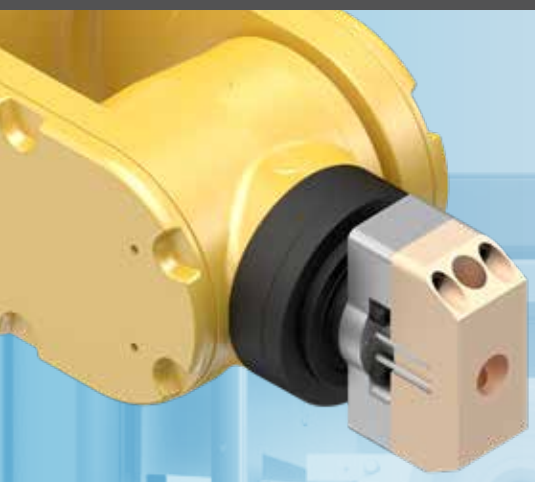
LYNDEX NIKKEN 10DER

MODULAR CNC MACHINE TENDING PLATFORM

For High Mix / Low Volume Production



LN LYNDEX-NIKKEN

VIEW OUR FULL LINE OF PRODUCTS
@ WWW.LYNDEXNIKKEN.COM

WHY AUTOMATION

DRAMATICALLY IMPROVE YOUR MANUFACTURING POTENTIAL

Output, Efficiency, Flexibility

In today's fast paced manufacturing environment there are many factors we are competing for and against. There is a real case for why automate, and why automate now.

- COMPETING FOR TALENT
- HIGH MIX LOW VOLUME DEMAND
- ON TIME DEMAND
- RISING COST OF LABOR, BENEFITS & MEDICAL
- MODERN SUPPLY CHAIN
- INDUSTRY 4.0 DEMAND

BENEFITS OF AUTOMATION

AUTOMATION PROVIDES SOLUTIONS TO YOUR MANUFACTURING NEEDS

The amazing technology in today's automation products allows the manufacturer the ability to leverage his resources to achieve tremendous benefits otherwise not achievable by traditional means.

- LOWERING EMPLOYEE COST
- LEVERAGE AGAINST LACK OF SKILLED LABOR
- INCREASE SPINDLE TIME
- SOLUTION FOR HIGH MIX LOW VOLUME
- QUALITY PART ON TIME
- MODERNIZATION FOR INDUSTRY 4.0

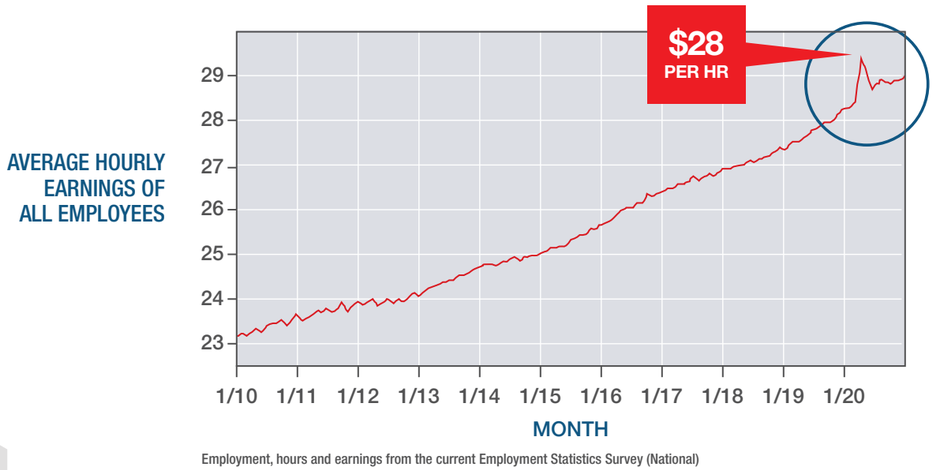
10DER™ RETURN ON INVESTMENT

US DEPARTMENT OF LABOR STATISTICS ON COSTS

RISING COST: LABOR, BENEFITS & MEDICAL

LABOR COST:

Average Hourly Cost For Manufacturing Job Is $28 and Rising



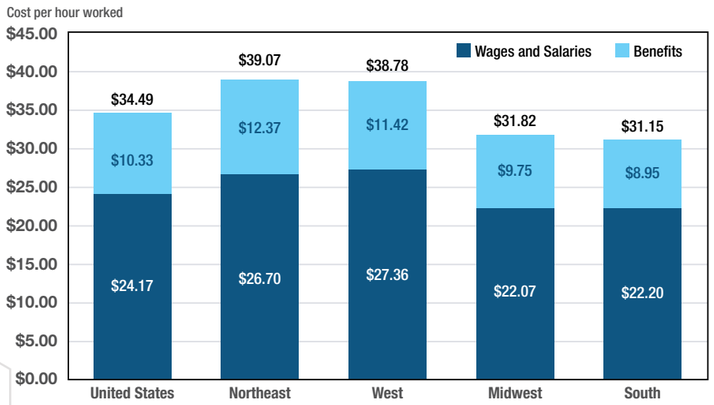
Employment, hours and earnings from the current Employment Statistics Survey (National)

BENEFITS COST:

43% of the Total Compensation is the Benefits Cost and Rising

43% OVERHEAD COSTS

EMPLOYEE COSTS PER HOUR WORKED FOR EMPLOYEE COMPENSATION IN PRIVATE INDUSTRY BY REGION, MARCH 2019



Note: The sum of individual items may not equal totals due to rounding.
Source: U.S. Bureau of Labor Statisitcs.

10DER™ RETURN ON INVESTMENT

HOW THE 10DER™ PAYS FOR ITSELF

ROI ASSUMPTIONS

COST ASSUMPTIONS	OPERATOR	10DER™	
A: Cost per Hour	$28.00	$40.00	
B: Overhead Costs	43%	0%	Vacation, Medical, 401k, etc.
C: Weeks per Year	52	52	
D: Hours per Week	40	40	
E: Shop Hourly Rate	$75.00	$75.00	
F: Machine Productivity	60%	90%	Operator Efficiency

TOTAL BURDEN CALCULATION

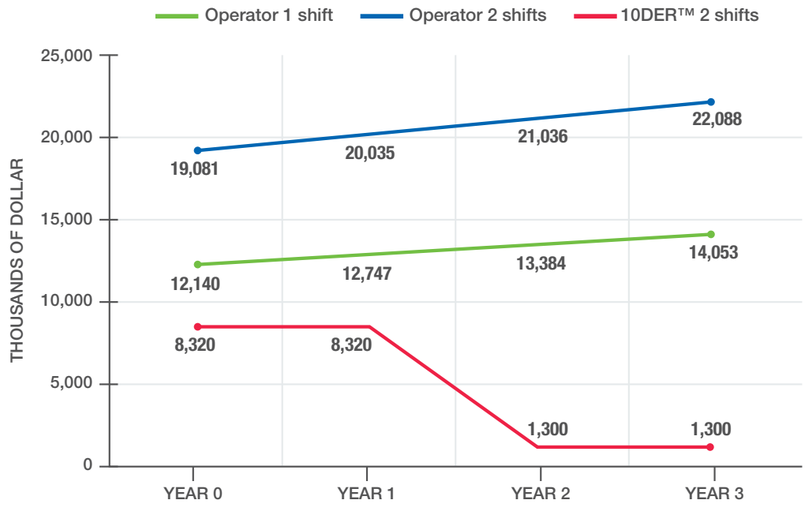
G: Salary	$58,240	$83,200	= A * C * D
H: Overhead	$25,043	$0	= G * B
I: Inefficiency	$62,400	$15,600	= E * C * D * (1 - F)
J: ANNUAL	**$145,683**	**$98,800**	= G + H + I
K: MONTHLY	**$12,140**	**$8,233**	= J / 12

Our operator cost assumptions are based on US Labor Statistic as shown in graph. The two rising costs are wages and benefits which includes the continual rise of medical benefits costs.

