

# User manual



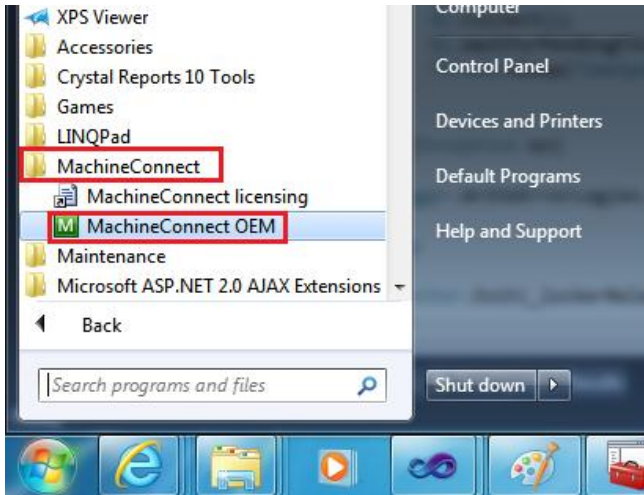
OEM Edition

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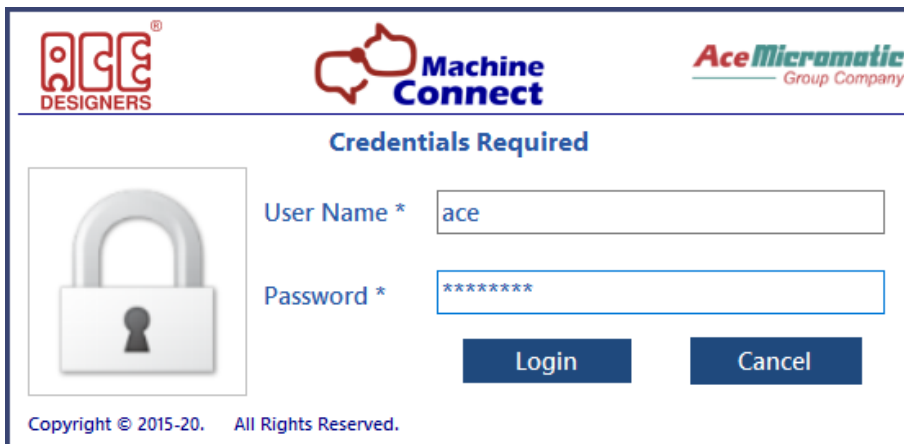
## Application Launch and Login

Go to Windows -> Start -> All Programs -> MachineConnect and Click on “MachineConnectOEM” to open the application.



Enter the **user id** and **password** in Login screen to access the application. Two users are pre-defined in the application.

- Admin User:** User id is 'admin' and Password is 'admin\$4321'
- Normal User:** User id is 'ace' and Password is 'ace\$1234'

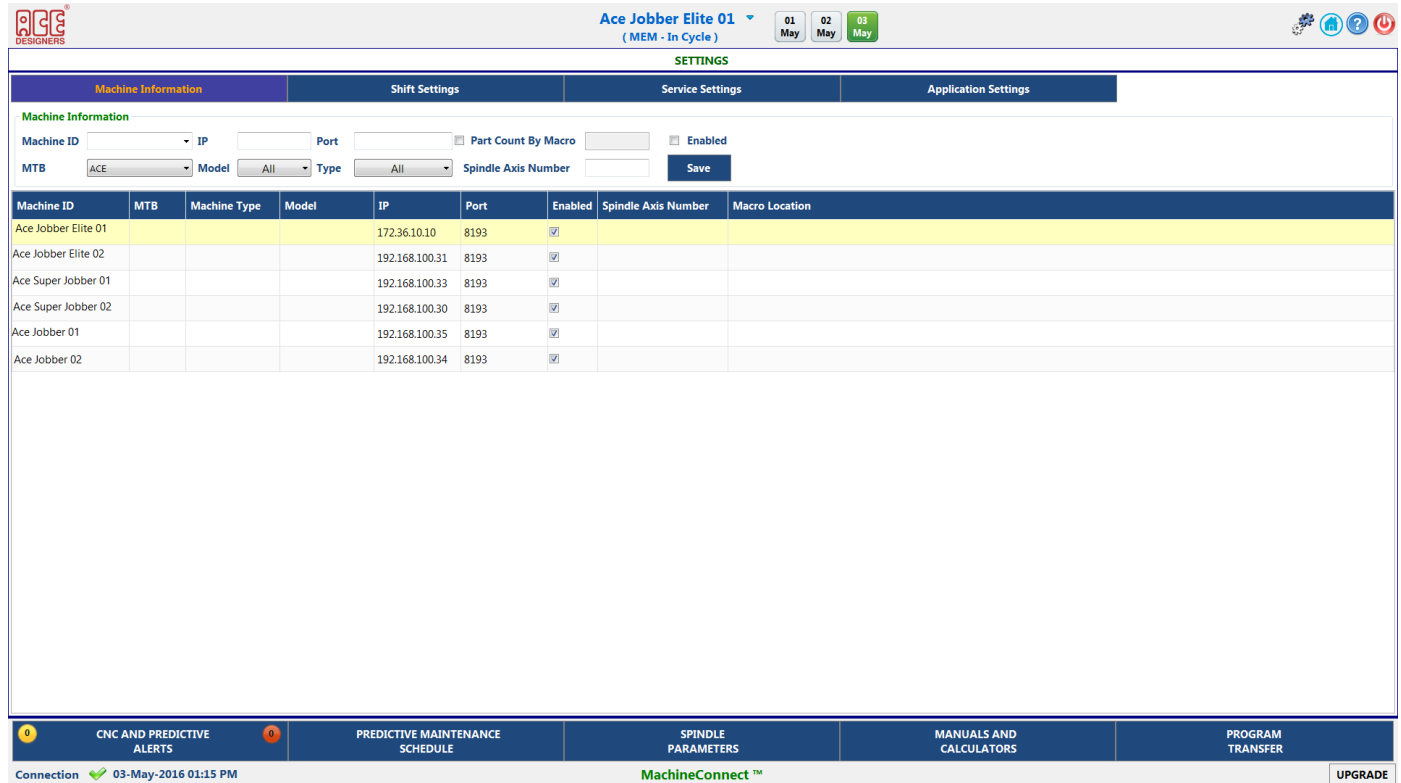


The login screen features the ACE DESIGNERS, Machine Connect, and AceMicromatic Group Company logos at the top. Below the logos, the text 'Credentials Required' is displayed. On the left, there is a large padlock icon. To the right of the padlock, there are two input fields: 'User Name \*' with the value 'ace' and 'Password \*' with masked characters '\*\*\*\*\*'. Below these fields are two buttons: 'Login' and 'Cancel'. At the bottom left, the copyright notice 'Copyright © 2015-20. All Rights Reserved.' is visible.

