



Box/Bag Filling Carousel Operation & Programming Guide

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Basic Description

Introduction:

This operation/programming guide was designed to provide information regarding the safe set up and operation of the CC/CS box or bag-filling carousel using the CR-269-286 control unit.

Specifications:

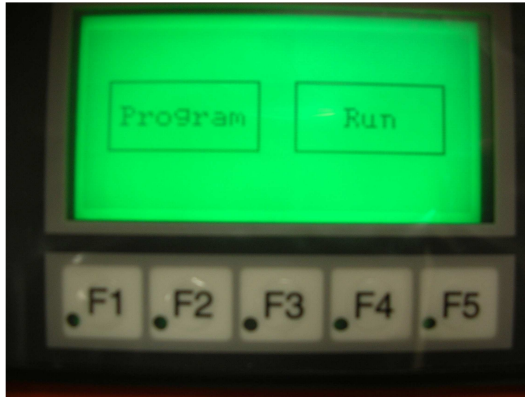
The carousel is designed to fill boxes or bags using a count signal from a molding machine, robot, weigh-scale hopper etc. The carousel control can be configured as needed, to accept a 24 VDC signal, an isolated dry contact or a signal from a proximity switch or photo-eye (NPN or PNP switching available upon request).

The carousel frame consists of formed and painted industrial steel. The unit is equipped with a rack and pinion drive. High quality thrust bearings and hardened sprockets guarantee a long lasting maintenance free operation. Standard casters are Ø80mm (3.1”) for easy mobility.

The direction of rotation is factory preset. Each carousel is shipped with a 15-ft cord terminating with a standard 3-prong plug, which can be plugged into any 110 VAC receptacle with ground.

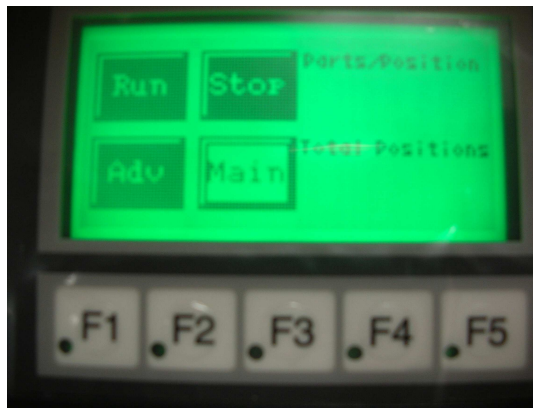
SCREEN DESCRIPTIONS

Main screen



Program Pushbutton: Goes to Program screen
Run Pushbutton: Goes to Run screen

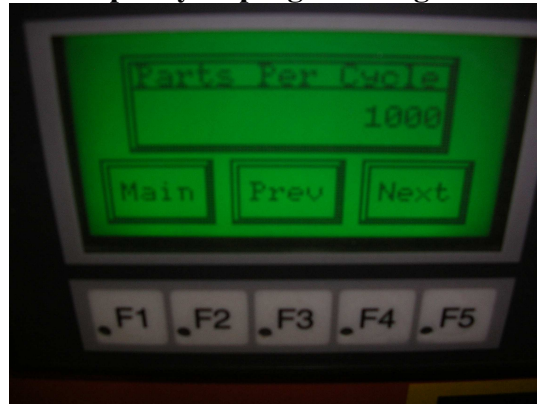
Run screen



Run Pushbutton: Starts system cycle
Stop Pushbutton: Resets alarms and sets position to 1 if pressed once, shuts down system if pressed twice
Adv Pushbutton: Advances to next position during run mode
Main Pushbutton: Goes to Main screen

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Parts per cycle programming screen



Parts per Cycle Pushbutton: Goes to Numeric entry screen

Main Pushbutton: Goes to Main screen

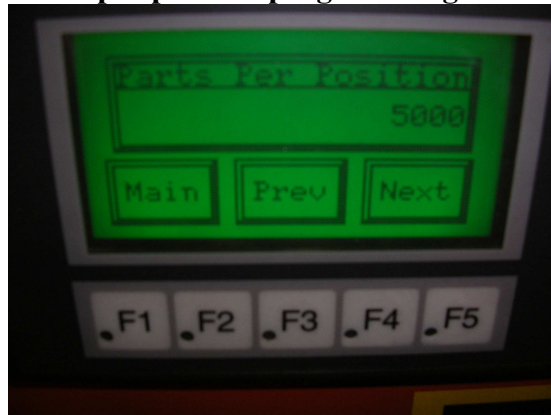
Previous Pushbutton: Goes to Main screen

