

# **P**ARTS MANUAL

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## ***Force Control 250***

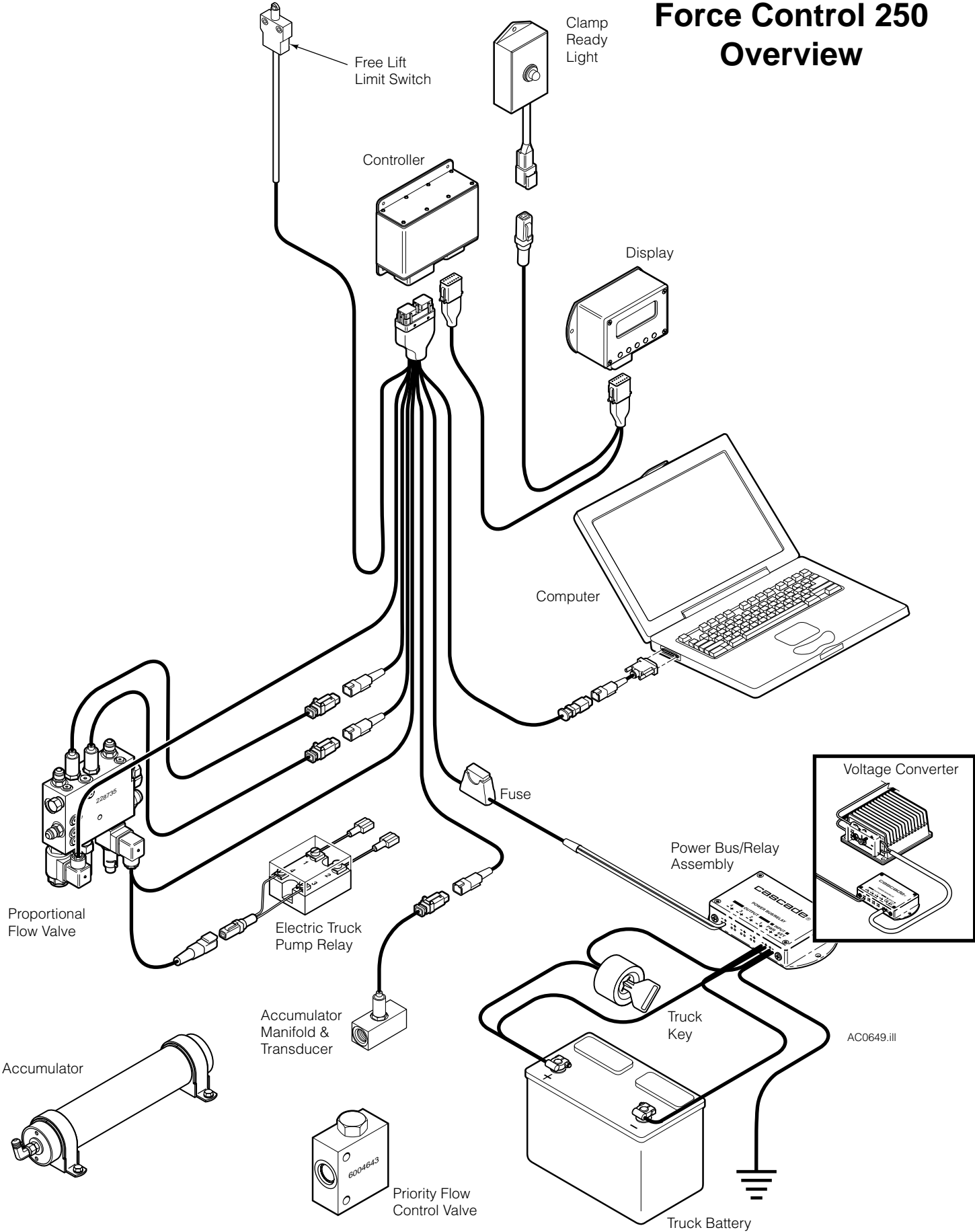
***Manual Number 6028273-R2***

**cascade<sup>®</sup>**  
**corporation**

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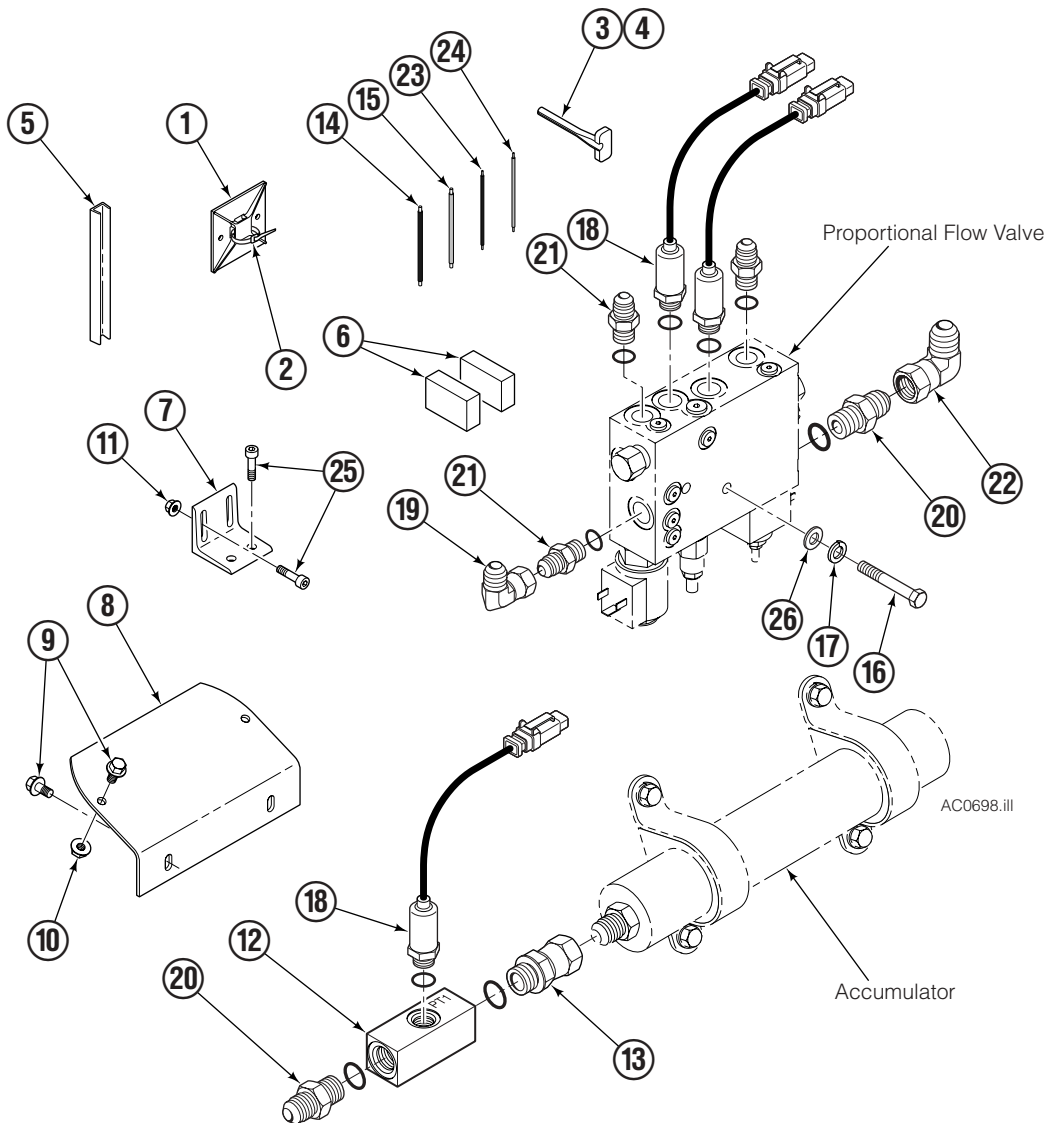
# Force Control 250 Overview



# Force Control 250 Kits

12V	24/36V	48/80V	96V	DESCRIPTION
PART NO.	PART NO.	PART NO.	PART NO.	
6023587	6025338	6025351	6025375	Force Control 250 Kit
6023582	6023582	6023582	6023582	Common Parts
228735	228735	228735	228735	Proportional Flow Valve
6025066	6025066	6025066	6025066	Controller
6002505	6002505	6002505	6002505	Display Housing
6020665	6020665	6020665	6020665	Power Bus Assembly
6025562	6025694	6025694	6025694	Wire Harness Group
—	6009393	6007579	6009394	DC/DC Converter Group

