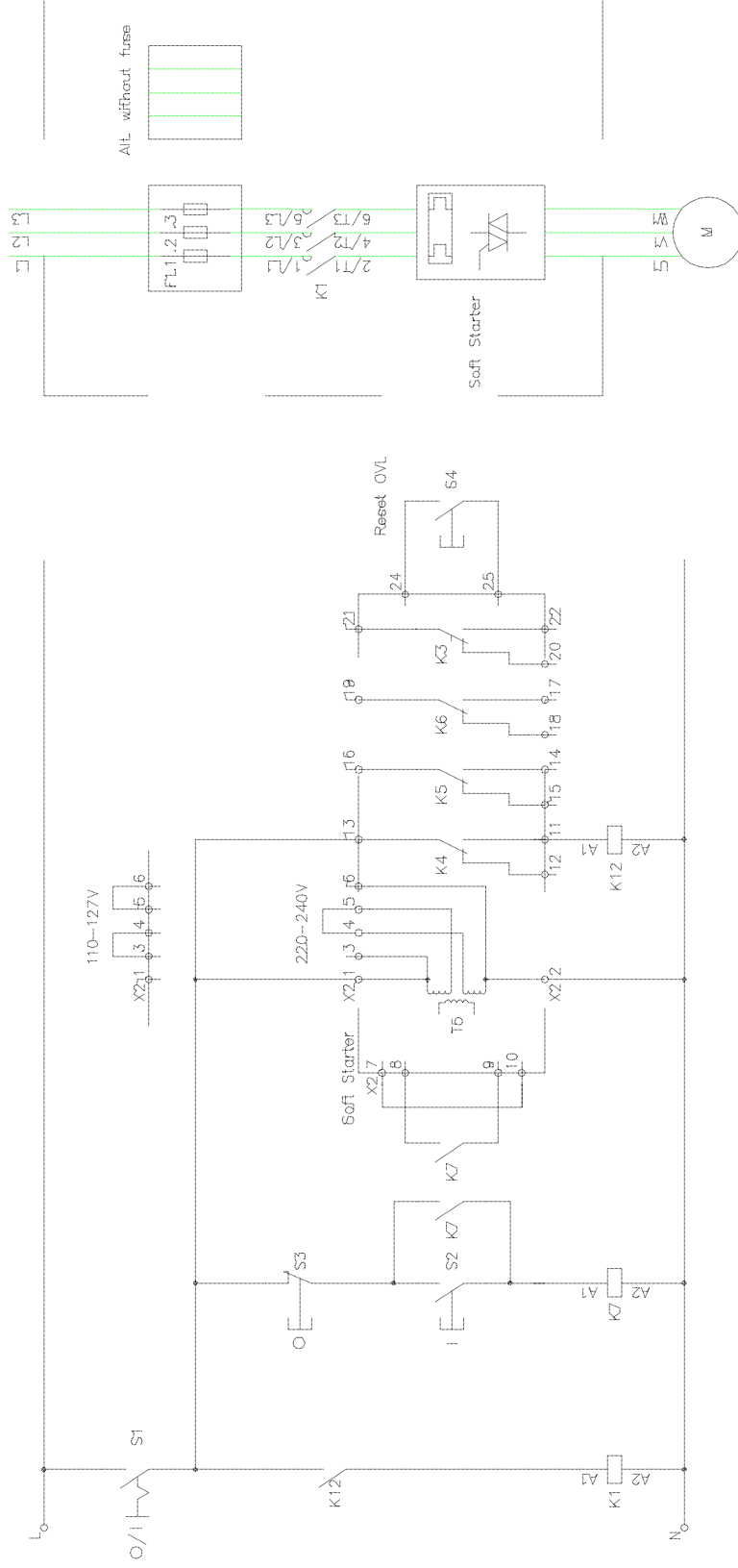
Iss By	Dept.	Year	Week	Issue
SECR/BQ	BQ	96	05	ISSUED

Rev	Int	Sheet
2	82	1
2	82	1

5366 105-4

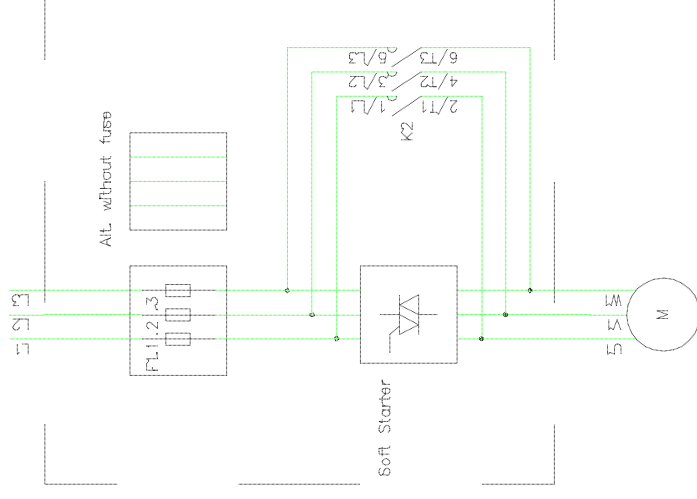
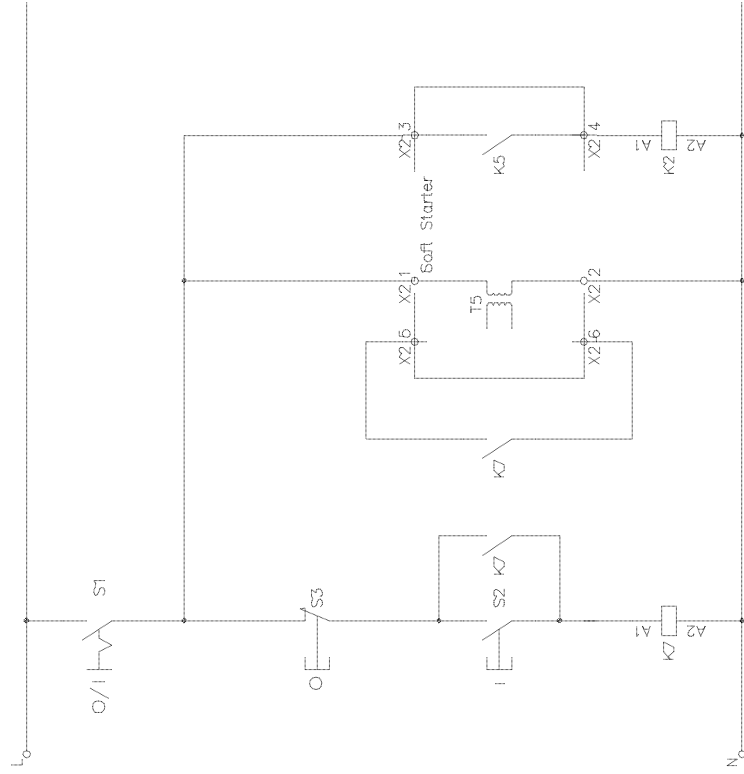
Soft Starter PS D370...840, PS DH300...720 with motor protection and softstop.  
Main contactor open during pause



A105-6

		APPLICATION DIAGRAM		Rev. no. Sheet	
Design checked by T. PERSSON		Soft Starter Mjukstare		Long Sheet	1
Drawing checked by T. PERSSON		ABB ABB Control		Rev. no. Cont.	2
Drawn by TP		Issued by SECUR/BB		ISSUED	
		Year Week		...	
		06 09			
		Appd			
		Year			
		Week			
2		K12 Insert and fuse moved			
1		Adjusted			
Rev. no.		Year		Week	

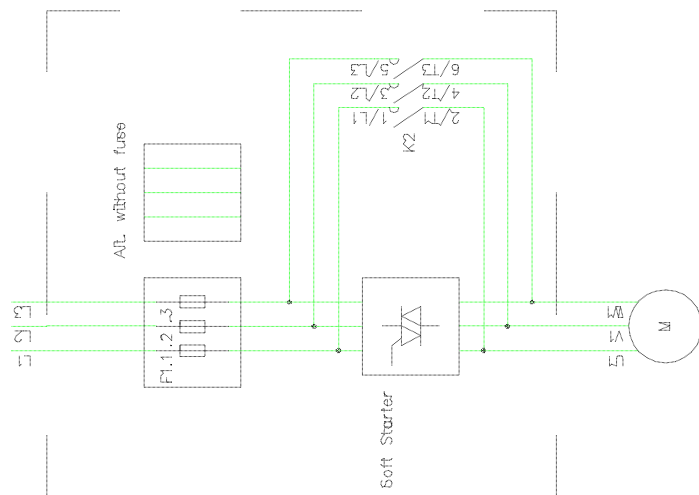
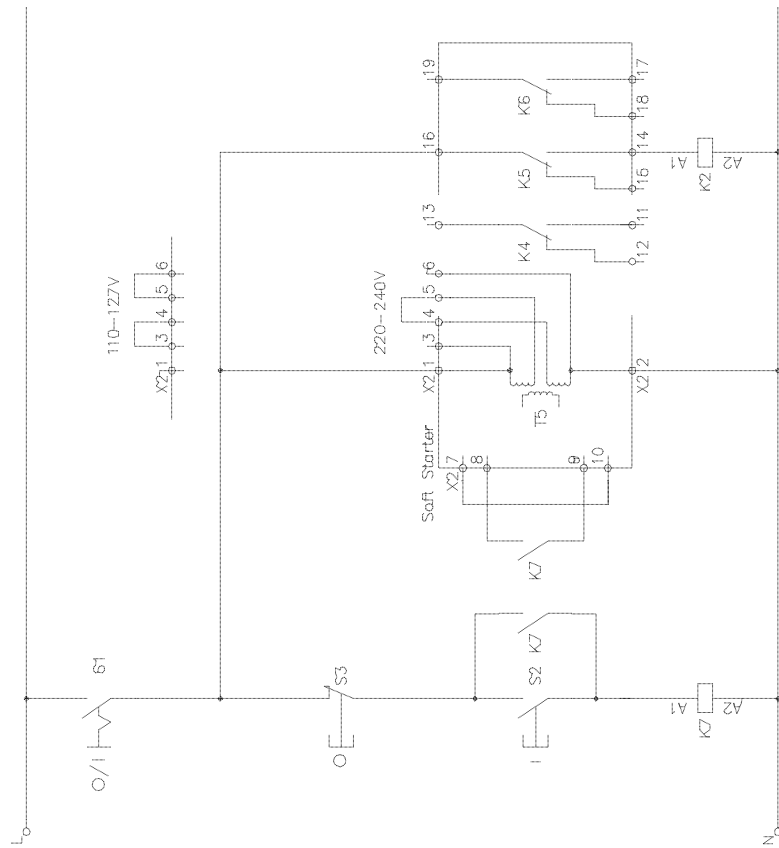
# Soft Starter PS A18...60 with softstop and By-pass.



A105-6

APPLICATION DIAGRAM		SECUR/80 06 05		ISSUED	
Soft Starter		Mjuketartare		5366 105-6	
I Perssoa		I Perssoa		82	
I Perssoa		TP		1	
TP		86 40		1	
1 Fuses moved		Appt		1	
Rev int		Xor		1	
		Week		...	

# Soft Starter PS D75...300 with softstop and By-pass.



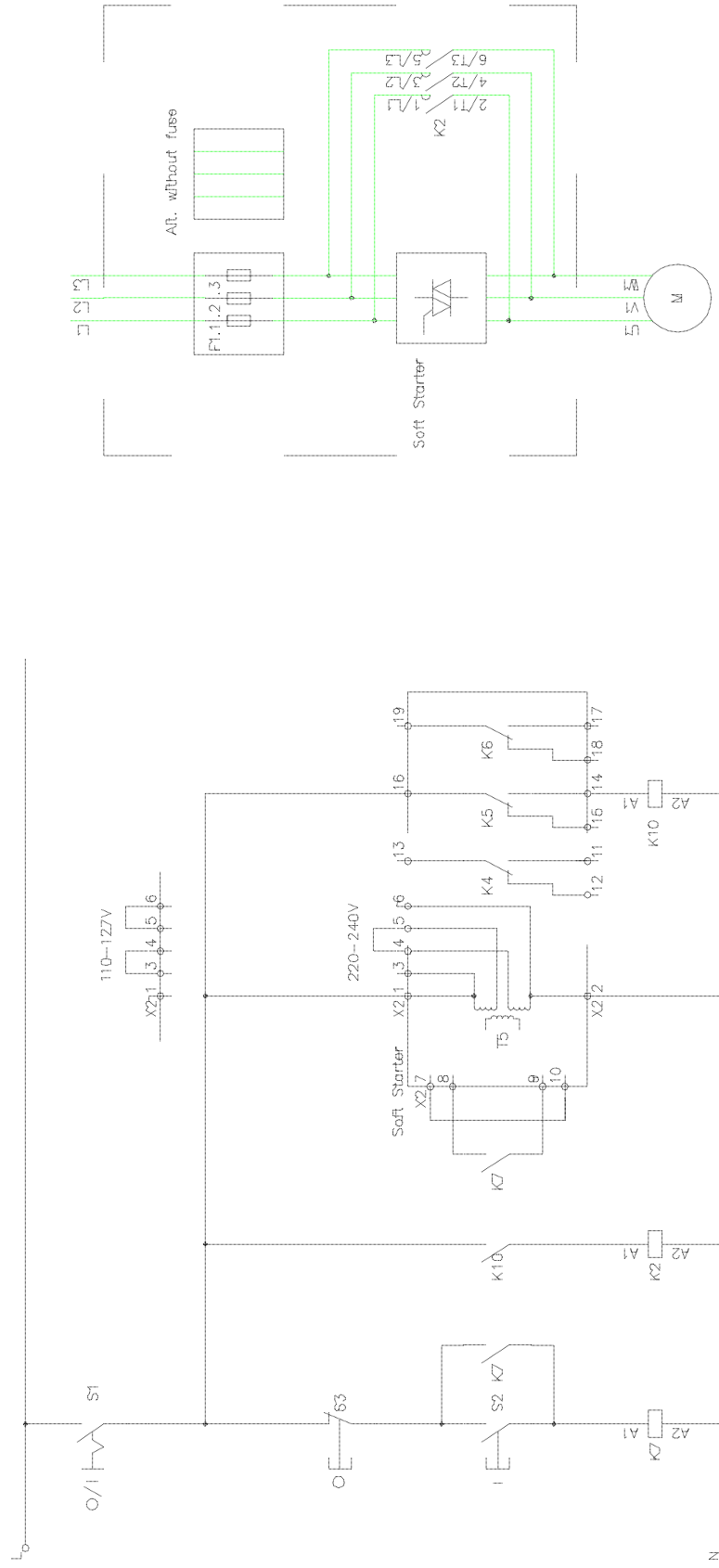
A105-7

APPLICATION DIAGRAM		SECUR/80 06 05		ISSUED	
Soft Starter				5366 105-7	
Mjukstartare				82	
				1	
				---	

1	Fuses moved	TP	06 40	Yor	Work
---	-------------	----	-------	-----	------

Rev int

# Soft Starter PS D370...840 with softstop and By-pass.

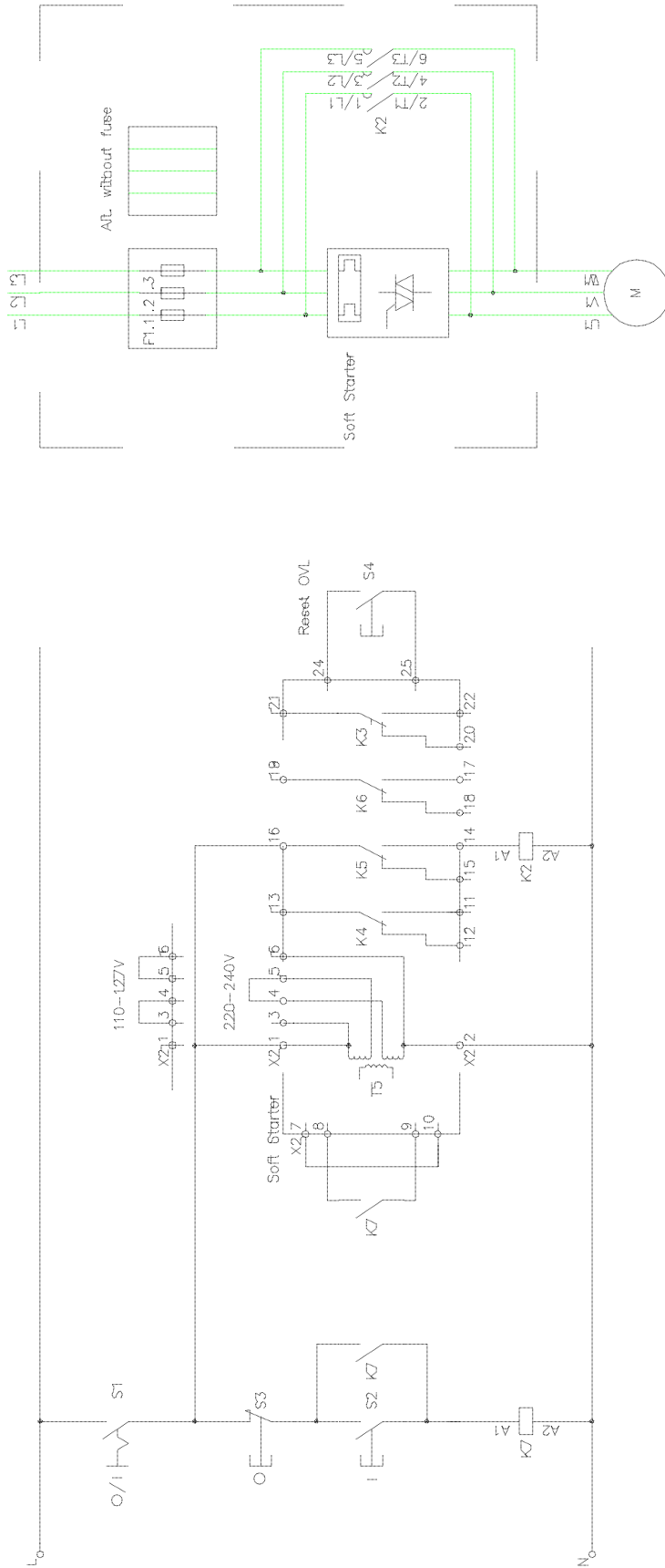


A105-8

APPLICATION DIAGRAM		SECUR/80 06 05	
I Perisosa	Soft Starter	82	1
I Perisosa	Mjakstartare	5366 105-8	1
TP		ISSUED	...