## Settings

Setting option is available at the top right corner of the Home screen. Under this option, following features are available:

### Machine information



**Machine Information**

Machine ID: Ace Jobber Elite 01 IP: 172.36.10.10 Port: 8193 ☐ Part Count By Macro ☐ Enabled ☒ Save

Machine ID	MTB	Machine Type	Model	IP	Port	Enabled	Spindle Axis Number	Macro Location
Ace Jobber Elite 01				172.36.10.10	8193	<input checked="" type="checkbox"/>		
Ace Jobber Elite 02				192.168.100.31	8193	<input checked="" type="checkbox"/>		
Ace Super Jobber 01				192.168.100.33	8193	<input checked="" type="checkbox"/>		
Ace Super Jobber 02				192.168.100.30	8193	<input checked="" type="checkbox"/>		
Ace Jobber 01				192.168.100.35	8193	<input checked="" type="checkbox"/>		
Ace Jobber 02				192.168.100.34	8193	<input checked="" type="checkbox"/>		

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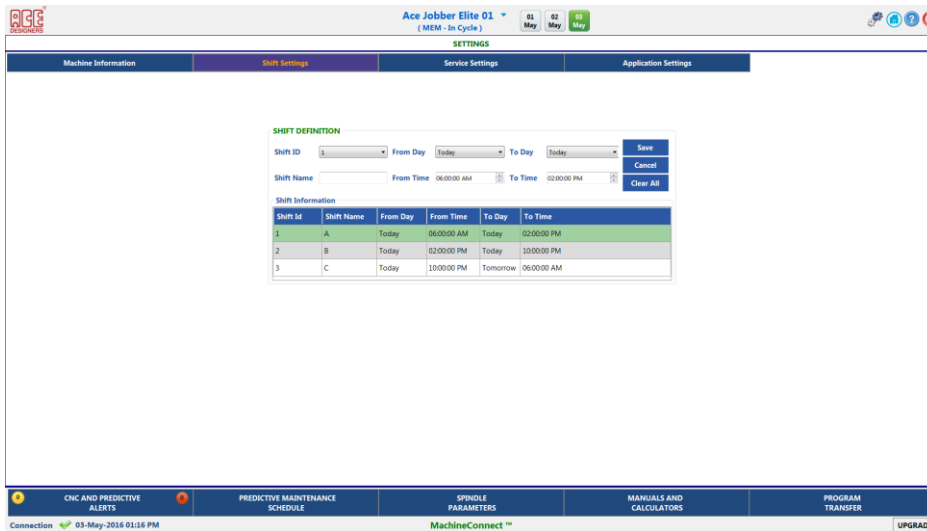
Machine information option as shown above, is used for **adding** or **modifying** machine related information. Information such as machine name, manufacturer, model of the machine etc. is required to be populated properly.

IP address and Port number should be match with the values configured at the machine.

Please refer to the section [Machine configuration](#). 'Enabled' option should be selected.

## Shift Definition

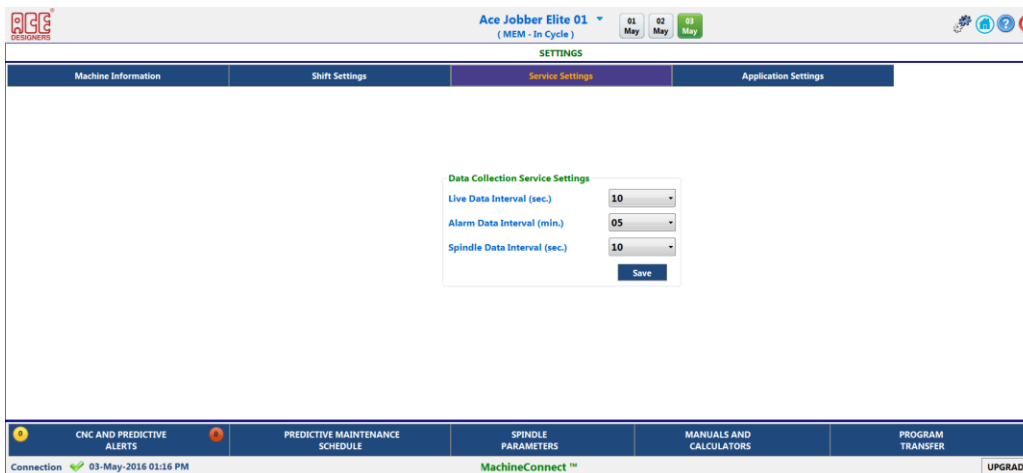
This facility allows the user to define his shift timings. By default, 8 hour shifts are defined.



Shift Id	Shift Name	From Day	From Time	To Day	To Time
1	A	Today	06:00:00 AM	Today	02:00:00 PM
2	B	Today	02:00:00 PM	Today	10:00:00 PM
3	C	Today	10:00:00 PM	Tomorrow	06:00:00 AM

## Service Settings

Time interval values for polling different data can be defined here.



Data Collection Service Settings

Live Data Interval (sec.) 10

Alarm Data Interval (min.) 05

Spindle Data Interval (sec.) 10

Save

### Live data Interval

This defines the frequency of reading data for *Live data*, by default this is set to 10 seconds. For longer cycles, say, more than 10 minutes, this value can be increased to 20 or 30 seconds. Please note that if this value is low, then the MachineConnect software reads data more frequently, which will increase the stored data.