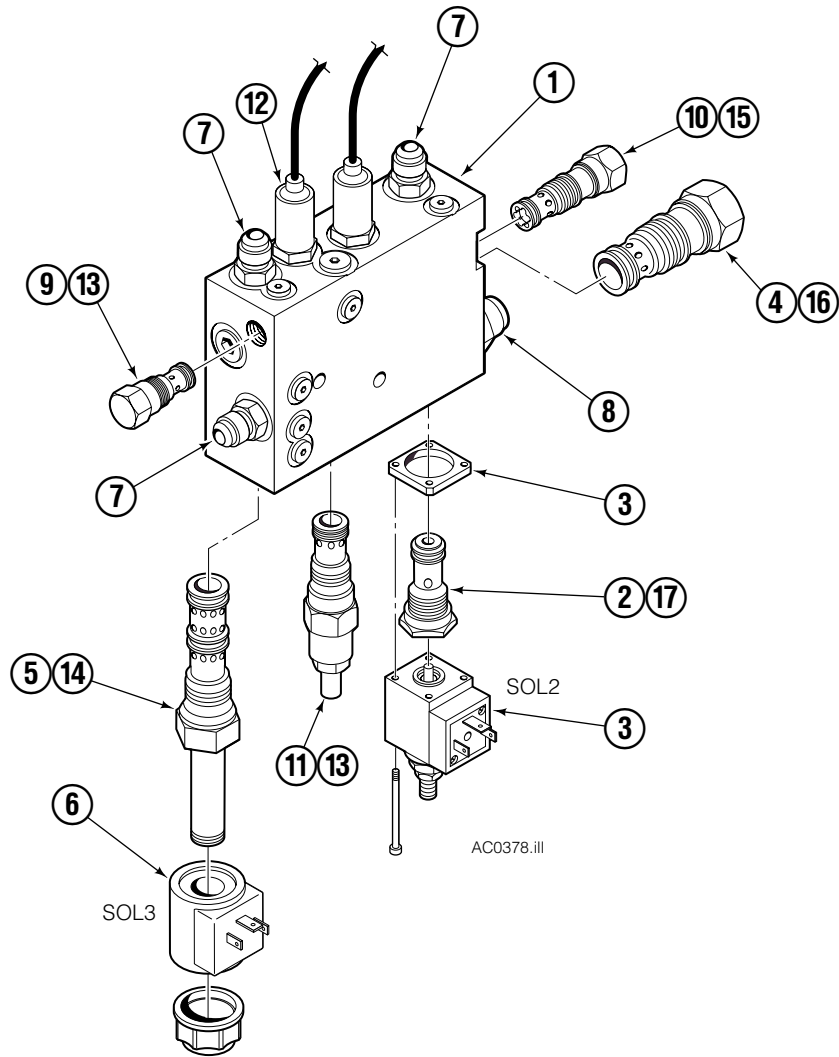
# Common Parts



REF	QTY	PART NO.	DESCRIPTION	REF	QTY	PART NO.	DESCRIPTION
		6023582	Common Parts	17	2	206315	Lockwasher, M8
1	6	6002451	Anchor, Cable Tie	18	3	225587	Pressure Transmitter
2	6	6002479	Cable Tie	19	1	2680	Fitting, 6-6
3	1	6016072	Pin Removal Tool, 16/18 AWG	20	2	601377	Fitting, 8-8
4	1	6016073	Pin Removal Tool, 20 AWG	21	3	604511	Fitting, 6-6
5	1	6017291	Grommet Strip, 110 mm	22	1	605761	Fitting, 8-8
6	2	6017292	Block	23	1	669407	Wire, 18 AWG Black
7	1	6017294	Bracket, Switch Mounting	24	1	669410	Wire, 18 AWG Red
8	1	6017295	Bracket	25	4	768220	Capscrew, M5 x 20
9	8	6017321	Flange Screw, M6 x 12	26	2	787398	Washer, M8
10	2	6017322	Nut, M6	◆	1	6018743	Convuluted Tubing
11	2	6017324	Nut, M5	◆	1	6029665	Velcro
12	1	6023583	Manifold	◆	1	6009181	Tap, M6
13	1	6025378	Fitting, 8-8	◆	1	6009182	Tap, M8
14	1	6029615	Wire, 12 AWG Black	◆	1	6009185	Drill, 5.3 mm
15	1	6029616	Wire, 12 AWG Red	◆	1	6009186	Drill, 7.3 mm
16	2	768528	Capscrew, M8 x 55	◆	1	6017287	Hole Saw, 38 mm

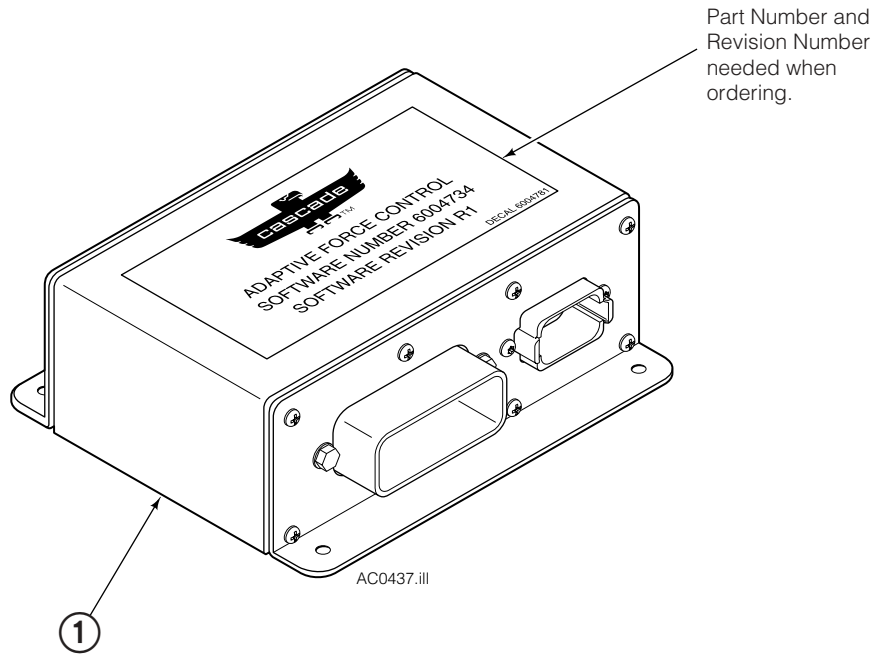
◆ Not shown.

# Proportional Flow Valve



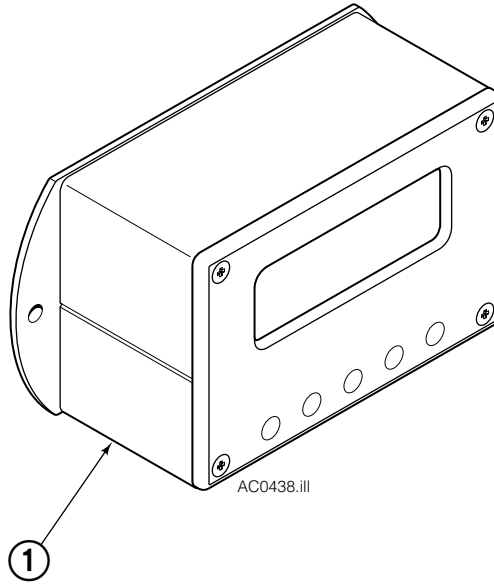
REF	QTY	PART NO.	DESCRIPTION
		228735	Proportional Flow Valve
1	1	228734	Valve Body
2	1	227785	Relief Cartridge
3	1	227836	Solenoid Coil – 12V, (SOL2)
4	1	227787	Valve Cartridge
5	1	228739	Solenoid Valve
6	1	227835	Solenoid Coil – 12V, (SOL3)
7	3	604511	Fitting, 6-6
8	1	601377	Fitting, 8-8
9	1	228738	Check Valve
10	1	228737	Check Valve
11	1	228740	Relief Valve
12	2	225587	Pressure Transducer
13	2	6024967	Seal Kit
14	1	6024970	Seal Kit
15	2	6024968	Seal Kit
16	2	6024964	Seal Kit
17	2	6024969	Seal Kit

# Controller



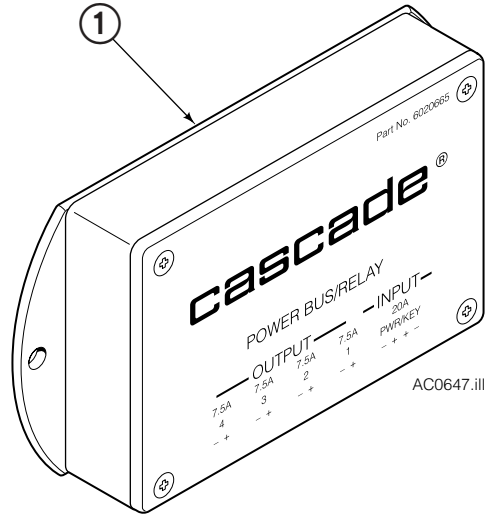
REF	QTY	PART NO.	DESCRIPTION
1	1	6025066	Controller