Rev	nr	Appd	Yor	Week
1		TP	06	40

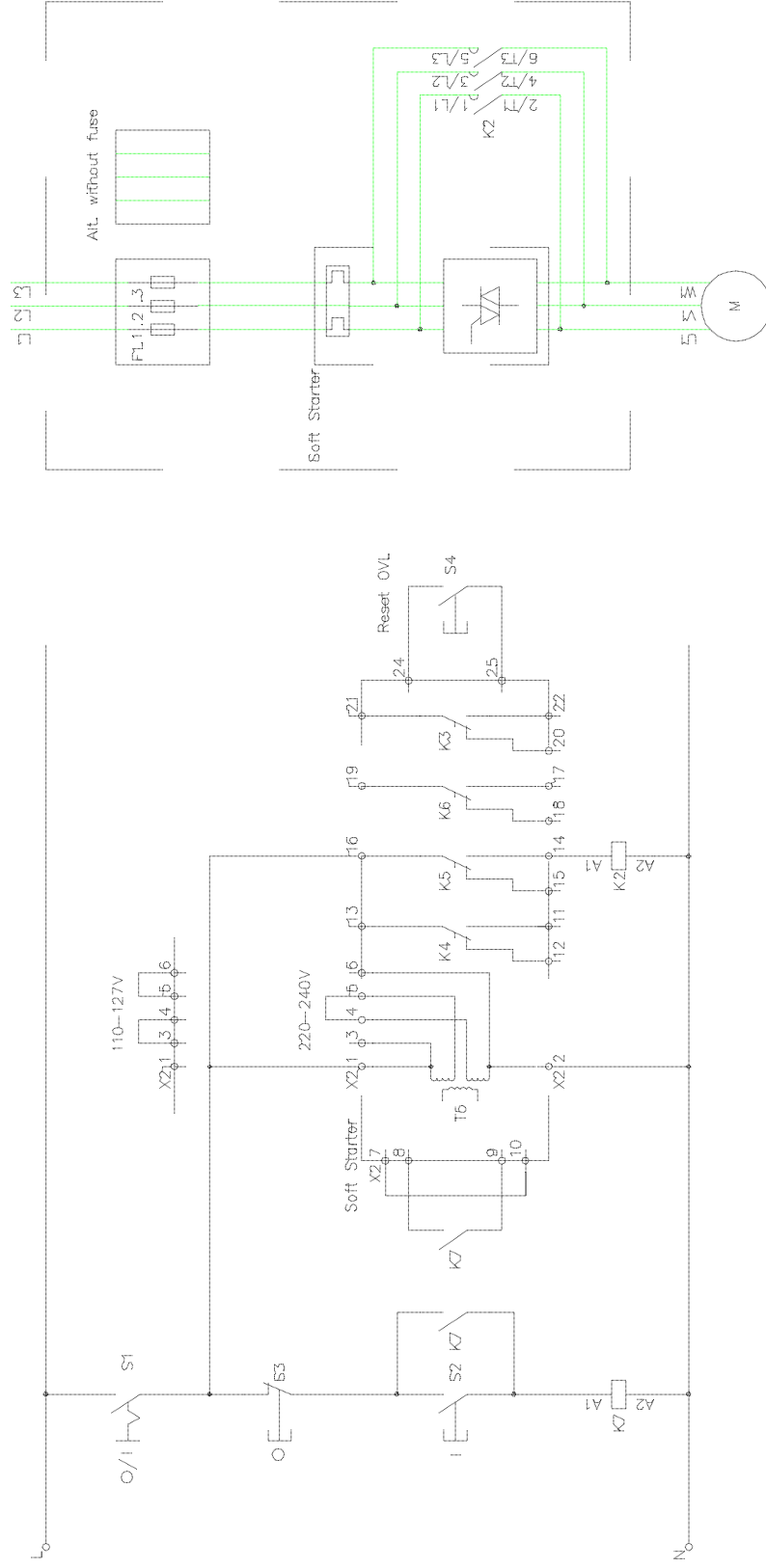
Soft Starter PS D75...145, PS DH30...110 with softstop and By-pass.



Rev. no.		Date		By		Checked		Approved		Issued	
2	Fuses moved	TP	06	40							
1	Adjusted	TP	06	08							
		Appd.	Year	Week							
Design checked by: I. Pefssod Drawing checked by: I. Pefssod Drawn by: TP											
APPLICATION DIAGRAM: Soft Starter Mjukstartare											
ABB Control											
Issued by: STORL/BG 05 05											
5366 105-9											
Rev. no. Sheet Long Sheet Rev. no. Cont. ...											
A105-9											



Soft Starter PS D175...300, PS DH145...250 with softstop and By-pass.  
 The internal overload relay is working also together with By-pass.

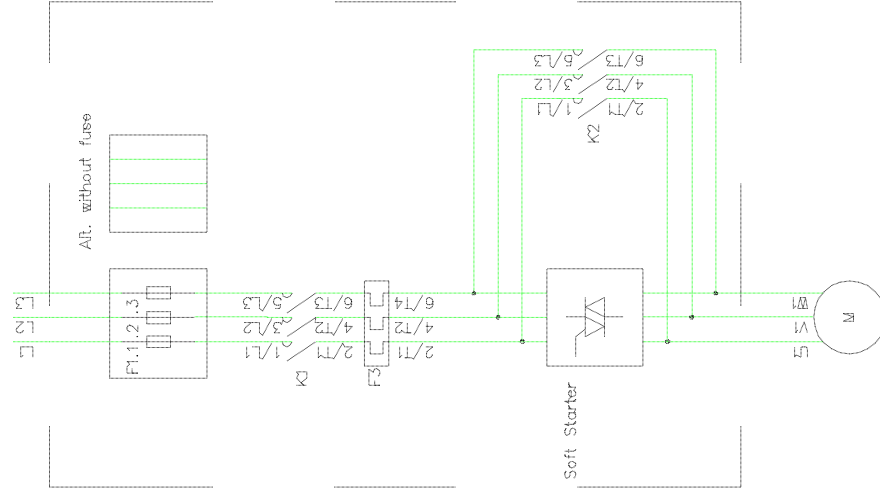
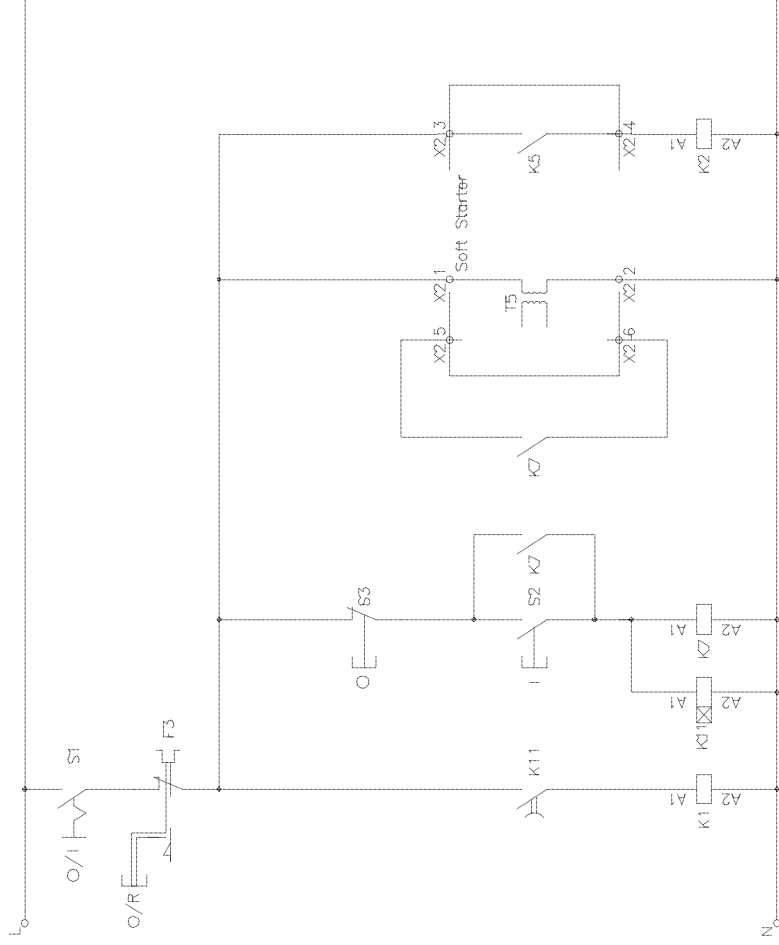


A105-10

I Persson		APPLICATION DIAGRAM		82		1	
I Persson		Soft Starter		5366 105-10		2	
IP		Mjukstartare		ISSUED		...	
				SECUR/80 06 05			
2	KT0 removed	IP	06 40				
1	Adjusted	IP	06 09				
Rev int		Appt	Year	Week			



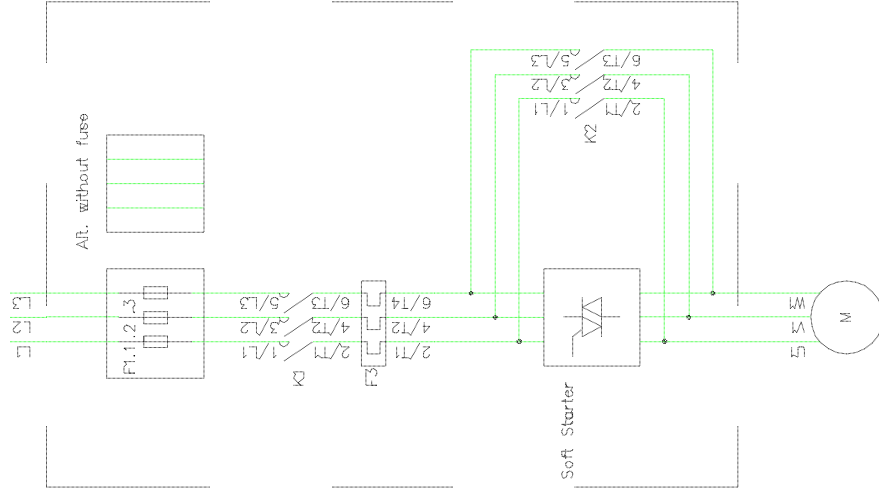
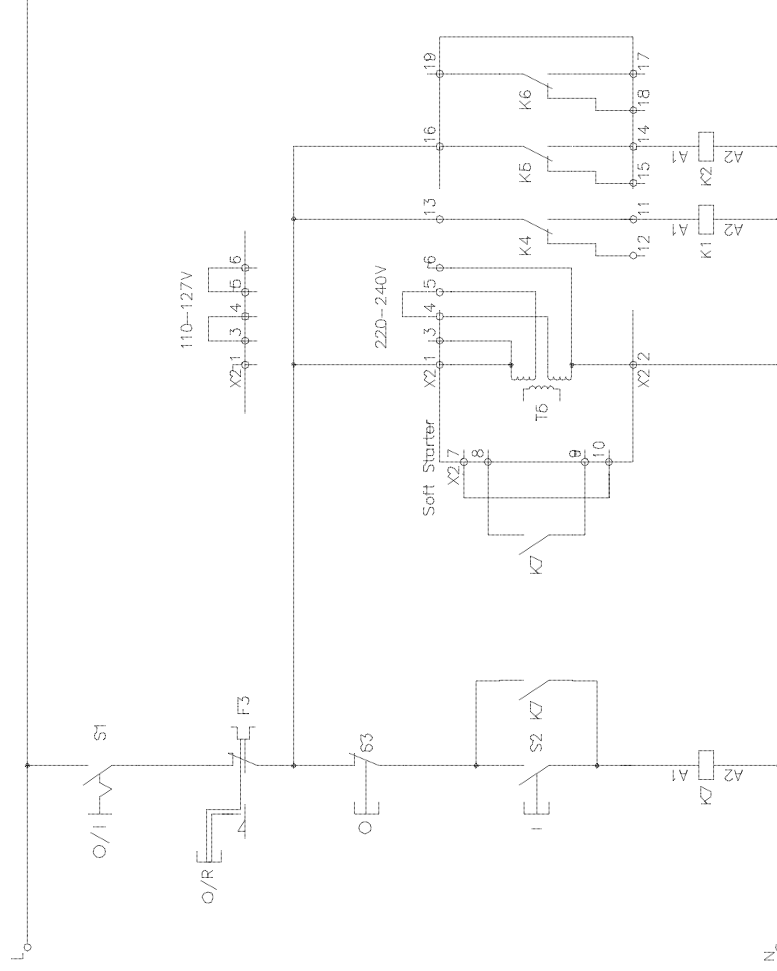
Soft Starter PS A18...60 with motor protection, softstop and By-pass.  
 Main contactor open during pause



Rev int		1	Redrains	TP	86	40	Appt	Year	Week
Design checked by		I. Persson							
Drawing checked by		I. Persson							
Drawn by		TP							
Application Diagram		Soft Starter Mjukstartare							
ABB Control									
Issued		5366 105-12							
Rev int		1	Long	82	Sheet	1	Rev int	Cont.	...

A105-12

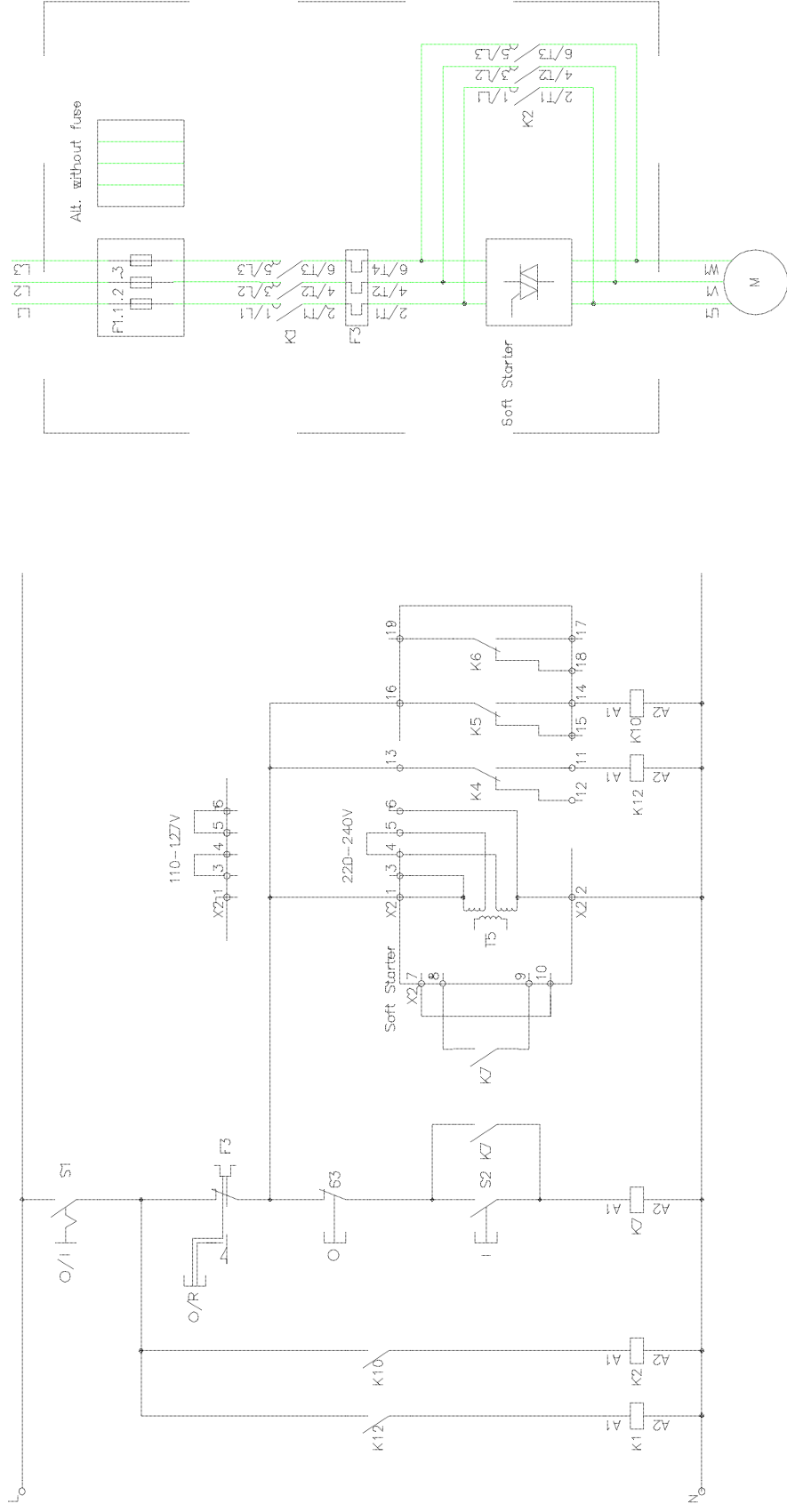
Soft Starter PS D75...300 with motor protection, softstart and By-pass.  
 Main contactor open during pause



AJ05-13

I Persson		APPLICATION DIAGRAM		82		1	
I Persson		Soft Starter		5366 105-13		1	
TP		Mjukstartare		ISSUED		1	
Rev int		Appd		SECUR/80 06 05		---	
1		K10 removed, K1, K2 and fuses moved		TP 06 40		---	
		Appd		Rev		Issued	

Soft Starter PS D370...840 with motor protection, softstop and By-pass.  
 Main contactor open during pause



A105-14

APPLICATION DIAGRAM		SECUR/80 06 05	
I Pensson	Soft Starter	82	1
I Pensson	Mjpkstartare	5366 105-14	1
TP		ISSUED	...

