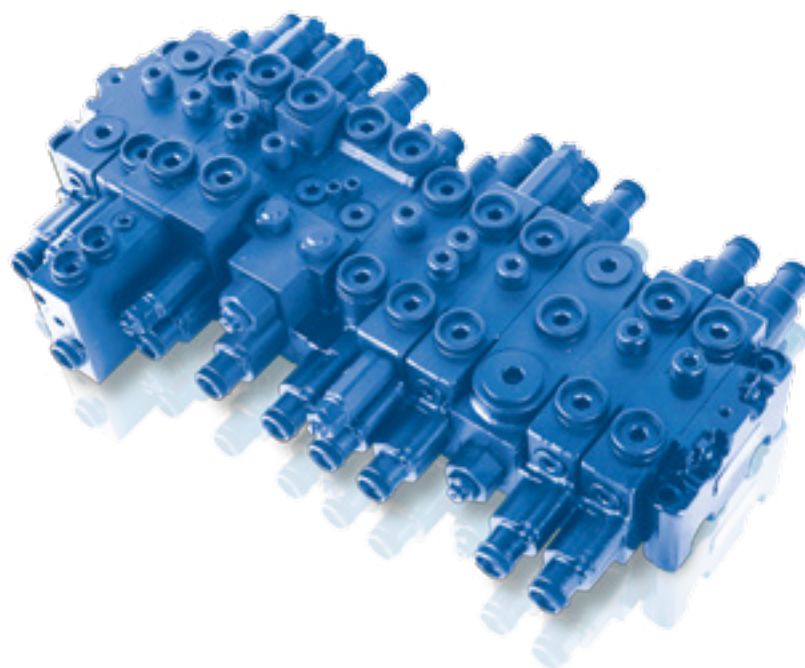


Mobile Directional  
Control Valve

CMJ Sectional Valve  
Rate Pressure: 230bar  
Flow rate 60, 80L/min



**EATON**

*Powering Business Worldwide*

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Schematic and Installation .....	10
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# General Introduction

## Features & Benefits

- Open center sectional control valve
- Max. pressure: 230 bar
- Two flow options available: 60 LPM; 80 LPM
- Using low friction seals and wipers
- Low pressure drop and low noise through optimized casing and oil path design
- Flexible configuration for multiple functions
- Low hysteresis and high dynamic valve design
- Low internal leakage due to optimum spool design
- High market acceptance due to reliability and durability
- Three Main Relief Valves provide added system protection in complex excavator applications. (Market leading design)
- P1 and P2 can purge additional flow from P3 through special patented circuit design to achieve higher work circuit speeds
- Load Holding valve for Boom Holding
- Multiple valve port relief configurations available
- For traction drive control, P1 and P2 separately supply left and right traction, while P3 supplies other functions, e.g. bucket load will not impact the traction speed during "travel straight mode"



## Typical Applications

- Excavator and mini excavator
- Backhoe loader
- Horizontal directional drilling
- Forklift
- Agricultural machinery

## Notes

*Other larger mono-block valves are available on request, please consult AP product marketing for further information.*

*The open center system is widely applied in compact machinery, e.g. typically mini excavator. Compared with other systems, open center systems are market-proven products with competitive cost and high levels of reliability.*

*This catalogue introduces two types of open center sectional valves applicable to 5~7 Ton mini excavator applications.*