# Display



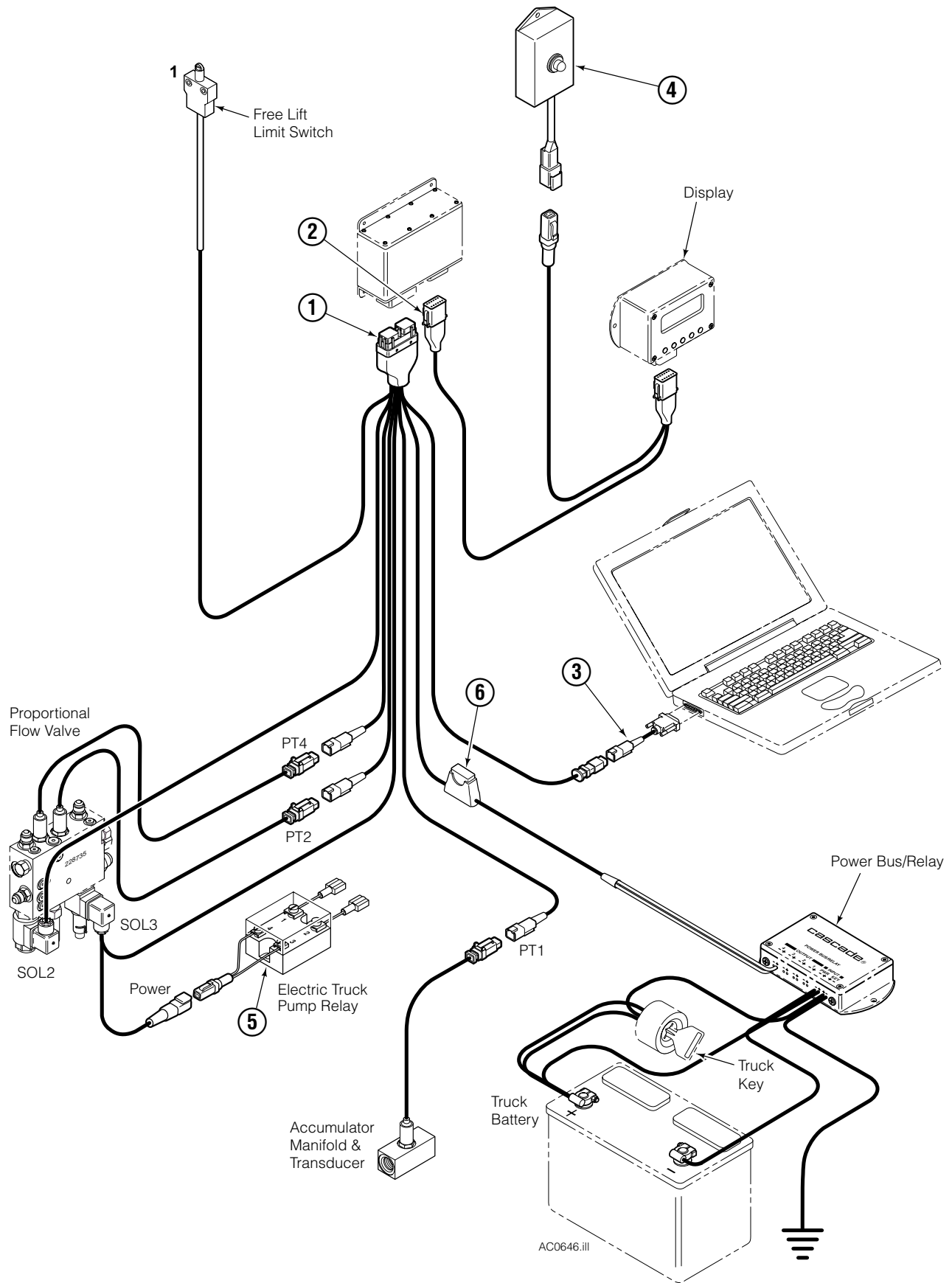
REF	QTY	PART NO.	DESCRIPTION
1	1	6002505	Display

# Power Bus Assembly



REF	QTY	PART NO.	DESCRIPTION
1	1	6020665	Power Bus Assembly

# Wire Harness Group



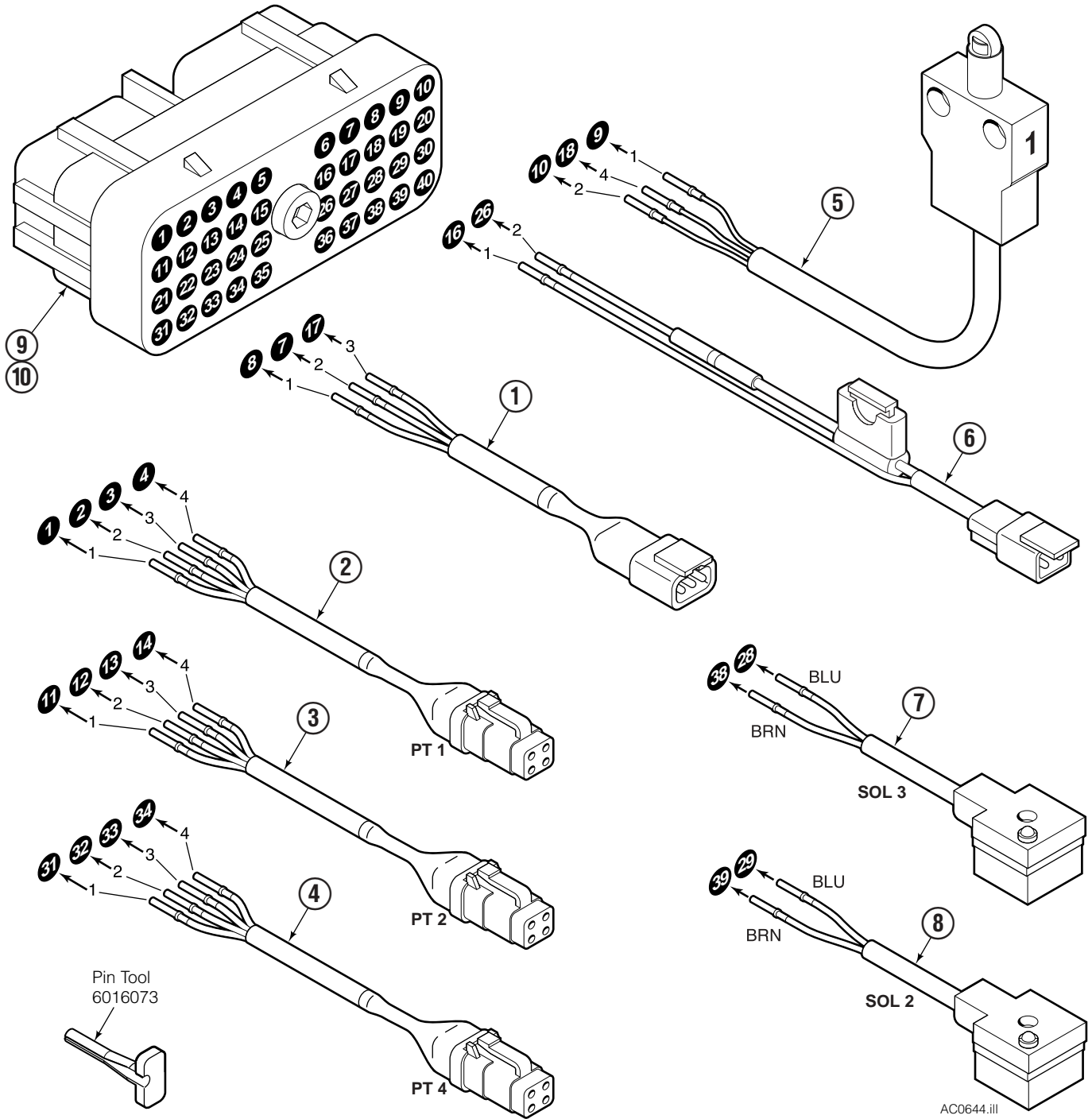
# Wire Harness Group

REF	QTY	IC Truck	Electric Truck	DESCRIPTION
		PART NO.	PART NO.	
		6025562	6025694	Wire Harness Group
1	1	6023386	6025678	Wire Harness ●
2	1	227447	227447	Wire Harness
3	1	6004818	6004818	Communication Cable
4	1	6009681	6009681	Light Box ◆
5	1	—	6009853	Relay Group
6	1	228154	228154	Fuse, 7.5 amp

- See Wire Harness page for parts breakdown.
- ◆ See Light Box page for parts breakdown.

