



AMERICAN GOVERNOR

- **REPLACEMENT PARTS**

- **EXPERT FIELD SERVICE**

- **TECHNICAL SUPPORT**

- **RETROFIT KITS**

- **DIGITAL UPGRADES**

- **PROFESSIONAL TRAINING**

- **GOVERNOR SCHOOL**

American Governor is truly a full service governor company, offering parts, service, training and technical support for legacy governors, as well as complete custom-engineered digital conversion packages. American Governor personnel has over 500 years of combined governor experience and have provided parts, service or training to over 1000 powerplants worldwide. The experience, integrity, responsiveness and technical capability of our team explains why we have developed a strong and loyal following in the hydro industry. We regularly do business with every major hydro owner in North America. Our annual Governor School in June draws over 100 industry professionals seeking theoretical knowledge and practical training on everything from the oldest mechanical governor to the newest PLC digital governor. We are committed to keeping your governors – new or old – running reliably and efficiently for as long as you wish to keep them in service.

American Governor Company is restoring the level of support you once depended on the OEM to provide. Support that you have grown to trust and expect. Our goal is to provide the highest quality parts, field service, technical support, training, engineering and digital upgrades at the best price. And, with regional facilities located throughout the United States, we're close to you.

Legacy Governors

For legacy governors ranging from mechanical flyball to analog electric to early digital governors, we offer new and refurbished parts, experienced field service and expert training. With our huge inventory of new and reconditioned governor parts, we can often provide the part you need overnight. Our Factory Training and Repair facility provides complete factory repair and overhaul services for many types of governors, oil pumps and Permanent Magnet Generators. Our governor specialists can answer your maintenance questions and provide troubleshooting assistance over the phone. We also offer factory and on-site training to customers who wish to build their staff's familiarity with the maintenance and calibration of existing equipment.



Digital PLC Governors

If your unit control requirements have changed due to new operational needs, a digital governor conversion may be appropriate. American Governor is a leading provider of digital governor systems and hydraulic power units. We have commissioned or have orders for over 300 digital governor systems. Our custom-engineered systems are built around industry-standard PLC and hydraulic technology, our proven governor algorithms and your specific needs. All our digital governors are fail-safe and some feature electronic and hydraulic redundancy to continue operation in the event of a single point failure. We can incorporate other unit control features like unit start/stop sequencing, automatic synchronizing, synchronous bypass valve operation, six-needle sequencing, pump-turbine control and downstream flow control modes. We have extensive experience using PLC's from Rockwell/Allen-Bradley, Telemecanique/Schneider Electric/Modicon, GE, Siemens & ABB.

Operator interfaces can range from a local color touchscreen to a complete PC-based plant monitoring system. All our digital governors and control systems are completely tested on our Turbine Simulator before leaving our factory. Various other field devices are also simulated to ensure the system hardware and software are working properly before the equipment arrives at your powerplant, reducing start-up and commissioning time.



New and Reconditioned Spare Parts

We supply new and reconditioned replacement parts for many hydro governors including:

Woodward:

- *Gateshaft Governors and GS Actuators*
- *Mechanical Cabinet Actuators*
- *Analog Electric Actuators including MOD I / MOD II*
- *Digital Governors (all models)*
- *A-Actuators*
- *20 Series Pumps*
- *Oil Pumps, unloaders and pilot valves*
- *Reconditioned XX Pumps and Unloaders*
- *Permanent Magnet Generators (PMGs)*
- *Speed Signal Generators (SSGs)*
- *Speed Switches*

Other manufacturers we support:

- *Allis-Chalmers*
- *Alstom*
- *Andritz*
- *ASEA/ABB*
- *GE*
- *L&S Electric*
- *Lombard*
- *North American Phoenix*
- *Pelton*
- *Voith*
- *Others*

Standard overhaul parts are typically in-stock. Our warehouse stocks thousands of new parts, ready for immediate shipment. Analog Electric and Digital Governor modules can be supplied, tested, and repaired. Obscure parts such as castings, shafts, and couplings are also available.

Our parts and products are guaranteed, and manufactured to meet or **exceed OEM specifications**. We utilize MIL, ASTM, ANSI, and SAE standards to ensure consistent quality results, and we have improved upon many OEM manufacturing processes.