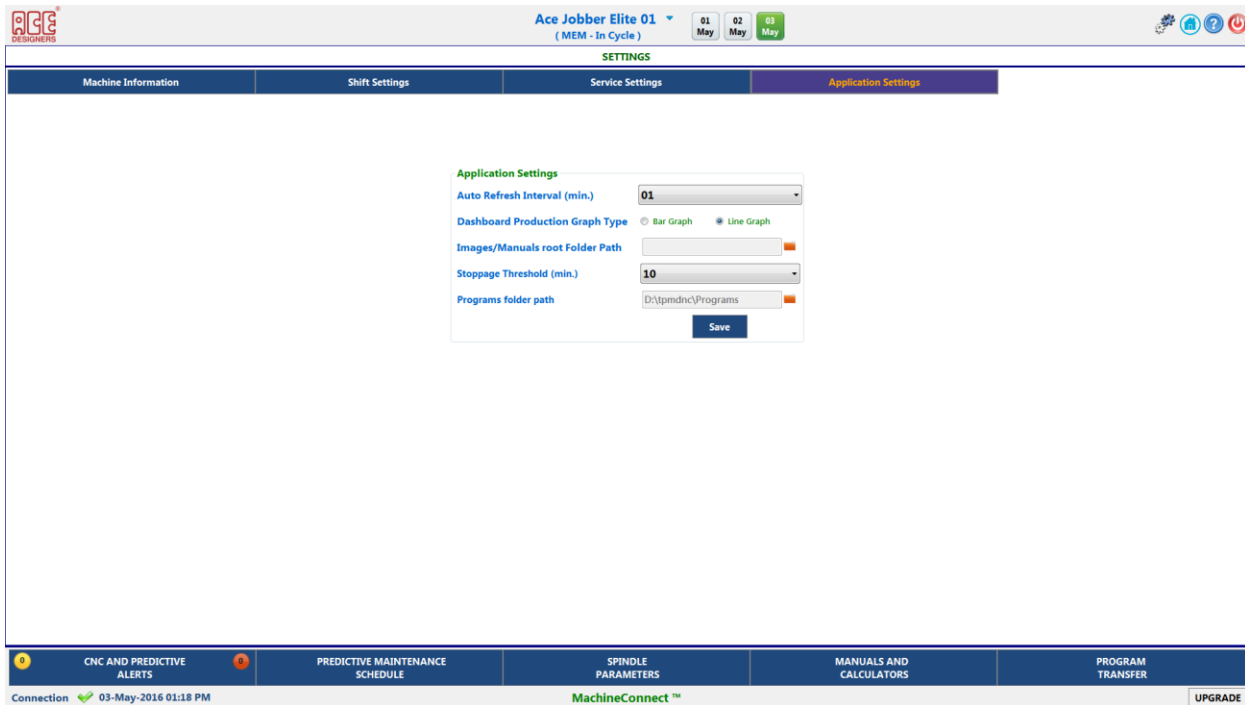
### Alarm Data interval

This defines the frequency of reading *Alarms* data. It is recommended to set this interval to a value more than 10 minutes.

### Spindle Data read

This defines the frequency of reading *Spindle* data. Lowest value is 10 sec.

## Application settings



Under Application Settings, options are available to configure the following:

### Auto Refresh Interval

Based on this value, the home screen data is refreshed, minimum value is 1 minute.

### Dashboard of production Graph

Graph type for production graph in the home screen (Bar graph or Line graph)

### Images/manuals root folder path

Root folder path to store Images and Manuals. By default, this folder will be created under Application folder. If you would like to specify a shared folder, you could choose to do so.

### Stoppage threshold

Spindle stoppages more than this value, are shown as Machine Stoppage in the home screen. Minimum value is 5 minutes.

### Programs folder path

Root folder path under which programs are stored. This folder will have several folders, one for each Machine under which the programs meant for that machine will reside.

## Home screen



The main or home screen, displays following data up to 24 Hours, for the day selected. Three days of data will be visible in this screen.

- i. **Hourly count:** Bar graph of cycle count by hour with Program number.
- ii. **Time analysis:** for the available data, time is split into:

**Power ON/OFF time:** Total time the machine is Powered ON.

**Operating / Non-operating time:** In the total power ON time, Operating time means, cumulated value of time during automatic operation (Auto Mode), *both Stop and Hold times are excluded.*

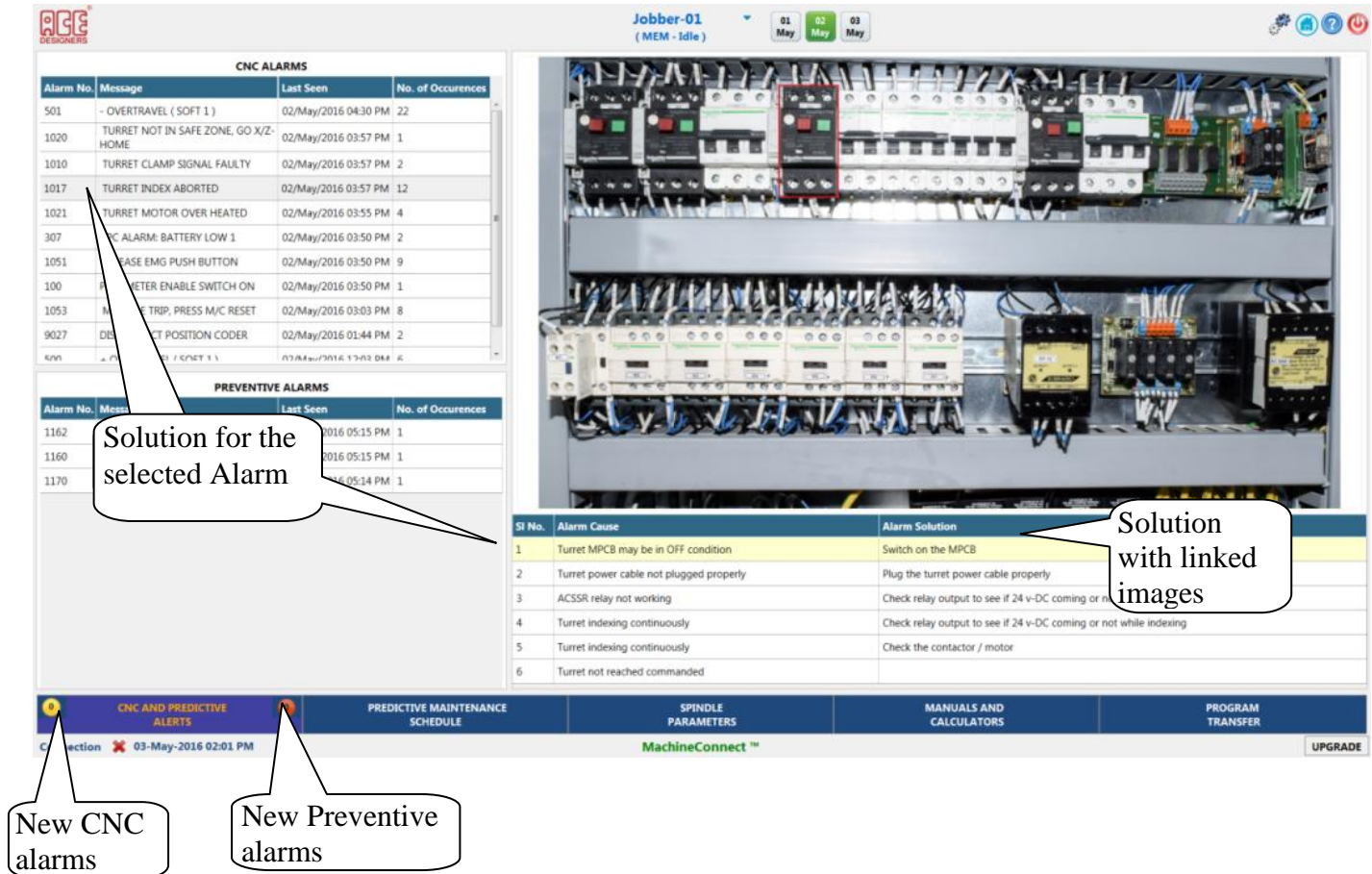
**Cutting / Non-cutting time:** Indication of Cutting time in total Operating time - Cutting time means accumulated time in cutting feed such as linear interpolation (G01) and circular interpolation (G02 OR G03), OR this value is the summation of cutting G codes.

- iii. **Run Chart:** Uptime, down times shown in a graphical way in a time line.
- iv. **Hourly Run times:** The time analysis as explained in point ii is shown for each hour to indicate the time split (Power ON, Operating and Cutting times)
- v. **Stoppages:** Machine stoppages indicates the inactive time of the machine, These stoppages indicates for those duration machine is stopped (no activity of spindle in Auto mode)

## Alerts (CNC & Predictive Alarms)

### CNC Alerts OR Alarms

MachineConnect will provide a first level trouble shooting help through relevant images for critical alarms. Once the alarm occurs, the alert will be indicated in the Home Screen on the "CNC AND PREDICTIVE ALERTS" tab, through a number notification, user has to click the button to find the new alarms.



