SECTION 5 MECHATRONICS SYSTEM
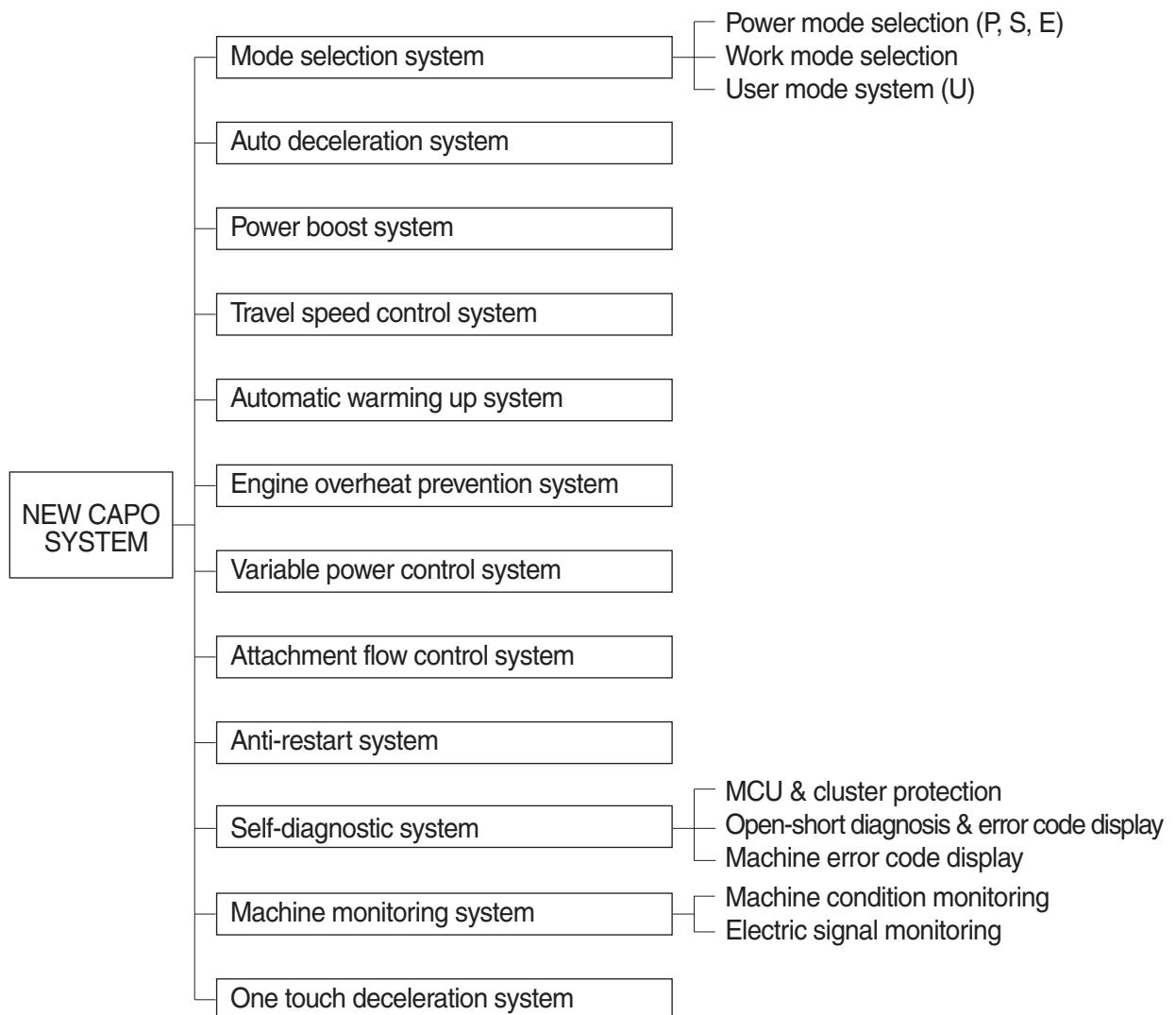