



Experience a whole new level of connectivity and control.



Introducing the Eaton® CMA Advanced Mobile Valve with Independent Metering

CMA features and benefits

A whole new level of machine performance

- Automated functions for more dynamic decision-making
- Significantly improved machine responsiveness
- More precise control for all load conditions
- Improved energy management for fuel savings

A whole new level of operator productivity

- Advanced diagnostics for faster troubleshooting
- Limp mode for continued operation
- Hose burst shut-off to minimize spills
- Easier system integration



CMA features and benefits

CMA technical specifications

- Two frame sizes: CMA90 (90 LPM) and CMA200 (200 LPM)
- 440 bar max (380 bar NFPA rated)
- Twin spool architecture with independent metering, integrated pressure position and temperature sensors
- Sectional construction with up to 8 sections per bank (15 max per system)
- J1939 or CANopen communication
- Software configurable

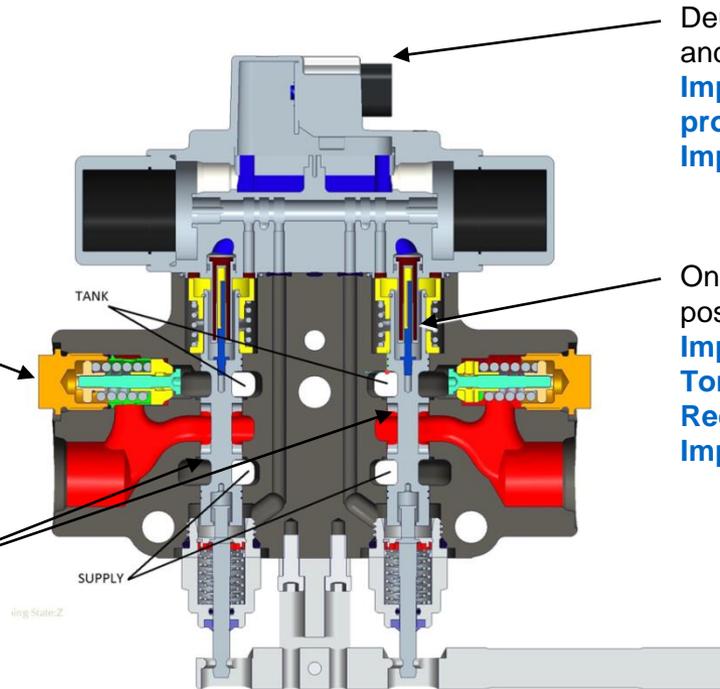


Unique valve design enables a whole new level of precision and performance

Sectional / configurable inlet
(Up to 8 sections)
Design Flexibility

Port Reliefs
**Easily accessible
for modifications**

Patented independent
twin spool design
**High performance
Reduces inefficiencies**



Deutsch connector cabling
and interface change
**Improved environmental
protection
Improved temperature**

On board pressure and
position sensors
**Improved diagnostics
Torque control
Reduced throttling losses
Improved machine precision**



CMA Series Valve Features

- Precise control maintained for all load conditions
- High valve responsiveness
- Flow Sharing – Pre and Post Comp Capabilities
- Flexibility in configuration / easily change parameters
- Advanced Diagnostics for improved reliability and productivity
- Diagnostics on the inlet, tank, load sense, work port pressures, spool position, consumed flow, and oil temperature
- Reliable performance across a broad temperature range