10DER™ RETURN ON INVESTMENT

10DER™ VS. OPERATOR MONTHLY COST

OPERATOR COST ASSUMPTION:



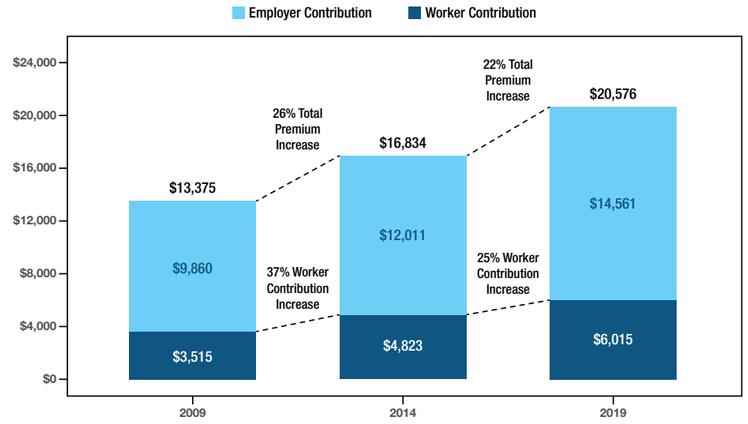
- A 5% YoY theoretical increase on operator cost due to rising cost of skilled labor and medical.
- All costs are assumptions only. We used the US Bureau of Labor statistics. Please contact us for a calculus of ROI specific to you.
- 10DER™ baseline assumptions are generated using an efficiency factor of 90%.

By introducing 10DER™ system you can lower the monthly burden immediately by 50% within the first year. Thereafter, the 10DER™ is free to run at zero cost. When compared with 3 shifts, the payback and monthly burden can be lowered significantly. Please contact us for your personal cost analysis.

Our graph shows a 5% increase YoY on operator cost. This is taken into consideration the rising cost of labor and medical coverage. Moreover, government tax and regulation changes drastically with employees counts over 51. To leverage this, you can maximize your output with existing equipment by introducing lights out manufacturing using the 10DER™ system without spending millions on an FMS.

MEDICAL COST:
Average Increase of 22% Every 5 Years and Rising

AVERAGE ANNUAL WORKER AND EMPLOYER PREMIUM CONTRIBUTIONS AND TOTAL PREMIUMS FOR FAMILY COVERAGE, 2009, 2014 AND 2019



Source: KFF Employer Health Benefits Survey, 2019; Kaiser/HRET Survey of Employer-Sponsored Health Benefits, 2009 and 2014

INTRODUCING THE 10DER™

WHY CHOOSE A 10DER™ MACHINE

Introducing an approachable, non-threatening industrial robotic machine tending system

The 10DER™ is an off the shelf automation experience. Great for the first time industrial robotic user entry level or the professional wanting of ease of use and setup of industrial robot tending. Customers will also enjoy a very short delivery lead time.

WITH AUTOMATION ONE OPERATOR CAN RUN MULTIPLE MACHINES

LESS OPERATORS MITIGATES COST INCREASES

SPINDLES RUN SIGNIFICANTLY MORE WITH ASSISTANCE FROM AUTOMATION

HIGH EFFICIENCIES EQUAL IMPROVED CAPACITY UTILIZATIONS

MORE THROUGHPUT WITH THE IMPROVED EFFICIENCIES

BETTER EFFICIENCIES, MORE THROUGHPUT, LESS COST MITIGATES COMPETITION ISSUES

THE 10DER™ CAN PROVIDE THE FOLLOWING RESULTS:

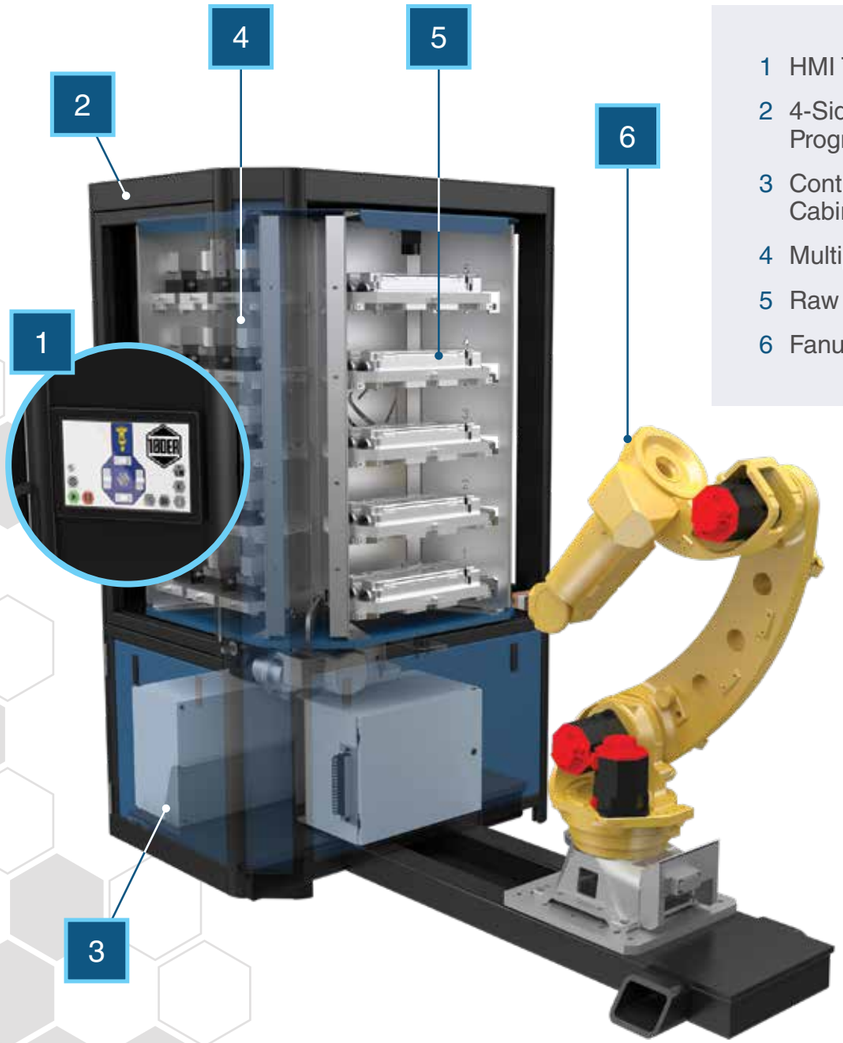
- INCREASE IN SALES
- LOWER LABOR COSTS
- HIGHER PROFIT MARGINS
- FASTER RESPONSE TO FLUCTUATIONS IN DEMAND
- LESS PHYSICAL OPERATOR STRAIN
- SMALLER STOCKS
- HIGHER PRODUCTION OUTPUT
- MORE SPINDLE HOURS
- CONTROLLING MULTIPLE CNC MACHINES

INTRODUCING THE 10DER™

THE 10DER™ MACHINE

Designed for Safety and Productivity

The 10DER™ system uses mechanical design elements to provide protection from interaction with mechanical movement to offer the optimum level of operator safety. Optional state-of-the-art laser scanners are available.