**CNC ALARMS**

Alarm No.	Message	Last Seen	No. of Occurrences
501	- OVERTRAVEL ( SOFT 1 )	02/May/2016 04:30 PM	22
1020	TURRET NOT IN SAFE ZONE, GO X/Z-HOME	02/May/2016 03:57 PM	1
1010	TURRET CLAMP SIGNAL FAULTY	02/May/2016 03:57 PM	2
1017	TURRET INDEX ABORTED	02/May/2016 03:57 PM	12
1021	TURRET MOTOR OVER HEATED	02/May/2016 03:55 PM	4
307	DC ALARM: BATTERY LOW 1	02/May/2016 03:50 PM	2
1051	EMG PUSH BUTTON	02/May/2016 03:50 PM	9
100	EMG ENABLE SWITCH ON	02/May/2016 03:50 PM	1
1053	EMG TRIP, PRESS M/C RESET	02/May/2016 03:03 PM	8
9027	DETECT POSITION CODER	02/May/2016 01:44 PM	2
400	...	...	...

**PREVENTIVE ALARMS**

Alarm No.	Message	Last Seen	No. of Occurrences
1162	...	2016 05:15 PM	1
1160	...	2016 05:15 PM	1
1170	...	2016 05:14 PM	1

**Alarm Solution**

SI No.	Alarm Cause	Alarm Solution
1	Turret MPCB may be in OFF condition	Switch on the MPCB
2	Turret power cable not plugged properly	Plug the turret power cable properly
3	ACSSR relay not working	Check relay output to see if 24 v-DC coming or not
4	Turret indexing continuously	Check relay output to see if 24 v-DC coming or not while indexing
5	Turret indexing continuously	Check the contactor / motor
6	Turret not reached commanded	

After clicking on alarm text at the left side of the screen, solution part (at the right side of the screen) is displayed.

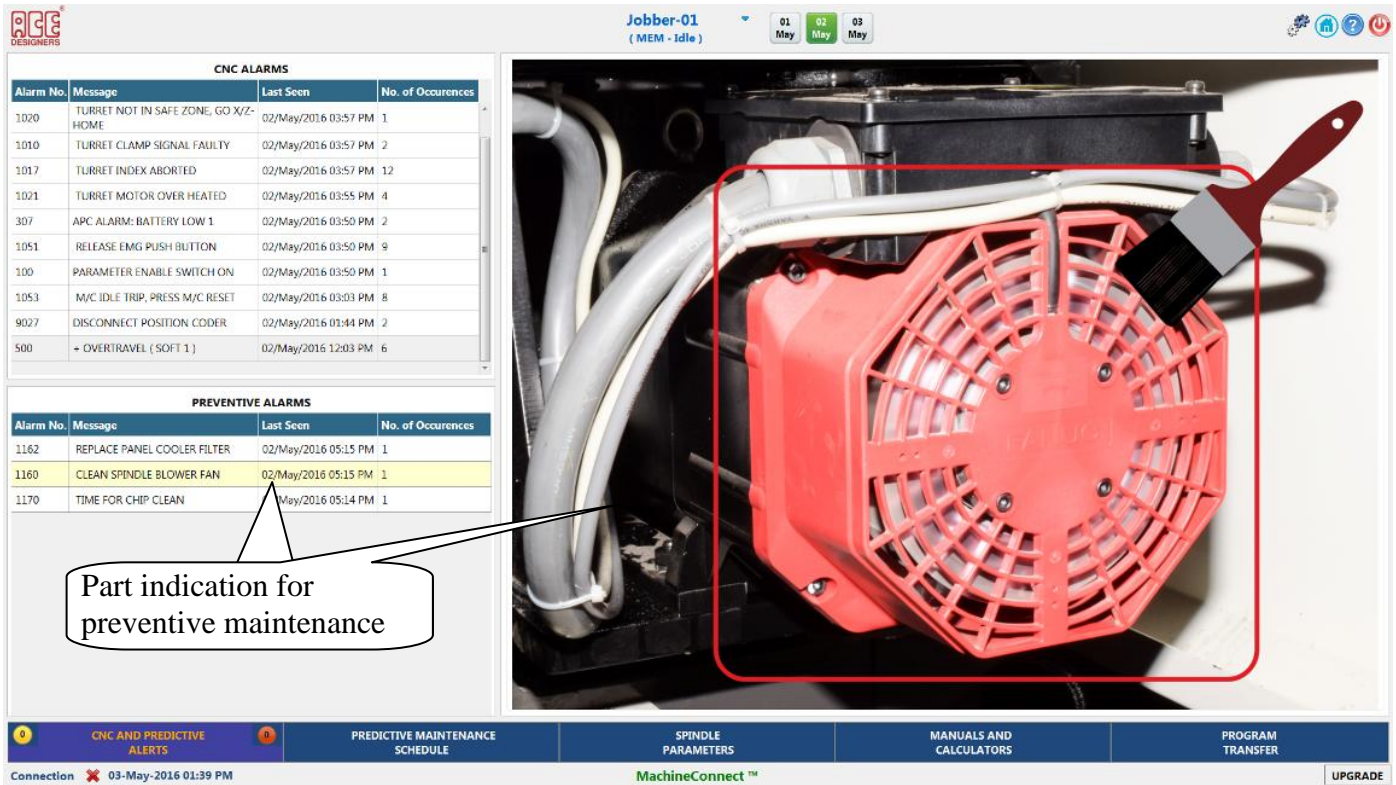
If the solution is having multiple steps/reasons, then the steps/solution will be displayed below the image part, by clicking each step one can see the image corresponding to the next step.



## Preventive alerts

Preventive alerts can be configured in CNC machine to take up the preventive maintenance activities to avoid the breakdowns.

The second part of the screen below displays these preventive alerts



The screenshot displays the MachineConnect interface. On the left, there are two tables: 'CNC ALARMS' and 'PREVENTIVE ALARMS'. The 'PREVENTIVE ALARMS' table has a yellow highlight on the row with Alarm No. 1160, 'CLEAN SPINDLE BLOWER FAN'. A callout bubble points to this row with the text 'Part indication for preventive maintenance'. On the right, a photograph shows a red, octagonal spindle blower fan with a red brush pointing to it, enclosed in a red rectangular box. The interface also shows a top bar with 'Jobber-01 (MEM - Idle)' and a bottom bar with navigation options like 'CNC AND PREDICTIVE ALERTS', 'PREDICTIVE MAINTENANCE SCHEDULE', 'SPINDLE PARAMETERS', 'MANUALS AND CALCULATORS', and 'PROGRAM TRANSFER'.