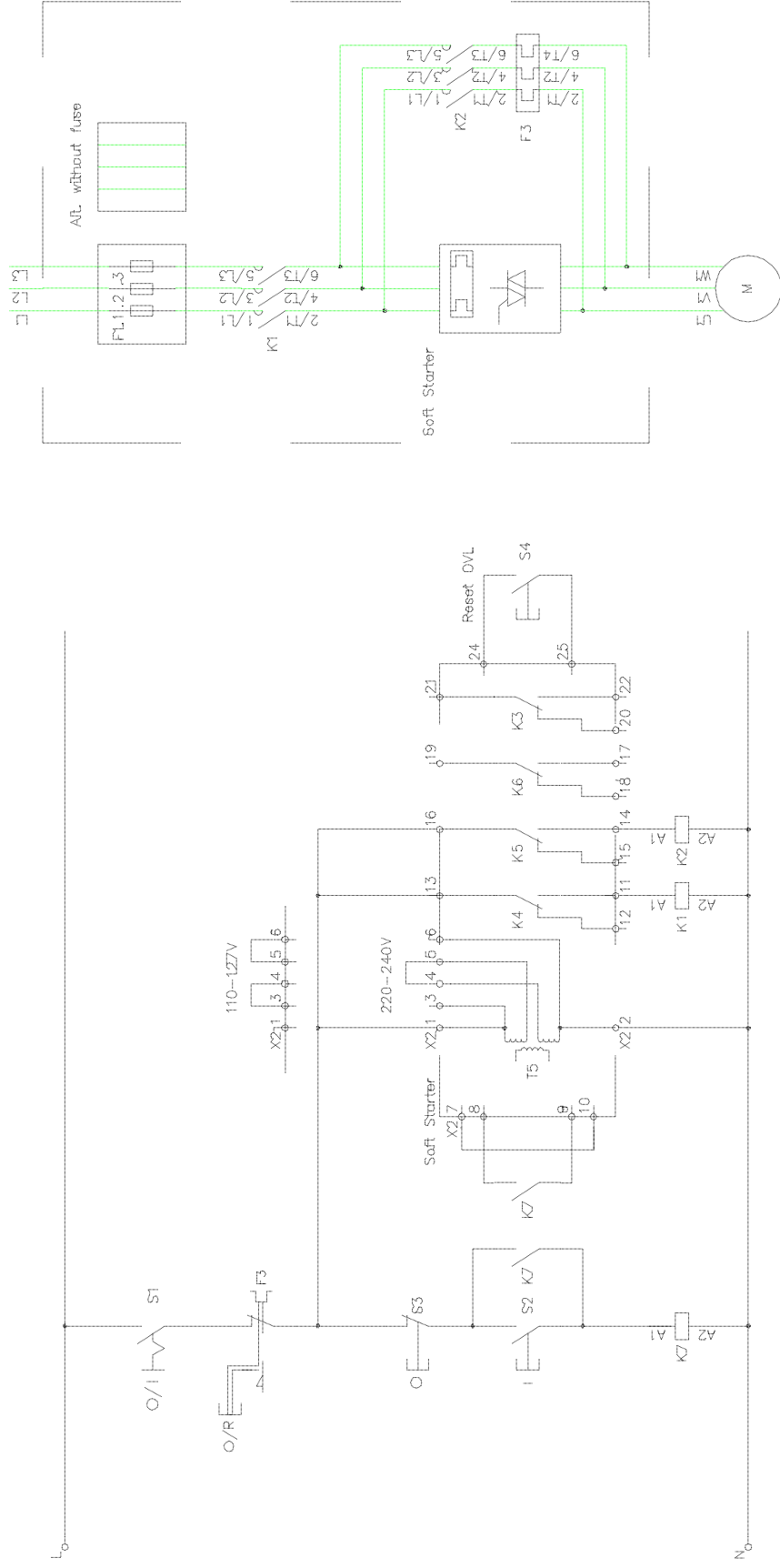
1 K12 fasett and fuses moved

TP 86 40

Appt Year Week

Rev int

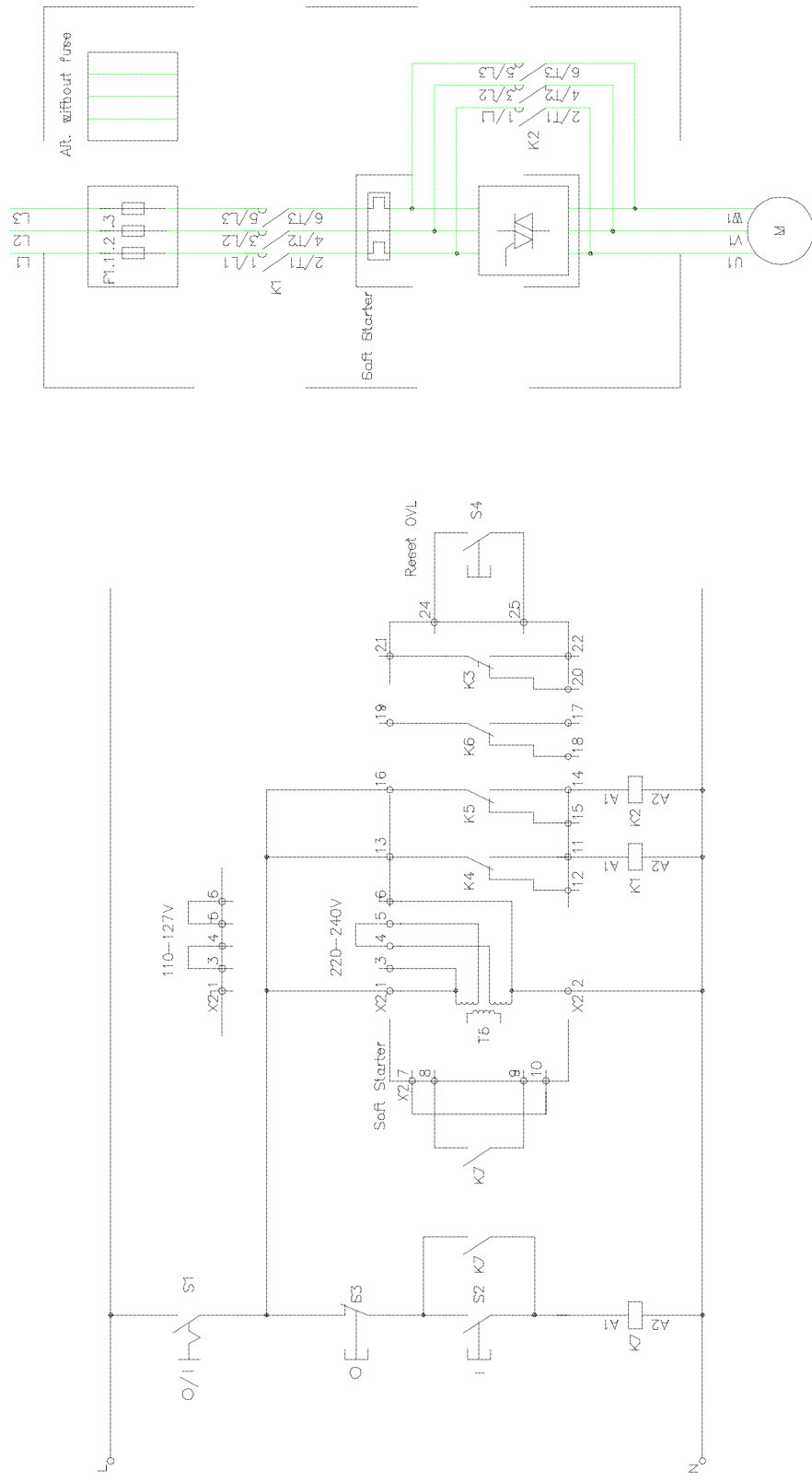
Soft Starter PS D75...145, PS DH30...110 with motor protection, softstop and By-pass.  
 Main contactor open during pause



A105-15

Rev int		Issued	2
2		K1 and fuses moved	TP 06 40
1		Adjusted	TP 06 08
Rev int		Appd	Year Week
Design checked by		I Persson	
Drawing checked by		I Persson	
Drawn by		TP	
APPLICATION DIAGRAM		Soft Starter Mjukstartare	
ABB Control		ABB	
Issued		5366 105-15	
Rev int		Long Sheet	1
Rev int		Rev int	2

Soft Starter PS D175...300, PS DH145...250 with motor protection, softstop and By-pass.  
 The internal overload relay is working also together with By-pass.  
 Main contactor open during pause



Rev int		Sheet	Rev int		Sheet
2		F3K8 removed, K12 inserted, fuses moved	82		1
1		Adjusted	5366 105-16		Rev int
Appd		Year	ISSUED		2
TP		09	des by Dept		...
TP		09	SECUR/80		05
TP		09	ABB Control		
TP		09	APPLICATION DIAGRAM		
TP		09	Soft Starter		
TP		09	Mjukstartare		
TP		09	ABB		
TP		09	ABB Control		
TP		09	Design checked by		
TP		09	I. Persson		
TP		09	Drawing checked by		
TP		09	I. Persson		
TP		09	Drawn by		
TP		09	TP		
TP		09	APPD		
TP		09	Year		
TP		09	Week		
TP		09	APPD		
TP		09	Year		
TP		09	Week		

A105-16



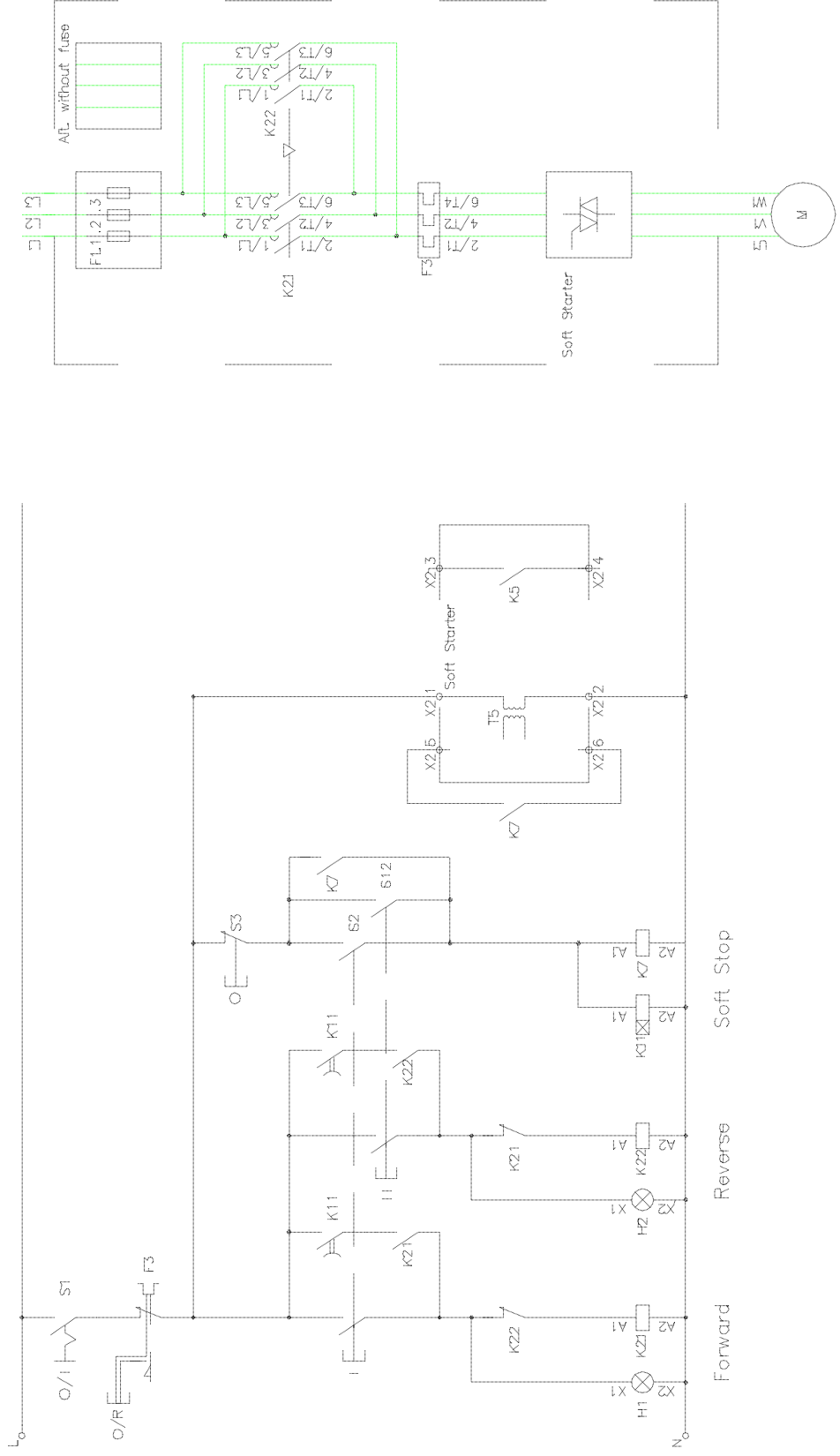


Soft Starter PS A18...60 with reversing and softstop.

To be stopped before reversing.

Start at optional direction.

If softstop is not needed set the time for softstop to 0.5.



A105-18

APPLICATION DIAGRAM

I Perisson  
I Perisson  
TP

Soft Starter  
Mjakstartare

SECUR/80 06 05

ISSUED

5366 105-18

82 1

2

...

Rev. nr

Appl

Year

Week

TP 96 42

TP 96 10

2 Bedrun

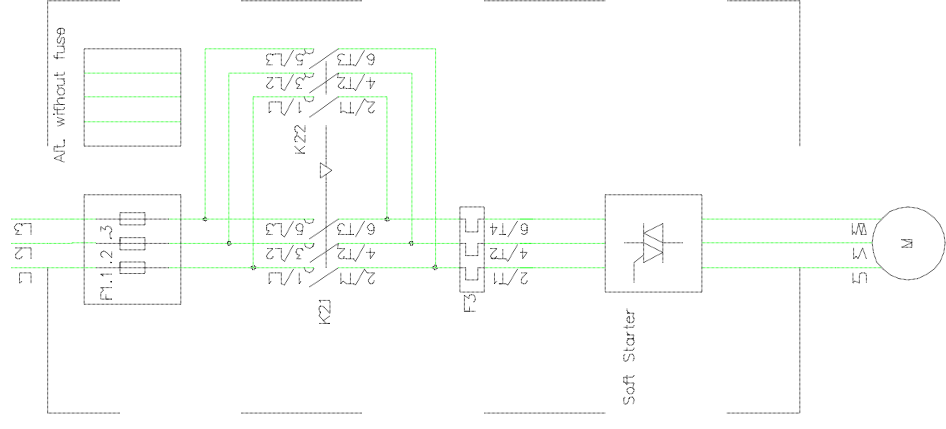
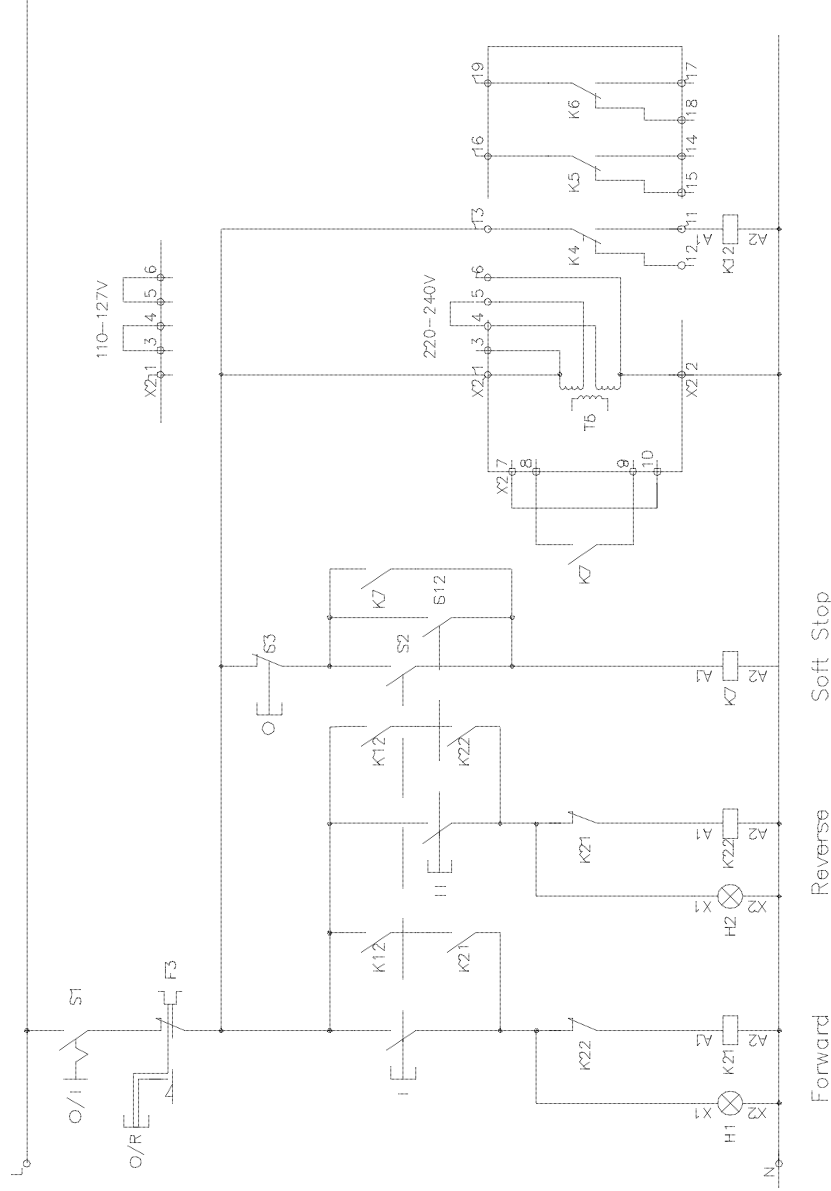
1 Adjusted

Soft Starter PS D75...300 with reversing and softstop.

To be stopped before reversing.

Start at optional direction.

