

## Novak Machine

Specializing in power transmission components machining, primarily: precision multi-spline shafting from 1/2" through 4" diameters and precision gear cases and adapter housings. We commonly do prototyping through production runs from 1-500 items. We are a primary supplier to our customers or supplemental supplier to other machining firms.

### Capabilities

In-house capabilities as follows:

- Spline cutting
- Four-axis CNC milling
- CNC turning
- Gear shaping (straight cut, currently)
- Mechanical engineering & design
- Manufacturing engineering
- Pattern making (typ. for non-ferrous foundry)
- Heat treatment
- Tool design and creation
- Part finishing
- Mechanical assembly
- Expert gearbox assembly
- Gearbox dynamometer testing
- Hardness testing, analysis & metallurgy
- Welding
- Media blast

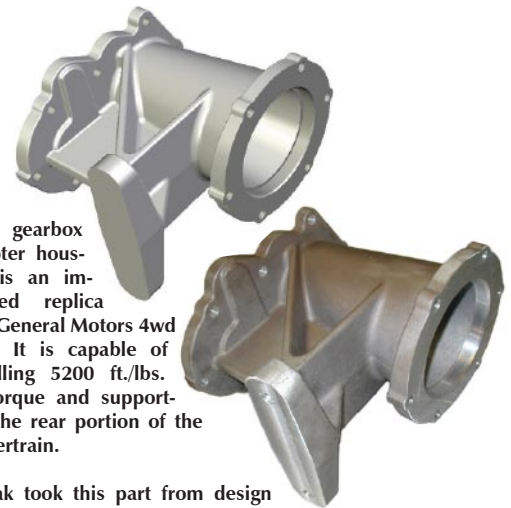
### Equipment

Some of our key machines & software include:

- Machining center, Hardinge VMC 1000, four-axis, 20" x 20" x 60"
- Turning center, Hitachi Seiki HT25-S, 10" chuck, 2-5/8" thru bore
- Lathe, CNC prototyping & finishing, Bridgeport EZPath SD
- Shaper, gear, Fellowes 10-2
- Shaper, spline/keyway, Bridgeport, CNC
- Spline mill, Bridgeport, CNC
- Grinder, cylindrical OD / ID, Grisetti
- Mill, knee, conventional
- Lathe, engine, Lyon, conventional
- Oven, heat treatment, Brimstone
- Grinder, tool, Cincinnatti
- Tester, hardness
- Welder, MIG, Miller
- SolidWorks & SolidCam, integrated CAD/CAM
- Etc.

We have long-standing rapport with expert companies, and are able to quickly and economically draw from these complimentary resources as needed:

- Laser cutting - Sheet metal forming - Metals plating - Non-ferrous founding
- Atmospheric heat-treatment (carburizing, nitriding, etc.)



This gearbox adapter housing is an improved replica of a General Motors 4wd part. It is capable of handling 5200 ft./lbs. of torque and supporting the rear portion of the powertrain.

Novak took this part from design to founding pattern to production, within the same SolidWorks / SolidCam integrated software and a rapid timetable.



This is a strengthened, aftermarket gearset for individuals performing high horsepower engine upgrades in an ATV application



Our HT25S lathe carves steel off of shafts with a massively rigid, 10 station turret, precision chuck and 30hp motor. Fancu drives and controls offer rock-solid operation.

**Novak Machine**

Novak is a 41 year old mechanical design and machine firm, with a crew of talented and driven makers and craftsmen. We're equipped with machines and skills appropriate to the work we bid and perform.



The Hardinge VMC features a 20x20x60 machining envelope, ideal for running multiple housings per run. Production part tolerance is commonly held at .0015" and better.

## Shaft Work Features & Processes

- \* External involute splines, disc shaped
- \* Internal involute splines, shank shaped
- \* External involute splines, single side cut
- \* External straight splines, single side cut
- \* Internal keyways, single point shaped
- \* 4-axis CNC worm drive gear cutting
- \* Double heat-treated alloys with nitride case hardening
- \* Carburized surfaces from .035" to .050" depths and 60RC hardness
- \* Precision ground or PCBN hard-turned surfaces from 16 to 8 micron finishes
- \* Selective groove & thread masking during hardening to prevent brittleness
- \* Cold Jet hard-finishing for temperature stability and tool life
- \* Oil flow, bearing fit and gear clearance tolerancing
- \* Hydraulic flow port cross drilling
- \* Cylindrical tolerances to .0002"
- \* External keyways, milled
- \* Media Blasting
- \* Gun drilling



The Grisetti cylindrical grinder features a DRO with .00001" precision for journal grinding within .0002".



Novak's Fellows 10-2 gear shaper is the best-of-breed shaping machine for cutting internal and external splines and spur gears.



The Bridgeport SD lathe is for prototyping and automatic precision finishing.

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