1 HMI Touchscreen
2 4-Sided Programmable Tower
3 Control and Electrical Cabinet
4 Multiple Pallet Options
5 Raw Material Options
6 Fanuc Robot

10DER™ MACHINE LEVERAGES LEAN PRINCIPLES

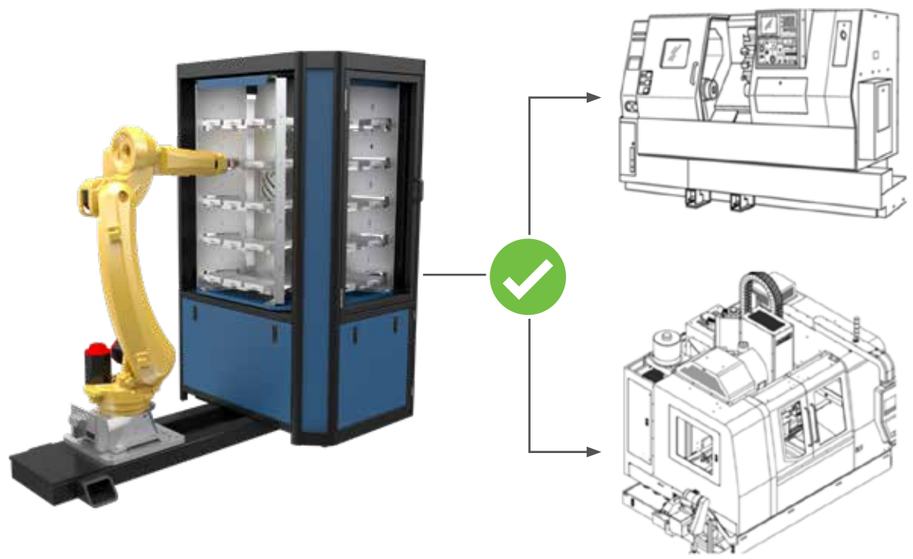
10DER™ machine takes the application of lean manufacturing to the next level by using robots to tend the CNC machine. Its flexibility and power allow it to service milling and turning centers.

FROM 'LEAN MFG' TO 'LEAN TENDING'

LEAN MANUFACTURING

10DER™-LEAN TENDING

OPTION TO TENDING BOTH MILL AND TURNING CENTER



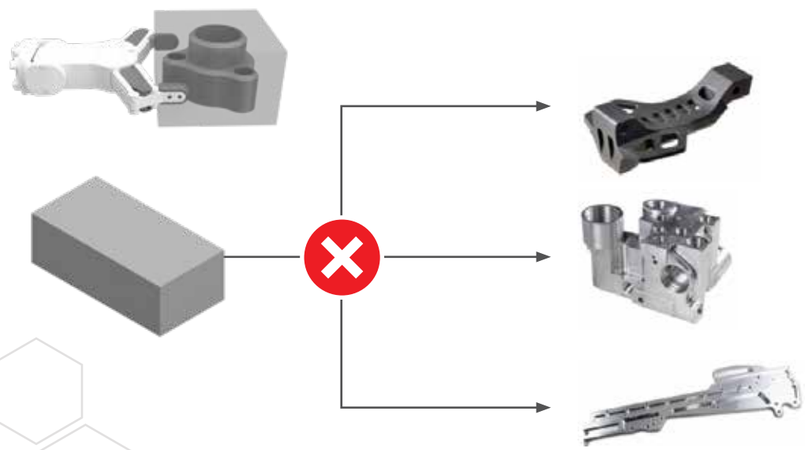
HOW 10DER™ SEPARATES ITSELF

Grabbing workpieces with 2- and 3-jaw grippers, the challenges:

- Grab square/rectangle block.
- Perform a machining operation.
- No parallel surfaces to grab.

Your automation journey starts to get complex, you now need a robot that can change its end of arm tool (EOAT) to accommodate the irregular shape. This is expensive and, in many cases, not possible.

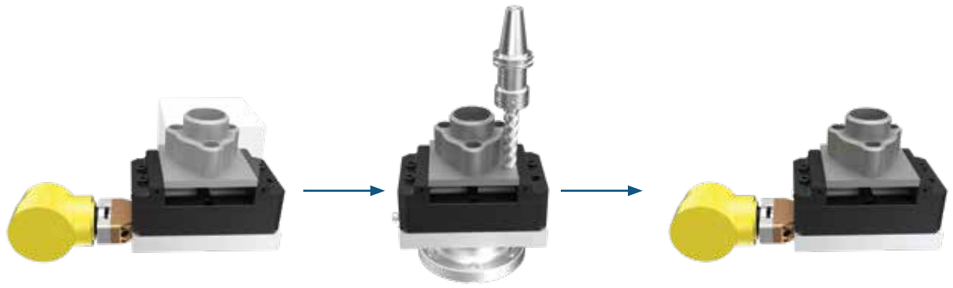
1. PICK SOLID BLOCK ✓ 2. MACHINED PART ✓ 3. PICK FINISH PART ✗



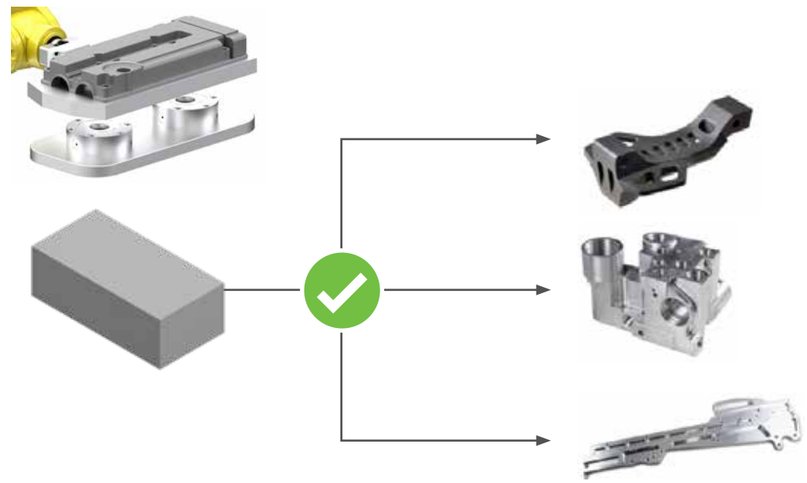
10DER™ doesn't deal with the changes in part geometry or the workholding issues. It utilizes a proven lean manufacturing technique of grabbing a single point on a pallet and moving the pallet and its contents to its destination...(PLACE).

This approach allows the user to:

- Machine any shape.
- Create part density.
- Freely access sides of part as needed.