# Wire Harness

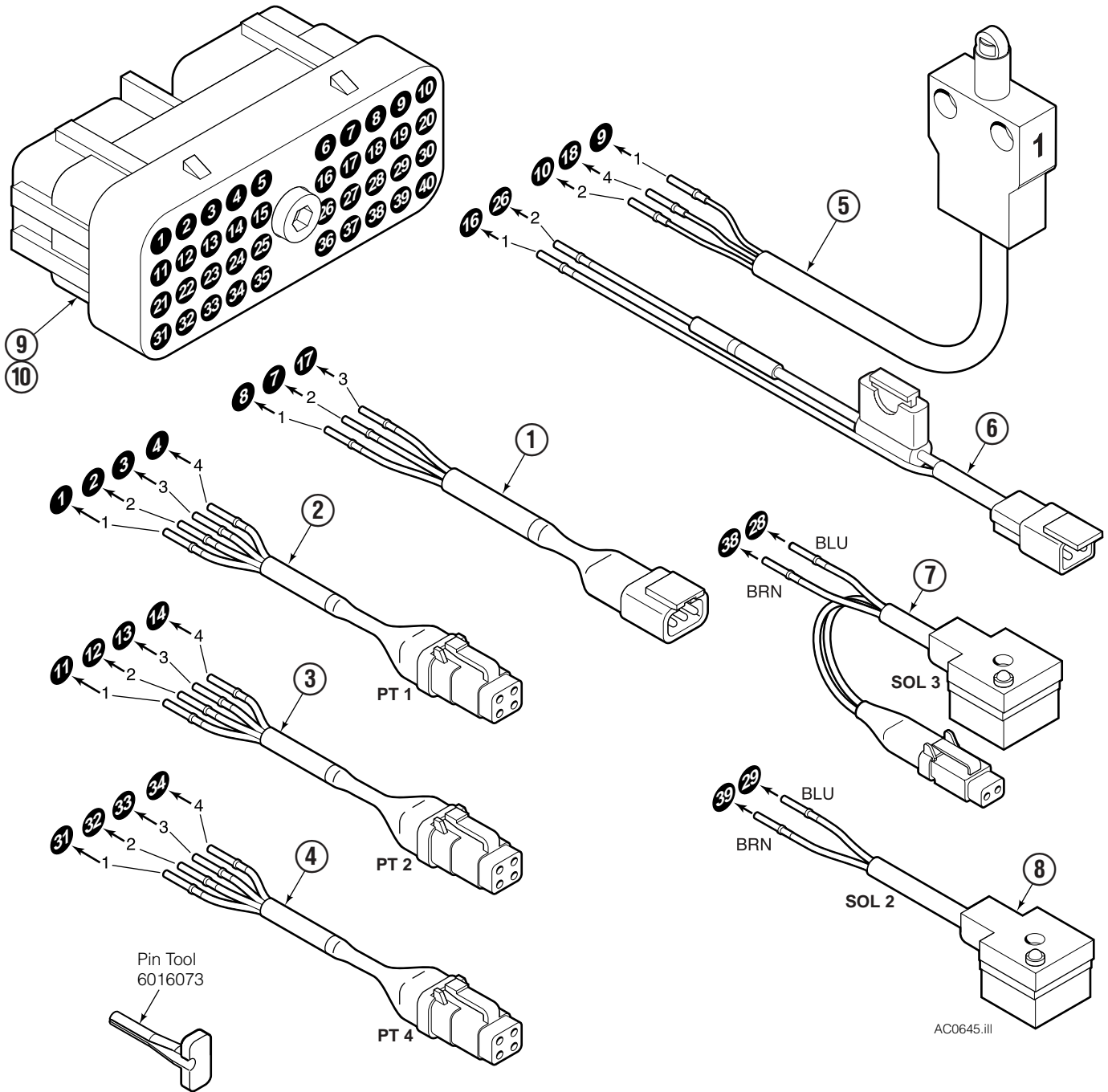
## IC Truck



REF	QTY	PART NO.	DESCRIPTION	REF	QTY	PART NO.	DESCRIPTION
		6023386	Wire Harness	6	1	228153	Cable, Power
1	1	228139	Cable, Communications	7	1	227463	Cable, SOL3
2	1	227457	Cable, PT1	8	1	227462	Cable, SOL2
3	1	227458	Cable, PT2	9	1	228164	Boot
4	1	227460	Cable, PT4	10	1	227194	Connector
5	1	6023437	Cable/Switch Assembly				

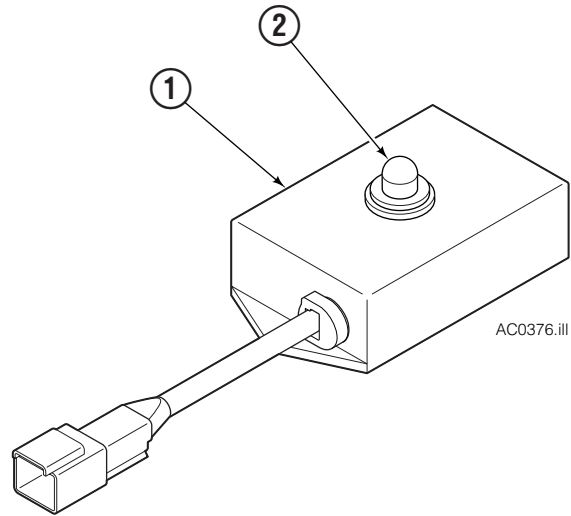
# Wire Harness

## Electric Truck



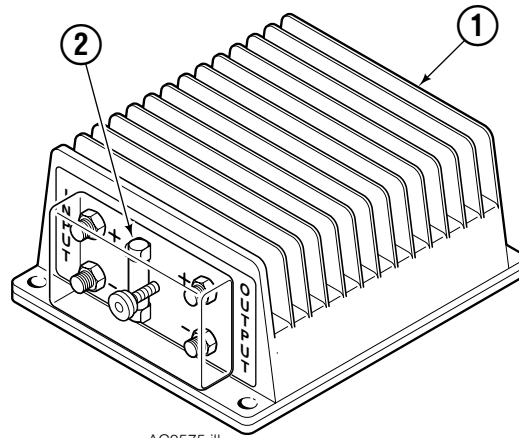
REF	QTY	PART NO.	DESCRIPTION	REF	QTY	PART NO.	DESCRIPTION
		6025678	Wire Harness	6	1	228153	Cable, Power
1	1	228139	Cable, Communications	7	1	6007503	Cable, SOL3
2	1	227457	Cable, PT1	8	1	227462	Cable, SOL2
3	1	227458	Cable, PT2	9	1	228164	Boot
4	1	227460	Cable, PT4	10	1	227194	Connector
5	1	6023437	Cable/Switch Assembly				