Next Pushbutton: Goes to Next programming screen

Number displayed on screen is current setting

Value must be equally divided into Parts per position value

Parts per position programming screen



Parts per Position Pushbutton: Goes to Numeric entry screen

Main Pushbutton: Goes to Main screen

Previous Pushbutton: Goes to Previous programming screen

Next Pushbutton: Goes to Next programming screen

Value displayed on screen is current setting

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Total positions programming screen



Total Positions Pushbutton: Goes to Numeric entry screen

Main Pushbutton: Goes to Main screen

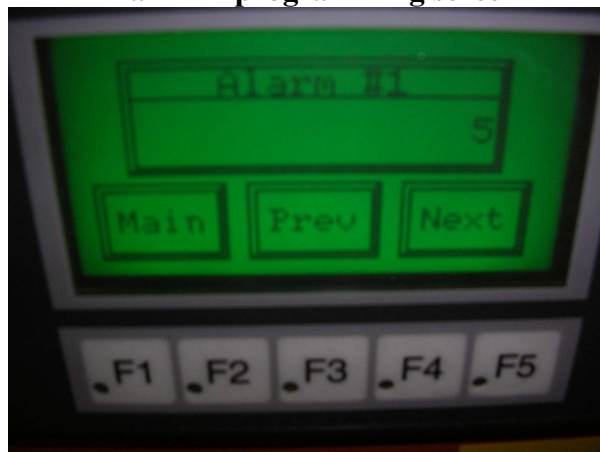
Previous Pushbutton: Goes to Previous programming screen

Next Pushbutton: Goes to Next programming screen

Value displayed on screen is current setting

Note: This value has to be equally divided into 24. (1,2,3,4,6,8,12,24)

Alarm #1 programming screen



Alarm #1 Pushbutton: Goes to Numeric entry screen

Main Pushbutton: Goes to Main screen

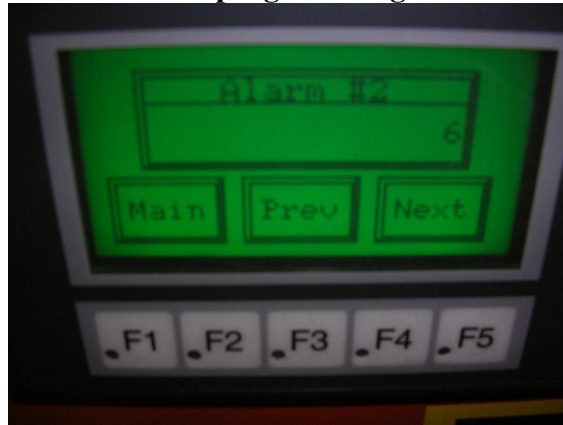
Previous Pushbutton: Goes to Previous programming screen

Next Pushbutton: Goes to Next programming screen

Value displayed on screen is current setting

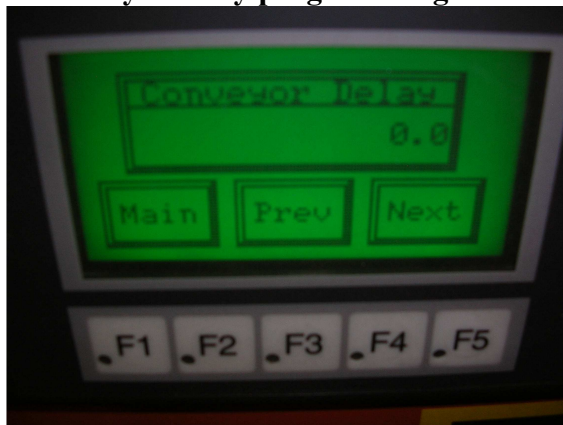
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Alarm #2 programming screen



- Alarm #2 Pushbutton: Goes to Numeric entry screen
- Main Pushbutton: Goes to Main screen
- Previous Pushbutton: Goes to Previous programming screen
- Next Pushbutton: Goes to Next programming screen
- Value displayed on screen is current setting