If softstop is not needed set the time for softstop to 0.5.



A105-19

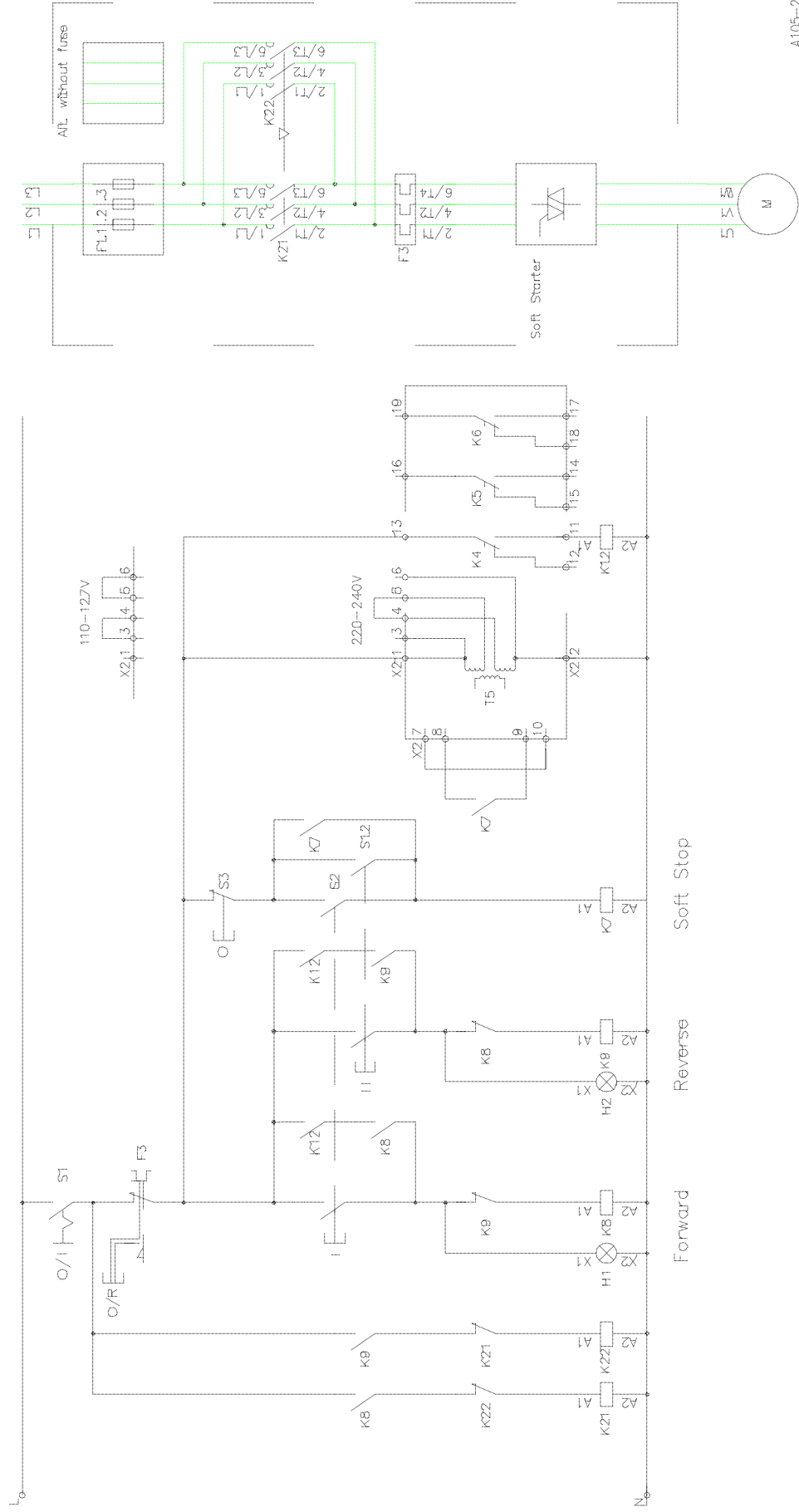
APPLICATION DIAGRAM		Soft Starter		Mjakstartare	
I Perissona		Soft Starter		Mjakstartare	
I Perissona		Soft Starter		Mjakstartare	
IP		IP		IP	
1 Redrawn		TP		86 42	
Rev int		Appt		Year	
		SECUR/80 06 05		ISSUED	
		5366 105-19		82 1	
				1	
				...	

Soft Starter PS D370...840 with reversing and softstop.

To be stopped before reversing.

Start at optional direction.

If softstop is not needed set the time for softstop to 0.5.



A105-20

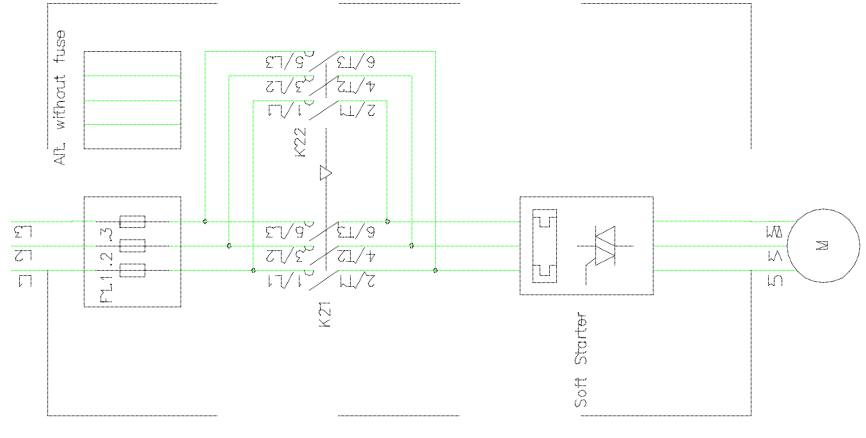
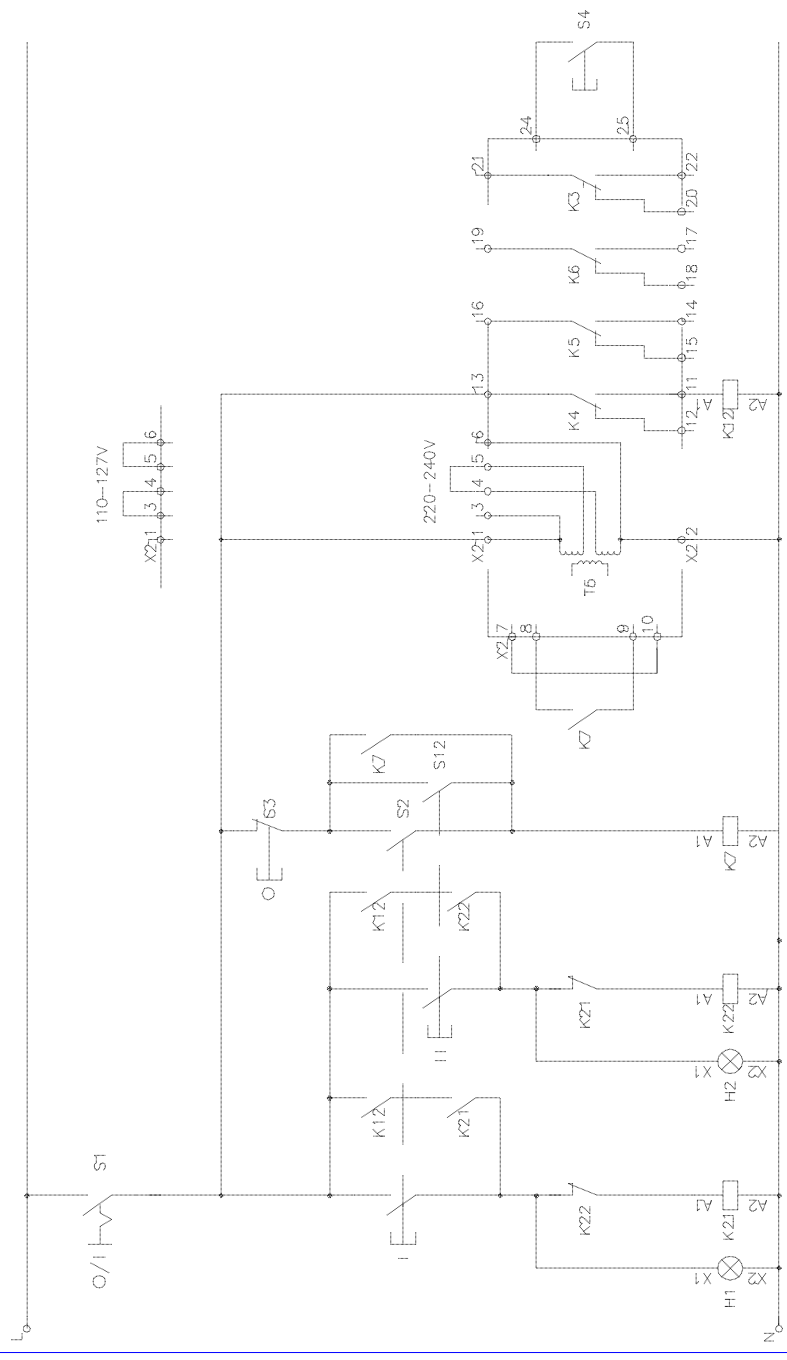
Rev. no.	1	Appd.	86	42	Year	1986
1	Redrawing	TP	86	42	Year	1986
Design checked by I. Persson Drawing checked by I. Persson Drawn by TP						
APPLICATION DIAGRAM Soft Starter Mjukstartare						
ABB Control						
Issued by: STC/80 05 05						
5366	105-20					
Rev. no.	1	Rev. no.	1	Sheet	82	Long Sheet
ABB						

Soft Starter PS D75...840, PS DH30...720 with reversing and softstop.

To be stopped before reversing.

Start at optional direction.

If softstop is not needed set the time for softstop to 0.5.



Reset OVL

Soft Stop

Reverse

Forward

A105-21

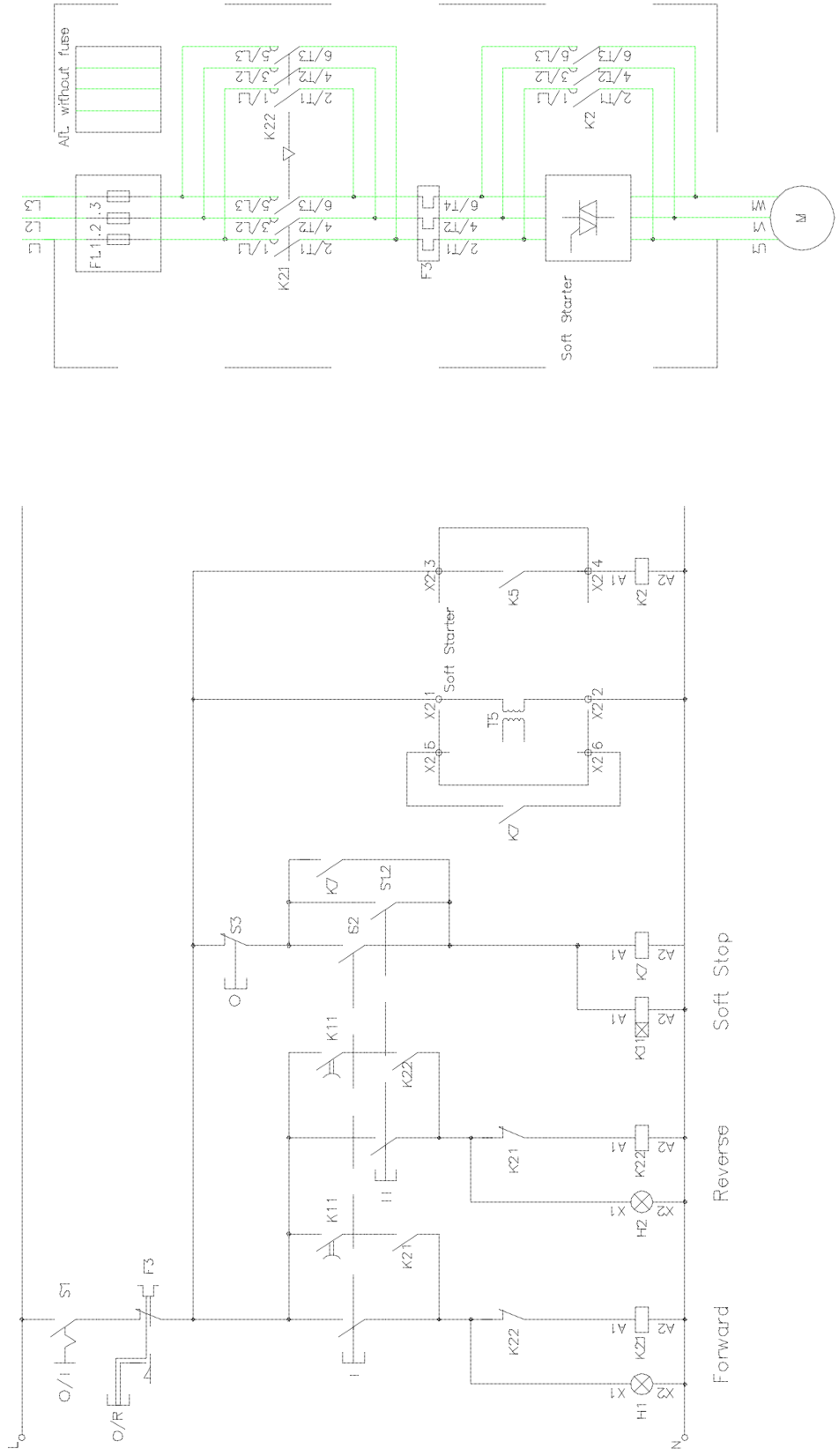
I Persson		APPLICATION DIAGRAM		82		1	
I Persson		Soft Starter		5366 105-21		1	
TP		Mjukstartare		ISSUED		1	
1		Revised		TP 96 42		1	
Rev int		Appl		Year		Week	
				SECUR/80 06 05			

Soft Starter PS A18...60 with reversing, By-pass and softstop.

To be stopped before reversing.

Start at optional direction.

If softstop is not needed set the time for softstop to 0.5.



A105-22

APPLICATION DIAGRAM

Soft Starter  
Mjakstartare

2	Revised	TP	96	42
1	Adjusted	TP	96	10
Rev. int.		Appt.	Year	Week

5366 105-22

ISSUED

SECRL/80 06 05

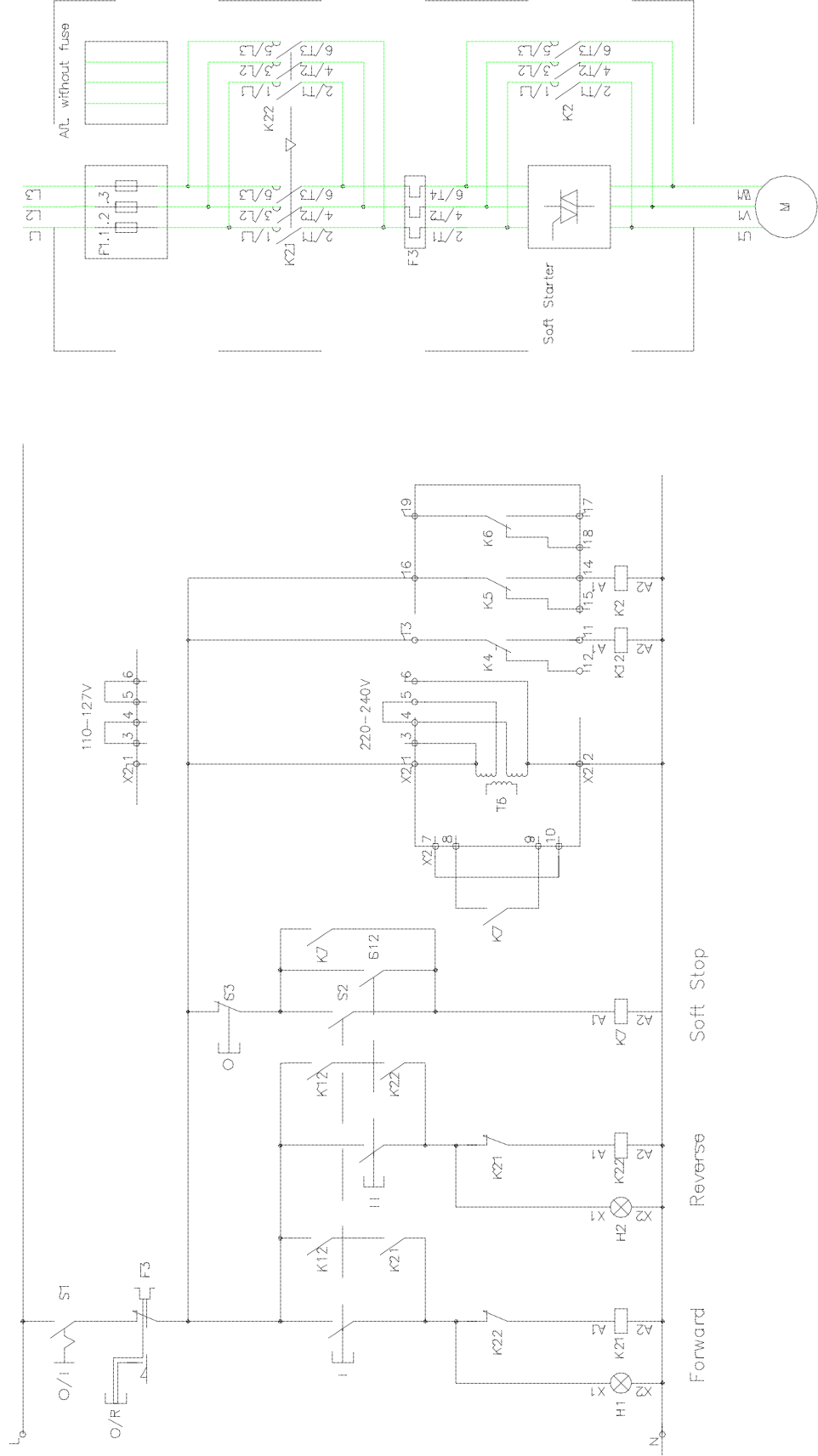
82

1

2

...