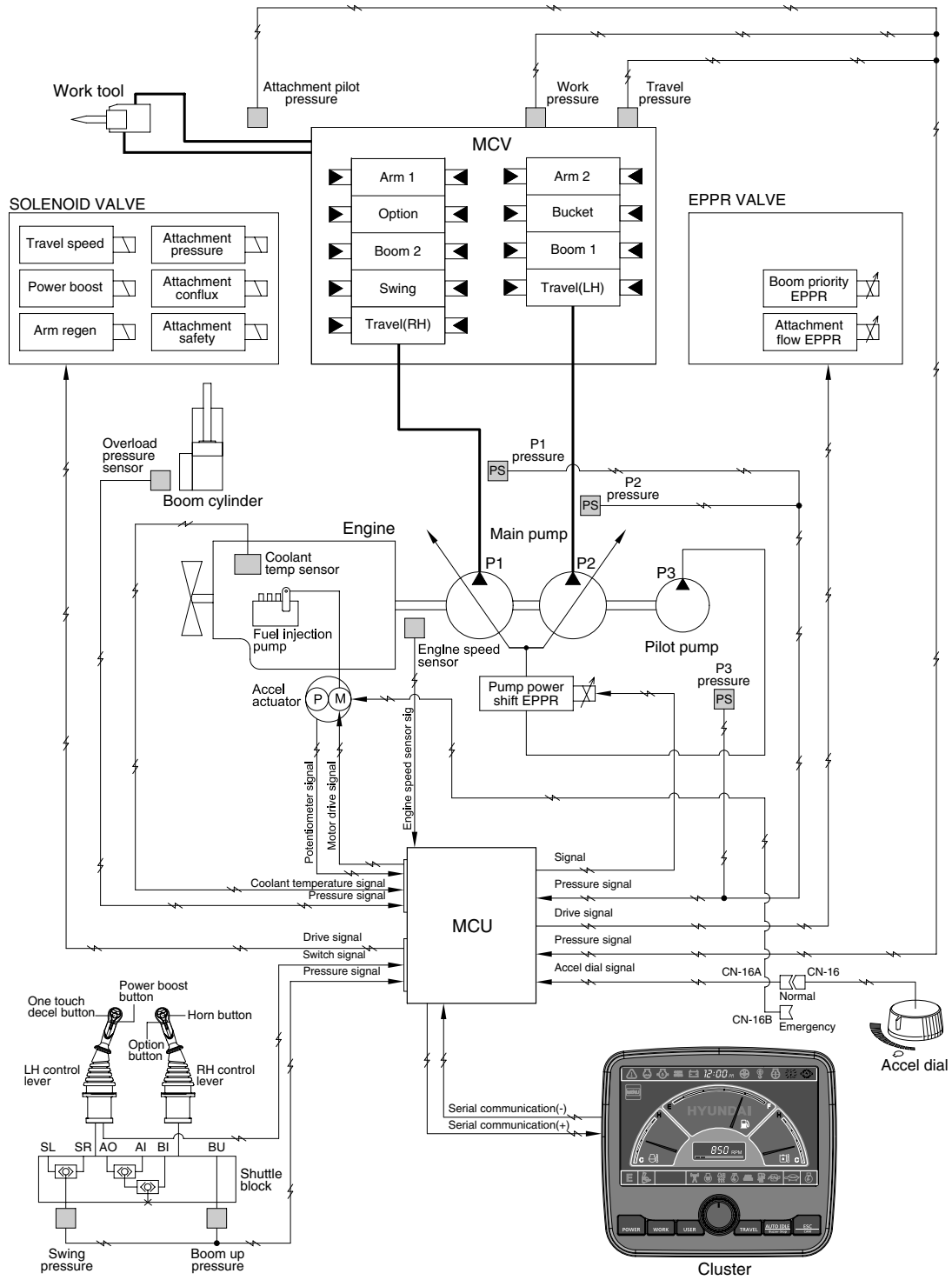
GROUP 1 OUTLINE (CLUSTER TYPE 1)