# Light Box Assembly



REF	QTY	PART NO.	DESCRIPTION
1	1	6009681	Light Box Assembly
2	1	6011909	Lamp

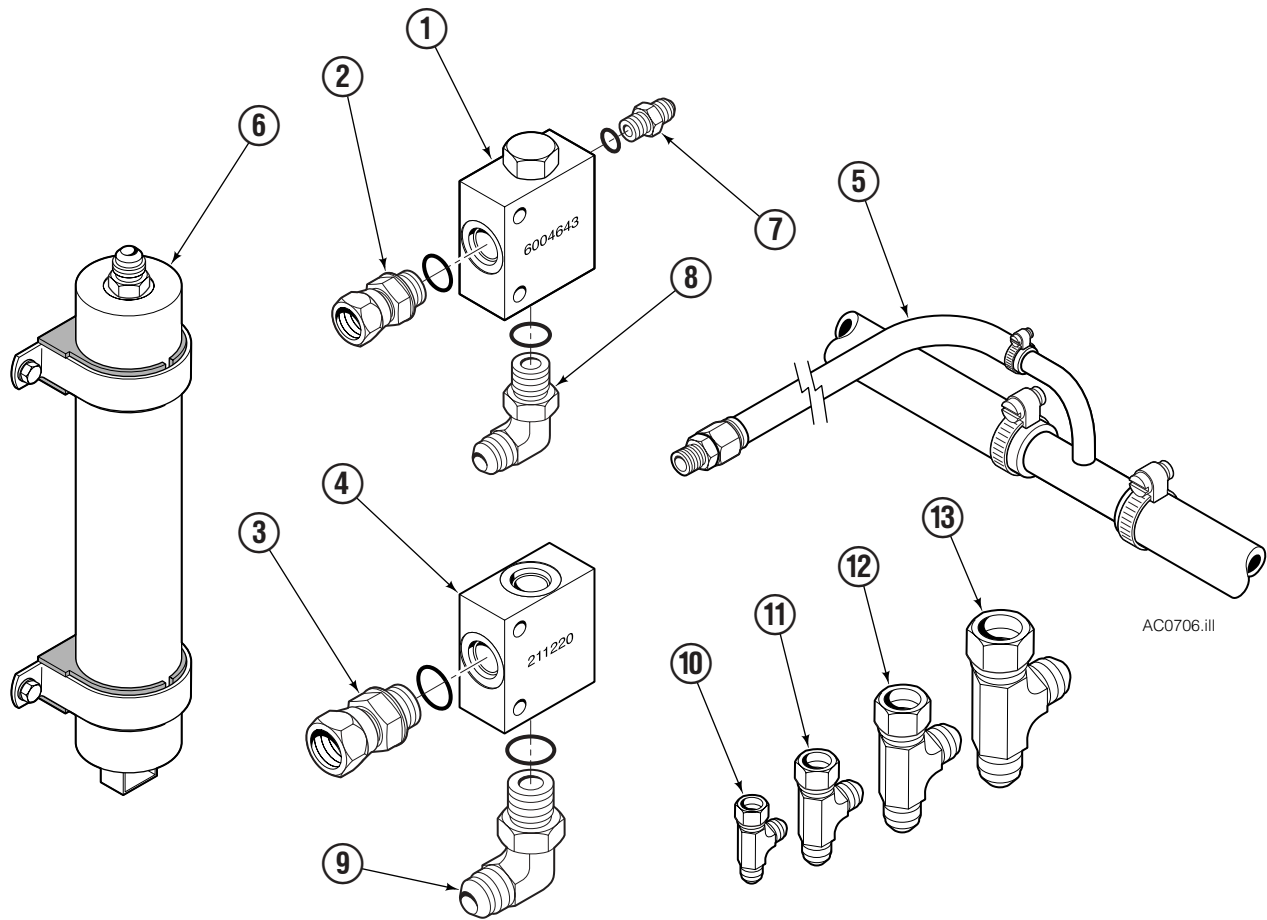
# DC to DC Voltage Converter Groups



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REF	QTY	24-36V to 12 Volt	48-80V to 12 Volt	96V to 12 Volt	DESCRIPTION
		PART NO.	PART NO.	PART NO.	
		6009393	6007579	6009394	DC/DC Converter Group
1	1	6009392	6009166	6017870	DC/DC Converter
2	1	TT25A	TT15A	TT12A	Fuse-Slow Blow (Buss/Little Fuse)

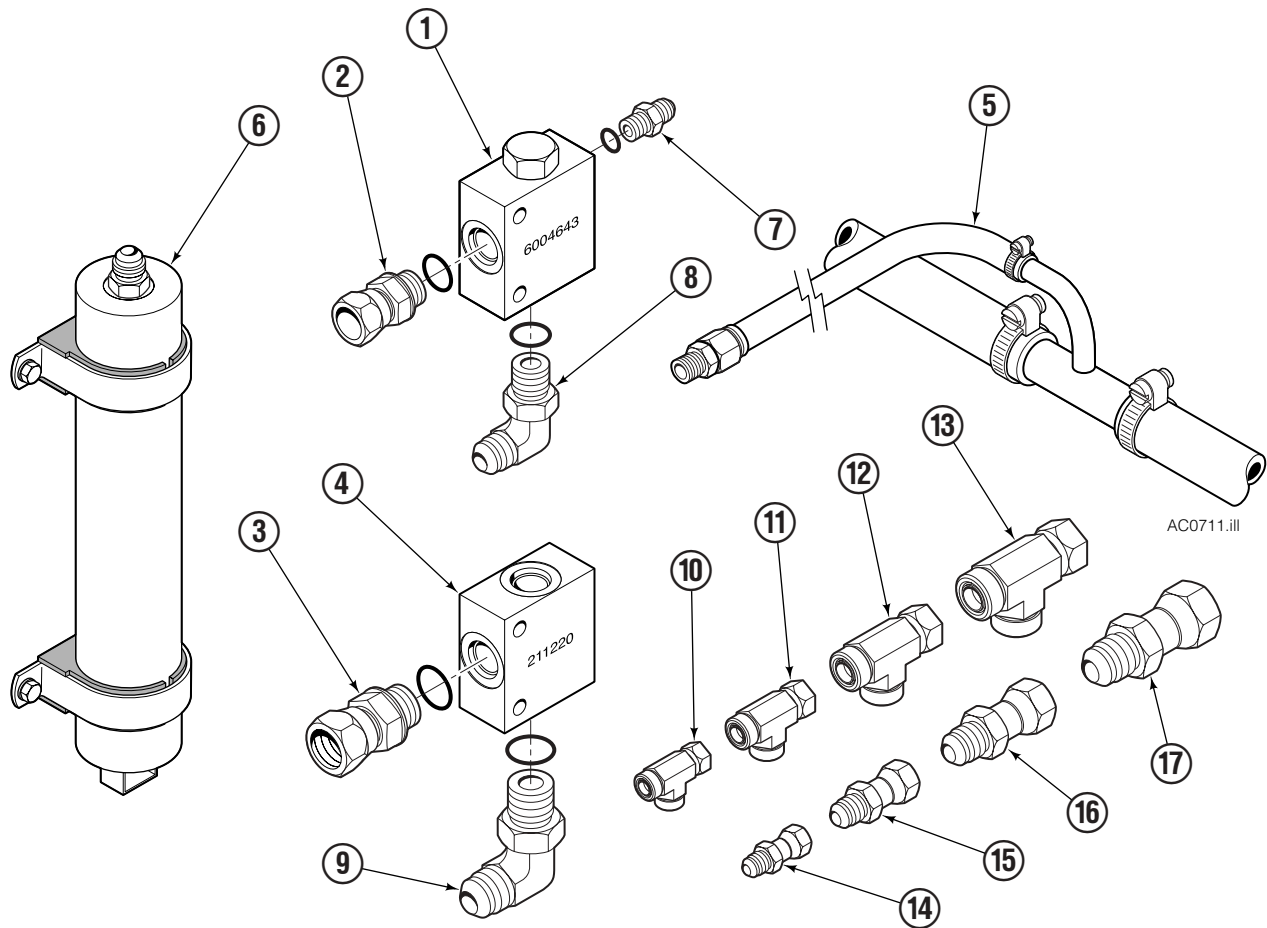
# FC 250 Installation Kit Cat M80D



REF	QTY	PART NO.	DESCRIPTION
		6029597	Installation Kit
1	1	6004643	Valve Assembly ◆
2	1	6013433	Fitting, 10-10
3	1	210342	Fitting, 12-12
4	1	211220	Valve Body
5	1	214062	Connector Kit ●
6	1	227201	Accumulator Kit ■
7	1	604511	Fitting, 6-6
8	1	611299	Fitting, 10-10
9	1	611300	Fitting, 12-12
10	2	611329	Fitting, 6-6
11	2	611330	Fitting, 8-8
12	1	611331	Fitting, 10-10
13	1	611332	Fitting, 12-12

- ◆ See Valve page for parts breakdown.
- See Connector Kit page for parts breakdown.
- See Accumulator Kit page for parts breakdown.

# FC 250 Installation Kit Cat MC60DSA



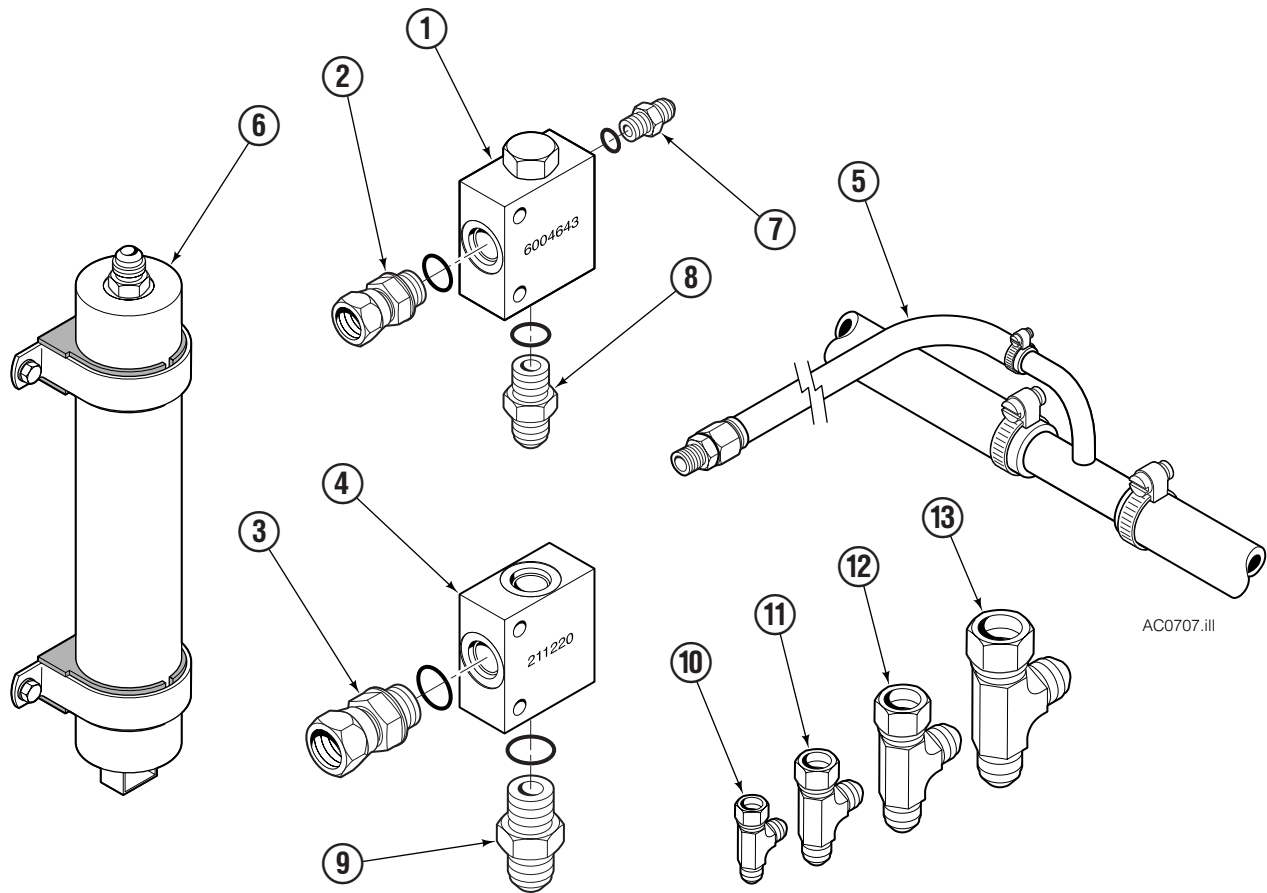
REF	QTY	PART NO.	DESCRIPTION
		6029668	Installation Kit
1	1	6004643	Valve Assembly ◆
2	1	6029669	Fitting, 10-10
3	1	210342	Fitting, 12-12
4	1	211220	Valve Body
5	1	214062	Connector Kit ●
6	1	227201	Accumulator Kit ■
7	1	604511	Fitting, 6-6
8	1	611299	Fitting, 10-10
9	1	611300	Fitting, 12-12
10	2	6029634	Fitting, 6-6
11	2	6029635	Fitting, 8-8
12	1	6029636	Fitting, 10-10
13	1	6029637	Fitting, 12-12
14	2	6029630	Fitting, 6-6
15	2	6029631	Fitting, 8-8
16	1	6029632	Fitting, 10-10
17	1	6029633	Fitting, 12-12