Soft Starter PS D75...300 with reversing, By-pass and softstop.  
 To be stopped before reversing.  
 Start at optional direction.  
 If softstop is not needed set the time for softstop to 0.5.



AJ05-23

APPLICATION DIAGRAM	
I Perissos	Soft Starter
I Perissos	Mjakstartare
TP	

5366 105-23

SECUR/80 06 05

ISSUED

82

1

1

...

Rev. no. 1

App. 96 42

Year

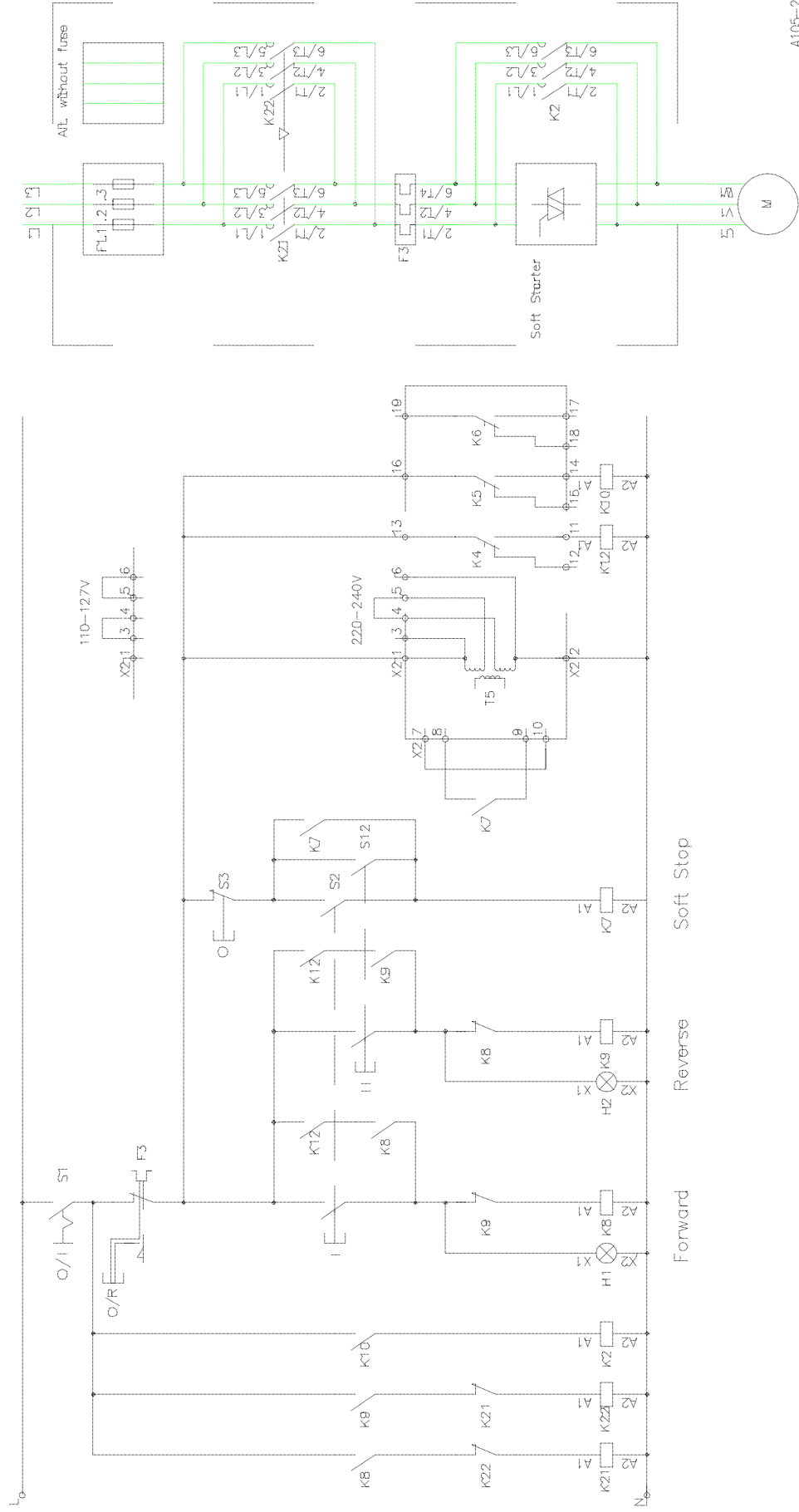
Week

Soft Starter PS D370...840 with reversing, By-pass and softstop.

To be stopped before reversing.

Start at optional direction.

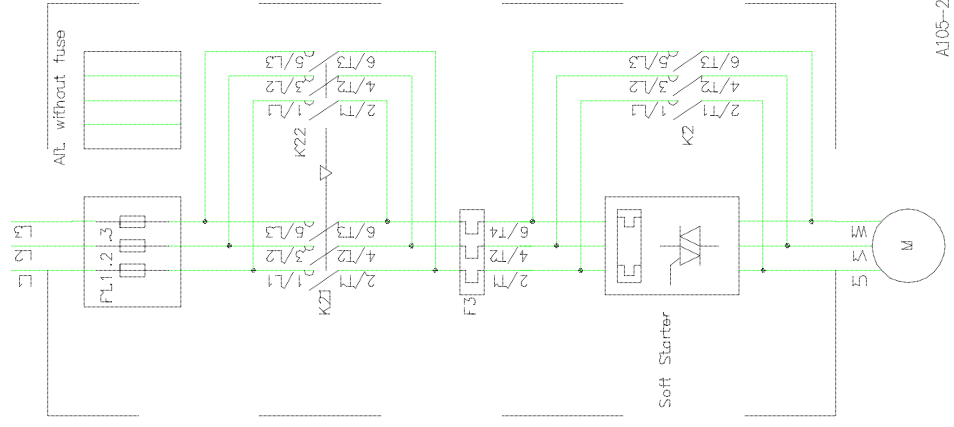
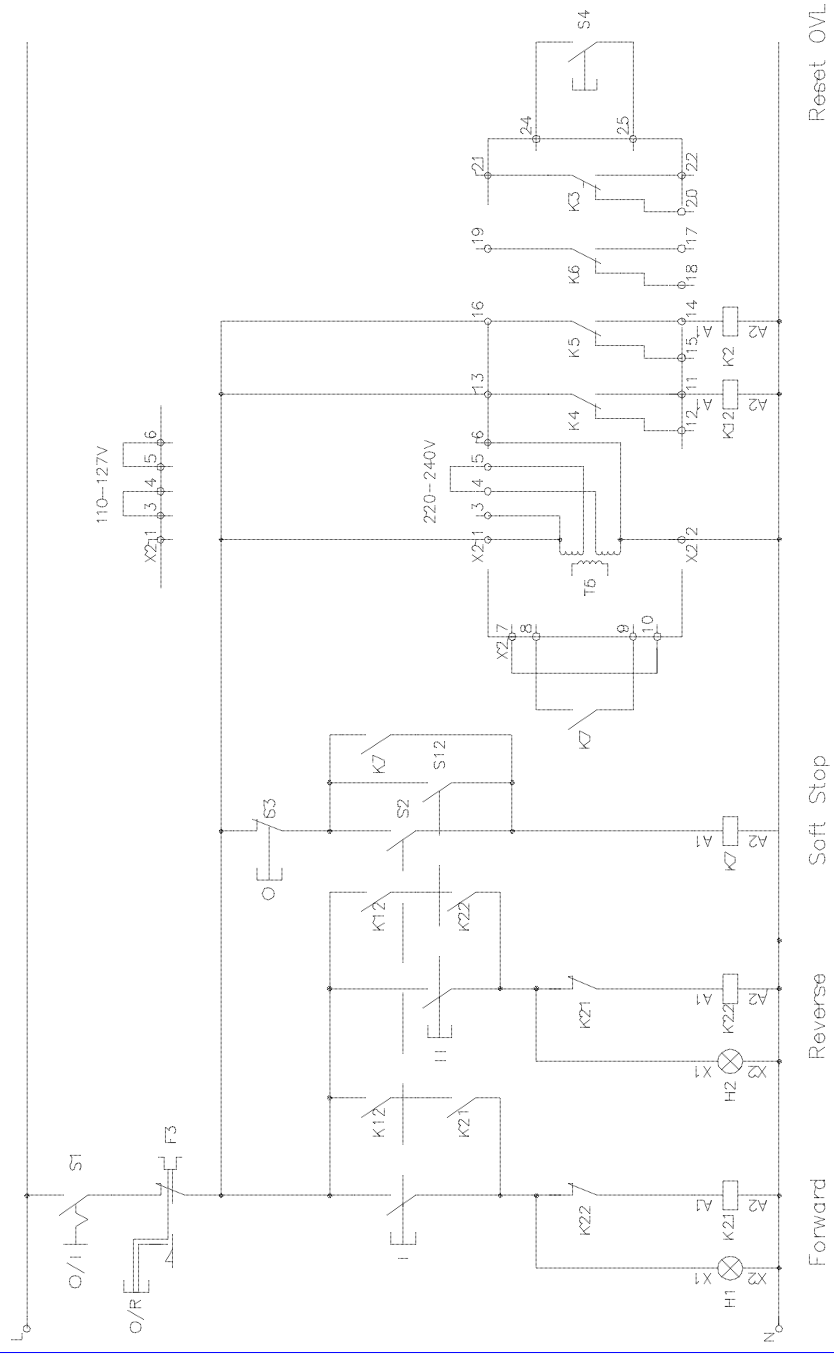
If softstop is not needed set the time for softstop to 0.5.



A105-24

1	Redrawn	TP	86	42	Appd	Year	Week
APPLICATION DIAGRAM							
Soft Starter							
Mjukstartare							
I Persson							
I Persson							
TP							
SECUR/80 06 05							
ISSUED							
5366 105-24							
82							
1							
...							

Soft Starter PS D75...145, PS DH30...110 with reversing, By-pass and softstop.  
 To be stopped before reversing.  
 Start at optional direction.  
 If softstop is not needed set the time for softstop to 0.5.

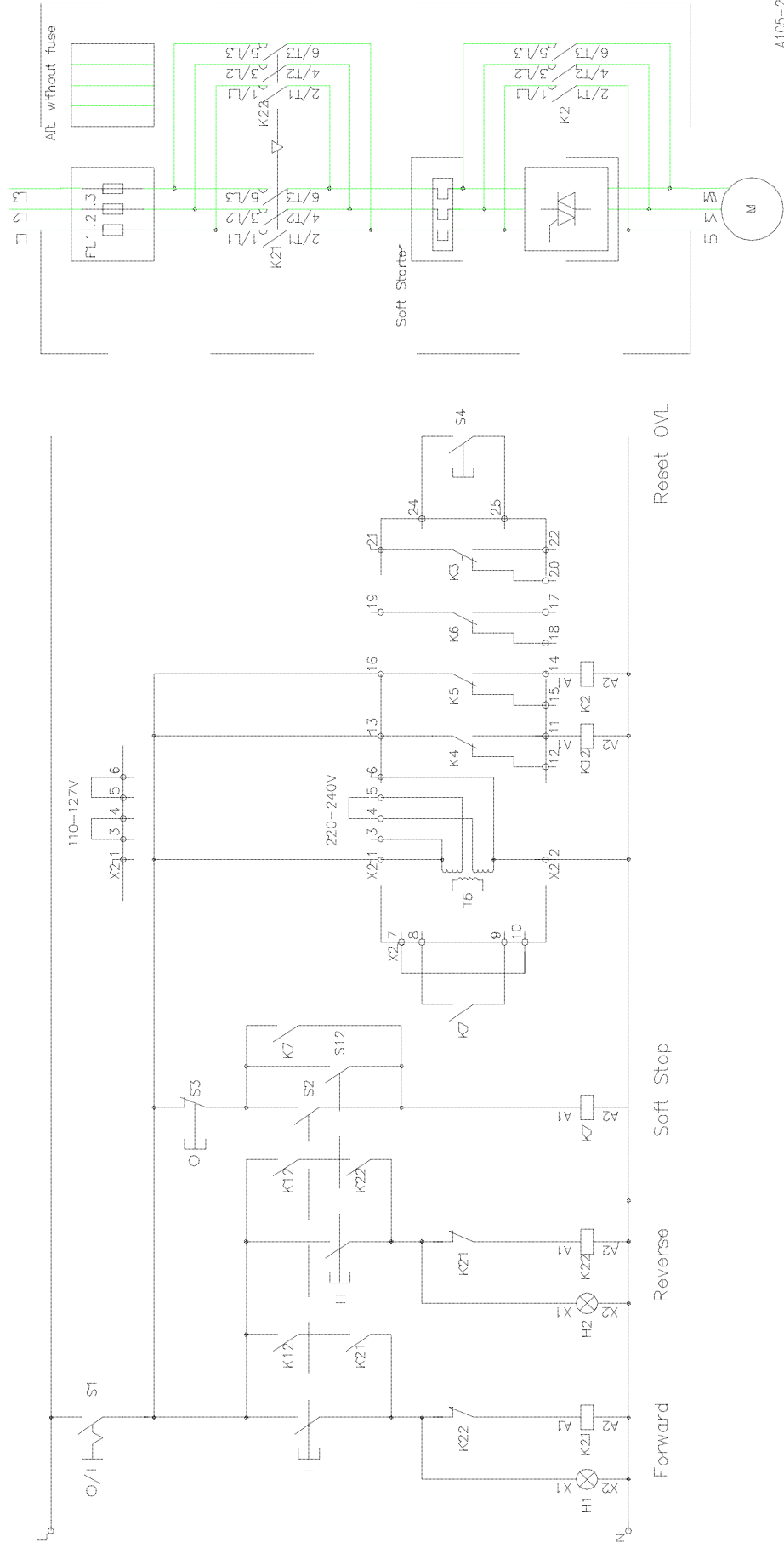


AJ05-26

I Perissos		APPLICATION DIAGRAM	
I Perissos		Soft Starter	
TP		Mjakstartare	
1	Redrawn	TP	96 42
Rev. int	Appl.	Year	Week
SECUR/80 06 05		ISSUED	
5366 105-25		82 1	
		1	
		...	

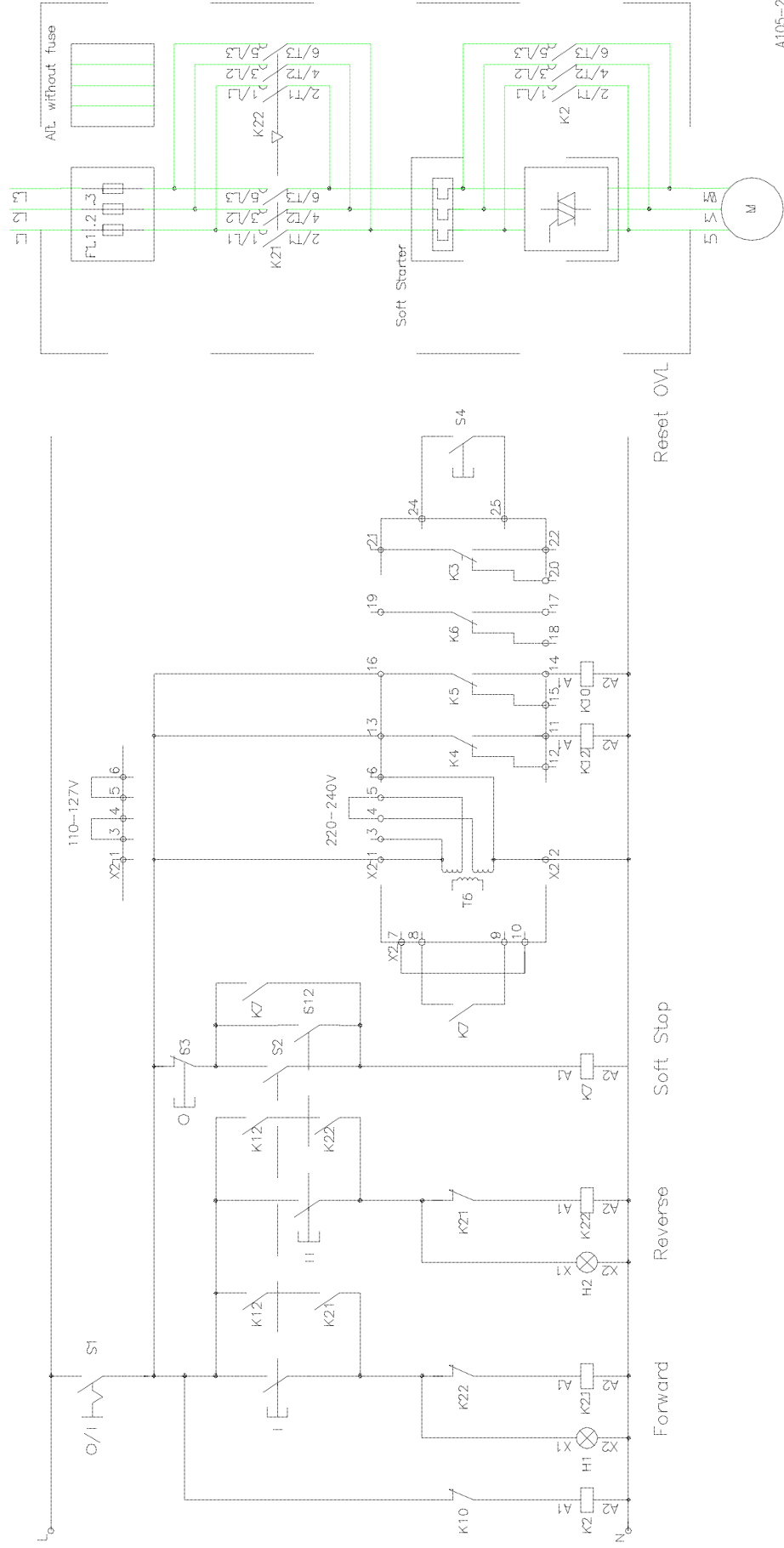


Soft Starter PS D175...300, PS DH145...250 with reversing, By-pass and softstop.  
 To be stopped before reversing.  
 Start at optional direction.  
 If softstop is not needed set the time for softstop to 0.5.  
 The internal overload relay is working also together with By-pass.