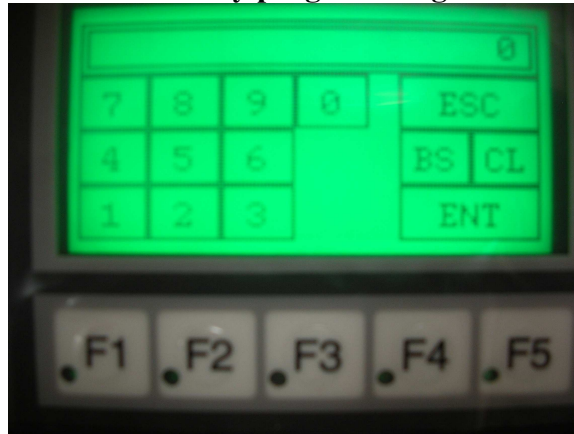
Conveyor delay programming screen



- Conveyor delay Pushbutton: Goes to Numeric entry screen
- Main Pushbutton: Goes to Main screen
- Previous Pushbutton: Goes to Previous programming screen
- Next Pushbutton: Goes to Main screen
- Value displayed on screen is current setting

(Continued on next page...)

Numeric entry programming screen



This screen will show up after selecting the desired value to change (Ex: Total Positions)
Type in the desired value with 0-9 and then press ENT

ESC= Escape

BS= Backspace

CL= Clear

ENT=Enter

0-9= Numeric entry

Customer Interface and Connection

Inputs

AC Supply

115 VAC power enters the enclosure through the cord grip (marked **F** in the “Mating connectors” section) and connects to terminal blocks in main control box according to table below:

Signals	Terminal block #
115 VAC line	L1
Earth ground	G
Neutral	L2

Note: This unit is protected by a 5 amp Bussmann fuse.

Part Count

This input is for the cycle count signal from the molding machine, which pulses each time a shot of parts is produced.

This signal is connected to the 4-pin Conxall connector (marked **A** in the “Mating connectors” section), to part count relays "IR3 and IR4", and terminal blocks in main control box according to table below:

Pin #	Signal	Relay/Terminal Block #
1	+24V	IR4 "A1"
2	-24V	IR4 "A2"
3	+110V	TERMINAL BLOCK "1"
4	Part Count	IR3 "A1"

When a 24V DC input is being used, connect the positive (+) 24VDC to pin number 1 (+24V) and the negative (-) 24VDC to pin number 2 (-24V). When contact closure input is being used, connect to pin numbers 3 and 4.

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Carousel Position Switch

Carousel System: this input is for the micro-switch that is wired Normally Open and will pulsed every 15 degrees of carousel rotation (i.e. 24 times per full revolution).

The signals are connected to the 5-pin connector (marked **D** in the “Mating connectors” section) and to the PLC and terminal blocks in the main control box according to table below:

By default the input is configured for either contact closure (between “Index” and “Ground”) or NPN-type (sinking) proximity sensor.

Pin #	Carousel System signal	PLC/Terminal Block #
1	-	-
2	Index switch	Terminal Block "1"
3	-	-
4	-	-
5	Ground	PLC Input "X0"

Outputs

Carousel Motor

This output provides 115 VAC to run the carousel motor.

The signals are provided on terminal blocks in the main control box according to the table below, and exit the case via the cord grip (marked **G** in the “Mating connectors” section).

Signals	Terminal Block #
115 VAC line	Terminal Block "21"
Earth ground	Terminal Block "G"
Neutral	Terminal Block "L2"

Note: The Carousel motor starter is an FG-5 with thermal protection via a A9.25 heater.

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Part Conveyor Drive

This output provides 115 VAC to activate the transport conveyor.

The signals are provided on control relay "CR2" and terminal blocks in the main control box according to the table below, and on the Hubbell connector located on the bottom of the enclosure (marked **E** in the "Mating connectors" section):

Signals	Hubbell connector	Relay/Terminal Block #
Switched 110 VAC line	Brass	CR2 "14"
Earth ground	Center	Terminal Block "G"
Neutral	Tin	Terminal Block "L2"

Alarm 1

This output provides 115 VAC whenever the Alarm 1 condition is active.