# Operation Data

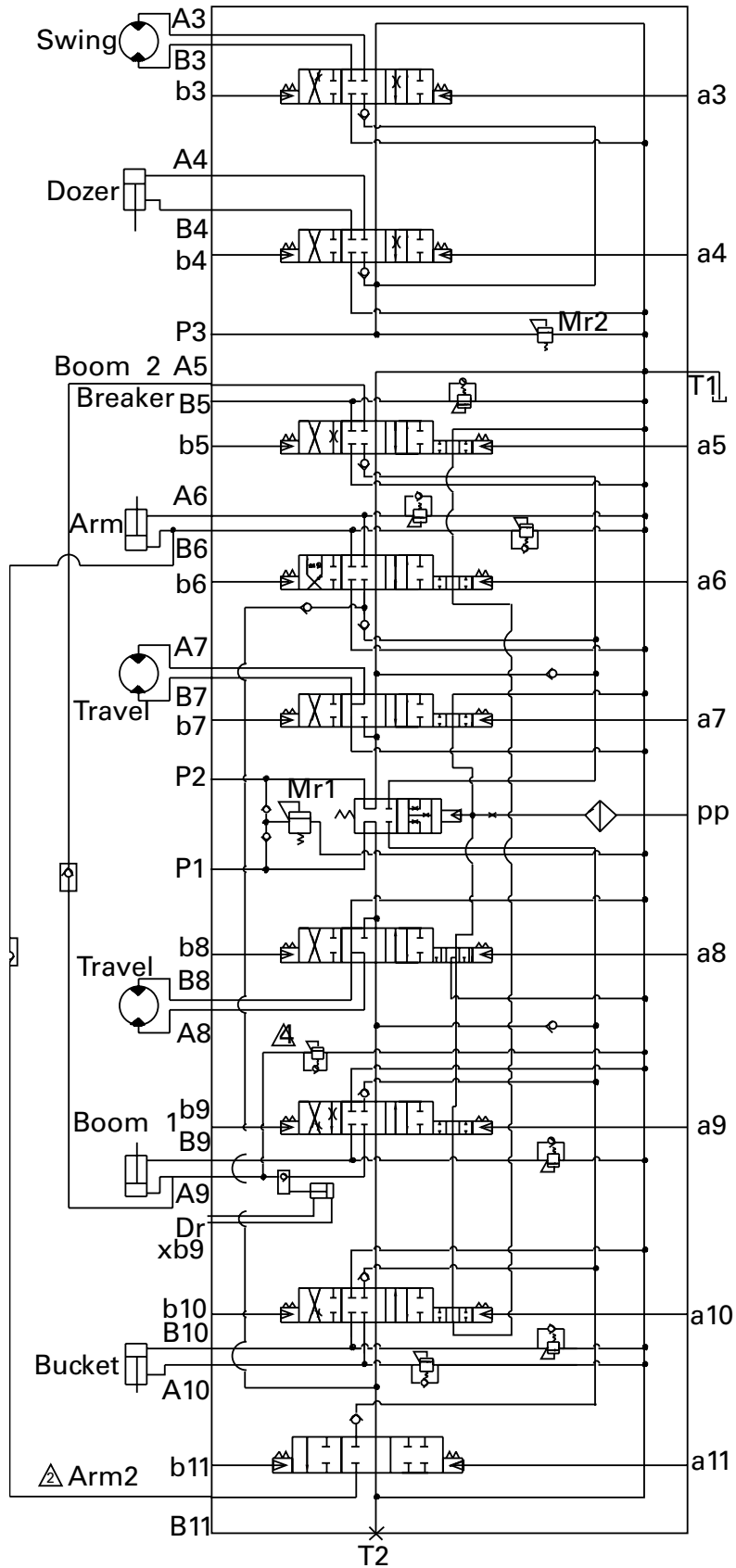


Model	CMJ60	CMJ80
Spool specification	Spool Dia = 14.5 mm	Spool Dia = 16.0 mm
	Spool Stroke = 8.0 mm	Spool Stroke = 8.0 mm
Rated pressure	220 bar	230 bar
Max. pressure	240 bar	250 bar
Pilot port rated pressure	40 bar	40 bar
Max. flow	P1,P2 – 60 LPM	P1,P2 – 80 LPM
	P3 – 40 LPM	P3 – 40 LPM
Max. back pressure	Peak – 20 bar	Peak – 20 bar
	Normal – 8 bar	Normal – 8 bar
Temperature range	-20 ~ 90 °C	-20 ~ 90 °C
Hydraulic oil	ISO VG 46 Equivalent	ISO VG 46 Equivalent
Main relief setting	220 bar @ 40 LPM	230 bar @ 50 LPM
Overload relief setting	240 bar @ 10 LPM	250 bar @ 20 LPM
Internal leakage	8 cc/min @70 bar & 37Cst	8 cc/min @70 bar & 37Cst
Typical vehicle application	5 Ton	5-7 Ton