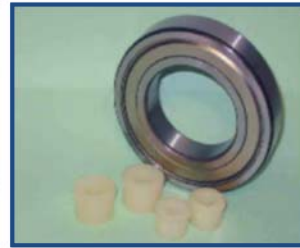
Replacement Parts



Reconditioned Dashpots



Speed Switch parts



PMG Bearings/Bushings



Governor Modules

Expert Field Service

Our field engineers are OEM-trained and have the skills and experience to keep your equipment running reliably and efficiently. We provide Field Service support for all Hydro Turbine Governor Systems including:

- *Mechanical Overhauls, Routine Maintenance, Tuning and Adjustments*
- *System Troubleshooting*
- *Governor Testing (including NERC & Stability Tests)*
- *PID Tuning*
- *Governor Calibrations (including Driver Amplifier Calibrations)*
- *Digital Control Tuning Expert Governor Specialists*
- *Customized Long-Term Maintenance Programs*
- *PLCs from Allen-Bradley, Modicon, GE, Siemens, ABB*



Expert Governor Specialists



Tuning a Digital Governor

We specialize in ALL Woodward equipment including:

- *Gateshaft Governors*
- *Mechanical Cabinet Actuators*
- *Mod I & II, Mag Amp, Drawer*
- *Digital Controls, including 501, 505H, 517, 700H, 723H, NetCon™, Micronet™, Atlas™*
- *OpTrend™, Intellution™, and other HMI Systems*
- *Oil Pumps, Unloaders and Pilot Valves*
- *Permanent Magnet Generators (PMGs)*
- *Speed Signal Generators (SSGs)*



Analog Governor



Pressure System

Our broad governor knowledge base and troubleshooting experience enables us to support equipment manufactured by: Allis Chalmers, Alstom, Andritz, ASEA/ABB, GE, L&S Electric, Lombard, North American Phoenix, Pelton, S. Morgan Smith, Voith, and others.

Governor Upgrades - Retrofits - Engineering Services

When it is time to either enhance your existing Governor or perform a complete Mechanical to Digital conversion, we can supply the Engineering, Field Support, and Hardware required.

Custom Engineered Systems:

- Digital Governor systems with Touchscreen Interface
- Electrohydraulic Interfaces - Simplex or Redundant
- Governor Oil Systems - High or Low pressure
- Unit Control systems with Touchscreen Interface
- Plant Control systems with Historical Data Archiving



Redundant PLC Controls Cabinet



Redundant Gate Position Feedback



Redundant Proportional Valve Manifold



Converted GS-Actuator

Pre-Engineered Retrofit Kits:

- Gateshaft - Standard Governor Retrofit Kit with Color Touchscreen Operator Interface
- Digital Interface Kits - an economical alternative to a digital governor upgrade
- Solenoid-Operated Pump Unloader Kits - replaces mechanical "Snap-Action" pilot valve and mechanical unloaders
- 3-D Cam Kits - replacement for the Zilog CPU controller, uses your existing gate, blade and net head signals
- Selsyn Replacement Kits - replace Selsyn transmitters and receivers with 4-20mA devices.
- Speed Switch - electronic replacement eliminates auxiliary speed switches
- Kidney Loop Oil Filtration Systems - provides continuous filtration of governor sump oil



Pump Unloader Kits



Gate Limit Transmitter



Speed Adjust Transmitter



Selsyn Replacement



Kidney Loop Filtration

Complete Service Facility

Our fully equipped Wisconsin **Training & Repair Facility** is ready to support all of your governor and accessory system repair needs. We have overhauled or repaired dozens of Woodward and Pelton PMGs and over 60 Woodward XX-Herringbone Gear Pumps.



Full Technical Support

We have qualified personnel with years of field experience available to assist with questions and governor problems. We can help guide you through the troubleshooting process. We offer technical support for governors and associated equipment from **all** manufacturers. Plus, our Field Service Engineers are well versed in all aspects of hydro powerplant performance, from the penstocks to the draft tubes.



AMERICAN GOVERNOR

Complete Training Services

American Governor Company offers a full range of factory and on-site training classes. On-site classes are specially prepared to cover the particular equipment at your site and your specific training needs.

American Governor Company offers a highly-rated "Governor School" each June in our Wisconsin Training Facility. This three-day intensive training workshop expands upon Woodward's successful governor schools of the 70's and 80's and is staffed by many of the same instructors. By using many cutaways and simulators, we offer a unique opportunity to learn about and work with many types of Woodward governors, speed sensing devices, oil systems and governor auxiliaries.

We also offer a series of Focus Training classes throughout the year. These two-day advanced classes are designed for experienced technicians and feature smaller class sizes.

Typical training topics:

- Governor Theory
- Droop and Load Sharing
- Mechanical Components and their Operation
- Electrical Components and their Operation
- Regular Maintenance Activities
- Governor Adjustments / Pumping System Adjustments
- Governor and Pump Troubleshooting
- Hands-on Overhaul and Troubleshooting Sessions



Governor School - Amherst, WI

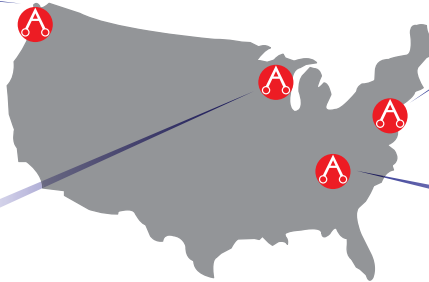


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