Alarm No.	Message	Last Seen	No. of Occurrences
1020	TURRET NOT IN SAFE ZONE, GO X/Z-HOME	02/May/2016 03:57 PM	1
1010	TURRET CLAMP SIGNAL FAULTY	02/May/2016 03:57 PM	2
1017	TURRET INDEX ABORTED	02/May/2016 03:57 PM	12
1021	TURRET MOTOR OVER HEATED	02/May/2016 03:55 PM	4
307	APC ALARM: BATTERY LOW 1	02/May/2016 03:50 PM	2
1051	RELEASE EMG PUSH BUTTON	02/May/2016 03:50 PM	9
100	PARAMETER ENABLE SWITCH ON	02/May/2016 03:50 PM	1
1053	M/C IDLE TRIP, PRESS M/C RESET	02/May/2016 03:03 PM	8
9027	DISCONNECT POSITION CODER	02/May/2016 01:44 PM	2
500	+ OVERTRAVEL ( SOFT 1 )	02/May/2016 12:03 PM	6

Alarm No.	Message	Last Seen	No. of Occurrences
1162	REPLACE PANEL COOLER FILTER	02/May/2016 05:15 PM	1
1160	CLEAN SPINDLE BLOWER FAN	02/May/2016 05:15 PM	1
1170	TIME FOR CHIP CLEAN	02/May/2016 05:14 PM	1

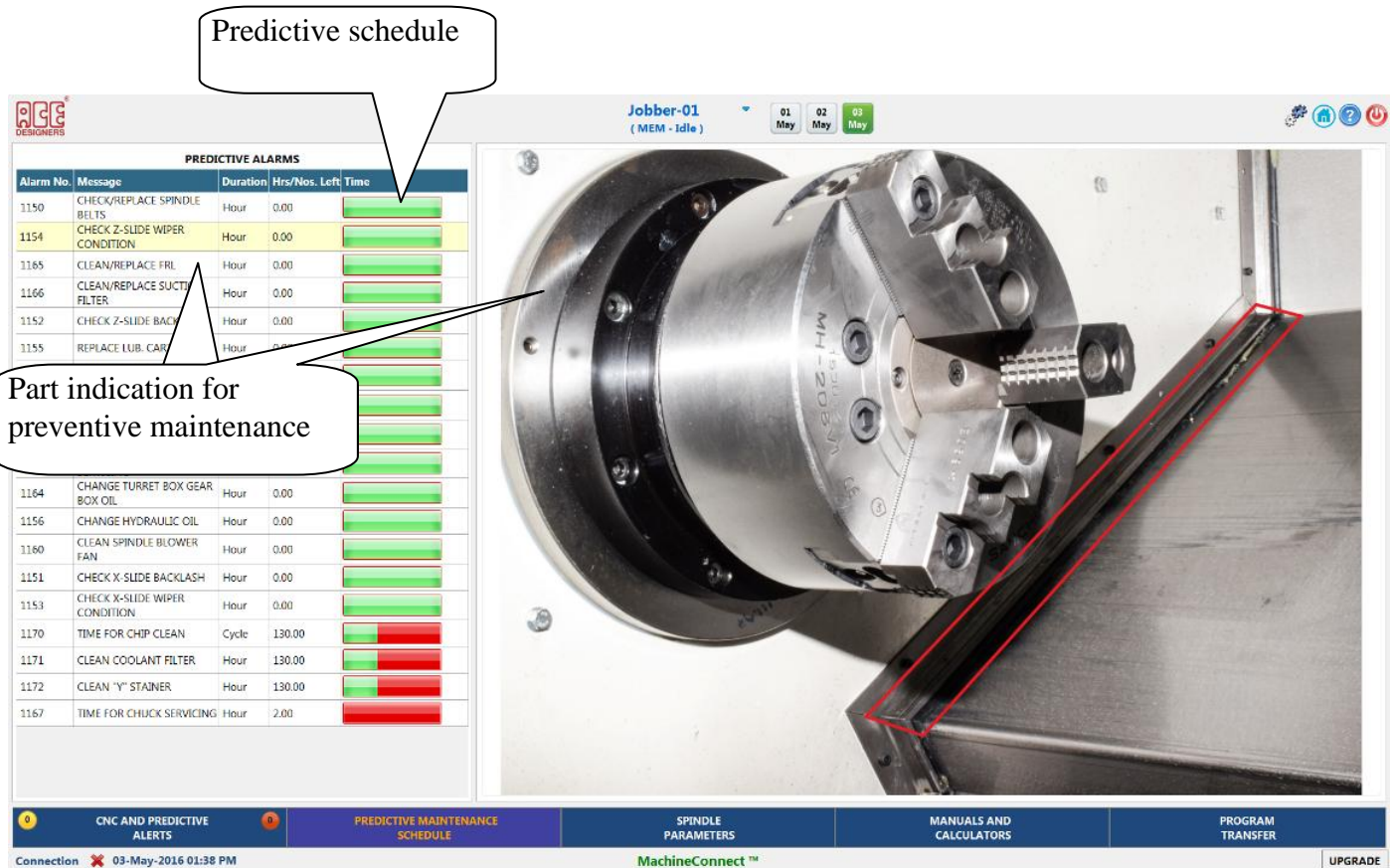
As shown above, left side will display the preventive alert and right pane of the screen will display the relevant part of the machine which needs action according to the message displayed.

## Predictive maintenance schedule

Machine manufacturer would have recommended a preventive maintenance schedule in the machine to ensure trouble free running of the machine; these alerts are displayed in the machine based on a schedule. The predictive maintenance screen will clearly show the information regarding the upcoming schedule of each predictive alert, as well as the type of schedule each alert has (time based or cycle based), so that user can plan the activity.

Predictive schedule

Part indication for preventive maintenance



Alarm No.	Message	Duration	Hrs/Nos.	Left Time
1150	CHECK/REPLACE SPINDLE BELTS	Hour	0.00	
1154	CHECK Z-SLIDE WIPER CONDITION	Hour	0.00	
1165	CLEAN/REPLACE FRL	Hour	0.00	
1166	CLEAN/REPLACE SUCTION FILTER	Hour	0.00	
1152	CHECK Z-SLIDE BACKLASH	Hour	0.00	
1155	REPLACE LUB. CARTRIDGE	Hour	0.00	
1164	CHANGE TURRET BOX GEAR BOX OIL	Hour	0.00	
1156	CHANGE HYDRAULIC OIL	Hour	0.00	
1160	CLEAN SPINDLE BLOWER FAN	Hour	0.00	
1151	CHECK X-SLIDE BACKLASH	Hour	0.00	
1153	CHECK X-SLIDE WIPER CONDITION	Hour	0.00	
1170	TIME FOR CHIP CLEAN	Cycle	130.00	
1171	CLEAN COOLANT FILTER	Hour	130.00	
1172	CLEAN Y-STAINER	Hour	130.00	
1167	TIME FOR CHUCK SERVICING	Hour	2.00	

