Machine Capabilities
About Paragon

Paragon D & E is a certified small business providing full-service tooling and machining with design and build capabilities. Paragon is located in Grand Rapids, MI and was established in 1959.

Paragon serves a variety of industries including automotive, heavy truck, oil and gas, aerospace and defense, marine and nuclear. Paragon is known for capabilities in very large and very accurate molds, fixtures and contract machining. Paragon also machines and CMM inspects composite and metal parts including titanium and inconel. With 50+ ton crane capacity and machines from 1 ft. to 52 ft. in length, Paragon is equipped to handle large and small projects.

Customer satisfaction at Paragon is achieved through experienced engineers, machinists and technicians as well as quality focused internal systems. Our quality is maintained through material and special process certification, incoming inspections, continuous monitoring and final inspection prior to release for shipping.

Paragon Products and Services

- Injection molding tools and tryouts
- Compression molding tools and tryouts
- Low-volume production support
- Aluminum and steel tooling
- Composite tooling
- Aerospace tooling
- Hydroform tooling
- DOD (Department of Defense) machining
- 5-axis machining of metal or composite
- Tool engineering and consulting
- Shipping and storage containers for nuclear waste
- Machining of metal components used in nuclear applications
- Contract machining
- Model shop
- 3D plate bending
- Honeycomb core crushing
- Stretchform tooling

Paragon Certifications

- AS 9100B
- ISO 9001:2008 Certified
- CCR Registered
- ITAR Registered
- NQA-1 Supplier
- ORCA
- Cage Code: 3CB75
- DD2345 US/Canada Joint Certification Program
Equipment and Plant Highlights

Some of the finest equipment in North America is housed in this 185,000 sq. ft. state-of-the-art facility. The Paragon team consists of over 215 employees working a 24/7 schedule and using the latest 5-axis and 6-axis equipment and CAD systems.

Over 35 Total Machines including:

1 - Double Gantry 5-axis Mill 60’x12’ table size
7 - 5-axis CNC Mills
1 - 6-axis CNC Mill
4 - Gundrills, including 1 3+2 gundrill
5 - Tarus Finishers
1 - Retrofitted Tarus with Fidia 3+2 head
7 - Boring Mills
1 - Gantry EDM
1 - HPM 3,000 Ton Injection Molding Machine
1 - Williams, White & Co. 3,000 Ton Hydraulic Press
The following is a list of our equipment along with a brief description of their capabilities. Please call Paragon at 616-949-2220 to schedule a tour.

**FIDIA Y2G 5 AXIS MILLING MACHINE**
- Control: Fidia C20 Control (X2)
- Spindle: 240-24,000 RPM
  - 85 HP
  - HSK 100: 14,000RPM
  - HSK 63: 24,000RPM
- Table Size: 720” X 144” (17,000mm X 3,500mm)
- Weight Capacity: Unlimited
- Travel:
  - X - 630” (16,000mm)
  - Y - 138” (3500mm)
  - Z - 55” (1400mm)
- Other Features:
  - M&H Digital Probe and Part Verification System
  - M&H Work Piece Alignment Probe
  - 2x42 Place Tool Changer
  - 1200 IPM Feed Rate

**FIDIA K414 HI SPEED FINISHER (2)**
- Control: Fidia C20 Control
- Feed Rate: 940 IPM
- Spindle: 24,000 RPM
  - 30-70 HP
- Table Size: 98-118” x 196-198” (2489-2997mm X 4978-5029mm)
- Travel:
  - X - 168” (4267mm)
  - Y - 49” (1245mm)
  - Z - 55” (1397mm)
- Other Features:
  - Continuous 5-Axis Head
  - 66-72” (1676-1829mm) Daylight under spindle
  - 48-84 Station Tool Changer
  - Laser Tool Alignment
  - Through the spindle cooling (@ 1000 psi)
- Weight Capacity: 100,000 lbs (45,359kgs)