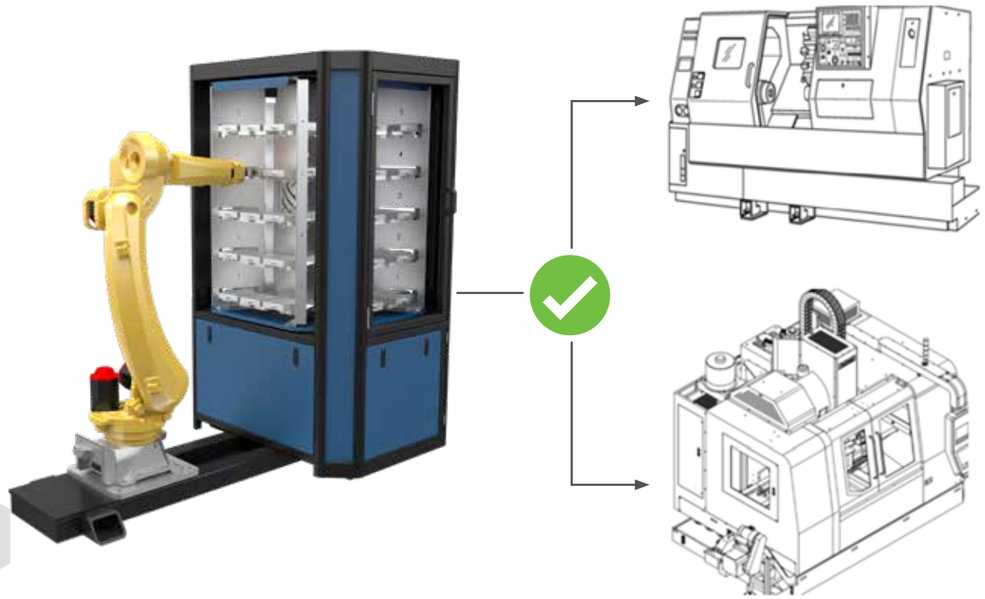
1. PICK SOLID BLOCK ✓ 2. MACHINED PART ✓ 3. PICK FINISH PART ✓



10DER™ MILL-TURN OPTIONS

TENDING BOTH MILL AND TURNING CENTER

*Requires additional hardware



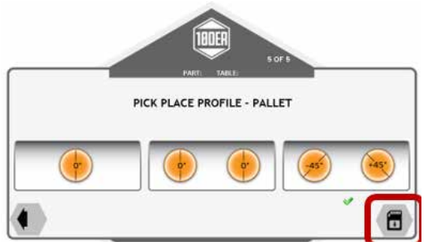
10DER IS TODAY'S INVESTMENT WITH TOMORROW'S ADAPTABILITY

Lyndex-Nikken 10DER™ systems are built for tending your current machines or new machine installs. The 10DER™ can be deployed in front of a milling or turning center. Should your work requirements change, the 10DER™ system can be reconfigured and redeployed as needed.

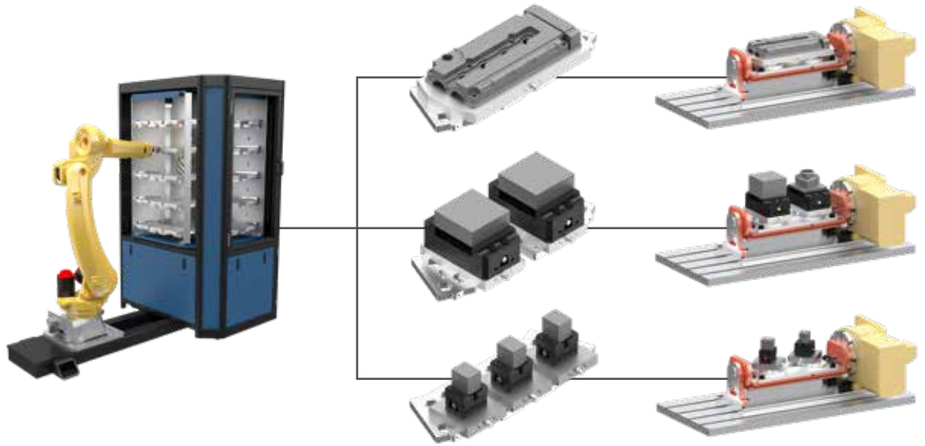
MILLING CENTER: SOFTWARE INCLUDED

Hardware is optional as required

- Three options to pick from
- Multiple pallet sizes to accommodate wide range of work pieces
- Palletize allow for high-low mix quick change over



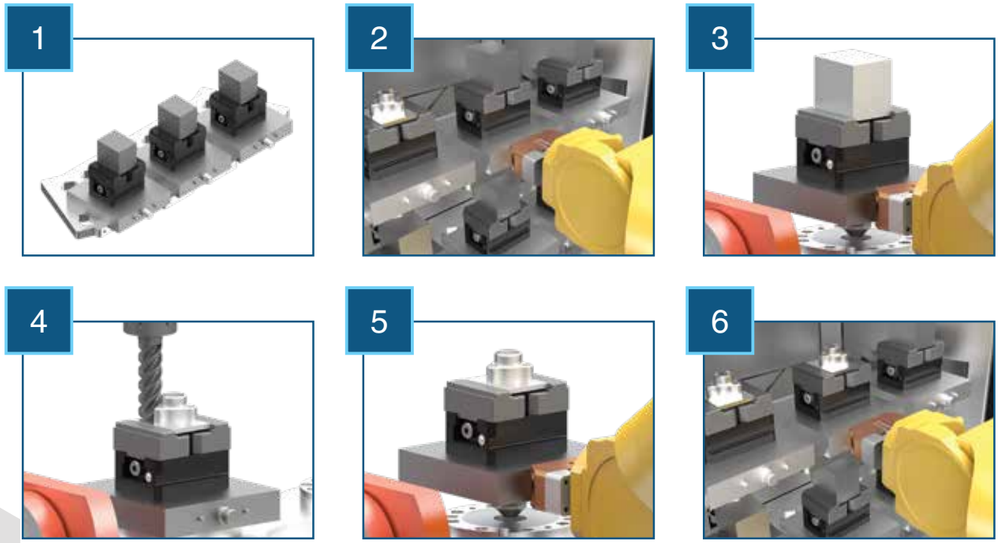
- Single point drop off for use on 5th axis machine or trunnion
- Double point drop off for lean process
- +45/-45 drop off for 5 planes machining without the need of a 5-axis equipment



The power of the 10DER™ lies in the preconfigured pick and place positions. No robot programming required.

10DER™ PROCESS FLOW

MILL TENDING CYCLE



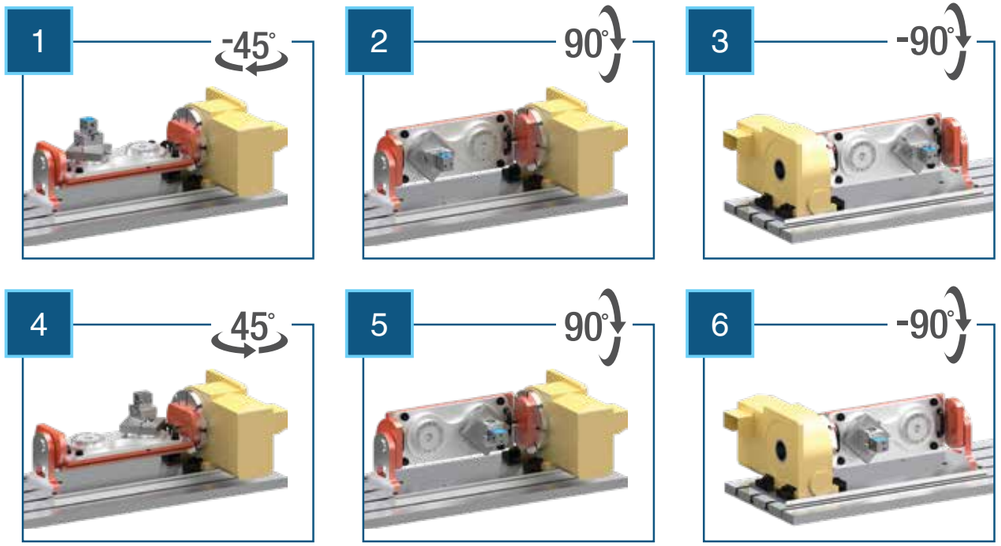
FOLLOW THESE STEPS

1. Build your pallets
2. Pick pallet from shelf
3. Place pallet in receiver system
4. Machine part
5. Remove part from receiver
6. Return it to the 10DER™ tower