The signals are available on the 3-pin Conxall connector (marked **B** in the "Mating connectors" section):

Pin #	Signal	Relay/Terminal Block #
1	115 VAC line (when alarm active)	IR1 "14"
2	Earth ground	Terminal Block "G"
3	Neutral	Terminal Block "L2"

Alarm 2

This output provides a contact closure whenever the Alarm 2 condition is active, between pins #1 and #2 of the 2-pin Conxall connector (marked **C** in the "Mating connectors" section).

Pin #	Signal	Relay #
1	Connected together through relay contacts when Alarm 2 signal is active	IR2 "11"
2		IR2 "14"

Programming Descriptions/Sequence

Descriptions

Parts Per Cycle: This is the number of parts to be counted each time the molding machine activates the PART COUNT signal.

Value must be divided equally into Parts Per Position value

Parts Per Position: This is the number of parts to be placed in each box. This value will increase and decrease by the Parts Per Cycle amount (so that it is always a multiple of that value).

Total Positions: This is the number of boxes to be filled on the carousel.

Value must be divided equally into 24. (1,2,3,4,6,8,12,24)

Alarm #1 Position: This is the position after which the Alarm #1 output is activated. Activation occurs as soon as the box has been filled, or when the ADV key is pressed to leave the position.

Alarm #2 Position: This is the position after which the Alarm #2 output is activated. Activation occurs as soon as the box has been filled, or when the ADV key is pressed to leave the position.

Conveyor Delay Time: This is the time, in seconds, between the PART COUNT signal from the molding machine and the parts arriving at the box.

Sequence

1. To access the first Programming screen, press the Program pushbutton on Main screen.
2. When in the first Programming screen "Parts per Cycle", press the Numeric entry pushbutton to change the desired value or press next to go to the next programming screen.
3. After pressing the Numeric entry pushbutton, the Numeric entry screen will appear. At this screen user will type in desired value with 0-9 and press ENT to accept.
4. Repeat until all desired programming is entered.

Run Mode Descriptions/Sequence

Descriptions

Display row 1

The 1st row shows the Parts per position value and how many parts have been conveyed into the current container.

Example display: 20/500

Display row 2

The 2nd row shows the Total positions value and the current position the cycle is on. After the last position has been filled, if no alarms have been programmed the system will assume next box is empty and current position will be set to 1.

Run screen pushbutton descriptions in Screen descriptions section.

Example display: 2/6

Sequence

1. To access the Run screen, press the Run pushbutton on Main screen
2. Once in the Run screen to start the cycle press the Stop pushbutton twice to reset system. After resetting the system press the Run pushbutton. System will initiate.
3. After initial start of system position will be set to "1" and all boxes will be assumed empty.
4. System will fill current container until Parts per position value is reached, the system will then index a empty box into place according to the Conveyor delay time.
5. System will repeat until last container filled, in which if no alarms are programmed into the system, system will index to next position (assumed empty) and current position will be set to 1.
6. If an alarm is active when the last container is filled, the system will switch to pause mode and await user interaction.
7. When an alarm is active, by pressing the stop button once will deactivate the alarm, set current position to 1 and system will continue to cycle.
8. When an alarm is active, by pressing the stop button twice will put the system in Stop mode.
9. By pressing the ADV while in Run mode, the system "depending on alarm status" will index next empty container into place and set the current position to next value.

Note: At any time the system can be stopped by pressing the Stop pushbutton on the Run screen, or by hitting the E-Stop on the controller. Hitting the E-Stop will cut off all power

Starting Position

Starting Position

The first time the Run Mode is activated after power-up the carousel remains at its present position (i.e. that position is assumed to be Position 01).

Otherwise the carousel will advance one position each time a fill cycle is started (or automatically restarted at the end of the cycle).

End of Cycle

End of Cycle

After the last container is filled, if either alarm is active the system exits **Run** mode and switches to **Pause** mode and awaits operator action.

If neither alarm is active the system advances to Position 01 and starts a new fill cycle.

Emergency Stop and Recovery

Emergency Stop

If the front panel E-STOP button is depressed all drives (motor and alarm outputs) are switched off and system will need reset.

To reset the system, the operator must release the E-STOP switch then hit the touch screen start button to start cycle.