The CAPO (Computer Aided Power Optimization) system controls engine and pump mutual power at an optimum and less fuel consuming state for the selected work by mode selection, auto-deceleration, power boost function, etc. It monitors machine conditions, for instance, engine speed, coolant temperature, hydraulic oil temperature, and hydraulic oil pressure, etc.
It consists of a MCU, a cluster, an accel actuator, EPPR valves, and other components. The MCU and the cluster protect themselves from over-current and high voltage input, and diagnose malfunctions caused by short or open circuit in electric system, and display error codes on the cluster.

```
                                                       ┌─ Power mode selection (P, S, E)
                        Mode selection system ─────────┼─ Work mode selection
                                                       └─ User mode system (U)

                        Auto deceleration system

                        Power boost system

                        Travel speed control system

                        Automatic warming up system

                        Engine overheat prevention system
NEW CAPO
SYSTEM                  Variable power control system

                        Attachment flow control system

                        Anti-restart system

                                                       ┌─ MCU & cluster protection
                        Self-diagnostic system ────────┼─ Open-short diagnosis & error code display
                                                       └─ Machine error code display

                                                       ┌─ Machine condition monitoring
                        Machine monitoring system ─────┴─ Electric signal monitoring

                        One touch deceleration system
```
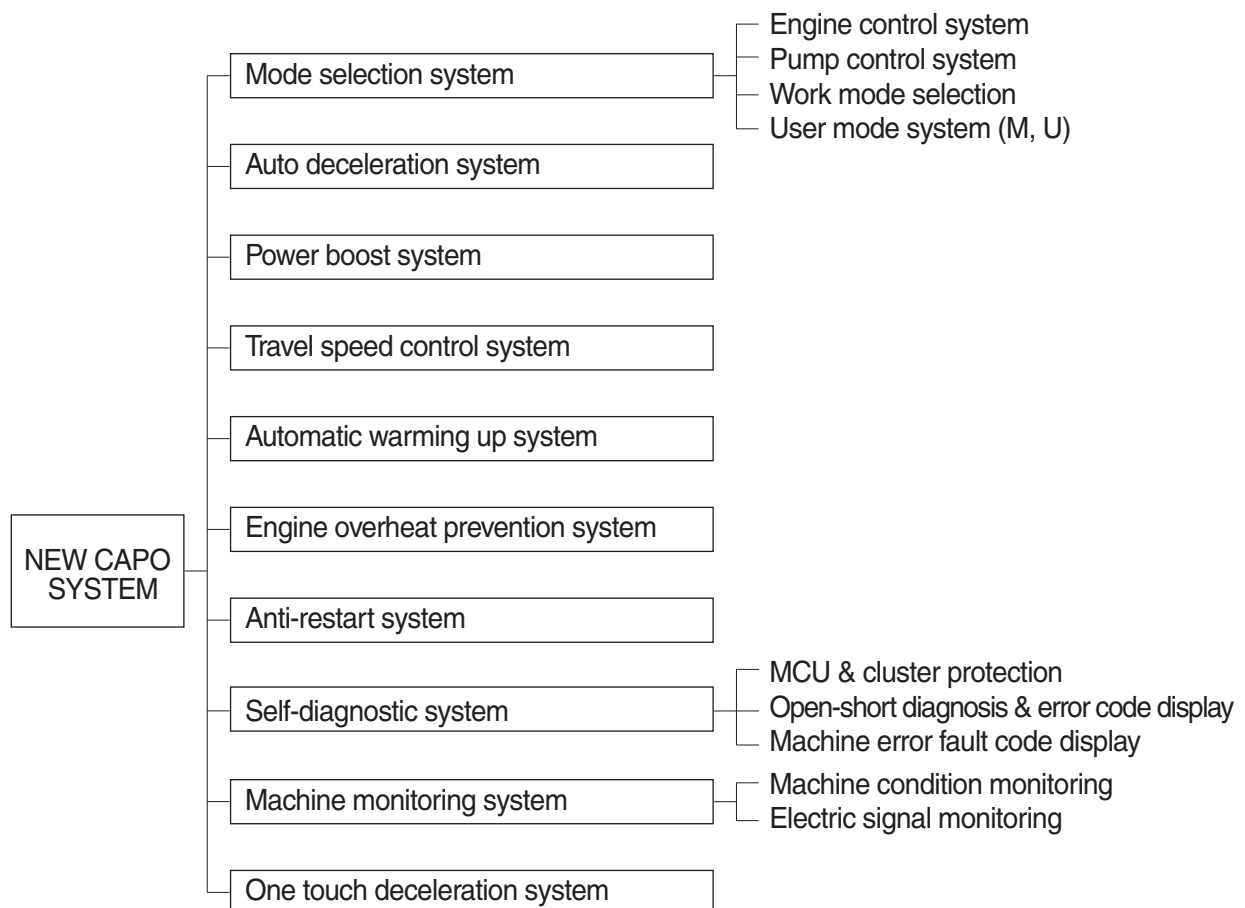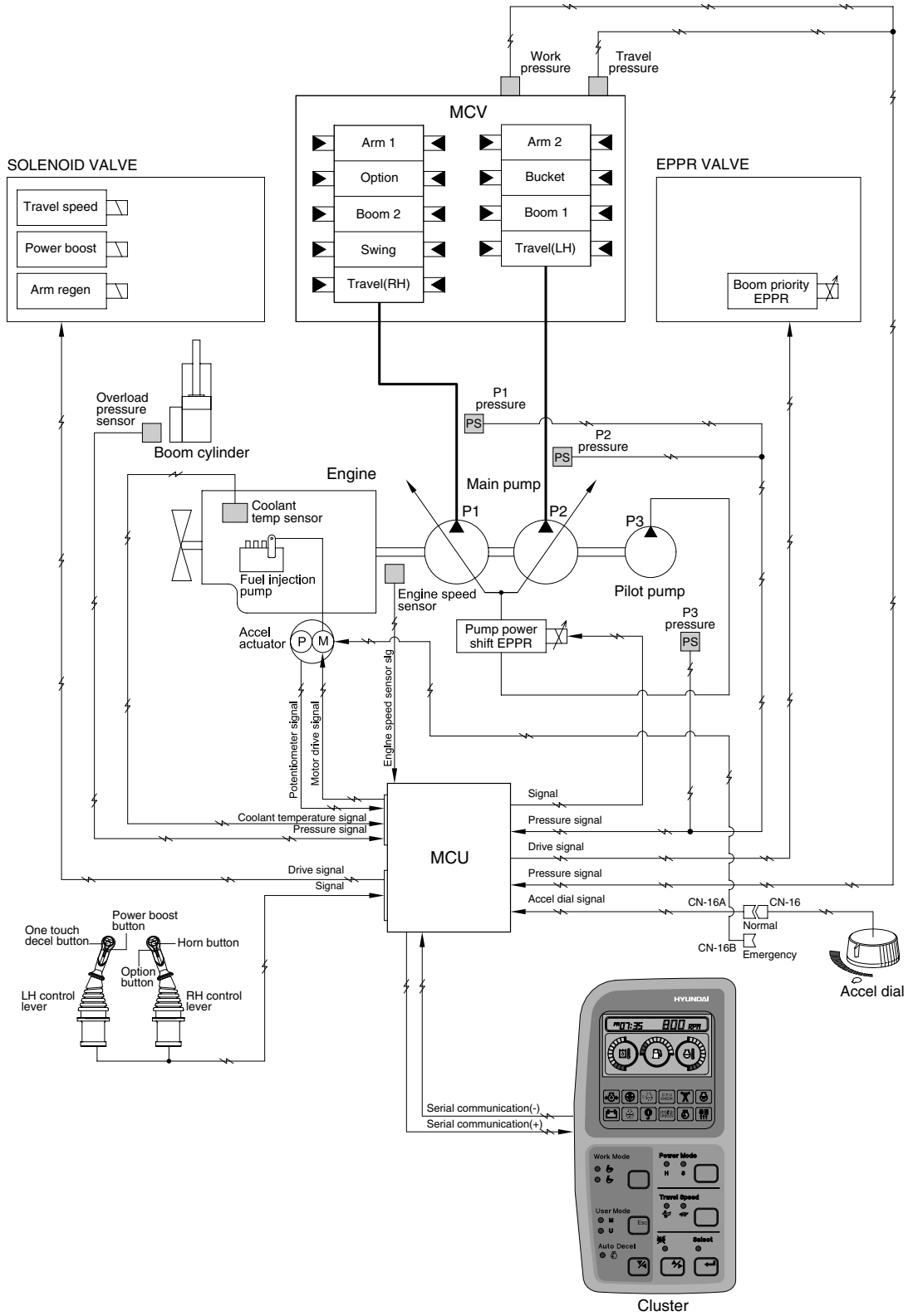
SYSTEM DIAGRAM (CLUSTER TYPE 1)