10DER™ POWERS 5-SIDED MACHINING

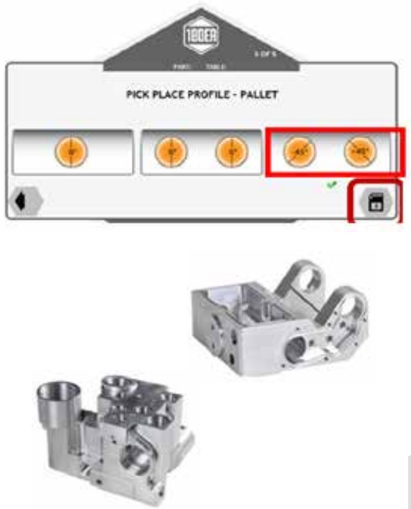
5-SIDED TENDING CYCLE

*Requires trunnion

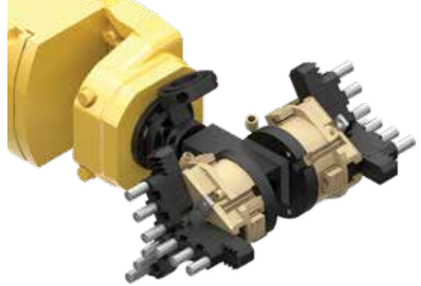


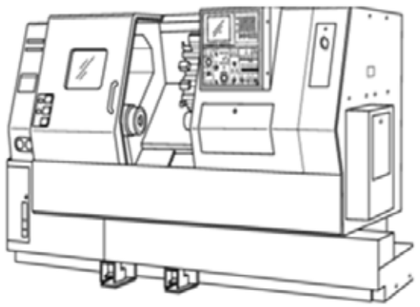
FOLLOW THESE STEPS

1. Place at -45 left-hand position. Machine surface A and perimeter
2. Rotate A-axis to +90. Machine surface B
3. Rotate A-axis to -90. Machine surface C
4. Move pallet to +45 right-hand position
5. Rotate A-axis to +90. Machine surface D
6. Rotate A-axis to -90. Machine surface E



10DER™ MILLING OR TURNING OPTIONS



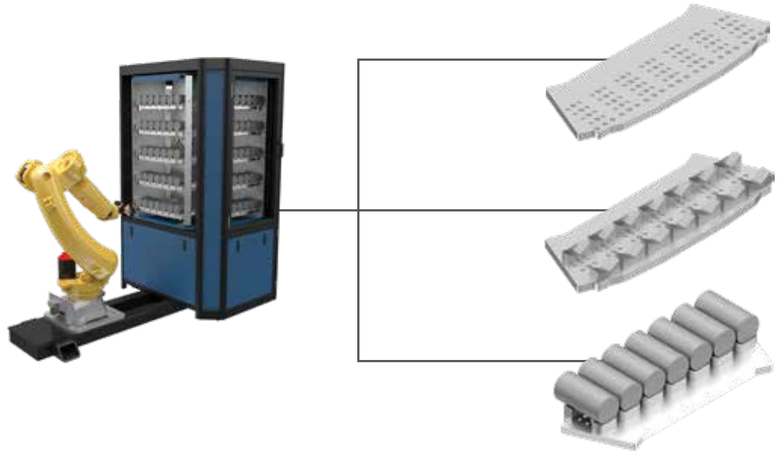


TURNING CENTER: SOFTWARE INCLUDED

Hardware is optional as required

- Wide range material diameters
- 3 options to pick from
- V-trays for high mix demand
- Optional ‘peg board’ or custom trays for high part density

- Include main or main/sub placement options
- Include multiple air blast cycle
- Optional custom cycle-for additional in-between process

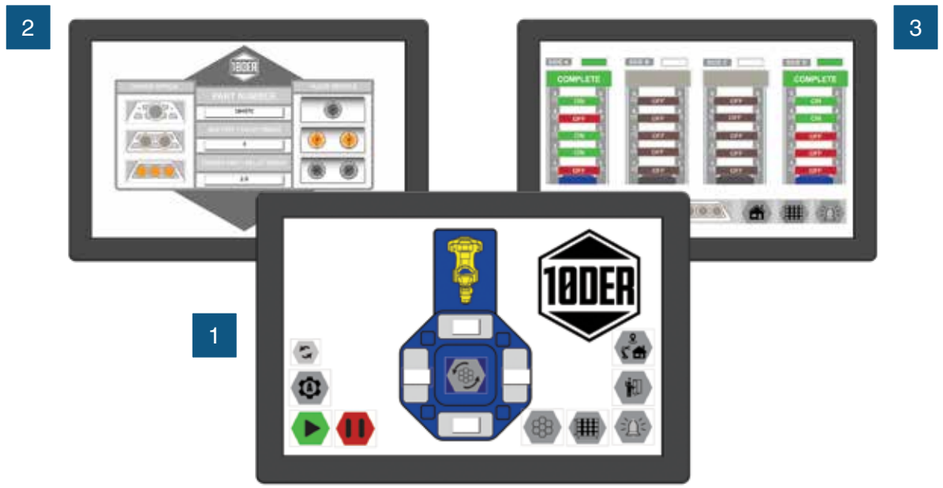


The 10DER™ system has the flexibility to go from palletized tending to tending of raw materials in one platform. The software for pick and place is already there, the user changes the shelves to a modular V-block system, they change the end of arm tool to a double ended tool and add a regrip stand. A perfect solution for high mix low volume raw material tending needs.

HMI-HUMAN MACHINE INTERFACE

MACHINE OPERATION IS AS EASY AS 1-2-3

- Approachable Interface
- Intuitive Program
- No Programming Experience Required



1 10DER™ HOME SCREEN

- Simplified user interface
- Icon based touchscreen
- Main screen gives access to all functions

2 10DER™ TOWER PICK & PLACE SELECTION SCREEN

PICK OPTIONS:

- 1 Position
- 2 Position
- 3 Position
- 7 Position Stock "V" Block*

PLACE OPTIONS:

- Neutral Placement
- Dual Neutral Placement
- +/-45 Single Placement*
- Single Position 5-Axis Placement

*Rotary & Trunnion Required

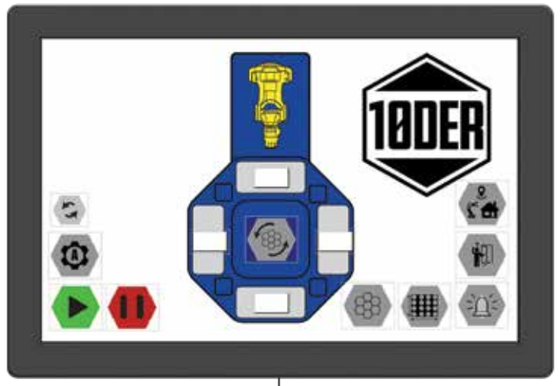
3 10DER™ TOWER FACE & SHELF SELECTION SCREEN

- Select face A, B, C, D
- Select shelf(s) 1–5
- Activate faces and shelves

HMI-HUMAN MACHINE INTERFACE

HMI HOME SCREEN

The simple, straight forward home screen interface makes the initial steps of inputting commands into the 10DER™ an easy process