**Fidia GTFMv3**
- Control: C40 Fidia
- Feed Rate: 1188 IPM
- Spindle Taper: HSK 100
  - 15,000 rpm
- Table Size 138.0” x 86.0”
- Other Features:
  - Renishaw RMP 600
  - ViMill anti-collision technology
Droop & Rein 5 Axis Floor Mill
Control: Fidia C20
Feed Rate: 600 IPM
Spindle:
3,000 RPM
44 HP
Table Size:
98” x 354” (2,489mm x 8,991mm)
Travel:
X - 366” (9,296mm)
Y - 145” (3,683mm)
Z - 71” (1,803mm)
Weight Capacity: 60,000 lbs (27,215 kgs)

Droop & Rein TFM 6 Axis CNC
Control: Fidia C20
Feed Rate: 1,188 IPM
Spindle #1:
Cat 50
4,000 RPM
44 HP
Spindle #2:
HSK 63 electric
18,000 rpm
27HP
Table Size:
71”x87” (1,803mm x 2,210mm)
Travel:
X - 107” (2718mm)
Y - 110” (2794mm)
Z - 49” (1,245mm)
Rotary Table
30 Station Tool Changer
Weight Capacity: 26,000 lbs (11,793kgs)
TARUS GUN DRILL WITH STS DRILLING SYSTEM (3)
Control: MBX 92 CNC Control
Table Size: 60” x 106” (1524mm x 2692mm)
Travel:
- X - 106-130” (2692-3302mm)
- Y - 60” (1524mm)
- Z - 94” (2388mm)
- W - 30” (762mm)
Featuring auxiliary spindles for tapping and milling
Weight Capacity: 45,000 lbs (20,411 kgs)

TARUS GUN DRILL WITH INTEGRATED MILLING SPINDLE, TILTING DRILL SLIDE AND INTEGRATED ROTARY TABLE
Control:  CNC Control
Table Size: 60” X 96” (1517mm X 2438mm)
Rotary Table: 360°
Travel:
- W - 46” (1168mm)
- X - 130” (3302mm)
- Y - 62” (1575mm)
- Z - 96” (2438mm)
Featuring auxiliary spindles for tapping and milling
Weight Capacity: 60,000 lbs (27,215 kgs)

TARUS HI SPEED CNC FINISHING MILLS (5)
Control: Lemoine M6
Spindle Speed: 10,000RPM
Spindle Power: 17HP
Feed Rate: 500 IPM
Table Size: 72” x 120” (1828mm x 3049mm)
Travel:
- X - 120” (3048mm)
- Y - 110” (2794mm)
- Z - 48” – 60” (1219mm - 1524mm)
Width Between Columns: 84”-96” (2134mm - 2438mm)
Weight Capacity: 60,000 lbs (27,215 kgs)
DROOP AND REIN & TARUS CNC MILL (4)
Control: Fidia C10 Control
Feed Rate: 200-300 IPM
Spindle:
- 3,000-3,150 RPM
- 40-75 HP
Table Size: 48-60” x 96-128”
  (1219-1524mm - 2438-3251mm)
Travel:
- X - 96-120” (2438-3048mm)
- Y - 48-60” (1219-1524mm)
- Z - 48-62” (1219-1575mm)
- W - 8” (203mm)
Weight Capacity: 45,000 lbs (20,411 kgs)

RETRO FITTED TARUS WITH FIDIA 3+2 HEAD
Control: Fidia C20 Control
Spindle:
- 240 - 24,000 RPM
Table Size: 72” x 120” (1829mm x 3048mm)
Travel:
- X - 120” (3048mm)
- Y - 110” (2794mm)
- Z - 54” (1372mm)
- B - +24° / -102°
- C - +180° / -177°
Width Between Columns: 94” (2388mm)
Weight Capacity: 60,000 lbs (27,215kgs)
24 Place Tool Changer
400 IPM Feed Rate