3309SH5MS04

■ OUTLINE (CLUSTER TYPE 2)

The NEW CAPO (Computer Aided Power Optimization) system controls engine and pump mutual power at an optimum and less fuel consuming state for the selected work by mode selection, auto-deceleration, power boost function, etc. It monitors machine conditions, for instance, engine speed, coolant temperature, hydraulic oil temperature, and hydraulic oil pressure, etc.

It consists of a MCU, a cluster, an accel actuator, EPPR valves, and other components. The MCU and the cluster protect themselves from over-current and high voltage input, and diagnose malfunctions caused by short or open circuit in electric system, and display error codes on the cluster.

```
                                                              ┌─ Engine control system
                        ┌─────────────────────────────┐      ├─ Pump control system
                        │ Mode selection system        │──────┼─ Work mode selection
                        └─────────────────────────────┘      └─ User mode system (M, U)

                        ┌─────────────────────────────┐
                        │ Auto deceleration system     │
                        └─────────────────────────────┘

                        ┌─────────────────────────────┐
                        │ Power boost system           │
                        └─────────────────────────────┘

                        ┌─────────────────────────────┐
                        │ Travel speed control system  │
                        └─────────────────────────────┘

                        ┌─────────────────────────────┐
                        │ Automatic warming up system  │
                        └─────────────────────────────┘

  ┌──────────┐          ┌───────────────────────────────────┐
  │ NEW CAPO │──────────│ Engine overheat prevention system │
  │ SYSTEM   │          └───────────────────────────────────┘
  └──────────┘
                        ┌─────────────────────────────┐
                        │ Anti-restart system          │
                        └─────────────────────────────┘
                                                              ┌─ MCU & cluster protection
                        ┌─────────────────────────────┐      ├─ Open-short diagnosis & error code display
                        │ Self-diagnostic system       │──────┼─ Machine error fault code display
                        └─────────────────────────────┘      
                                                              ┌─ Machine condition monitoring
                        ┌─────────────────────────────┐      └─ Electric signal monitoring
                        │ Machine monitoring system    │──────┘
                        └─────────────────────────────┘

                        ┌─────────────────────────────┐
                        │ One touch deceleration system│
                        └─────────────────────────────┘
```

SYSTEM DIAGRAM (CLUSTER TYPE 2)

Work pressure

Travel pressure

MCV

Arm 1	Arm 2
Option	Bucket
Boom 2	Boom 1
Swing	Travel(LH)
Travel(RH)	

SOLENOID VALVE

Travel speed

Power boost

Arm regen

EPPR VALVE

Boom priority EPPR

Overload pressure sensor

Boom cylinder

P1 pressure

PS

P2 pressure

PS

Engine

Main pump

Coolant temp sensor

Fuel injection pump

P1

P2

P3

Pilot pump

Engine speed sensor

Accel actuator

P M

Pump power shift EPPR

P3 pressure

PS

Potentiometer signal

Motor drive signal

Engine speed sensor slg.

Coolant temperature signal

Pressure signal

Drive signal

Signal

MCU

Signal

Pressure signal

Drive signal

Pressure signal

Accel dial signal

CN-16A

CN-16

Normal

CN-16B

Emergency

Accel dial

One touch decel button

Power boost button

Option button

Horn button

LH control lever

RH control lever

Serial communication(-)

Serial communication(+)

HYUNDAI

Work Mode

Power Mode

User Mode

Travel Speed

Auto Decel

Select

Esc

Cluster

3309SH5MS05

5-4