Start Button

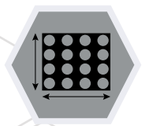
Stop Button

Reset

Auto Mode

Manual Rotation

Pick/Place Selector



Pallets & Shelves Selector

Alarm

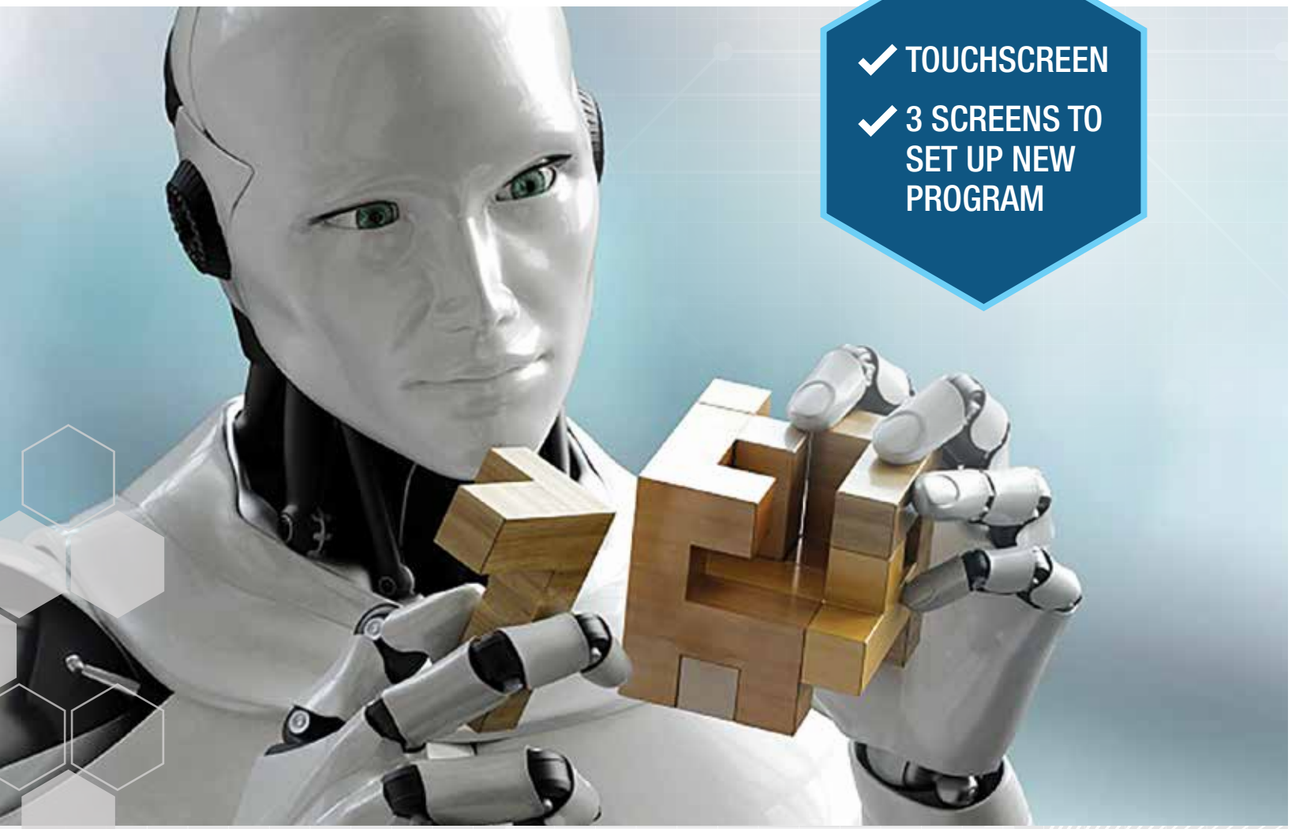
Permission to Enter

Robot Home

HOW IT WORKS

The 10DER™ system's HMI (Human Machine Interface) is designed for the novice. Its intent is to allow a non-robot programmer to create a pick and place routine using an icon base menu. This simplicity is the 10DER™ system's power.

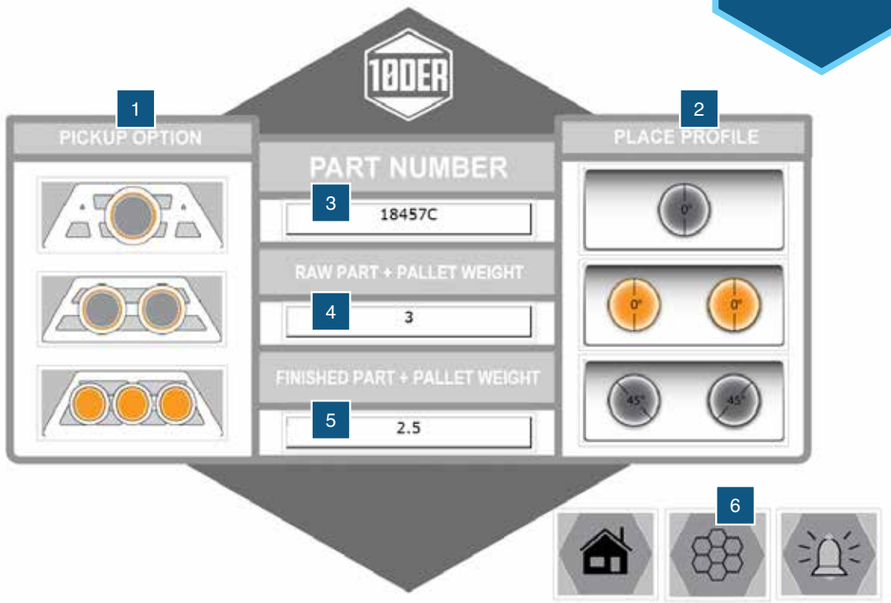
YOU DON'T NEED TO BE A ROBOT PROGRAMMER



- ✔ TOUCHSCREEN
- ✔ 3 SCREENS TO SET UP NEW PROGRAM

3-SCREENS SAMPLE

PICK AND PLACE SELECTOR



FOLLOW THESE STEPS

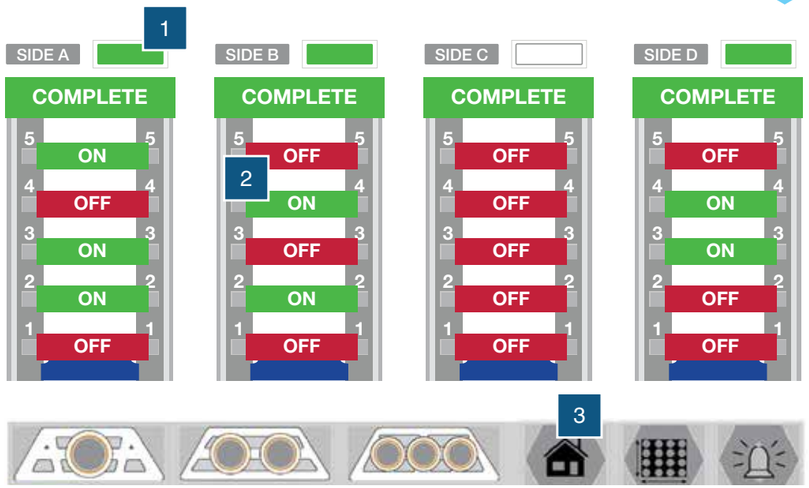
1. Select: Pick Options
2. Select: Place Options
3. Assign program name
4. Enter raw material weight
5. Enter finished part weight
6. Go to next step