◆ See Valve page for parts breakdown.

● See Connector Kit page for parts breakdown.

■ See Accumulator Kit page for parts breakdown.

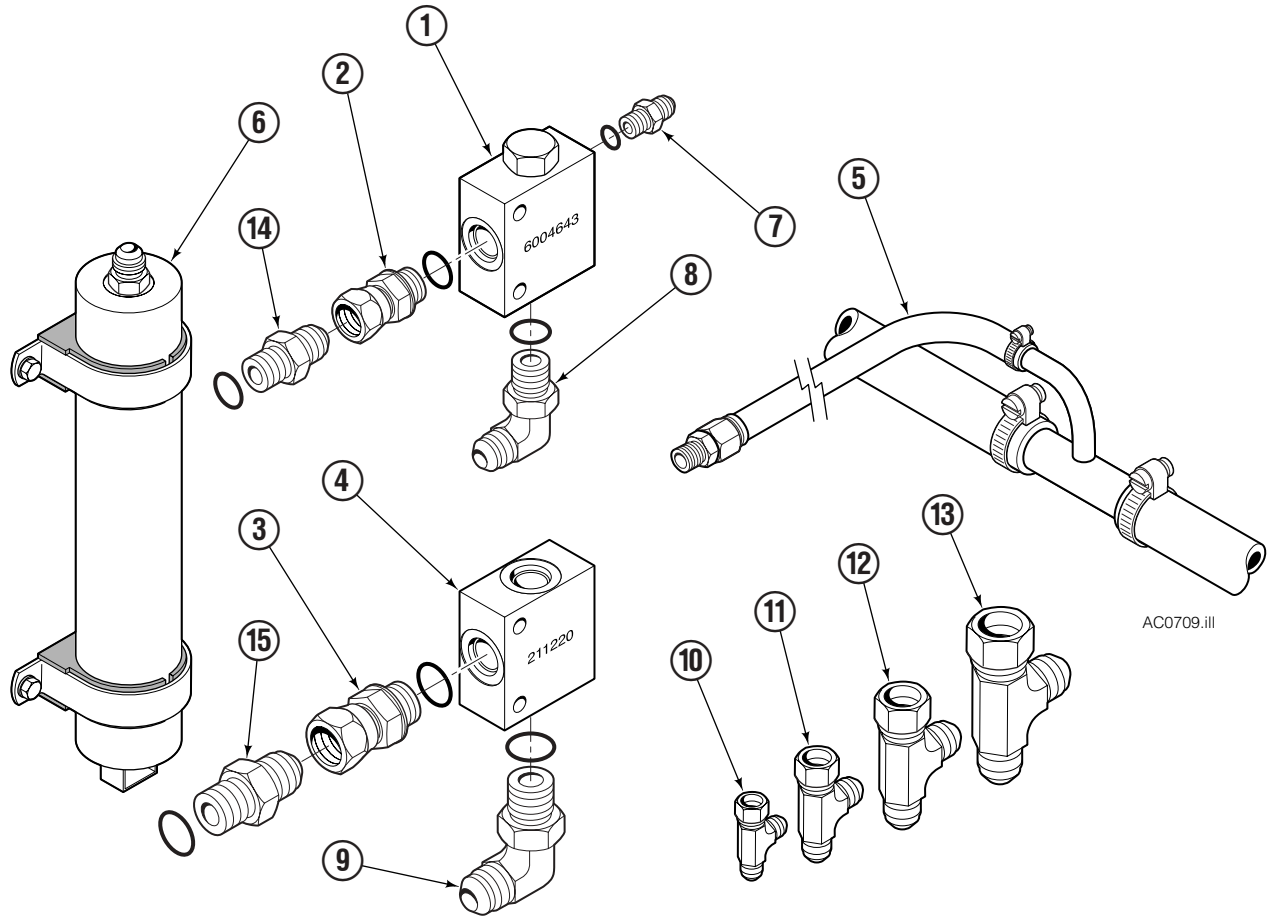
# FC 250 Installation Kit Clark CGC30H



REF	QTY	PART NO.	DESCRIPTION
		6029841	Installation Kit
1	1	6004643	Valve Assembly ◆
2	1	6013433	Fitting, 10-10
3	1	210342	Fitting, 12-12
4	1	211220	Valve Body
5	1	214062	Connector Kit ●
6	1	227201	Accumulator Kit ■
7	1	604511	Fitting, 6-6
8	1	611291	Fitting, 10-10
9	1	611293	Fitting, 12-12
10	2	611329	Fitting, 6-6
11	2	611330	Fitting, 8-8
12	1	611331	Fitting, 10-10
13	1	611332	Fitting, 12-12

- ◆ See Valve page for parts breakdown.
- See Connector Kit page for parts breakdown.
- See Accumulator Kit page for parts breakdown.