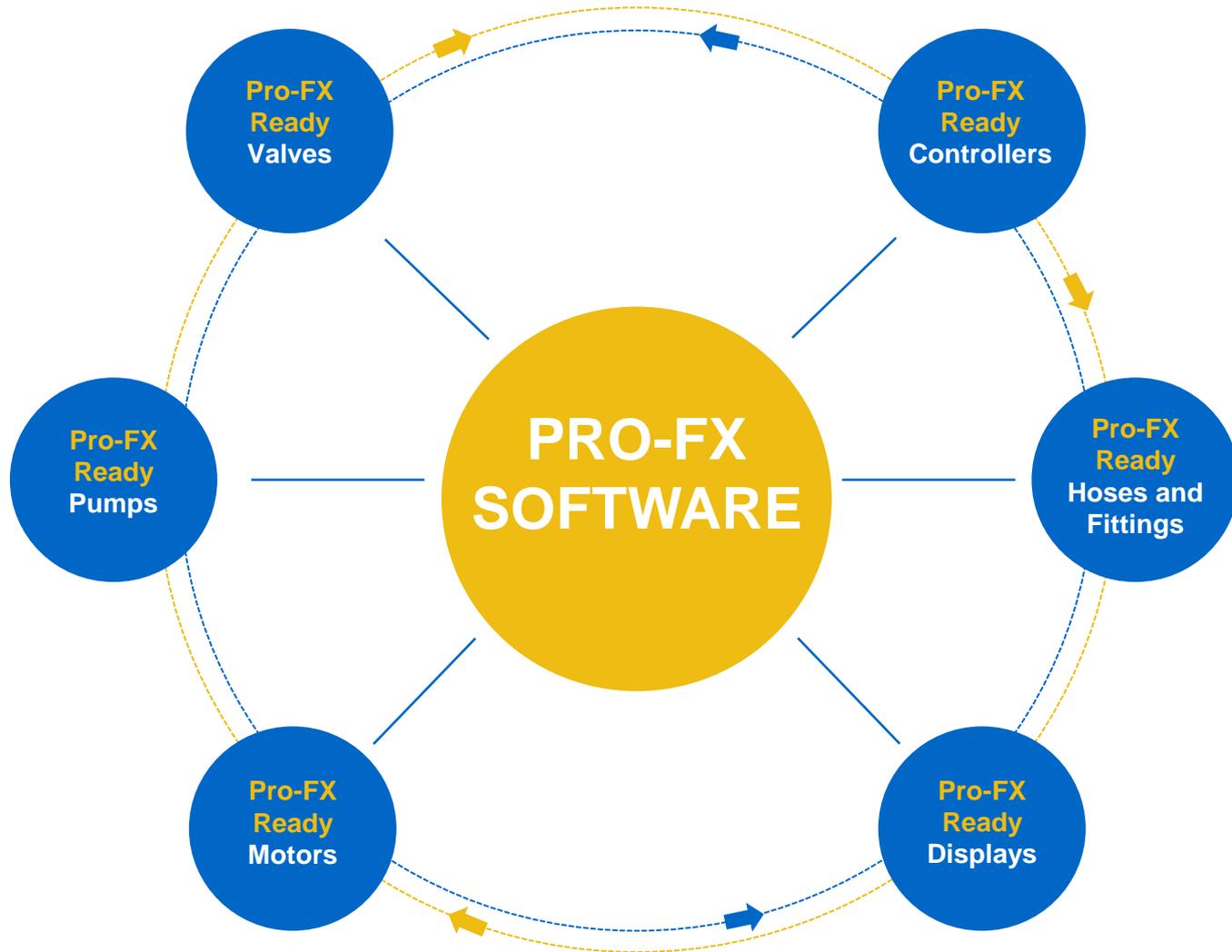
Basic Specifications



General Specifications	CMA90 (Gen 4 X)	CMA200 (Gen 4)
Max Number of Working Sections	8	8
Sectional Nominal Thickness	56 mm (2.2 in)	56 mm (2.2 in)
Spool Stroke	9 mm (.35 in)	9 mm (.35 in)
RATED FLOW		
A/B Port Flow Rate (l/min) (*)	90	200
CONTINUOUS RATED PRESSURE (NFPA Spec)	380 bar (5511 psi)	380 bar (5511 psi)
MAX PRESSURE	440 bar (6832 psi)	440 bar (6832 psi)
BACK PRESSURE MAX		
Max Pressure Outlet Port T	10 bar (145 psi) w/manual 30 bar (435 psi) w/out manual	10 bar (145 psi) w/manual 30 bar (435 psi) w/out manual