1		Redrawn	TP	96	42	Appd	Yor	Ibssk	SECUR/80	06	05	ISSUED	5366	105-26	82	1	...
1																	

Soft Starter PS D370...840, PS DH300...720 with reversing, By-pass and softstop.  
 To be stopped before reversing.  
 Start at optional direction.  
 If softstop is not needed set the time for softstop to 0.5.  
 The internal overload relay is working also together with By-pass.



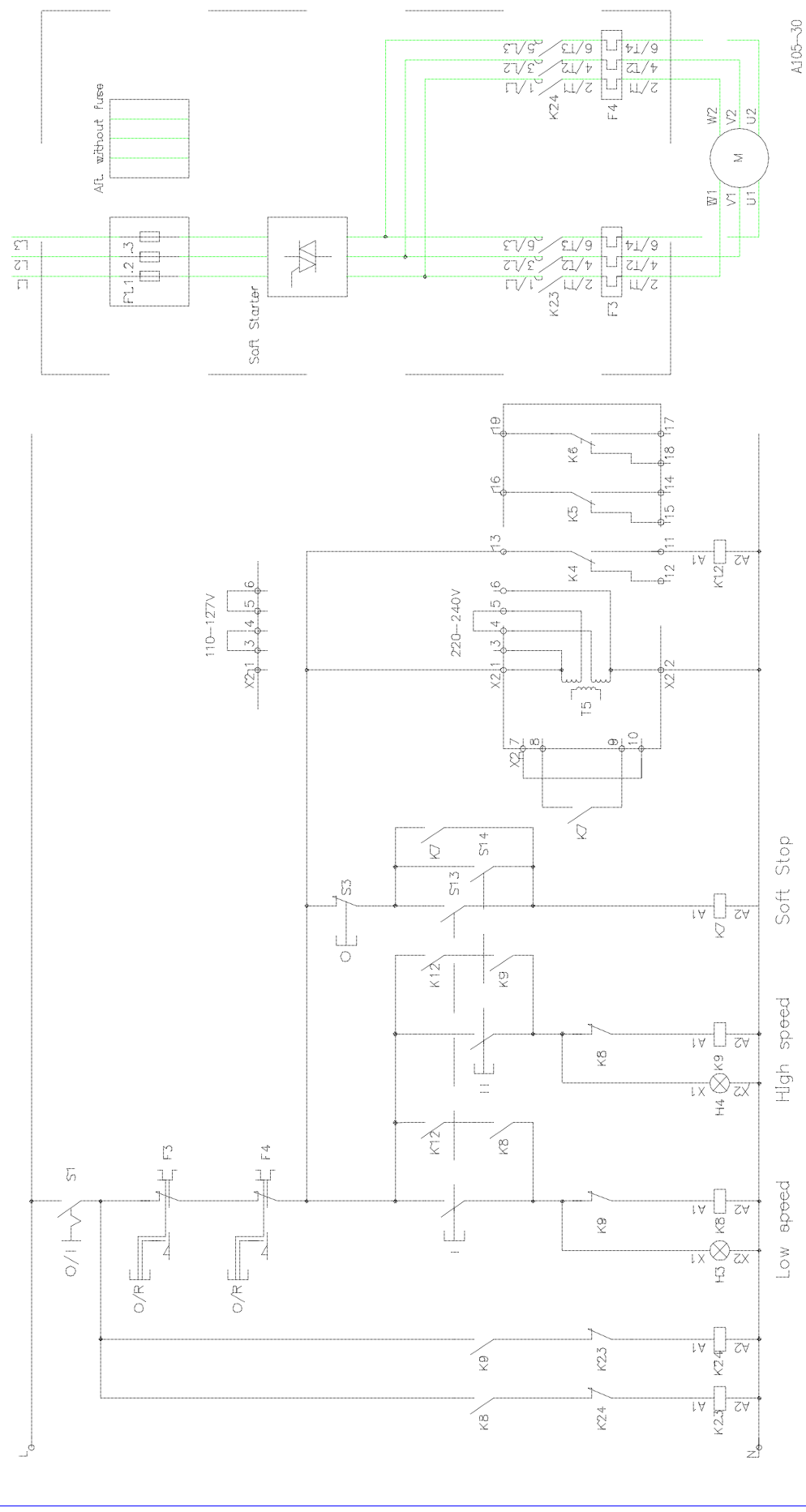
A105-27

I Perissos		APPLICATION DIAGRAM		5366 105-27		82		1	
I Perissos		Soft Starter							
TP		Mjpkstartare							
1		Redrawn		Appd		Yor		Issued	
Rev int						SECUR/80 06 05		1	
								...	





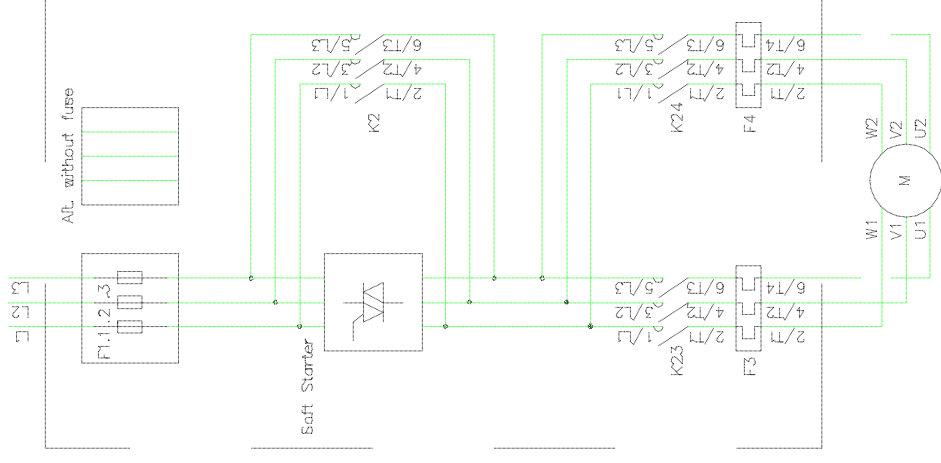
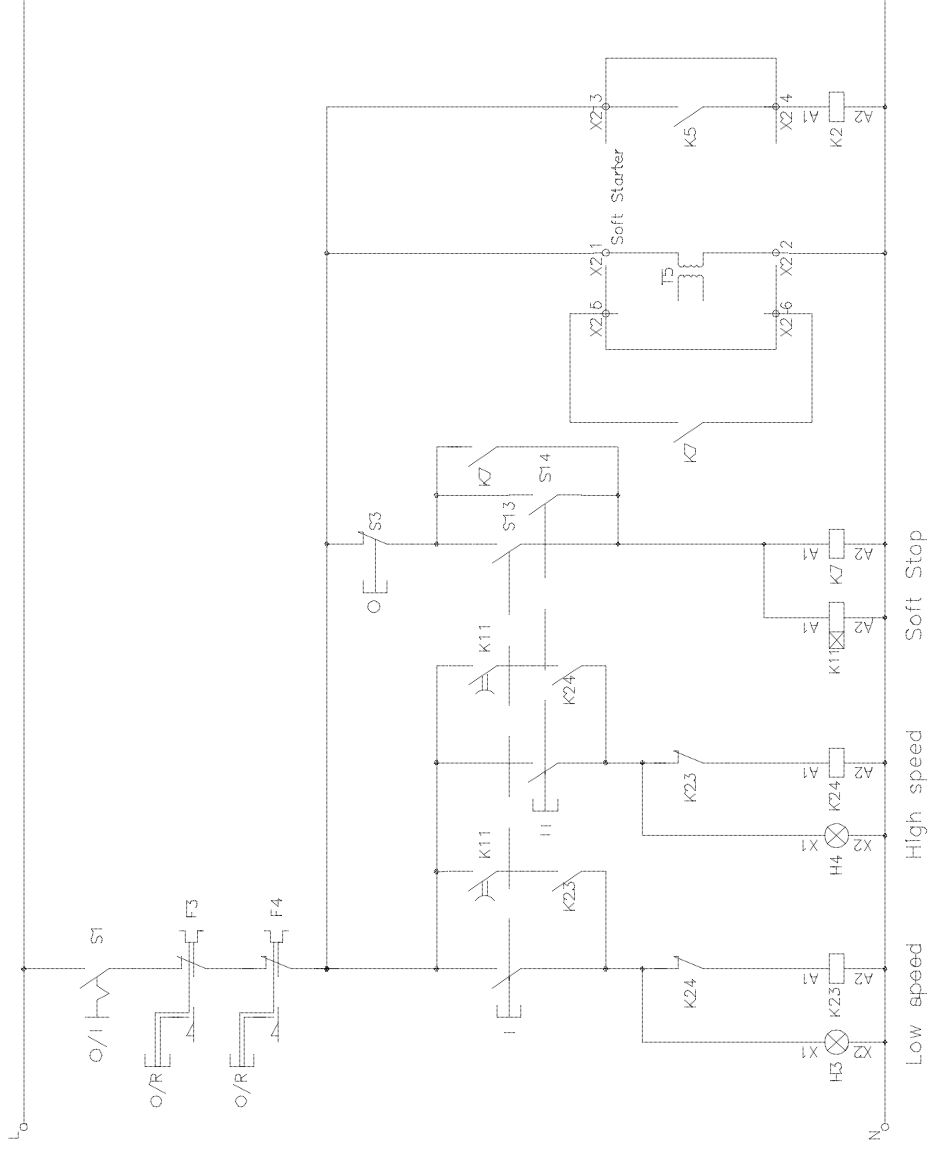
Soft Starter PS D370...840 with pole-changing and softstop.  
 To be stopped before change of speed.  
 Start at optional speed.  
 For motor with two winding.  
 If softstop is not needed set the time for softstop to 0.5.



AJ05-30

Rev. int.	Appl.	Year	Week	SECUR/80 06 42	ISSUED	82	1	...
						5366 105-30		
				APPLICATION DIAGRAM				
				Soft Starter				
				Mjakstartare				
				I Perissos				
				I Perissos				
				IP				

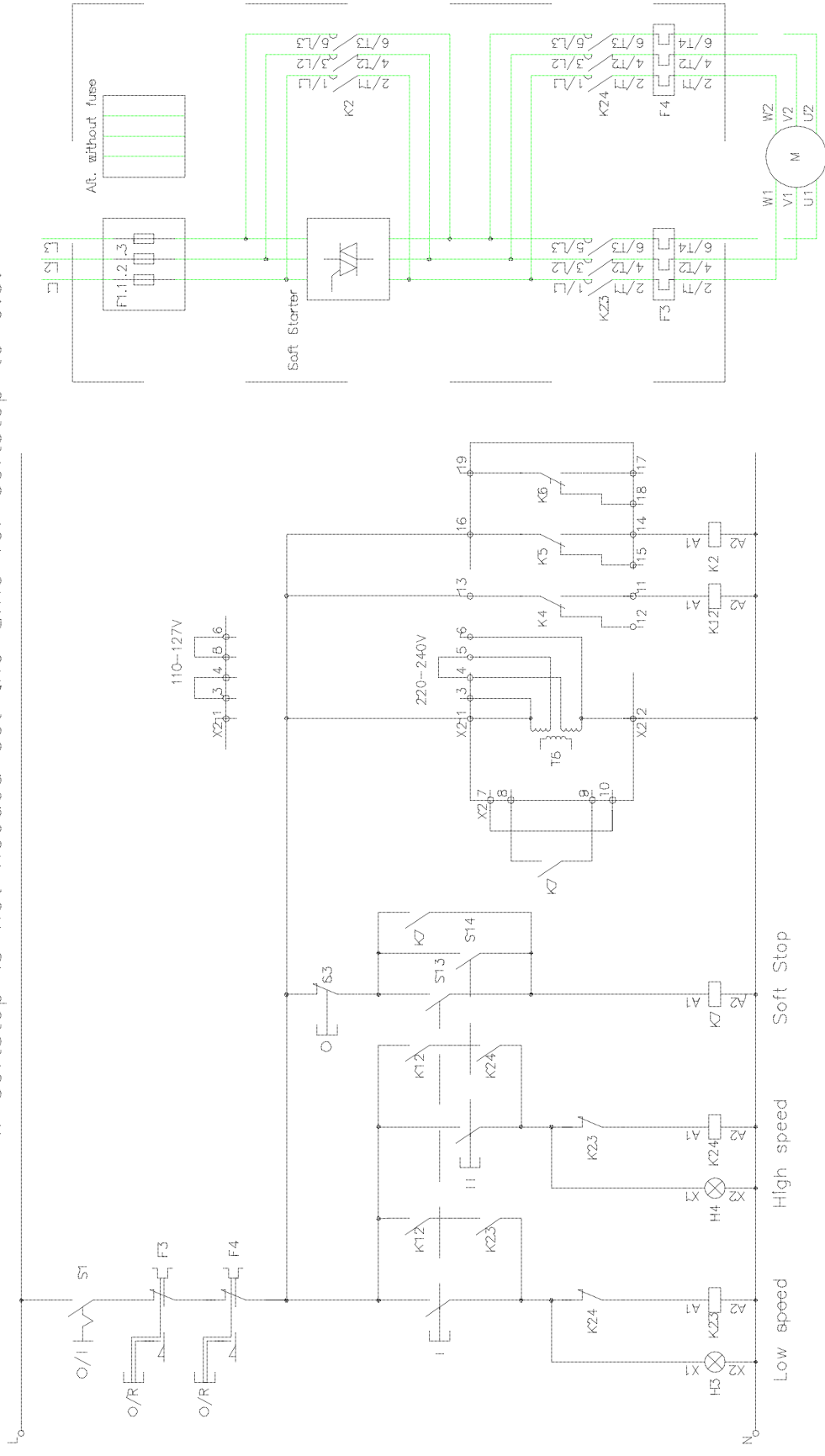
Soft Starter PS A18...60 with pole-changing, By-pass and softstop.  
 To be stopped before change of speed.  
 Start at optional speed.  
 For motor with two winding.  
 If softstop is not needed set the time for softstop to 0.5.



A105-31

Rev. int.	Appl.	Year	Week	APPLICATION DIAGRAM Soft Starter Mjukstartare		SECUR/80 06 42	ISSUED	5366 105-31	82	1	...
-----------	-------	------	------	---	--	----------------	--------	-------------	----	---	-----

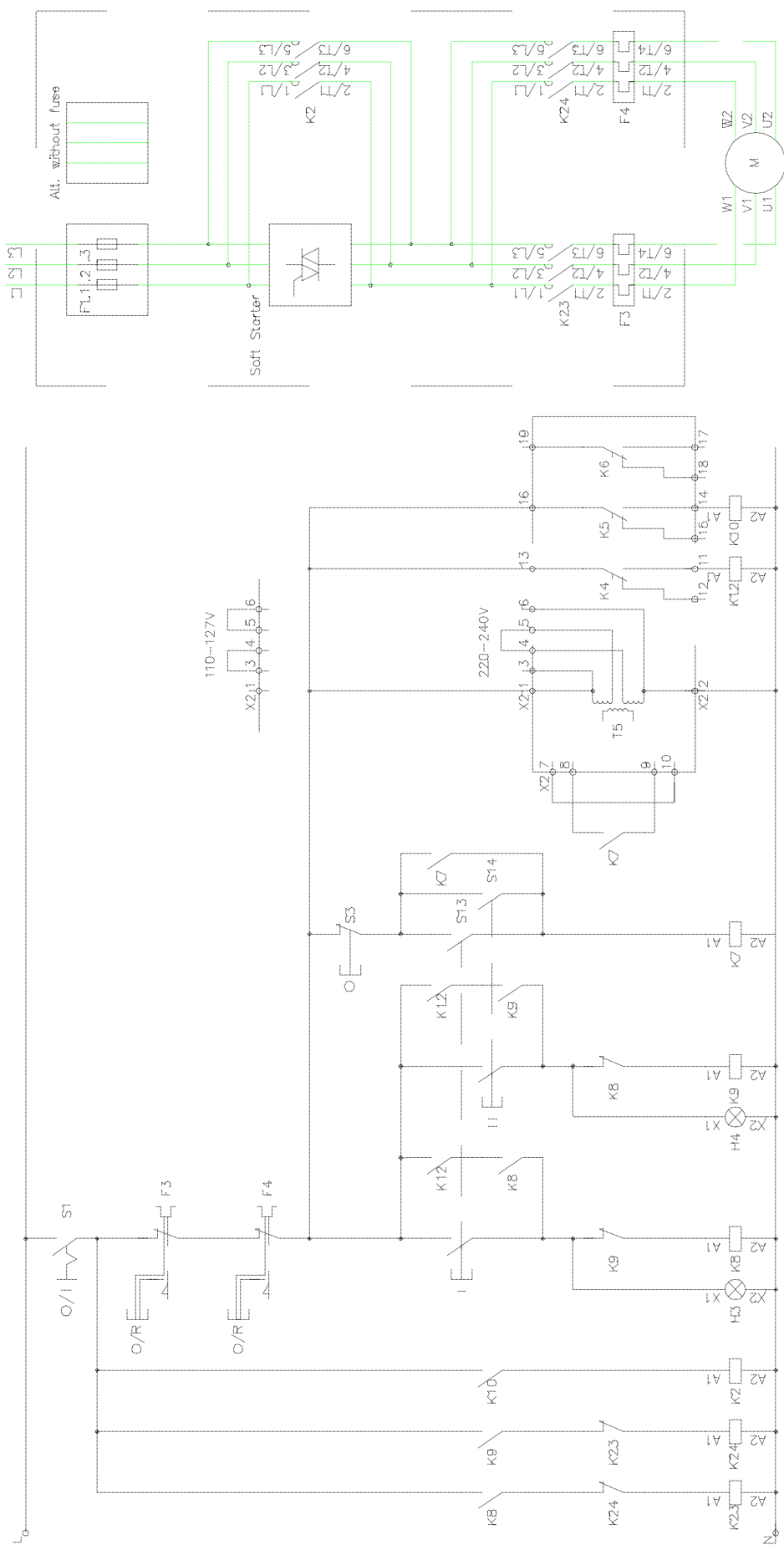
Soft Starter PS D75...300 with pole-changing, By-pass and softstop.  
 To be stopped before change of speed.  
 Start at optional speed.  
 For motor with two winding.  
 If softstop is not needed set the time for softstop to 0.5.