3-SCREENS SAMPLE

10DER™ TOWER FACE & SHELF SELECTION SCREEN

Define the location of your pallets, faces and shelves

PALLET AND SHELF SELECTOR

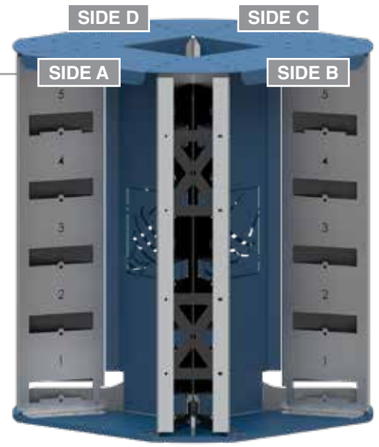


FOLLOW THESE STEPS

1 Select the side (A–D) where your work is located

2 Select the shelves that your pallets are loaded on

3 Select the Home button to set the 10DER™ to Auto

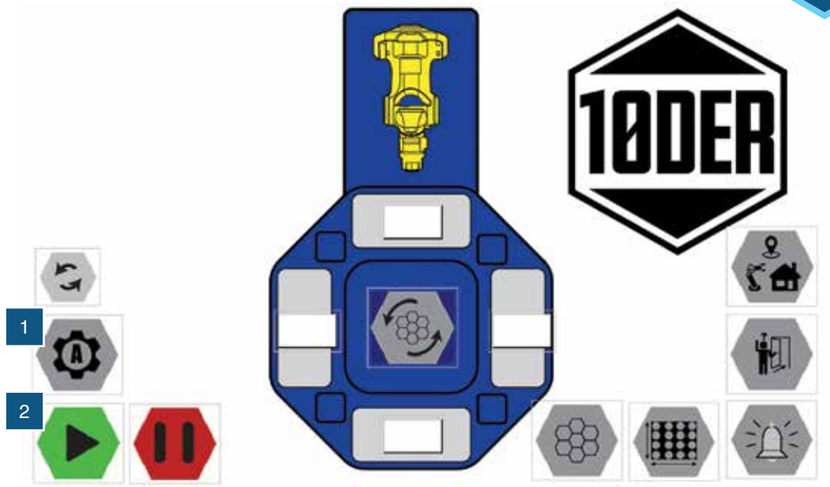


3-SCREENS SAMPLE

ACTIVATE THE 10DER™ MACHINE

Initiate these final steps to activate the 10DER™

CONTROL SCREEN

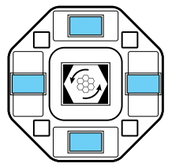


FOLLOW THESE STEPS

1 Set to Auto

2 Depress Start button

System is now waiting on the CNC machine for signals to start loading and unloading.

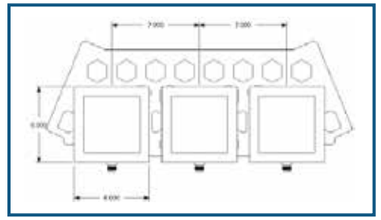


BOXES WILL DISPLAY ACTIVE SIDE AND PROGRAM INFORMATION

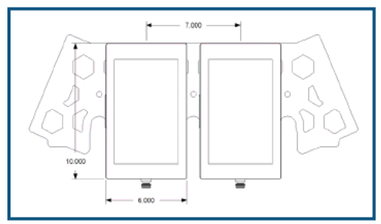
TECHNICAL SPECS/ REQUIREMENTS

THE RIGHT SETUP FOR THE JOB

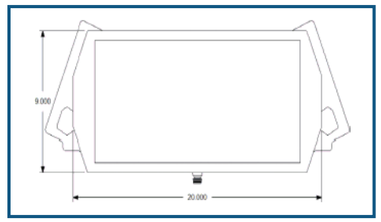
The 10DER™ can handle an array of pallet configurations



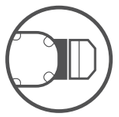
- Small to medium parts
- Workpieces 5.250 x 6 x 6
- Workholding direct 6 x 6 x 6
- Pallet payload 38#'s max
- Dual positioned



- Small to medium parts
- Workpieces 5.250 x 6 x 9
- Workholding direct 6 x 6 x 9
- Pallet payload 38#'s max
- Dual positioned



- Large parts
- Workpieces 5.250 x 9 x 20
- Pallet payload 33#'s
- Single position



End of Arm Tooling (EOAT) grabbing an empty pallet >

INSTALLATION REQUIREMENTS

MACHINE ESSENTIALS TO KNOW

Decisions must be made in order to best use the capabilities of the 10DER™

10DER™

- Forklift (5000 lbs. capacity)
- Safety Cage (per machine dimension)
- Power (200–240V, 50–60 Hz)
- Air (100 psi)

CNC MACHINE

- Autodoor (OEM or after-market)
- Fixtures:
  - Zero Point Receiver (2 units)
  - 4th Axis Trunnion (optional)
  - Fixture Build Plan
- Robot Interface:
  - Ethernet Interface-Robot Options
  - Discrete I/O's (input/output)

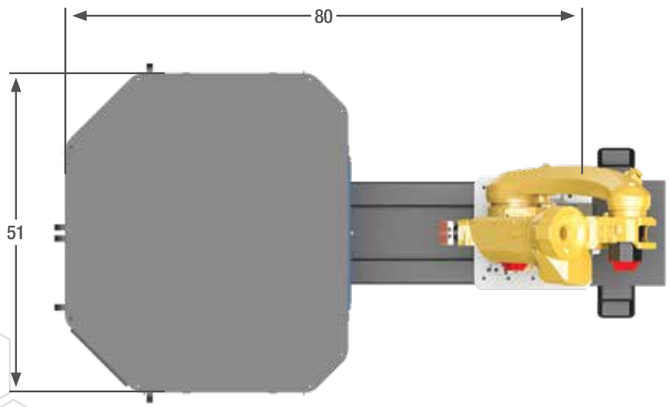
10DER™ SPECIFICATIONS

ROBOT SPECIFICATIONS

Base unit robot specifications

ROBOT/EOAT		
	10DER™-BASE-A	10DER™-BASE-B
FANUC M20-iD	●	●
1844MM Reach	●	●
25 kg Payload	●	●
End of arm tool Schunk NSR Mini 100	●	
End of Arm Tool Schunk Centric Double Ended	**	●
FOOTPRINTS, WEIGHTS, MISC.		
Tower Weight Capacity	1000 lbs.	1000 lbs.
10DER™ Footprint	55 x 83 x 101	55 x 83 x 102
10DER™ Weight with FANUC M20-iD	2450 lbs.	2450 lbs.
Programming via HMI Touchscreen	B&R	B&R
FANUC iRVision Position Teaching	Software Loaded	Software Loaded