External Connections

A: Part Count Input (4-pin Conxall)

Pin #	Signal	Relay/Terminal Block #
1	+24V	IR4 "A1"
2	-24V	IR4 "A2"
3	+110V	Terminal Block "1"
4	Part Count	IR3 "A1"

B: Alarm #1 Output (3-pin Conxall)

Pin #	Signal	Relay/Terminal Block #
1	115 VAC line (when alarm active)	IR1 "14"
2	Earth ground	Terminal Block "G"
3	Neutral	Terminal Block "L2"

C: Alarm #2 Output (2-pin Conxall)

Pin #	Signal	Relay #
1	Connected together through relay contacts when Alarm 2 signal is active	IR2 "11"
2		IR2 "14"

D: Position Input (5-pin Conxall)

Pin #	Carousel System signal	PLC/Terminal Block #
1	-	-
2	+110V	Terminal Block "1"
3	-	-
4	-	-
5	Switch Signal	PLC Input "X0"

E: Conveyor Motor Drive (Hubbell Connector)

Signals	Hubbell connector	Relay/Terminal Block #
115 VAC line	Brass	CR2 "14"
Earth ground	Center	Terminal Block "G"
Neutral	Tin	Terminal Block "L2"

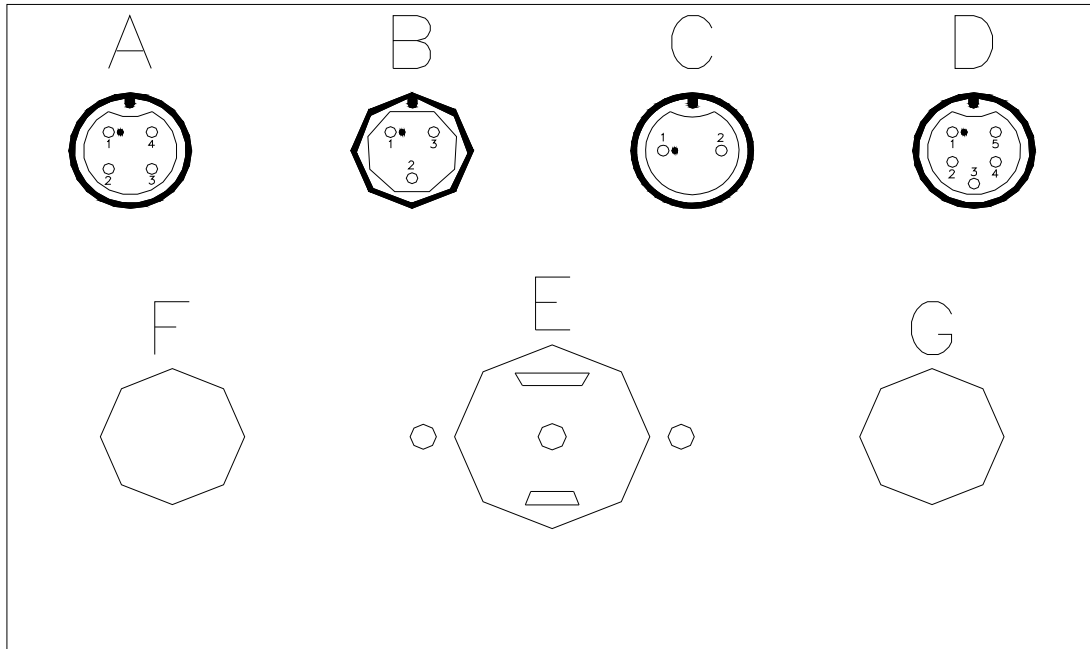
F: AC Main Input Power (Cord Grip)

Signals	Terminal Block #
115 VAC line	Terminal Block "L1"
Earth ground	Terminal Block "G"
Neutral	Terminal Block "L2"

G: Carousel Motor Drive (Cord Grip)

Carousel System signals	Terminal Block #
Switched 110 VAC line	Terminal Block "21"
Earth ground	Terminal Block "G"
Neutral	Terminal Block "L2"