# CMJ60

60L/min

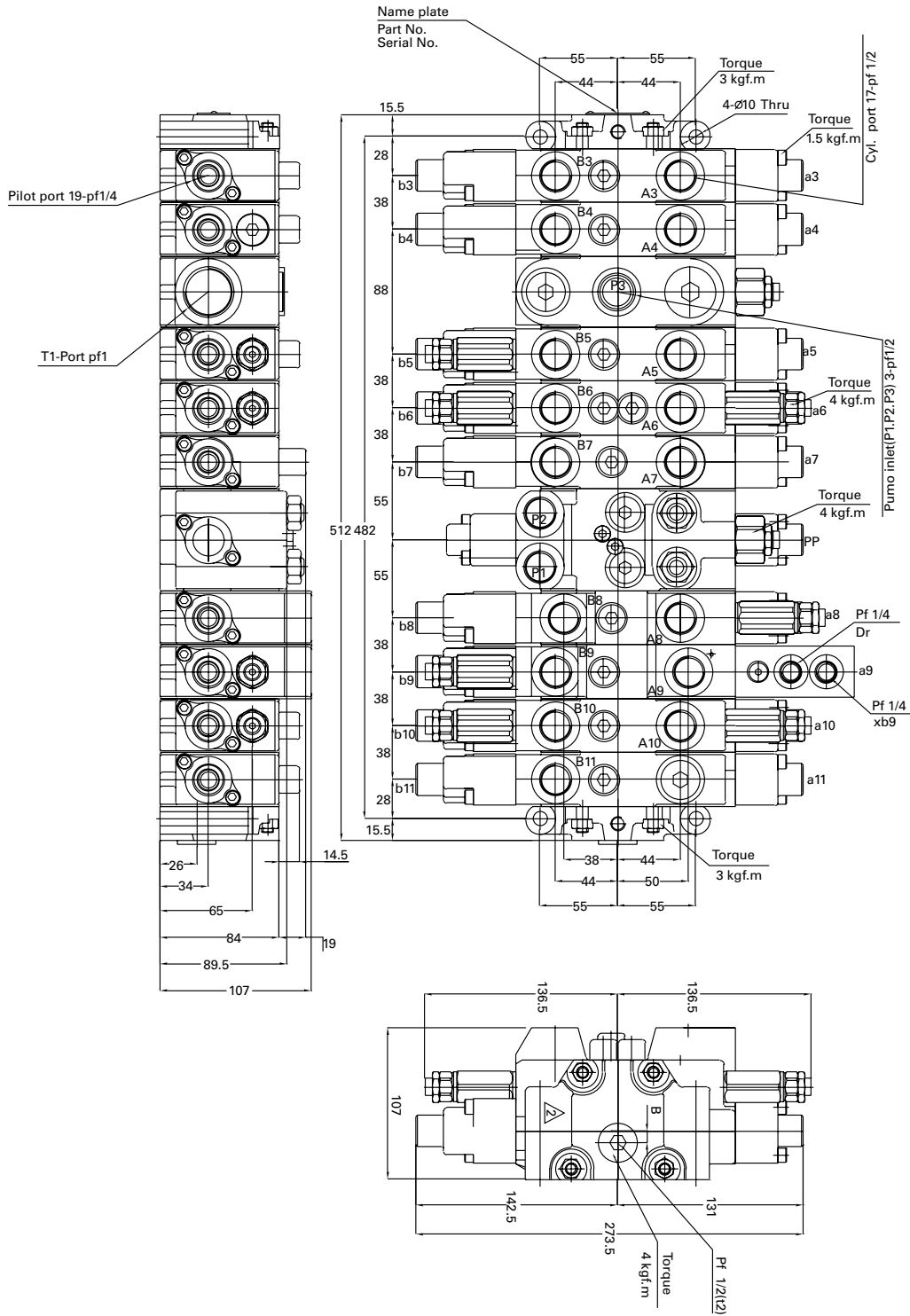
Schematic of typical mini excavator application



# CMJ60

60L/min

## Installation, mm

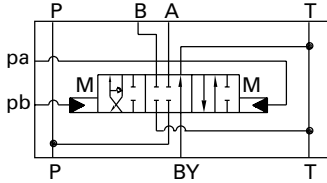


# CMJ60

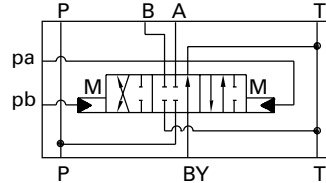
## Specifications and Spool Types

### Section schematic function - Hydraulic pilot control

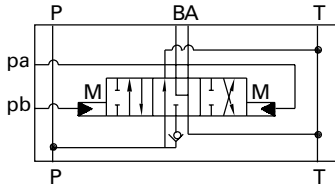
1. Hydraulically Operated, 3-Position Spool and regeneration from A to B line, while the spool is moved to the right direction.



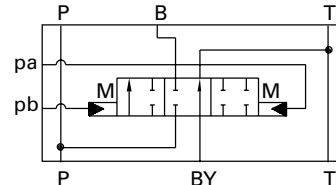
2. Hydraulically Operated, 3-Position Spool which has orifice in B->T line only.



3. Hydraulically Operated, 3-Position Spool which is opened to T from A and B port in neutral condition.

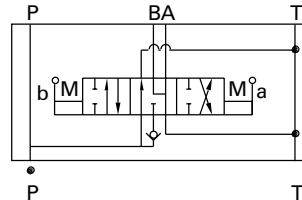


4. Hydraulically Operated, 3-Position Spool which has P->B line, while the spool is moved to the right direction.



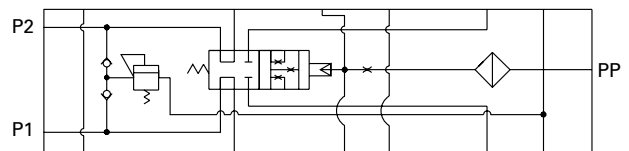
### Section schematic function - Manual control