** Pick and Place software loaded, requires purchase of V block shelves and DE Schunk centric EOAT



PART TOWER SPECIFICATIONS

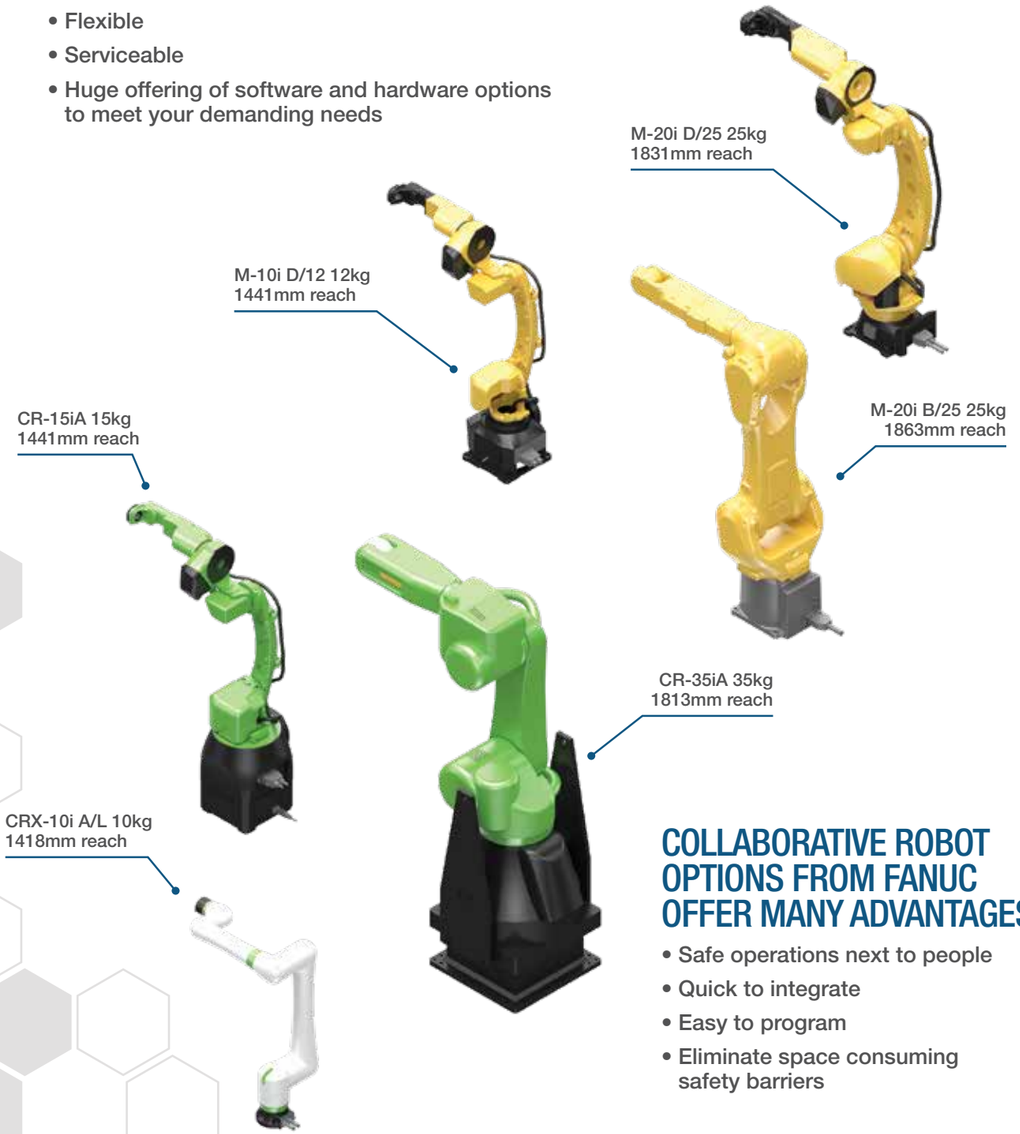
Base unit tower specifications

TOWER		
	10DER™-BASE-A	10DER™-BASE-B
PALLET SIZE AND QUANTITY		
5.25 x 6 x 6(60)	●	
5.25 x 6 x 9(40)	●	
5.25 x 9 x 20(20)	●	
V-Block Shelf Option 7 Diameters	●	
PALLET PAYLOAD CAPACITY MAX		
37 Lbs. (6 x 6, 6 x 9)	●	
33 Lbs. (9 x 20)	●	
PEG AND SOCKET CAPACITY MAX		
Cylinders		
2.5 Max Diameter		●
7” Max Length		●
Ring		
2.25 Max Diameter		●
2” Max Length		●
Up to 1128 Workpieces can be Installed		●
4 SIDES TO THE TOWER	●	●
5 LEVELS PER SIDE	●	●

ROBOT OPTIONS AVAILABLE FROM FANUC

INDUSTRIAL ROBOT OPTIONS FROM FANUC OFFER BEST IN CLASS PERFORMANCE FOR INDUSTRIAL APPLICATIONS:

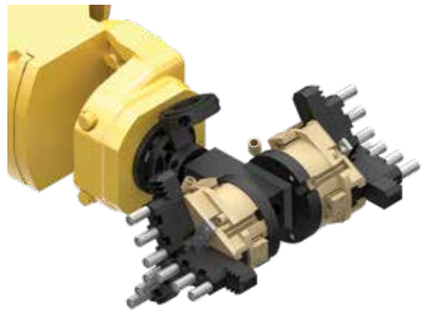
- Flexible
- Serviceable
- Huge offering of software and hardware options to meet your demanding needs



COLLABORATIVE ROBOT OPTIONS FROM FANUC OFFER MANY ADVANTAGES:

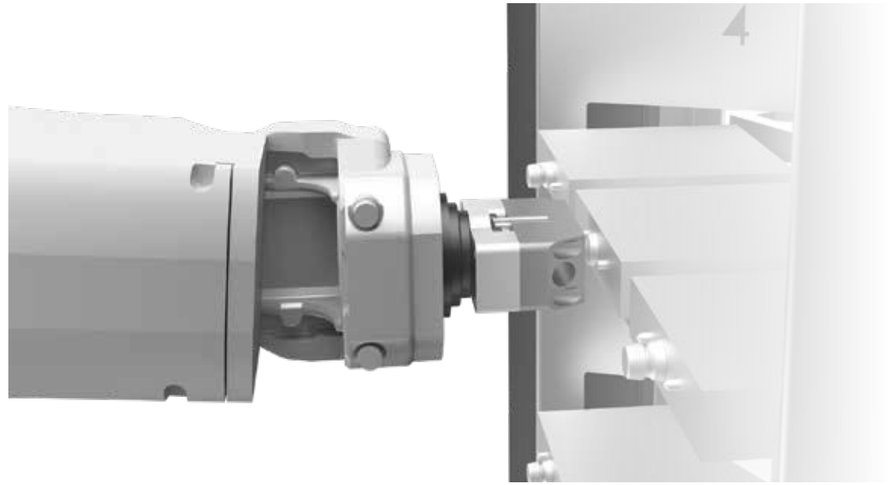
- Safe operations next to people
- Quick to integrate
- Easy to program
- Eliminate space consuming safety barriers

END OF ARM TOOLING CHOICES (EOAT)



SCHUNK JGZ 80-1-AS Centric Gripper with the Schunk A-PZN+80 Spring Pressure Plate

SCHUNK NSR-MINI 100 EOAT for palletized loads



THE 10DER™

The 10DER™ is the small footprint version perfect for the high mix-low volume work with the ability to morph into an inexpensive low mix-high volume solution.

OFFERED IN TWO MODELS:

10DER™–BASE

Shelving/pallet system/ modular V-blocks

10DER™–BASE PEG AND SOCKET

Panels replace shelves to support custom 3D printed sockets for round material, pegs for tube configurations.

HIGH VOLUME HELP AVAILABLE NOW

10DER™–PLUS

Available for those customers who have higher volume needs

The **10DER™–PLUS** offers a separate control console and two automatic pallet changers for lathe, on the milling side a 10DER™–PLUS offers two vertical towers with 24 shelves for palletized work.

10DER™-PLUS-4000-M20-TC

TURNING CENTER

10DER™-PLUS-4000-M20-VM

VERTICAL MILLING

LYNDEX-NIKKEN

AHB

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