# FC 250 Installation Kit Crown 50FCTT



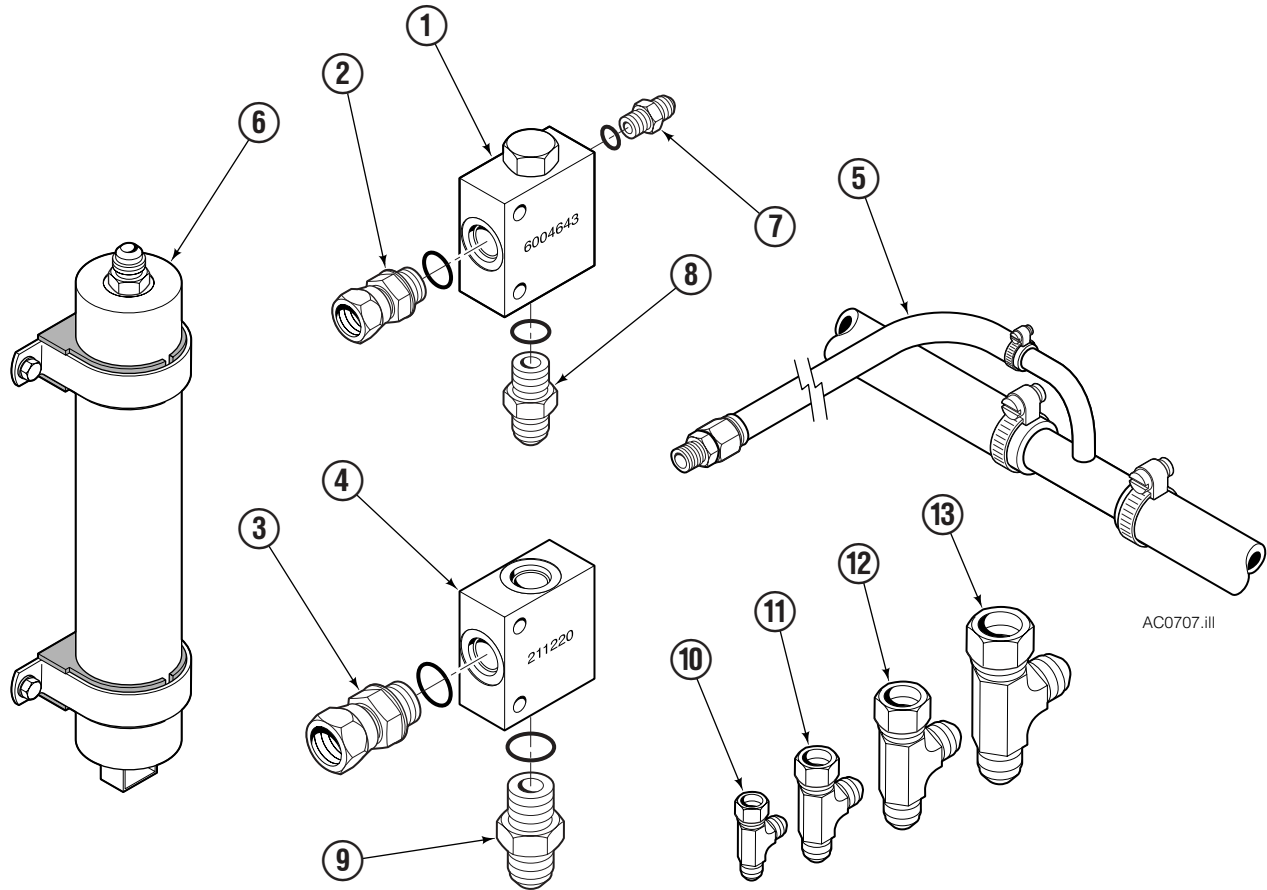
REF	QTY	PART NO.	DESCRIPTION
		6029839	Installation Kit
1	1	6004643	Valve Assembly ◆
2	1	6013433	Fitting, 10-10
3	1	210342	Fitting, 12-12
4	1	211220	Valve Body
5	1	214062	Connector Kit ●
6	1	227201	Accumulator Kit ■
7	1	604511	Fitting, 6-6
8	1	611299	Fitting, 10-10
9	1	611300	Fitting, 12-12
10	2	611329	Fitting, 6-6
11	2	611330	Fitting, 8-8
12	1	611331	Fitting, 10-10
13	1	611332	Fitting, 12-12
14	1	611291	Fitting, 10-10
15	1	611293	Fitting, 12-12

◆ See Valve page for parts breakdown.

● See Connector Kit page for parts breakdown.

■ See Accumulator Kit page for parts breakdown.

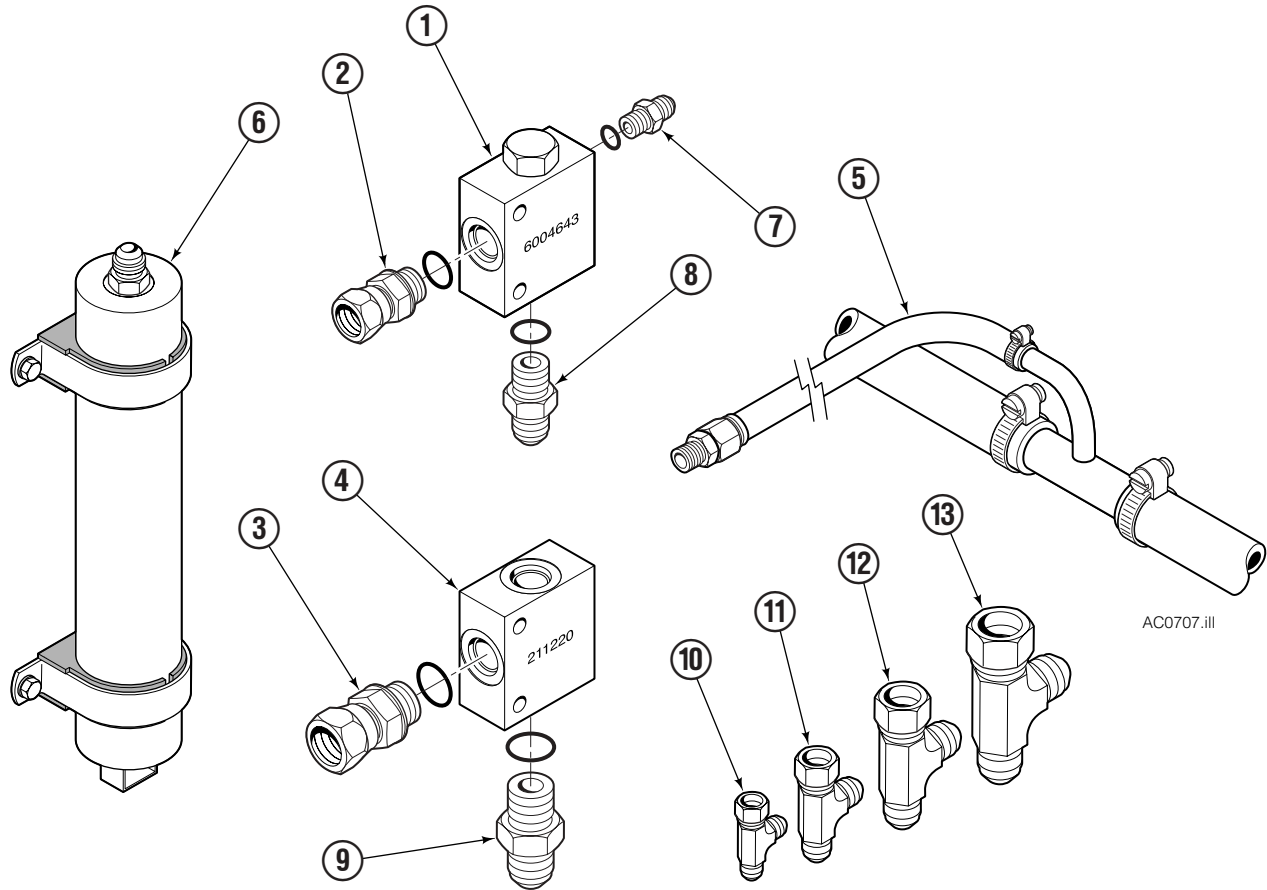
# FC 250 Installation Kit Hyster S80XL - S90XL



REF	QTY	PART NO.	DESCRIPTION
		6029735	Installation Kit
1	1	6004643	Valve Assembly ◆
2	1	6013433	Fitting, 10-10
3	1	210342	Fitting, 12-12
4	1	211220	Valve Body
5	1	214062	Connector Kit ●
6	1	227201	Accumulator Kit ■
7	1	604511	Fitting, 6-6
8	1	611291	Fitting, 10-10
9	1	611293	Fitting, 12-12
10	2	611329	Fitting, 6-6
	2	611330	Fitting, 8-8
12	1	611331	Fitting, 10-10
13	1	611332	Fitting, 12-12

- ◆ See Valve page for parts breakdown.
- See Connector Kit page for parts breakdown.
- See Accumulator Kit page for parts breakdown.

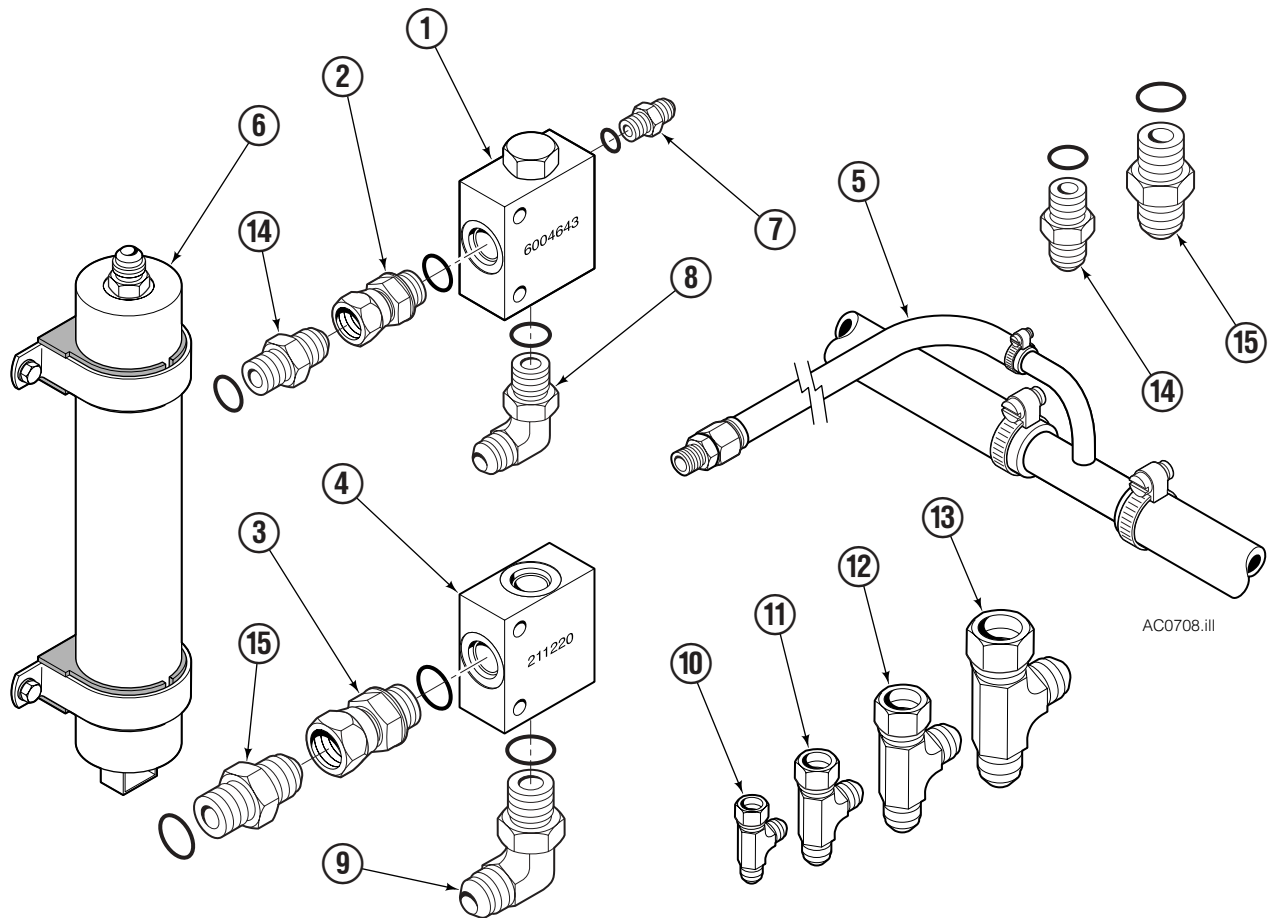
# FC 250 Installation Kit Hyster S100XL - S120XL