1. Manually Operated, 3-Position Spool which is opened to T from A and B port in neutral condition.



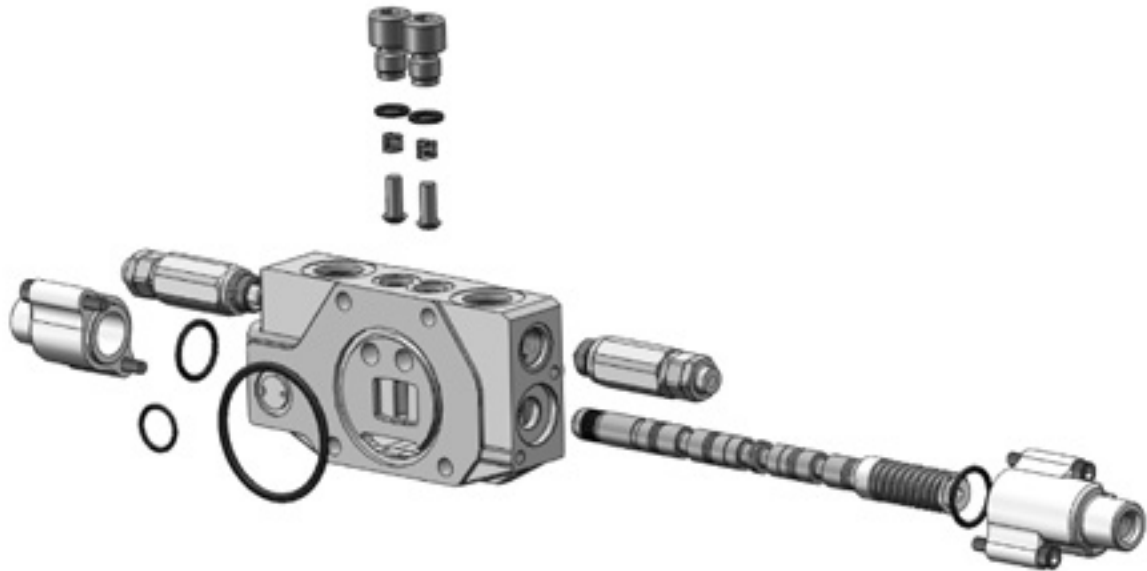
### Inlet section schematic (Mini excavator applications)

A Travel Straight function is integrated in inlet block. In order to make this function work normally, a pilot pressure from pilot gear pump is needed to supply to PP port.



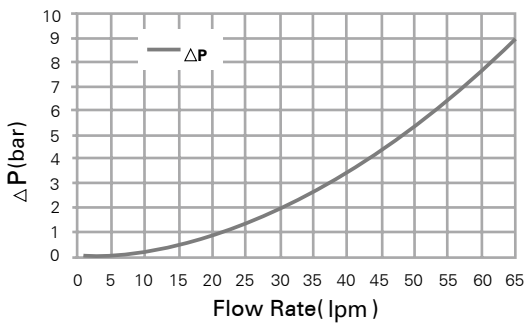
# CMJ60

## Exploded View

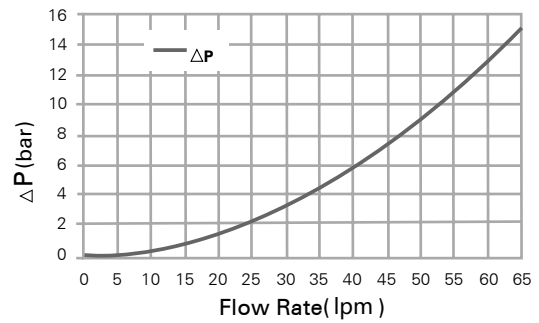


### Pressure drop curve

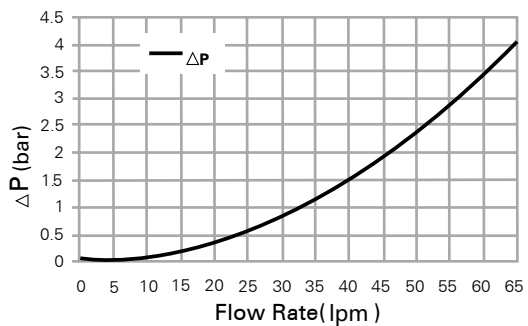
$\Delta P$  of P-T Neutral Flow



$\Delta P$  of P-C



$\Delta P$  of C-T





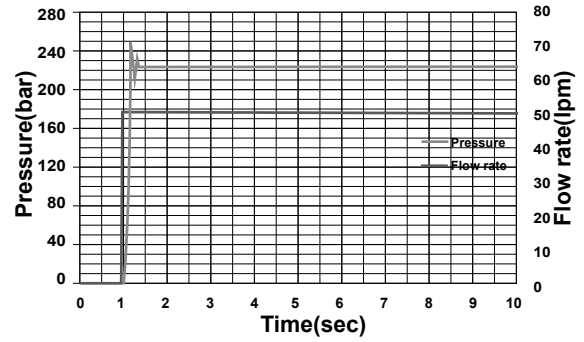
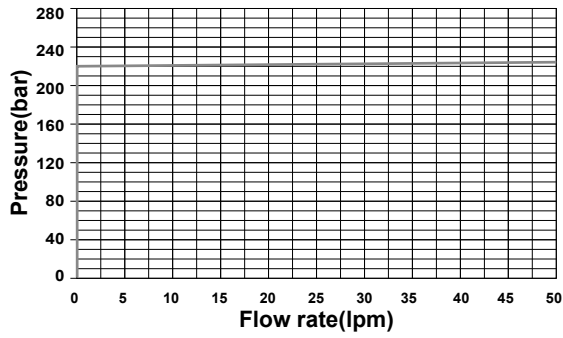
# CMJ60