A105-32

Rev. no.	Sheet	Rev. no.	Sheet
5366	105-32	ISSUED	...
des. by	year	year	week
SECUR/BO	06	02	
APPLICATION DIAGRAM		ABB Control	
Design checked by		I. Perissod	
Drawing checked by		I. Perissod	
Executed by		I. Perissod	
T.P.		Mjakstartare	
		Soft Starter	
		Mjakstartare	

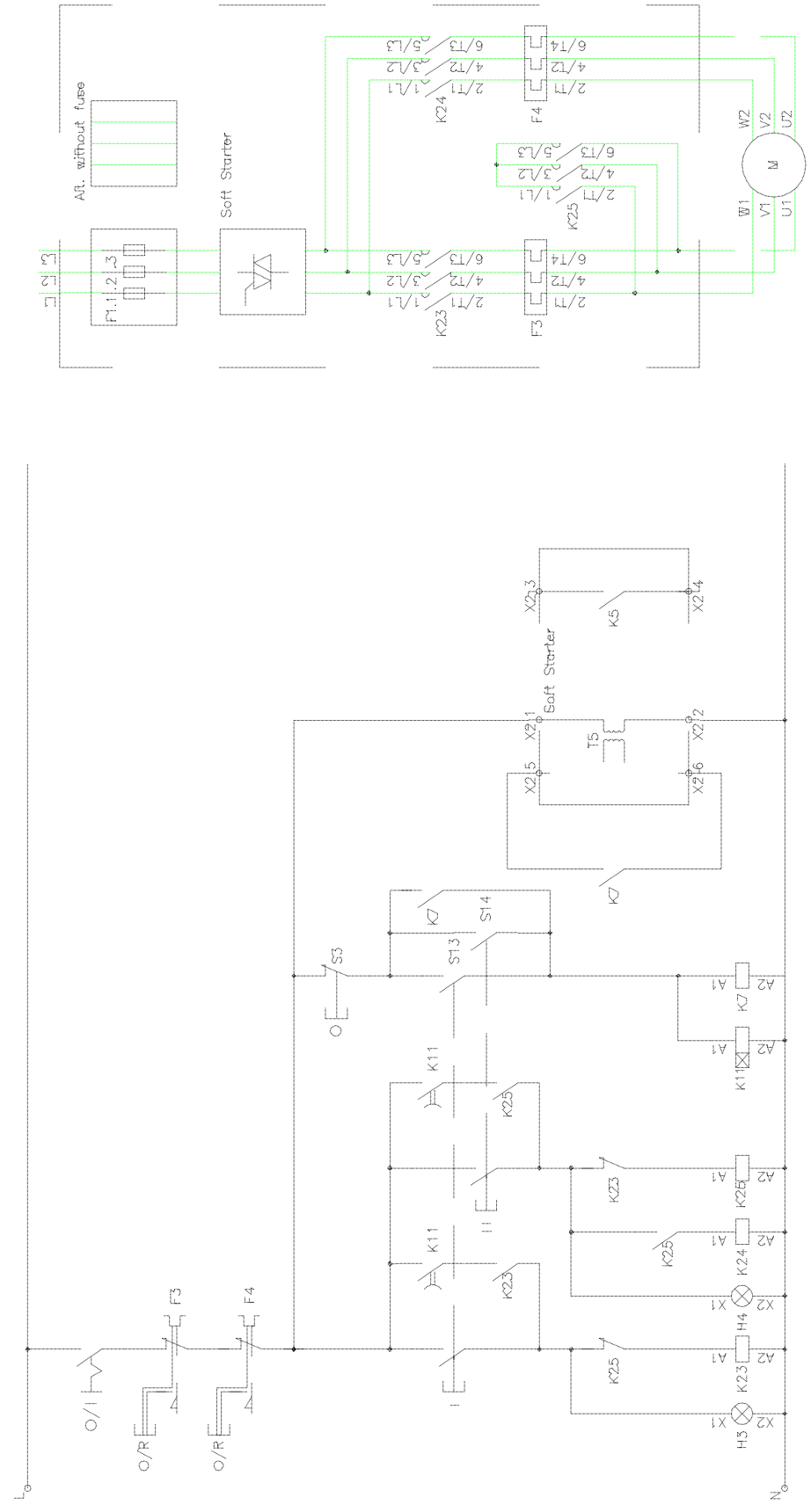
Soft Starter PS D370...840 with pole-changing, By-pass and softstop.  
 To be stopped before change of speed.  
 Start at optional speed.  
 For motor with two winding.  
 If softstop is not needed set the time for softstop to 0.5.



A105-33	
5366 105-33	ISSUED
SECUR/80 06 42	1
APPLICATION DIAGRAM	...
Soft Starter	
Mjakstartare	
T Perisson	
T Perisson	
TP	
Rev: not	Appt: Xeer /Rook



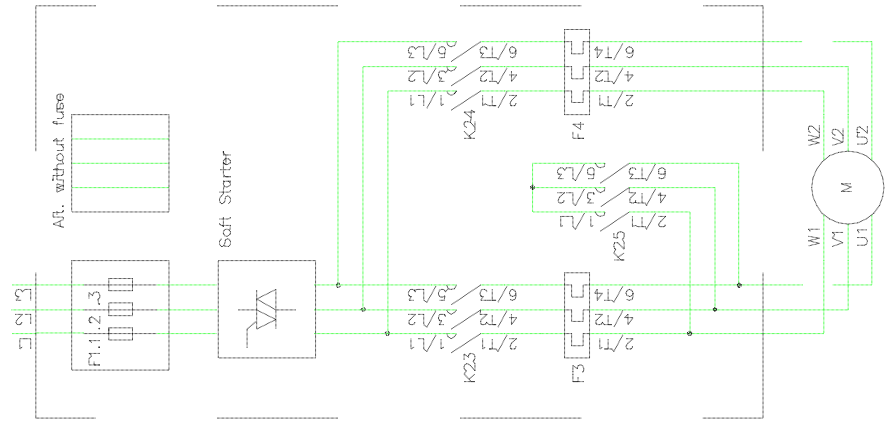
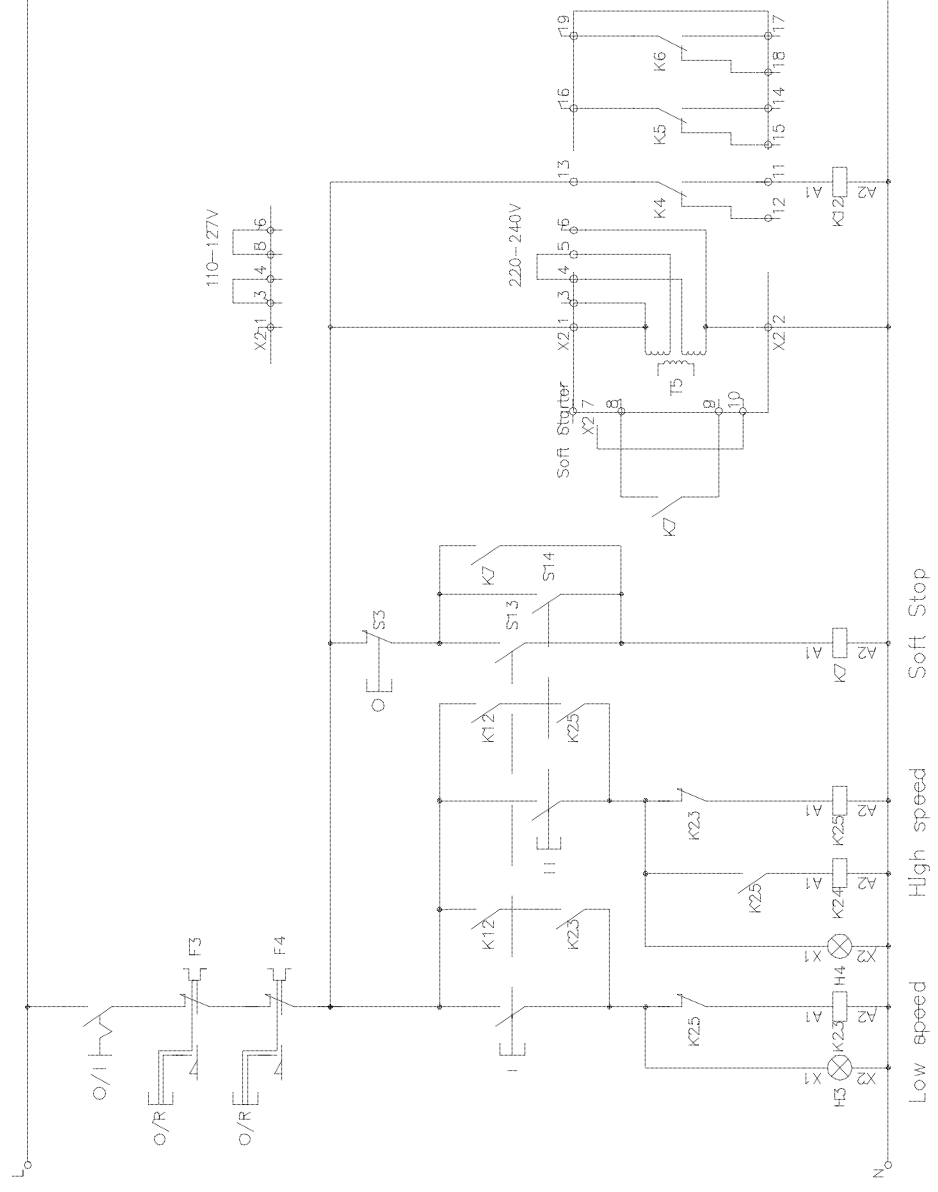
Soft Starter PS A18...60 with pole-changing and softstop.  
 To be stopped before change of speed.  
 Start at optional speed.  
 For motor with one winding (Dahlander).  
 If softstop is not needed set the time for softstop to 0.5.



A105-34

Rev. int.	Appt.	Year	Week	ISSUED	82	1
				SECUR/80 06 42	5366 105-34	...
APPLICATION DIAGRAM				I Persson		
Soft Starter				I Persson		
Mjukstartare				TP		

Soft Starter PS D75...300 with pole-changing and softstop.  
 To be stopped before change of speed.  
 Start at optional speed.  
 For motor with one winding (Dahlander).  
 If softstop is not needed set the time for softstop to 0.5.

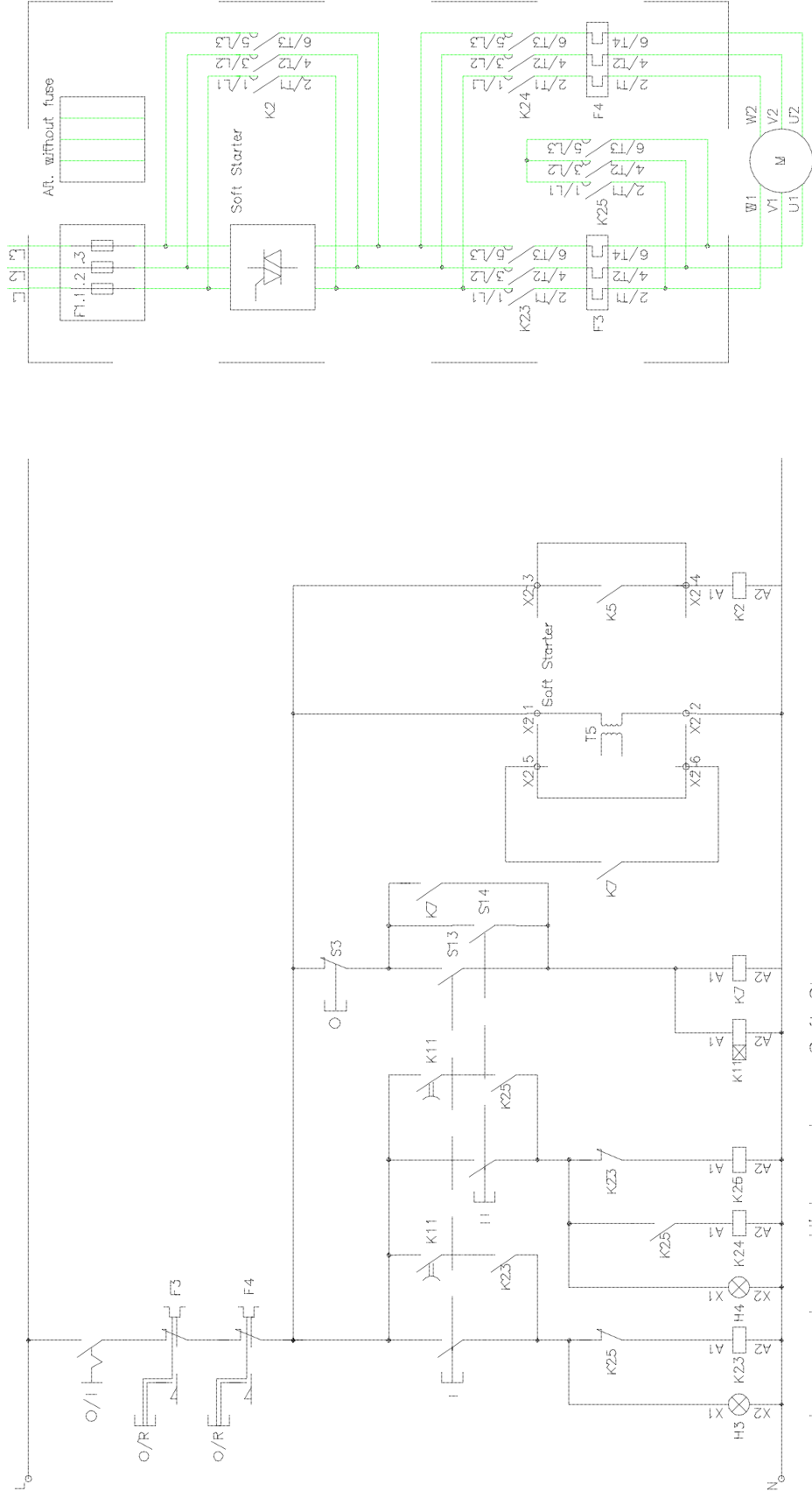


AJ05-35

Rev. int.	Appt.	Year	Issue	5366 105-35	82	1
SECUR/80 06 42			ISSUED			
APPLICATION DIAGRAM						
Soft Starter						
Mjukstartare						
I Persson						
I Persson						
TP						



Soft Starter PS A18...60 with pole-changing, By-pass and softstop.  
 To be stopped before change of speed.  
 Start at optional speed.  
 For motor with one winding (Dahlander).  
 If softstop is not needed set the time for softstop to 0.5.

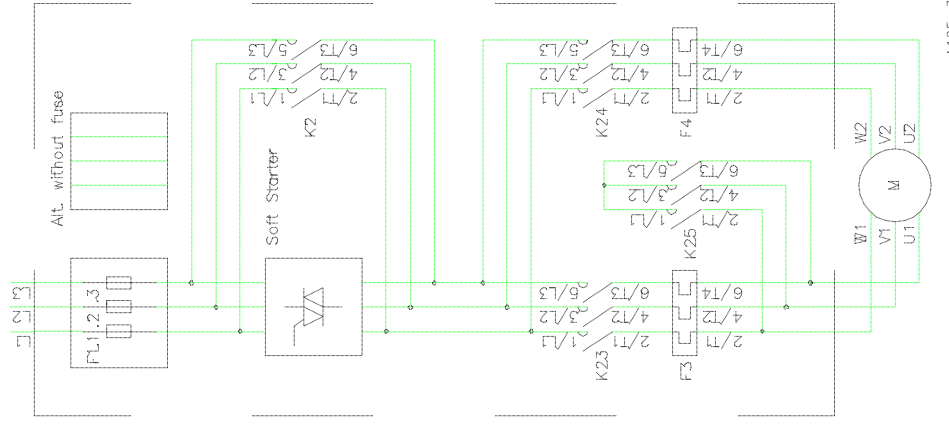
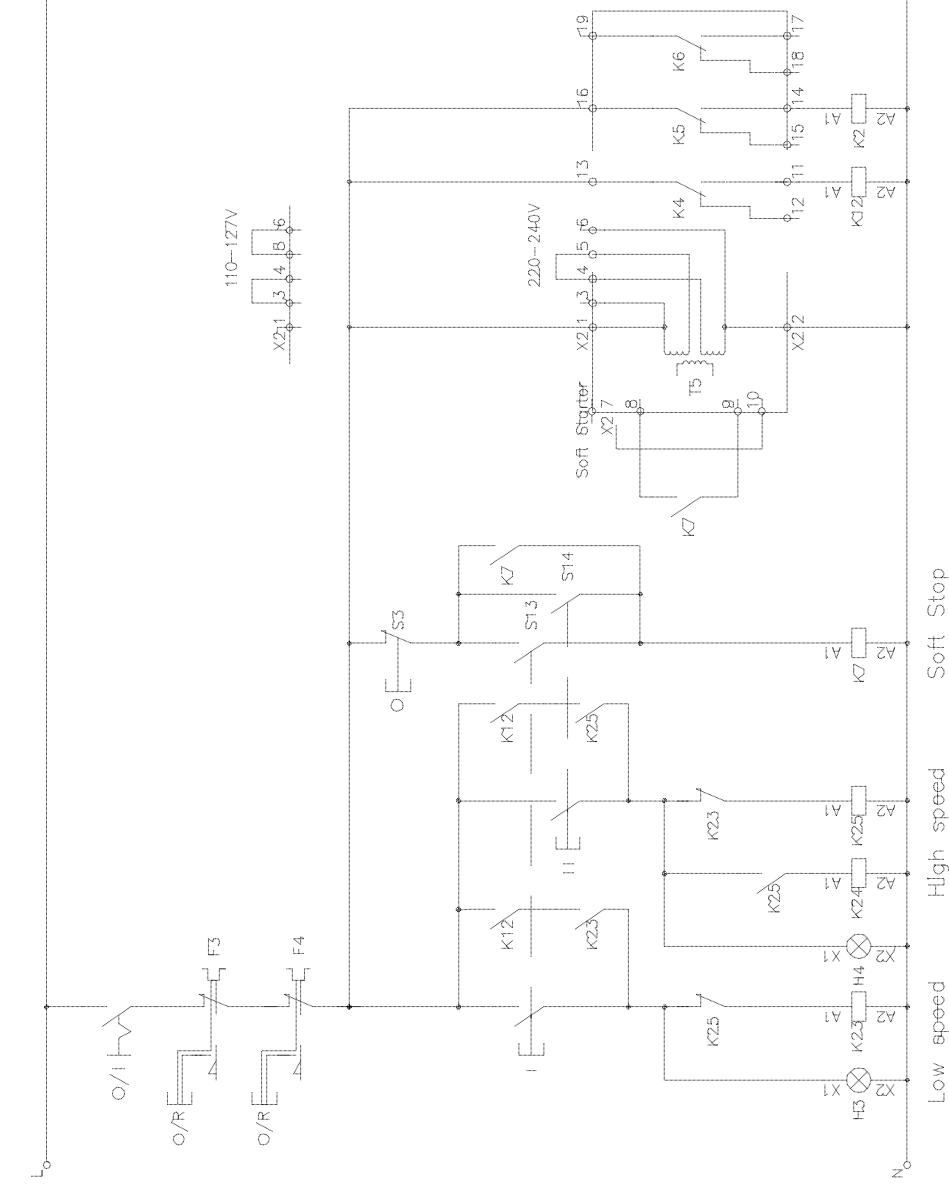