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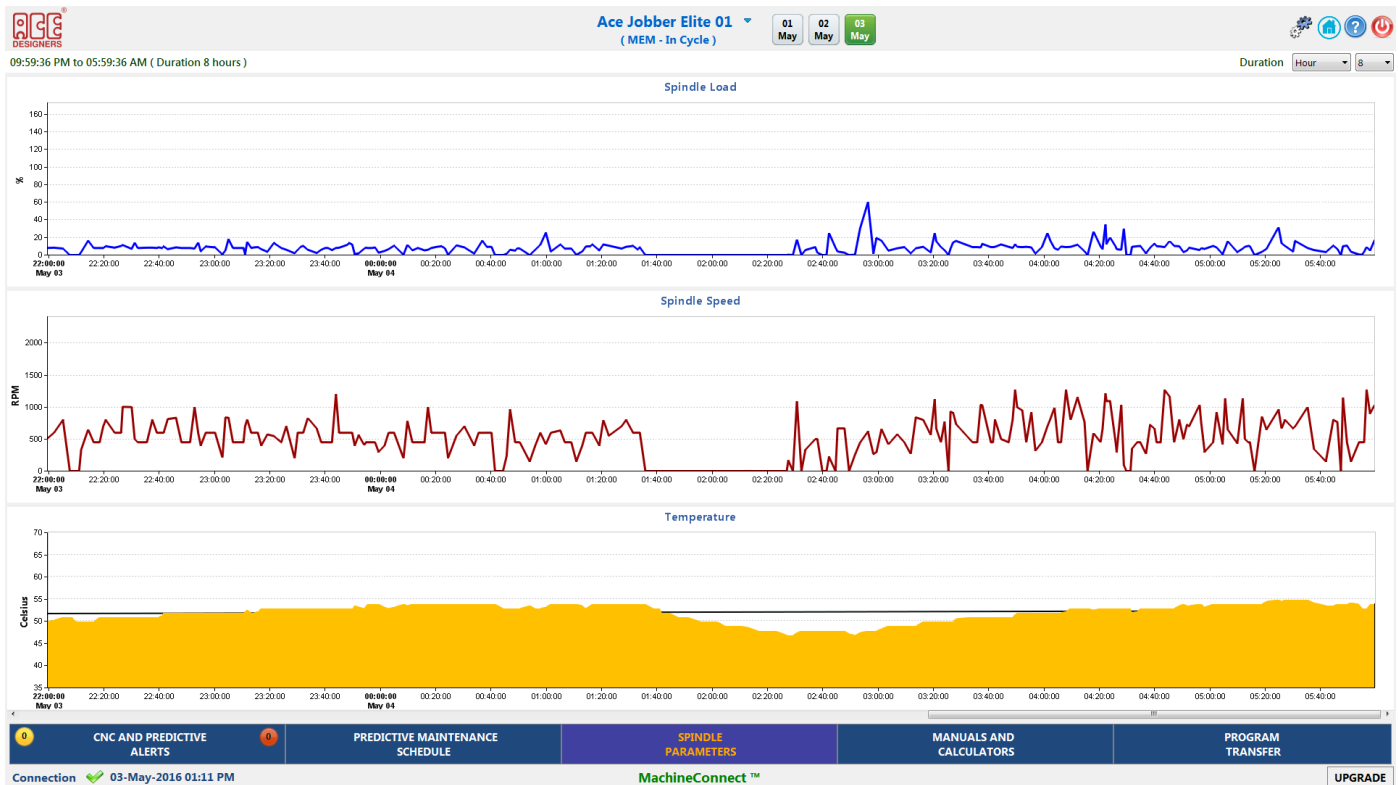
## Spindle Parameters

Following Spindle parameters will be displayed:

**Spindle Load:** This value indicates the percentage of load on the main spindle.

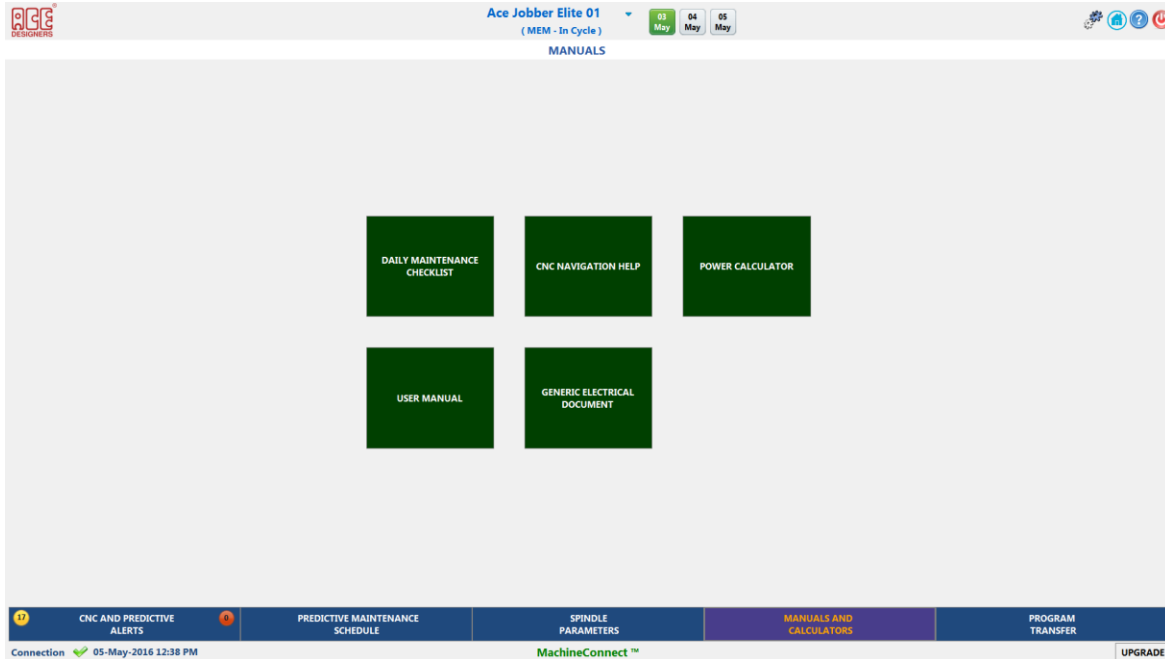
**RPM:** This value indicates the RPM of main spindle.

**Temperature:** This value indicates the temperature of the spindle motor in Deg Celsius.



## Manuals & Calculators

This module of machine connect will provide the access to following calculators / soft copies of important documents (pdf).