## Auxiliary Valves' Characteristic

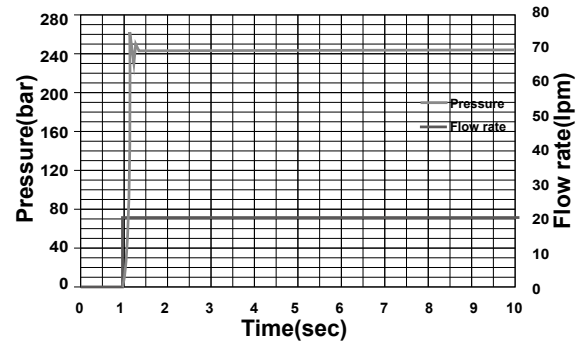
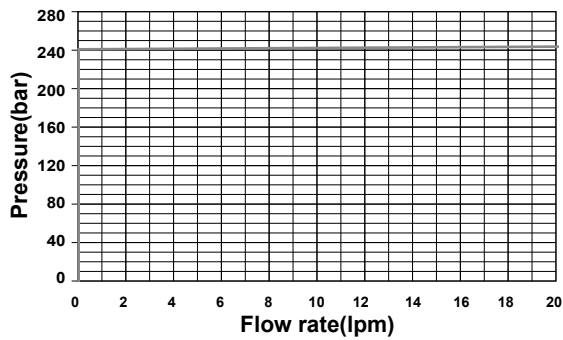
### Static Characteristic

### Dynamic Characteristic

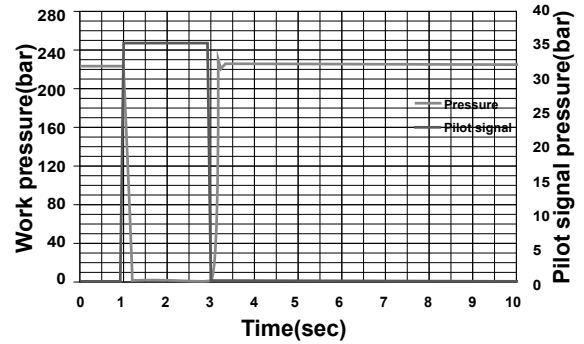
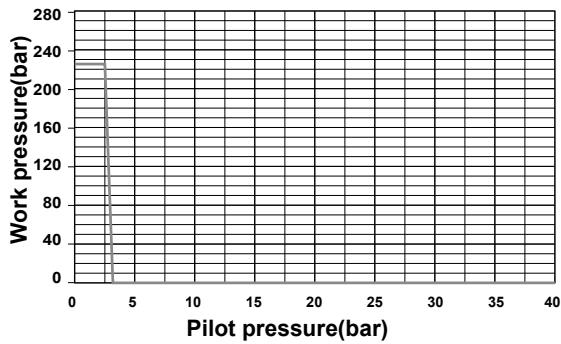
Main relief valve