PARPAS ML 100 Horiz. 3D Mill
Control: Fidia C20 Control
Spindle:
- 4,000 RPM
Table Size: 98” x 236” (2489mm x 6045mm)
Travel:
- X - 236” (5994mm)
- Y - 118” (2997mm)
- Z - 18” x 22” (457mm x 559mm)
472 IPM Feed Rate
Other Features:
- Roughing Head
- Rotating Conical Head
- 60 Station Tool Changer
- Laser Alignment
Weight Capacity 100,000 lbs+ (45,359 kgs+)
GL3 GIDDINGS AND LEWIS BORING MILL
MODEL 450
Control: Siemens Sinumerik 840D CNC Ctrl.
Feed Rate: 400 IPM
Spindle:
  2500 RPM
  50 HP
  6" (152mm) Bar
Travel:
  X - 140" (3556mm)
  Y - 92" (2337mm)
  Z - 48" (1219mm)
  W - 47" (1194mm)
Weight Capacity: 60,000 lbs (27,215 kgs)

GIDDINGS AND LEWIS BORING MILL
MODEL 455
Control: Numerization 8000H Ctrl.
Feed Rate: 500 IPM
Spindle:
  2500 RPM
  75 HP
  6" (152mm) Bar
Travel:
  X - 142" (3607mm)
  Y - 102" (2591mm)
  Z - 49" (1245mm)
  W - 59" (1499mm)
120 Position Tool Changer
Weight Capacity: 45,000 lbs (20,411 kgs)

MAG (GIDDINGS AND LEWIS) RT 1600
HORIZONTAL BORING MILL WITH ROTARY TABLE
Control: Siemens Sinumerik 840D CNC Ctrl.
Feed Rate: 709 IPM
Table Size: 63" x 98" (1600mm x 2500mm)
Spindle:
  3500 RPM
  74 HP
  6" (152mm) Bar
Travel:
  X - 142" (3607mm)
  Y - 102" (2591mm)
  Z - 49" (1245mm)
  W - 59" (1499mm)
120 Position Tool Changer
Weight Capacity: 55,100 lbs (25,000 kgs)
TOSHIBA BTD 13 P7 PLANE TABLE
BORING MILL
Control: Fidia C10 Control
Spindle:
  25 HP
  5" (127mm) Bar
Travel:
  X - 157" (3988mm)
  Y - 96" (2438mm)
  Z - 50" (1270mm)
  W - 36" (914mm)
Weight Capacity: 44,000 lbs (19,958 kgs)

TOSHIBA BTD 11 R3 ROTARY TABLE
BORING MILL
Control: Tosnuc 3 CNC Control
Feed Rate: 400 IPM
Spindle:
  18 HP
  5" (127mm) Bar
Travel:
  X - 98" (2489mm)
  Y - 70" (1778mm)
  Z - 57" (1448mm)
  W - 19" (483mm)
Through the spindle cooling (@ 100 psi)
Weight Capacity: 22,000 lbs (9,071 kgs)

GIDDINGS AND LEWIS
BORING MILL
Control: Siemens 800D Ctrl.
Feed Rate: 400 IPM
Spindle:
  2500 RPM
  75 HP
  6" (152mm) Bar
Travel:
  X - 216" (5486mm)
  Y - 96" (2438mm)
  Z - 48" (1219mm)
  W - 30" (762mm)
Weight Capacity: 100,000 lbs+ (45,359 kgs)
DVC-4025B DOUBLE COLUMN VERTICAL MACHINING CENTER
Control: YCM MXP200i
Feed Rate: 500 IPM
Spindle:
  4,500 RPM CAT 50 Spindle
  25 HP
Table Size: 161” X 94” (4260mm X 1500mm)
Travel:
  X - 157” (4000mm)
  Y - 94” (1600mm)
  Z - 30” (760mm)
Other Features:
Laser Alignment
Chip Blaster DC30

Makino F5XR
Control: Pro5
Feed Rate 787 IPM
Spindle:
  HSK 63 electric
  20,000 RPM
  15 HP
Table Size:
  40.0” x 20.0” (1,016mm x 508mm)
Other Features:
  Graphite machining utilization
  Koma Trunion table for continuous 5 axis
  Erowa compact 80 with RFID chip integration
  Renishaw OMP400 for on machine verification