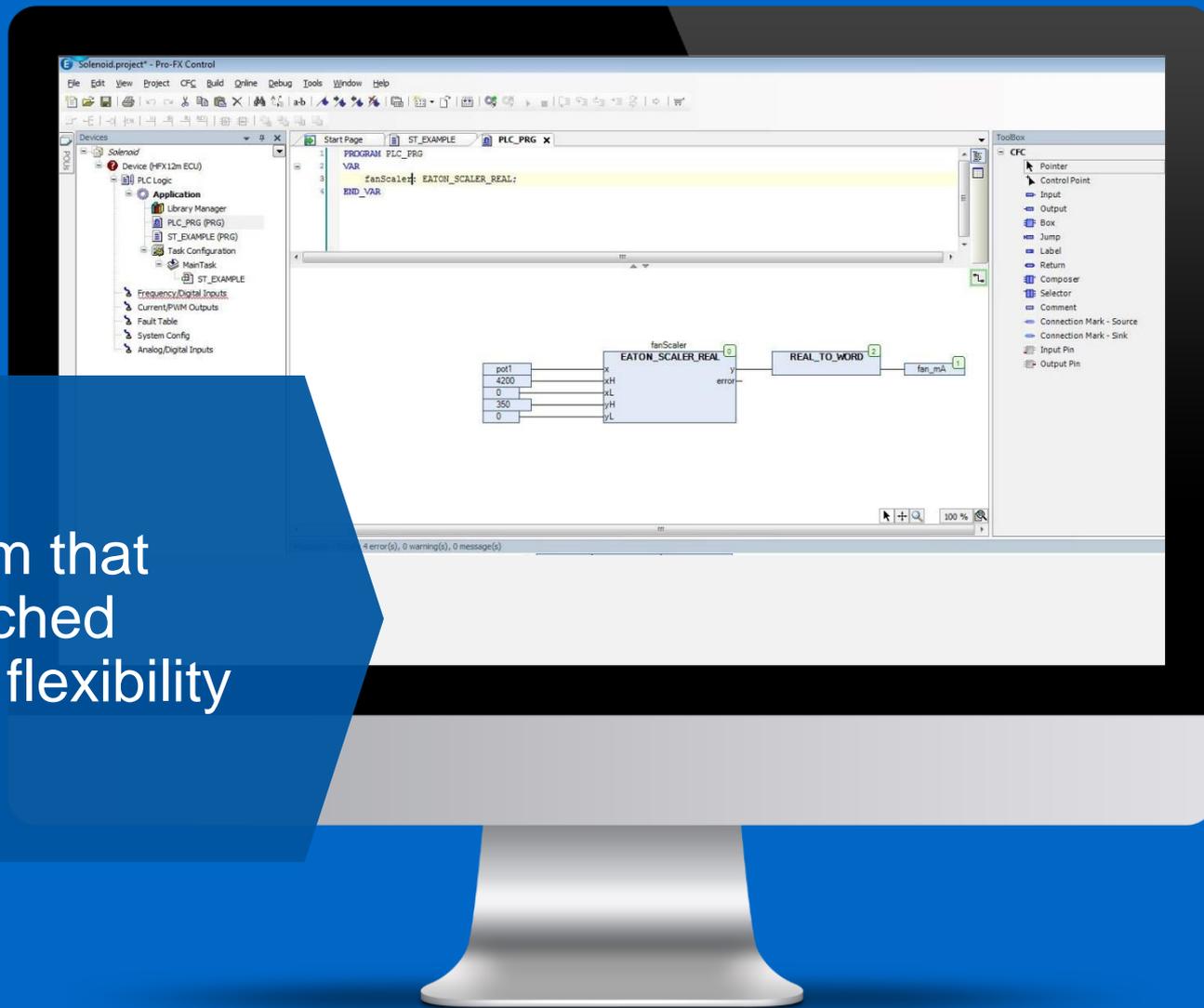
(*) Rated at 14 bar Δp

Pro-FX Technology Platform





Open platform that
offers unmatched
freedom and flexibility



What challenges are
you experiencing?