Overload relief valve



Holding valve



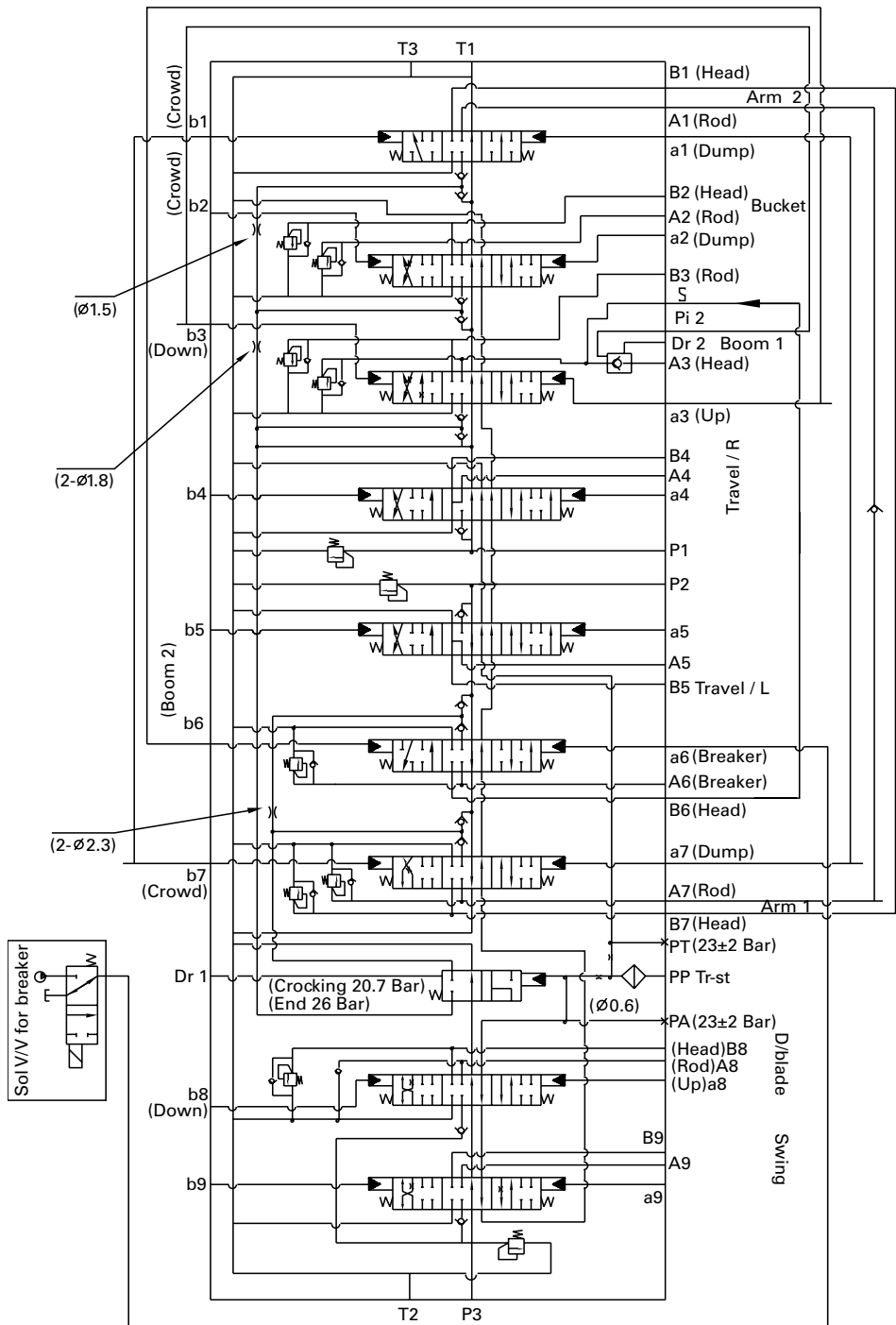
**Note:**

Above configurations are for mini excavator applications. All other configuration, please consult AP product marketing.

# CMJ80

80L/min

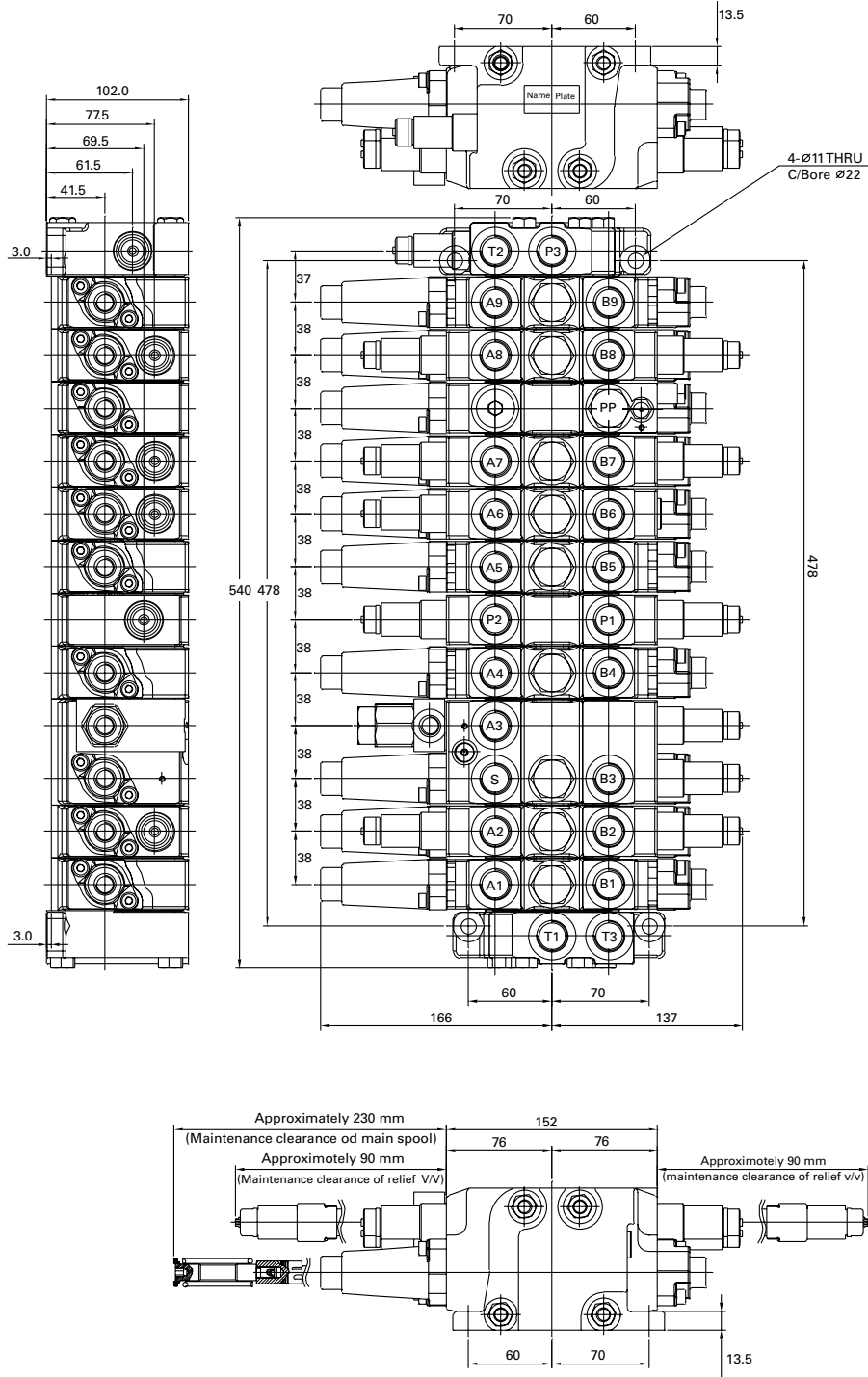
## Schematic of typical mini excavator application