Low speed High speed Soft Stop

AJ05-37

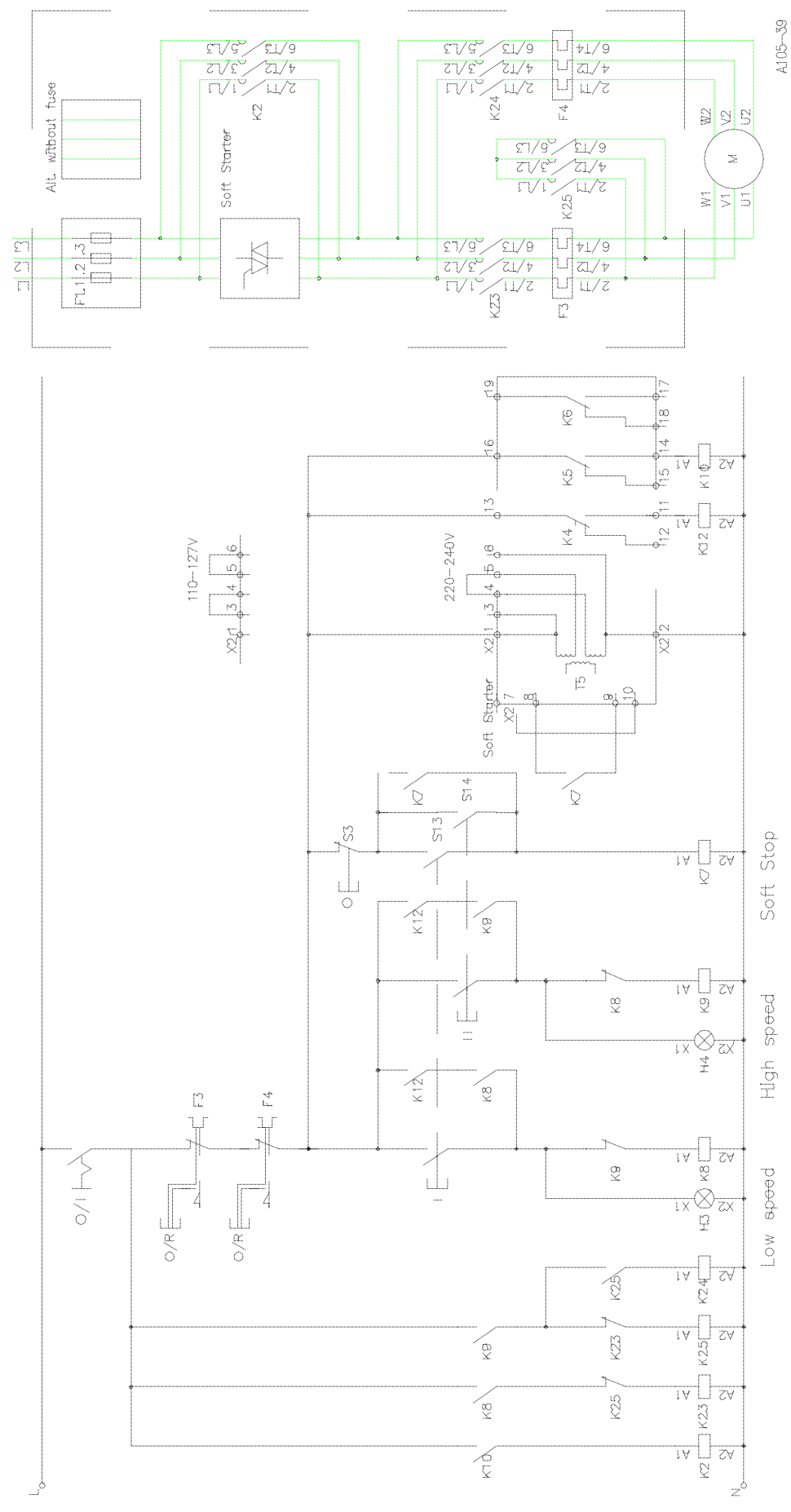
Rev. int.	Appl.	Year	Issue	ISSUED	82	1	...
				SECUR/80 06 42	5366 105-37		
APPLICATION DIAGRAM				Soft Starter			
I Persson				Mjukstartare			
I Persson							
TP							

Soft Starter PS D75...300 with pole-changing, By-pass and softstop.  
 To be stopped before change of speed.  
 Start at optional speed.  
 For motor with one winding (Dahlander).  
 If softstop is not needed set the time for softstop to 0.5.



Rev. int.	Appl.	Year	Issue	SECUR/80 06 42	ISSUED	5366 105-38	82	1	...
				APPLICATION DIAGRAM					
				I Perisosa		Soft Starter			
				I Perisosa		Mjukstartare			
				IP					

Soft Starter PS D370...840 with pole-changing and softstop.  
 To be stopped before change of speed.  
 Start at optional speed.  
 For motor with one winding (Dahlander).  
 If softstop is not needed set the time for softstop to 0.5.



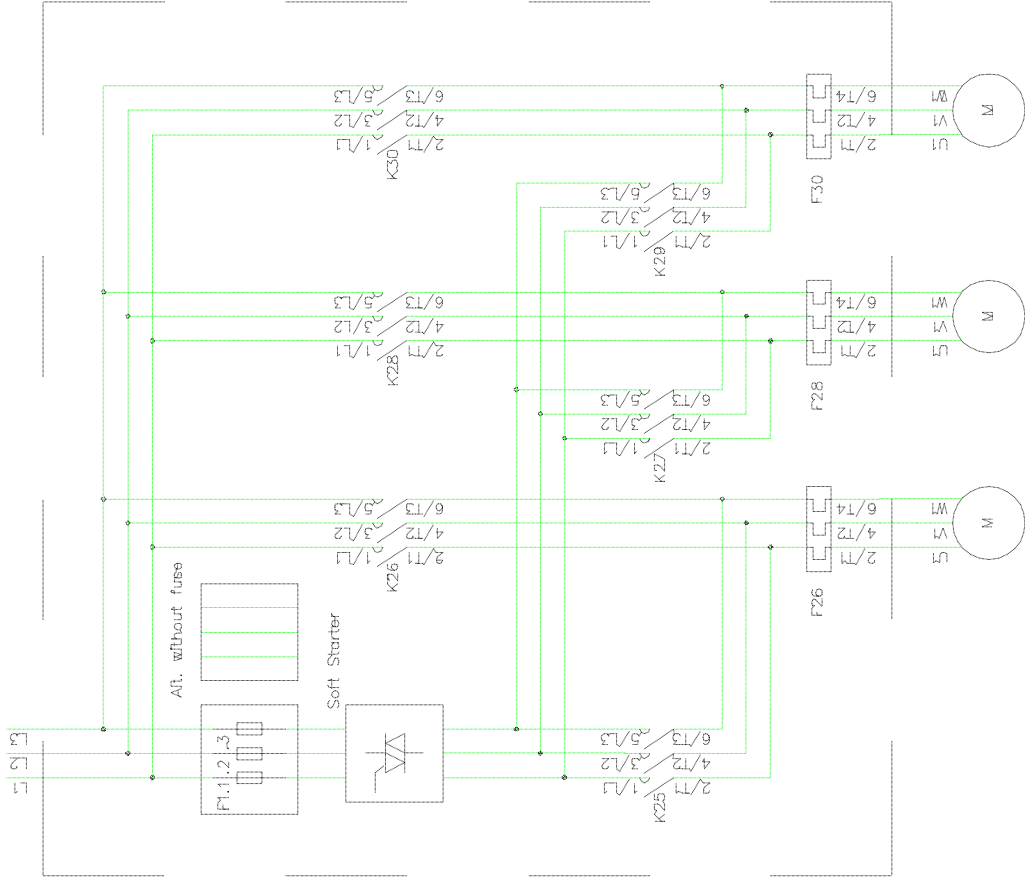
Rev. int.	Appl.	Year	Issue	SECUR/80 06 42	ISSUED	5366 105-39	82	1	...
				APPLICATION DIAGRAM					
				Soft Starter					
				Mjpkstartare					
				I Persson					
				I Persson					
				TP					

A105-39

## SPECIAL APPLICATION DIAGRAM

5366 106-1	PS D75...840	Sequential start for 3 motors.
5366 106-2	PS D75...300	Start of 2 motors.

Sequential start for 3 motors.  
 Soft Starter PS D75...300 with motor protection without softstop.  
 Start of optional motor.



A106-1A

Rev. nr	Appr.	Year	Week
2	Uutetved	TP	96 43
1	Fuses moved.	TP	95 09

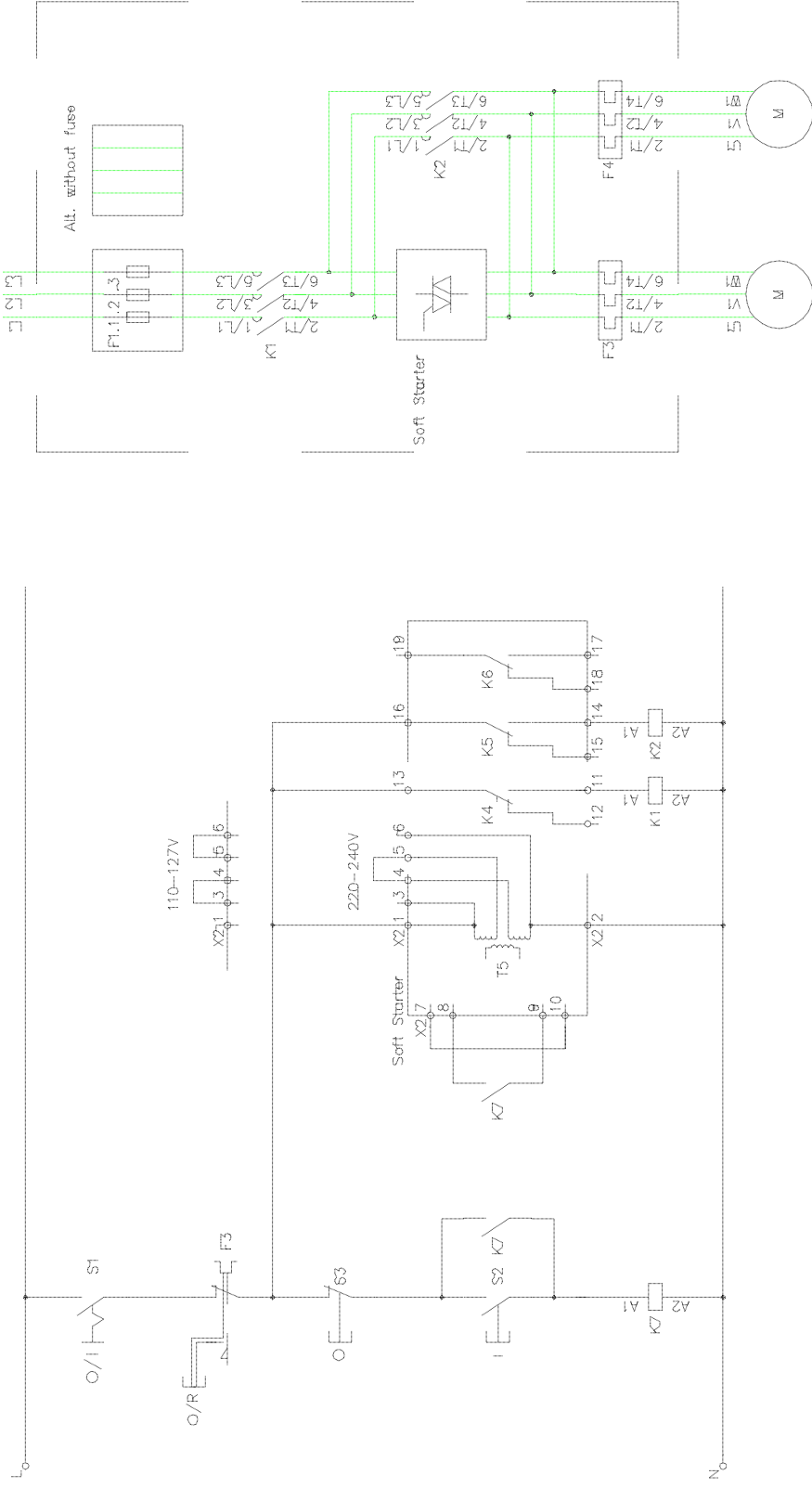
  

APPLICATION DIAGRAM		SECUR/80 96 07	ISSUED
I Perisson	Soft Starter		
I Perisson	Mjpkstartare		
TP			
5366 106--1			
82			
1			
2			





Start of 2 motors.  
 Soft Starter PS D75...300 with motor protection, softstart and By-pass.  
 Main contactor open during pause



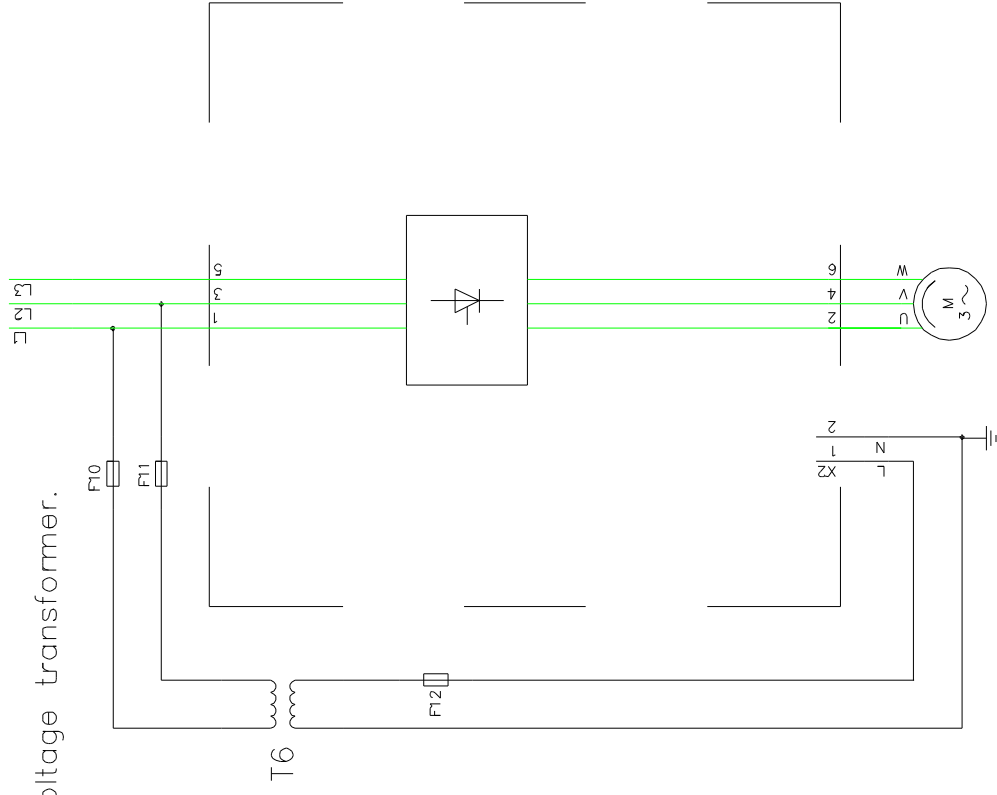
A106-2

Rev. nr	Appt	Year	Week	ISSUED	82	1	...
I Persson				APPLICATION DIAGRAM			
I Persson				Soft Starter			
TP				Mjukstartare			
				SECUR/80 06 43			
				5366 106-2			

## SPECIAL DIAGRAM

5366 107-1	PS A, PS D(H)	Connection of control voltage transformer.
5366 107-2	PS A, PS D(H)	Connection of control voltage between phase and neutral wire.

Connection of control voltage transformer.



A107-1

Rev	Ind	Sheet	5366 107-1	ISSUED
Rev	Ind	Sheet		
Rev	Ind	Cont		
Designed by		Diagram		
I PERSSON		SOFT STARTERS		
Drawing checked by		MADKSTARTARE		
I PERSSON		ABB Control		
Drawn by		Sec. Week		
IP		SCRL/BM 96 07		
Appd.	Year	Rev		





---

**ABB Automation Technology Products AB, Control**  
S-721 61 Västerås, SWEDEN

Telephone +46 21 32 07 00  
TELEFAX +46 21 12 60 01

(53096981.doc)