## Daily Maintenance Check list

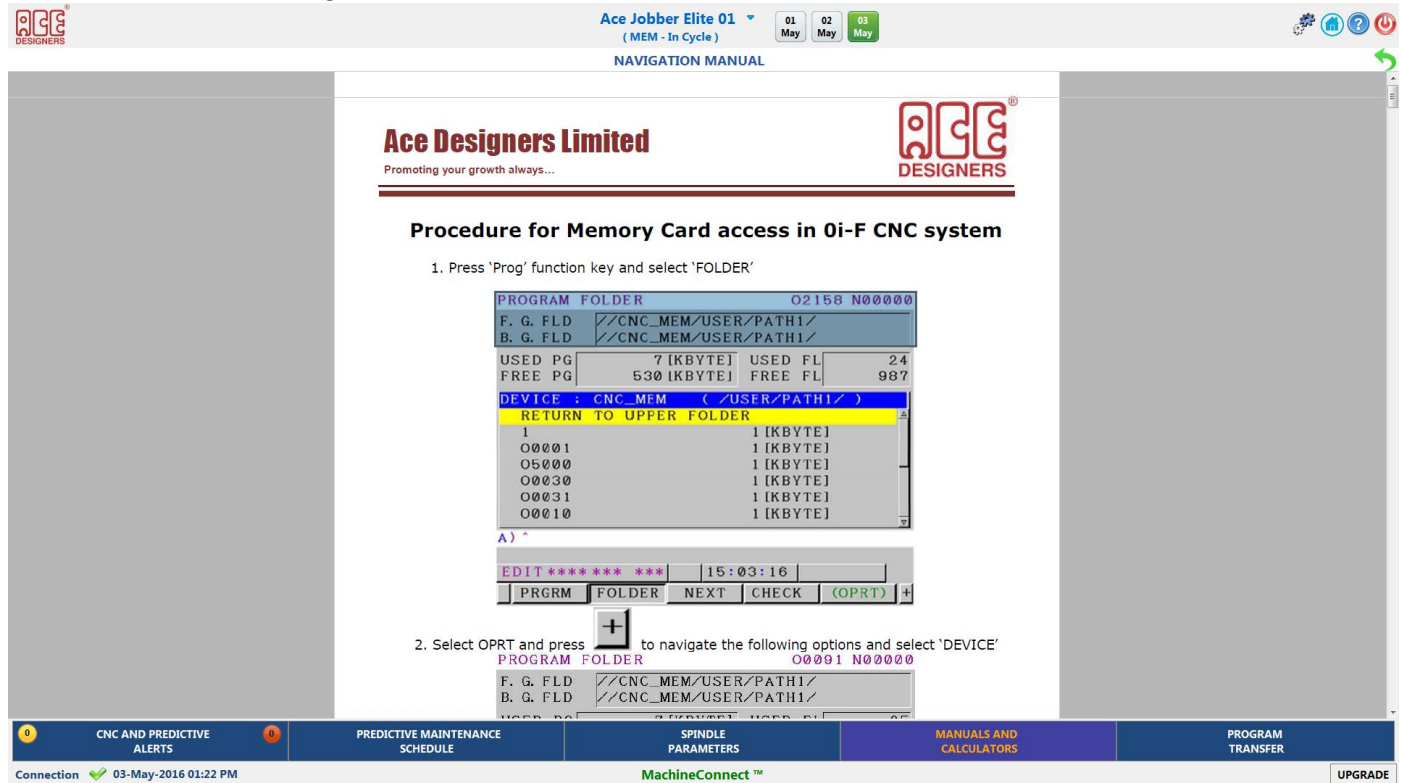
This list contains items that need to be checked frequently in the machine to ensure trouble-free operation, as recommended by machine manufacturer.



S.No.	Description	Frequency	Method
1	LUB OIL PRESSURE (22 TO 32 BAR)	DAILY ONCE	VISUAL
2	LUB OIL	DAILY ONCE	VISUAL
3	HYDRAULIC OIL LEVEL & CONDITION	ONCE IN SIX MONTHS	VISUAL
4	HYDRAULIC SYSTEM PRESSURE (20 BAR)	DAILY ONCE	PUSH TO READ PR GAUGE
5	CHECK CLAMPING PRESSURE	DAILY ONCE	PUSH TO READ PR GAUGE
6	COOLANT LEVEL IN COOLANT TANK	DAILY ONCE	VISUAL LEVEL INDICATOR
7	COOLANT CONDITION MONITORING	WEEKLY ONCE	VISUAL (CHECK LUB OIL MIXING)
8	WORK-HOLDING GREASING	EVERY SHIFT	GREASE GUN
9	OIL LEVEL IN CHIP CONVEYOR GEAR BOX	MONTHLY ONCE	VISUAL SIGHT GLASS
10	OIL / COOLANT LEAKAGE IN FITTING	EVERY SHIFT	VISUAL
11	CHECK AIR PRESSURE ( 4 BAR)	EVERY SHIFT	PR GAUGE ON FIL UNIT
12	LUBRICATOR HOSE CONDITION	DAILY ONCE	VISUAL
13	SPINDLE BELT CONDITION, BELT TENSION	DAILY ONCE	TENSOMETER / FEEL BY HAND
14	CLEAN SPINDLE LUBRICATION HOLES	QUARTLY ONCE	BY PW
15	SPINDLE MOTOR BLOWER FAN	DAILY ONCE	VISUAL
16	DRIVE COOLING FAN (PUMPING)	DAILY ONCE	VISUAL
17	OVERALL CLEANING	DAILY ONCE	HAND BRUSH / CLOTH
18	TURRET OIL LEVEL	MONTHLY ONCE	VISUAL SIGHT GLASS
19	TALSTOCK PRESSURE	DAILY ONCE	PUSH TO READ PR GAUGE
20	RETURN LINE FILTER	MONTHLY ONCE	CLOG INDICATOR

## CNC Navigation Help

CNC Navigation help document guides the user to navigate through different options in the CNC for regular usage as well as for trouble-shooting.



**Ace Jobber Elite 01** (MEM - In Cycle) 01 May 02 May 03 May

NAVIGATION MANUAL

**Ace Designers Limited**  
Promoting your growth always...

**Procedure for Memory Card access in Oi-F CNC system**


- Press 'Prog' function key and select 'FOLDER'

PROGRAM FOLDER		O2158 N00000	
F. G. FLD	//CNC_MEM/USER/PATH1/		
B. G. FLD	//CNC_MEM/USER/PATH1/		
USED PG	7 [KBYTE]	USED FL	24
FREE PG	530 [KBYTE]	FREE FL	987
DEVICE : CNC_MEM ( /USER/PATH1/ )			
RETURN TO UPPER FOLDER			
1	1 [KBYTE]		
O0001	1 [KBYTE]		
O5000	1 [KBYTE]		
O0030	1 [KBYTE]		
O0031	1 [KBYTE]		
O0010	1 [KBYTE]		

A) ^

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PRGRM FOLDER NEXT CHECK (OPRT) H

- Select OPRT and press  to navigate the following options and select 'DEVICE'


PROGRAM FOLDER		O0001 N00000	
F. G. FLD	//CNC_MEM/USER/PATH1/		
B. G. FLD	//CNC_MEM/USER/PATH1/		

0 CNC AND PREDICTIVE ALERTS 0 PREDICTIVE MAINTENANCE SCHEDULE SPINDLE PARAMETERS MANUALS AND CALCULATORS PROGRAM TRANSFER

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## User manual and General electrical documentation

These are the manuals provided by the machine manufacturer for the end user to refer in the course of regular usage as well as in case of any maintenance.