# CMJ80

80L/min

## Installation, mm

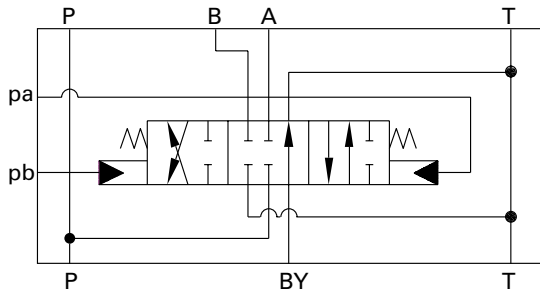


# CMJ80

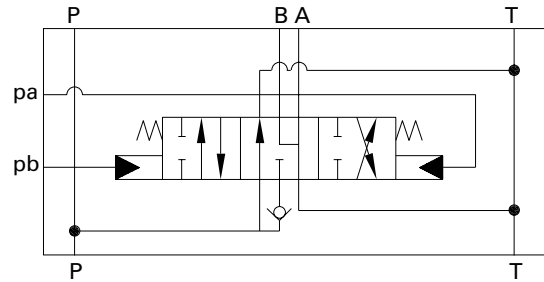
## Specifications and Spool Types

### Section schematic function - Hydraulic pilot control

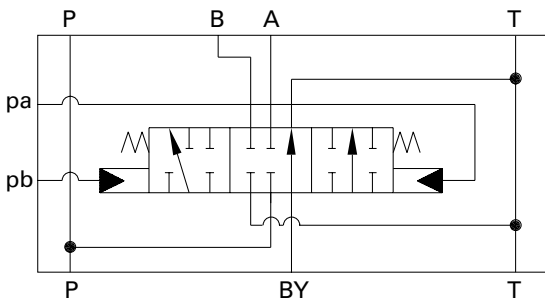
1. Hydraulically Operated, 3-Position Spool.



2. Hydraulically Operated, 3-Position Spool which is opened to T from A and B port in neutral condition.

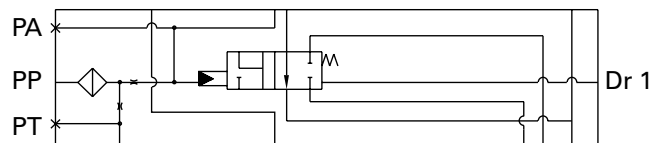


3. Hydraulically Operated, 3-Position Spool which does not have Return (A->T or B->T) line.



### Travelling straight section (Mini excavator)

A separated Travelling Straight section is used to combine flow of P3 to P1 and P2 circuits when Travelling Straight function is activated. To increase travel speed.