Makino A92
Control: Pro5
Spindle:
  10,000 RPM
Travel:
  X - 59” (1500mm)
  Y - 49” (1544mm)
  Z - 53” (1346mm)
Other Features:
  Dual pallet machine
  32.0” x 40.0” table size
  Work Envelope 59.0” x 59.0”
  Renishaw RMP 600
  Weight Capacity: 6,600 lbs (2,995 kgs)

Makino F9 Vertical
Control: Pro5
Spindle:
  10,000 RPM
Travel:
  X - 63" (1600mm)
  Y - 31.5" (800mm)
  Z - 25.6" (650mm)
Weight Capacity: 5,511 lbs (2,500 kgs)
Makino a61 NX Horizontal Machining Center
Control: Pro 5 Control
Spindle: 14,000 RPM
133 Station Tool Changer
Travel:
X - 28” (711mm)
Y - 25” (635mm)
Z - 31” (787mm)
Through the spindle cooling (@ 1000 psi)
Weight Capacity: 1,100 lbs (499 kgs)

Gantry 2000 Sinker EDM
Control: Pro 5 Control
Spindle: 20 RPM
20 Station Tool Changer
Travel:
X - 61” (1549mm)
Y - 108” (2743mm)
Z - 39” (990mm)
Weight Capacity: 66,000 lbs (29,937 kgs)

DEA COORDINATE MEASURING MACHINES
(DELTA 3406 CNC)
CNC Controlled
Software: DMIS
Travel:
X - 128” (3250mm)
Y - 72” (1830mm)
Z - 54” (1370mm)
Romer Arm:
11 foot total reach
6 axis - Absolute Encoders
PC-DMIS Software
Completely portable
HPM 3000-400/600 MK II
INJECTION MOLDING MACHINE
Command 90 CNC Control
8 Zone Water Mold Cooling
Valve Gate Controller
Conair Franklin Material Dryers
82 Zone Hot Runner Control

DAKE SPOTTING PRESSES
(300, 200, 150 TON)
300 Ton Dimensions
  Height: 100” (2540mm)
  Front to Back: 80” (2032mm)
  Left to Right: 127” (3226mm)
200 Ton Dimensions
  Height: 90” (2286mm)
  Front to Back: 48” (1219mm)
  Left to Right: 72” (1828mm)
150 Ton Dimensions
  Height: 60” (1524mm)
  Front to Back: 52” (1321mm)
  Left to Right: 80” (2032mm)

WILLIAMS, WHITE & CO.
3000 TON HYDRAULIC PRESS
Hydrostatic Leveling
Single Front Exiting Rolling Bolster
144” X 108” (3657mm - 2743mm) Die Space
OTHER MACHINES & EQUIPMENT

13 - DEMAG HOISTS 25-50 TONS

5 - LATHES 10”-21”

9 - MILLING MACHINES

1 - MAAS VR6A RADIAL DRILLING MACHINE

1 - KALAMAZOO H-700 BAND SAW / HORIZONTAL / DOUBLE-COLUMN / CUTTING WITH (H x W) 31.5” x 28” CAPACITY

1 - WELLSAW MODEL 1000 CUT OFF SAW WITH 8” X 18” CAPACITY

6 - MILLER WELDERS

5 - HI-POWER GRINDING MACHINES

2 - SG-6 UNIVERSAL CUTTER GRINDING MACHINES

1 - CREATIVE EVOLUTIONS GRAPHITE CUTTING MACHINE

1 - HURCO BMC 50P

1 - OVEN 150”L X 68”W X 72”H

1 - MATTISON GRINDER 30” X 8’ MAGNET - 98.5’ TRAVEL

Zoller Redomatic 600
Tool preset system
4-axis CNC control unit
Combined presetting, heat-shrinking and measuring machine with tool turret, induction coil, tailstock and cooling system.