**Ace Jobber Elite 01** (MEM - In Cycle) 01 May 02 May 03 May

User Manual

**Ace Designers Limited**

**Maintenance Manual**



ACE DESIGNERS LTD.,  
Plot No. 7 & 8, 2nd Phase,

0 CNC AND PREDICTIVE ALERTS 0 PREDICTIVE MAINTENANCE SCHEDULE SPINDLE PARAMETERS MANUALS AND CALCULATORS PROGRAM TRANSFER

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## Power Calculator

This is an important software tool, where the user can determine the feasibility of running a new part on the machine. The machine's *available power* will be calculated automatically, and based on user inputs (Material, Diameter etc.) the *required power* is calculated. If the *required power* is well within the limits of *available power* then it is safe to produce the part in the intended machine.

ACE DESIGNERS Ace Jobber Elite 01 (MEM - In Cycle) 01 May 02 May 03 May SIMPLE POWER CALCULATOR

**CUTTING CONDITIONS (Enter Input Values)**

Feed	f	mm/rev	0.3
Depth Of Cut	a <sub>p</sub>	mm	0.5
Diameter	D	mm	50
Cutting Speed	V <sub>c</sub>	m/min	100
Specific Cutting Force	K <sub>c</sub>	N/mm <sup>2</sup>	2500

Default Values Calculate

**REQUIRED POWER**

RPM	N	Rev/min	636.62
Torque	T	Nm	9.38
Power Required	P <sub>r</sub>	KW	0.69

**AVAILABLE POWER**

			Standard @ 1000 RPM	Calculated @ 636.62 RPM
Continuous Power	P <sub>ac</sub>	Kw	5.5	3.5
15 Mins. Power	P <sub>as</sub>	Kw	7.5	4.77
Continuous Torque	T <sub>ac</sub>	Nm	36	54
15 Mins. Torque	T <sub>as</sub>	Nm	48	72

Input required from user

ACE DESIGNERS MachineConnect™ Ace Jobber Elite 01 (MEM - In Cycle) 01 May 02 May 03 May SIMPLE POWER CALCULATOR

**CUTTING CONDITIONS (Enter Input Values)**

Feed	f	mm/rev	0.9
Depth Of Cut	a <sub>p</sub>	mm	0.9
Diameter	D	mm	50
Cutting Speed	V <sub>c</sub>	m/min	100
Specific Cutting Force	K <sub>c</sub>	N/mm <sup>2</sup>	2500

Default Values Calculate

**REQUIRED POWER**

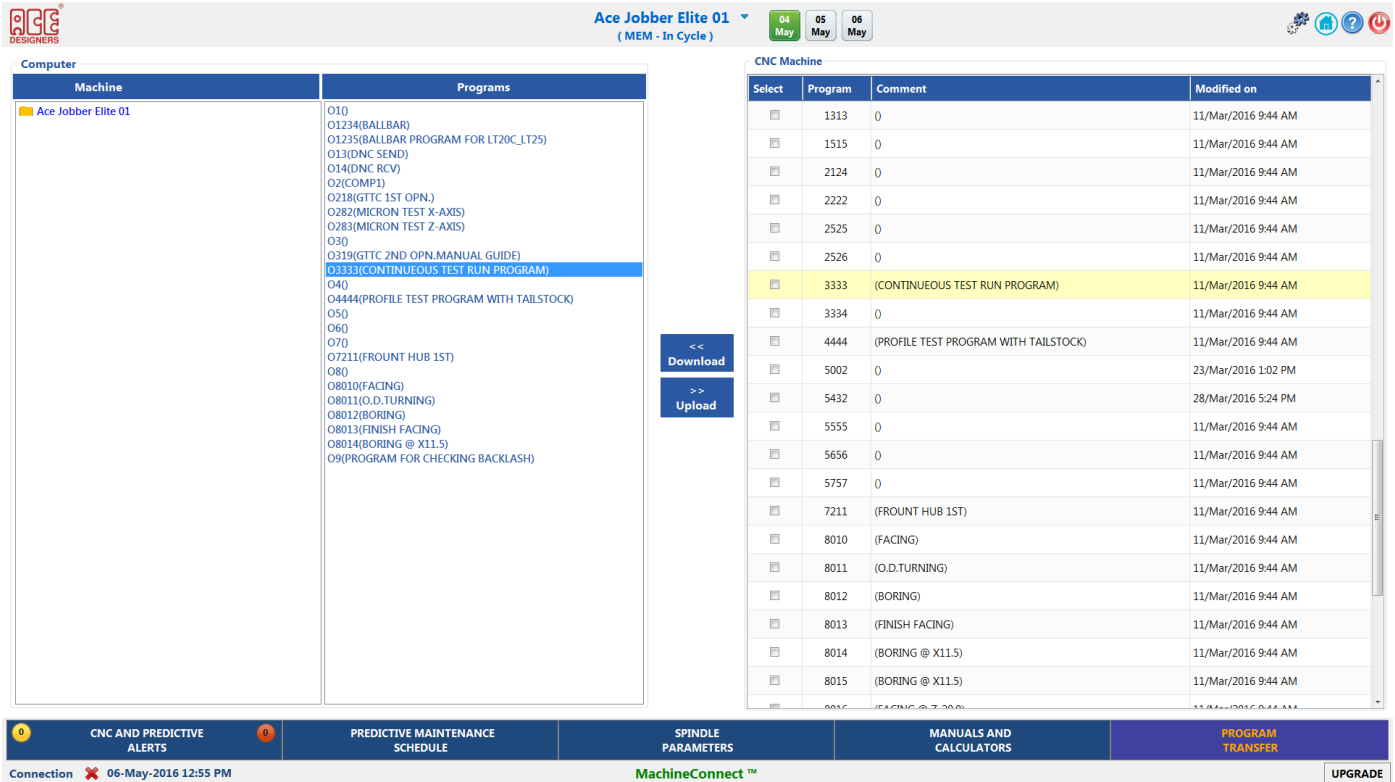
RPM	N	Rev/min	636.62
Torque	T	Nm	50.63
Power Required	P <sub>r</sub>	KW	3.75

**AVAILABLE POWER**

			Standard @ 1000 RPM	Calculated @ 636.62 RPM
Continuous Power	P <sub>ac</sub>	Kw	5.5	3.5
15 Mins. Power	P <sub>as</sub>	Kw	7.5	4.77
Continuous Torque	T <sub>ac</sub>	Nm	36	54
15 Mins. Torque	T <sub>as</sub>	Nm	48	72

## Program Transfer

Program transfer module of MachineConnect is used for transferring the programs from CNC to Computer and vice-versa without going near the machine. All the activities are done at the Computer.



As shown in above screen, the box on the left hand side of the screen will list Machines (folder with machine name should exist), and the programs available for each machine in the computer. The box on the right hand side of the screen will display the program directory of the machine.

To transfer the program from Machine to Computer, the program number needs to be selected and by clicking the 'Download' button the program will be transferred to the computer and will be available as a text file in the computer.

To upload the program from Computer, the program which is in .txt (text/notepad) format should be available in designated folder (Reference: **Programs Folder Path** under **Application Settings**). The programs available in the designated folder will be displayed under Computer/Programs (second column in the left hand box). After selecting the program, user should click 'Upload' button to transfer the program to the machine. A confirmation message will appear; if the program already exists, then the same message will be communicated through a pop-up.