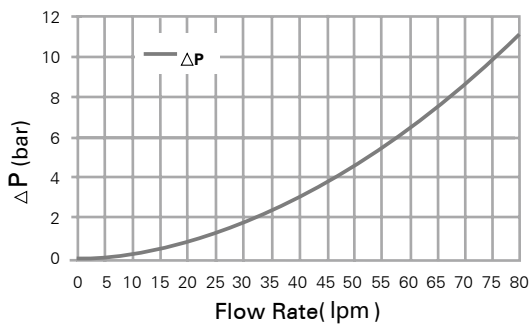
# CMJ80

## Exploded View

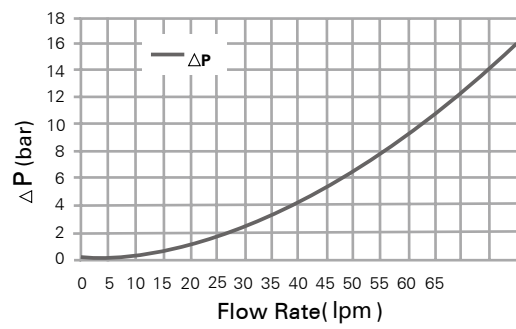


## Pressure drop curve

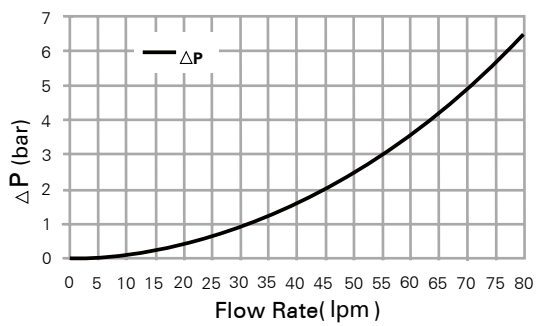
$\Delta P$  of P-T Neutral Flow



$\Delta P$  of P-C



$\Delta P$  of C-T



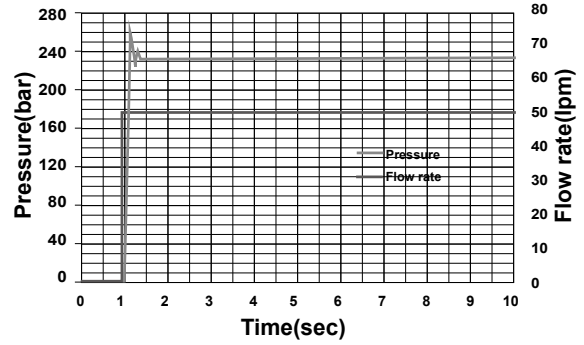
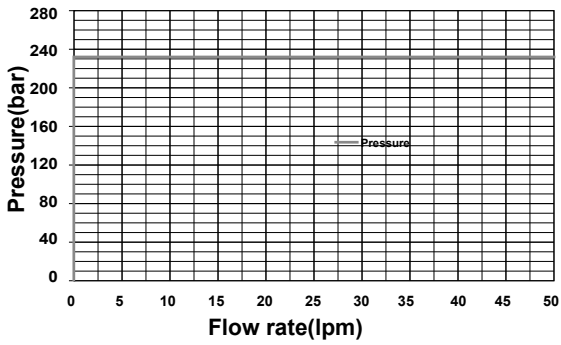
# CMJ80

## Auxiliary Valves' Characteristic

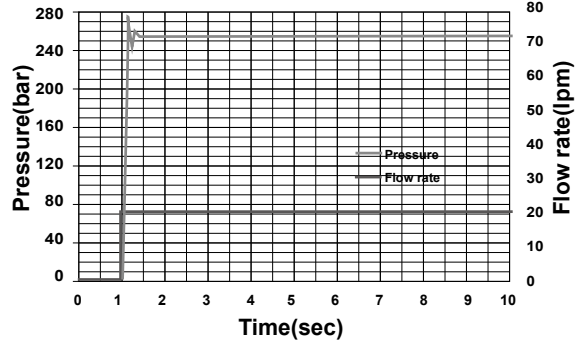
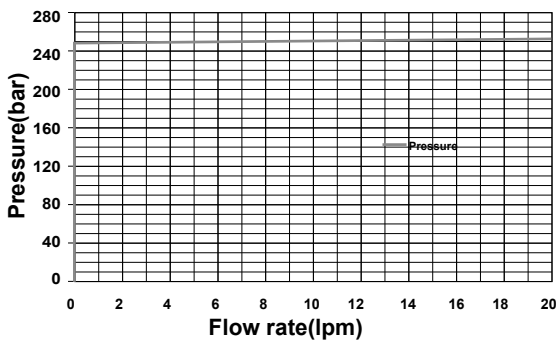
### Static Characteristic

### Dynamic Characteristic

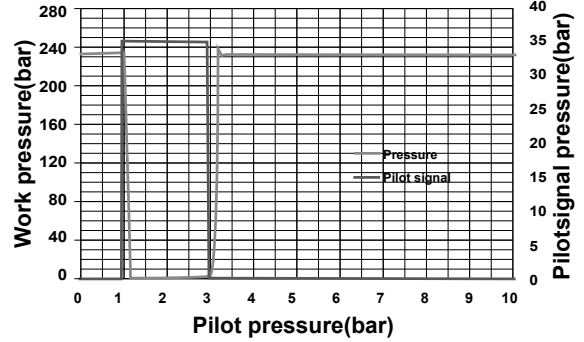
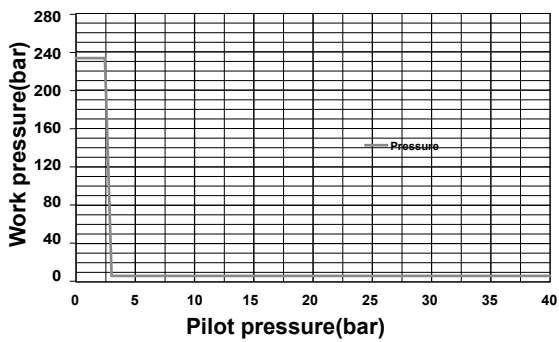
Main relief valve



Overload relief valve




Holding valve



**Note:**

Above configurations are for mini excavator applications. All other configuration, please consult AP product marketing.

# Notes



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