External Connection Receptacle Layout



NOTE: Pin number 1 is identified by the small black indicator bump

Mating Connectors

	Connector	Manufacturer & style	Manuf part #
A	Part Count	Conxall Mini-Con-X 4-pin	6282-4PG-3DC
B	Alarm 1	Conxall Mini-Con-X 3-pin	6282-3PG-3DC
C	Alarm 2	Conxall Mini-Con-X 2-pin	6282-2PG-3DC
D	Position Switch	Conxall Mini-Con-X 5-pin	6282-5PG-3DC
E	Conveyor drive	Hubbell twist lock plug	HBL7594V
F	AC input	Directly wired through cord grip	
G	Carousel motor	Directly wired through cord grip	

SPARE PARTS LIST

Pos.	Description	Order #	Recommended Spare Parts
1	Control Box enclosure	CS 01	
2	Mounting post control box	CS 02	
3	Support base for platform	CS 03	
4	Rotating platform (Ø refer to QC-CS 04 sheet)	CS 04	
5	Gearmotor - (refer to QC-sheet)	CS 05	
6	Motor drive sprocket Ø 150mm Z=23	CS 06	
7	3 prong Receptacle feeding device	CS 07	
8	Motor mounting plate	CS 08	
9	Support post rotating platform	CS 09	
10	Thrust bearing 51110	CS 10	
11	Metal ring Ø 150 mm - p=1.5mm	CS 11	
12	Micro switch	CS 12	
13	Nylon wheel Ø 50 mm	CS 13	
14	Washer Ø 10-30mm	CS 14	
15	Lock washer Ø 10 mm	CS 15	
16	Locking caster Ø 80 mm	CS 16	
17	Hex head screw, TE M6 x 20	CS 17	
18	Screw, B M8 x 15	CS 18	
19	Screw, TC M5 x 30	CS 19	
20	Hex head screw, TE M8 x 35	CS 20	
21	Hex head screw, TE M8 x 15	CS 21	
22	Screw, TC M4 x 12	CS 22	
23	Screw, TC M4 x 20	CS 23	
24	(3) Prong connector	CS 24	
24 A	(2) Prong connector	CS 24 A	
25	Post for bag holder	CS 25	
26	Steel ring bag holder	CS 26	
27	Pin with plastic ball	CS 27	
28	Safety pin	CS 28	
29	Nut, M10	CS 29	
30	Shaft for nylon wheel, Ø 27 mm	CS 30	
31	Steel rim Ø 585 mm Z = 98	CS 31	
32	Hex head screw, TE M10 x 25	CS 32	
33	Washer Ø 10 mm	CS 33	
34	Nut, M6	CS 34	
35	Washer, Ø 6 mm	CS 35	
36	Washer Ø 8 - 55 mm	CS 36	
37	Nut, M8	CS 37	
38	Hex head screw, TE M8 x 60	CS 38	
39	Washer Ø 8 mm	CS 39	
40	Washer Ø 5 mm	CS 40	
41	Nut, M5	CS 41	
42	Visual & acoustic alarm unit	CS 42	