Key benefits of CMA Valve

- Reduce Set-Up Time
- Increase Stability
- Real-Time Diagnostic Data
- Continue Operation until the Job is Done
- Improve Swing Control
- Eliminate Pump Saturation
- Reduce Inventory Levels
- Reduce Valve Sections



Reduce setup time

Problem:

The adjustment of spool and housings during valve set-up time can take weeks.

With traditional valves, Complex hardware **changes to spools and housing.**

Long machine **calibration time.**

CMA Solution:

The pairing of sophisticated on-board sensors with our Pro-FX software have automated the fine tuning process – down to a few minutes for some applications.

With CMA valves, **Configured via software** on laptop – no spools involved.

Automated calibration process – tests in seconds.



Increase stability

Problem:

When dealing with large loads or in precise environments, control is at the utmost importance.

Traditional valves deliver **inconsistent actuator movements** when transitioning between passive and overrunning loads.

CMA Solution:

Eaton offers intelligent, precise control with sensors and microprocessors on every pilot valve.

With CMA valves, **Independent control** of meter in and meter out allows for a **smooth transition** between passive and overrunning loads.



Real time diagnostic data

Problem:

When a valve fails, every hour out of commission counts.

Must take apart **each section** to pinpoint failure point.

Failure **without warning** leading to machine downtime.

CMA Solution:

Eaton allows you to monitor the performance of the CMA valves real time and schedule maintenance on your time – before a failure occurs.

On-board sensors monitor inlet, tank, load sense, work port pressures, spool positions, consumed flow and oil temperatures – **complete real-time diagnostics view**.



Continue operation until the job is done

Problem:

Some applications (i.e. harvesters) have a short window to get the job done.

With traditional valves, a valve failure requires **immediate repair** for continued operation.

CMA Solution:

CMA intelligent valves can switch into 'limp mode' if a sensor goes down in the field, allowing the operator to finish the job before maintenance is required.

Limp-mode algorithm provides a backup mode for the machine to **continue to operate** even if a valve sensor is down.



Improve swing control

Problem:

Safety is the utmost concern for crane operators. Allowing for uncontrollable swing is required and takes **great operator skill**.

With traditional valves, the amount of swing was a **liability** to the operator and a constant safety concern.

CMA Solution:

With twin-spool architecture, on-board sensors and data processing CMA can determine load conditions, flow demand and available flow and implements Eaton proprietary control strategies – resulting in **infinite control**.



Eliminate pump saturation

Problem:

With traditional valves, you accept pump saturation occurrences and **manage your losses**.

CMA Solution:

Avoid pump saturation **completely** with proprietary flow sharing algorithms and methodology. Ability to choose and **prioritize methods** based on application.



Reduce inventory levels

Problem:

Inventories of **200+ spools** to calibrate valves.

Part proliferation of components.

CMA Solution:

Only **two spools** are available/needed to calibrate CMA valve.

Keep only the CMA on the shelf and then, just before installation, program customized performance through Pro-FX software.

One valve – many uses, simplified inventory.



Reduce number of valve sections

Problem:

With a traditional valve, one service = one section.

CMA Solution:

Ability to use single spool modes and control **two services with one section**.

Potentially reducing a section within valve bank for cost-out of system.



Customer Successes



Machine Function:

The key function of the machine is to provide smooth snow for the world's ski resorts. This requires operation in extreme temperature environments in rapidly changing terrain.

Challenge:

Providing smooth snow in varying conditions requires expert operators who are constantly managing the machine speed and down acting pressure of the implements. This results in fatigue for operators, hiring challenges for ski resorts, and inconsistent snow for their customers

DMC solution:

- By taking operator input and combining with sensor data and logic on the valve, we are able to “shift on the fly” from pressure to flow control, a function that is nearly impossible with traditional systems.
- This removes the burden from the operator and results in smoother snow independent of the operator and changing terrain conditions.