HOW TO ORDER SPARE PARTS

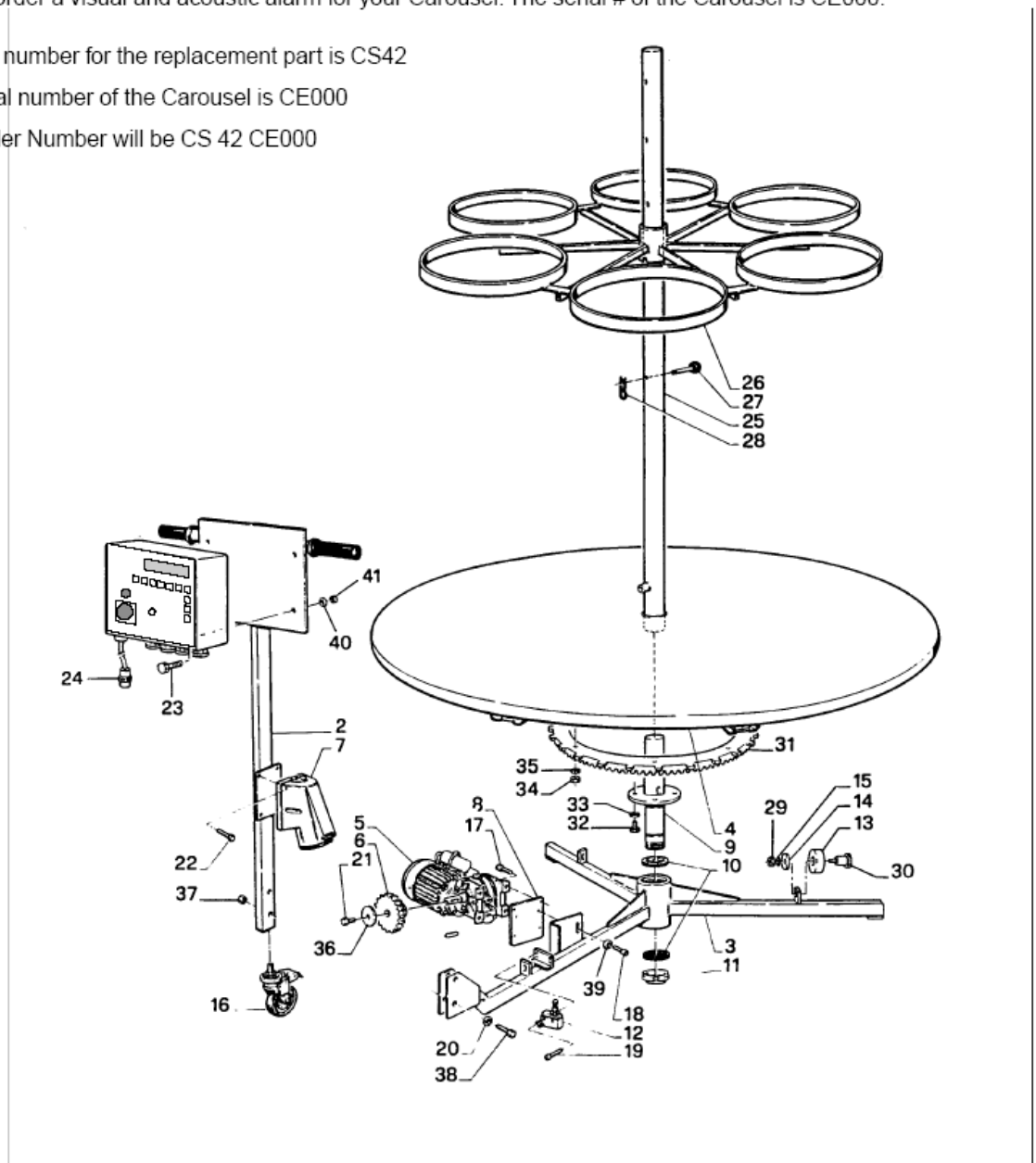
To determine the spare part Order Number for your Carousel

- Identify the part you need from the drawing below.
- Note the part number on the drawing.
- Identify the name of the part and the Order Number from the spare parts list.
- Add the serial number of the Carousel.

Example:

You want to order a visual and acoustic alarm for your Carousel. The serial # of the Carousel is CE000.

- The part number for the replacement part is CS42
- The serial number of the Carousel is CE000
- Your Order Number will be CS 42 CE000



PREVENTIVE MAINTENANCE

The CC/CS carousel is essentially maintenance free. However, a few easy preventive maintenance steps can significantly increase the lifetime of the carousel.

1. Lubricate the sprocket wheel once every 6 months with common industrial grease.
2. Keep the carousel clean! Moving parts, such as the motor sprocket and sprocket wheel can create an additional load on the motor if they are not kept clean. Do not use harsh cleaners or alcohol. Use common household cleaner with warm water.
3. Check sprockets on a regular basis to be sure there are no plastic parts caught.
4. In order to prevent excess stress on the motor, it is important to check to see that the sprocket of the reducer is not binding with the platform sprocket wheel. Check to see that there is a little bit of 'play' between the sprocket and the wheel. If it is too tight, loosen the four bolts holding the gear reducer and slide it down slightly to increase the gap.

WARNING

THIS CAROUSEL IS DESIGNED TO OPERATE IN A REASONABLY CLEAN, DUST-FREE AND MOISTURE-FREE INDUSTRIAL ENVIRONMENT !!! OPERATING THE CAROUSEL IN A WET ENVIRONMENT OR IN THE PRESENCE OF OIL, METAL SHAVINGS, ETC., IS DANGEROUS FOR THE OPERATOR !! THIS MAY CAUSE DAMAGE TO THE CAROUSEL AND VOID THE WARRANTY !! DO NOT STAND ON THE CAROUSEL !