REF	QTY	PART NO.	DESCRIPTION
		6029818	Installation Kit
1	1	6004643	Valve Assembly ◆
2	1	6013433	Fitting, 10-10
3	1	210342	Fitting, 12-12
4	1	211220	Valve Body
5	1	211745	Connector Kit ●
6	1	227202	Accumulator Kit ■
7	1	604511	Fitting, 6-6
8	1	611291	Fitting, 10-10
9	1	611293	Fitting, 12-12
10	2	611329	Fitting, 6-6
	2	611330	Fitting, 8-8
12	1	611331	Fitting, 10-10
13	1	611332	Fitting, 12-12

- ◆ See Valve page for parts breakdown.
- See Connector Kit page for parts breakdown.
- See Accumulator Kit page for parts breakdown.

# FC 250 Installation Kit Hyster E65/XM



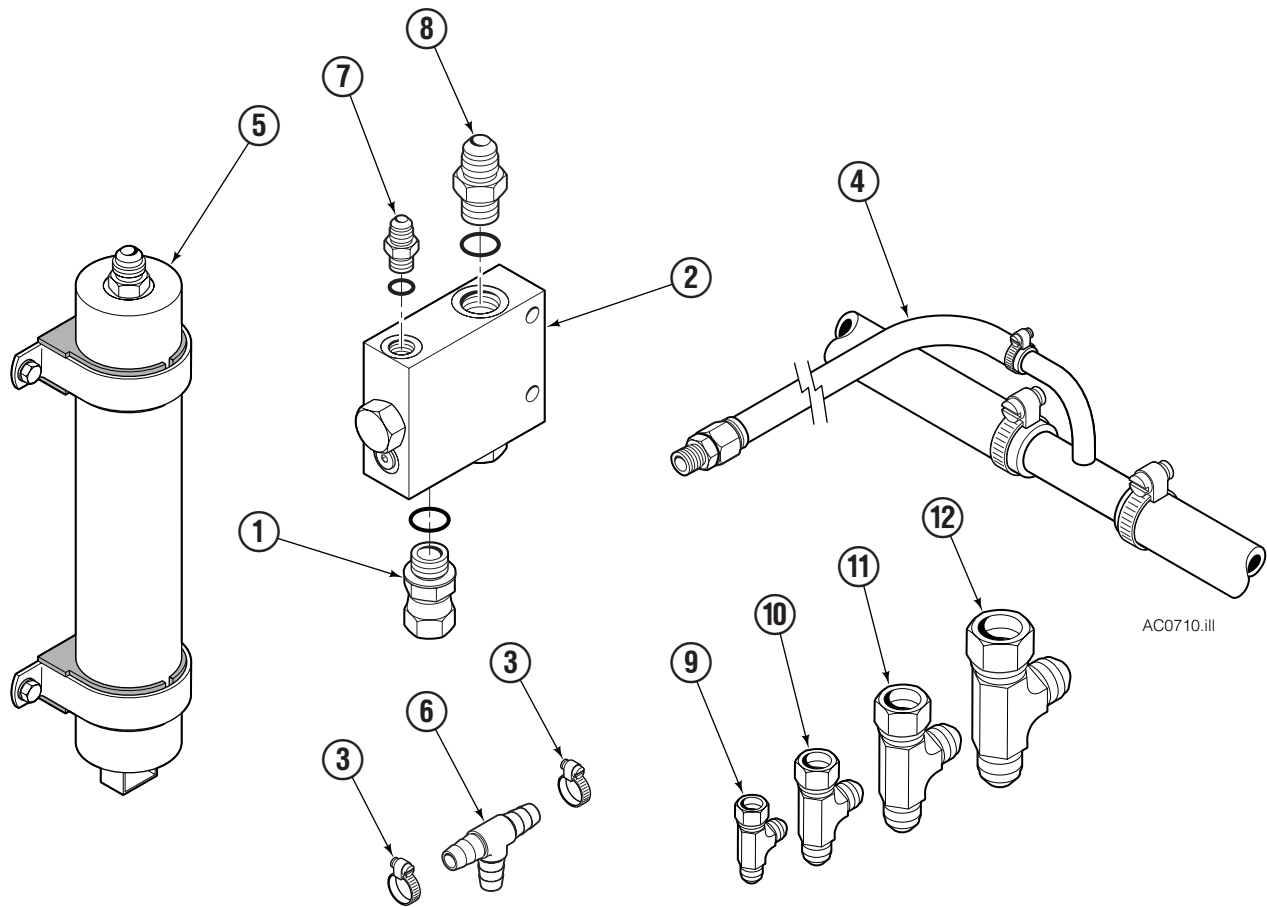
REF	QTY	PART NO.	DESCRIPTION
		6029842	Installation Kit
1	1	6004643	Valve Assembly ◆
2	1	6013433	Fitting, 10-10
3	1	210342	Fitting, 12-12
4	1	211220	Valve Body
5	1	214062	Connector Kit ●
6	1	227201	Accumulator Kit ■
7	1	604511	Fitting, 6-6
8	1	611299	Fitting, 10-10
9	1	611300	Fitting, 12-12
10	2	611329	Fitting, 6-6
11	2	611330	Fitting, 8-8
12	1	611331	Fitting, 10-10
13	1	611332	Fitting, 12-12
14	2	611291	Fitting, 10-10
15	2	611293	Fitting, 12-12

◆ See Valve page for parts breakdown.

● See Connector Kit page for parts breakdown.

■ See Accumulator Kit page for parts breakdown.

# FC 250 Installation Kit Toyota 7FGCU30 - 32



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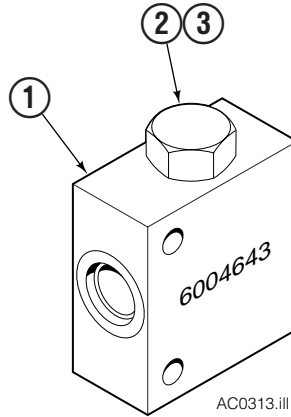
REF	QTY	PART NO.	DESCRIPTION
		6029834	Installation Kit
1	1	6013433	Fitting, 10-10
2	1	6027083	Valve Assembly ◆
3	2	211742	Hose Clamp
4	1	214062	Connector Kit ●
5	1	227201	Accumulator Kit ■
6	1	233123	Fitting
7	1	604511	Fitting, 6-6
8	1	611291	Fitting, 10-10
9	2	611329	Fitting, 6-6
10	2	611330	Fitting, 8-8
11	1	611331	Fitting, 10-10
12	1	611332	Fitting, 12-12

◆ See Valve page for parts breakdown.

● See Connector Kit page for parts breakdown.

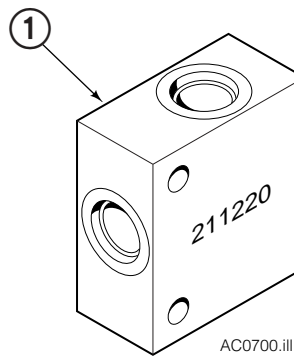
■ See Accumulator Kit page for parts breakdown.

# Priority Flow Valve



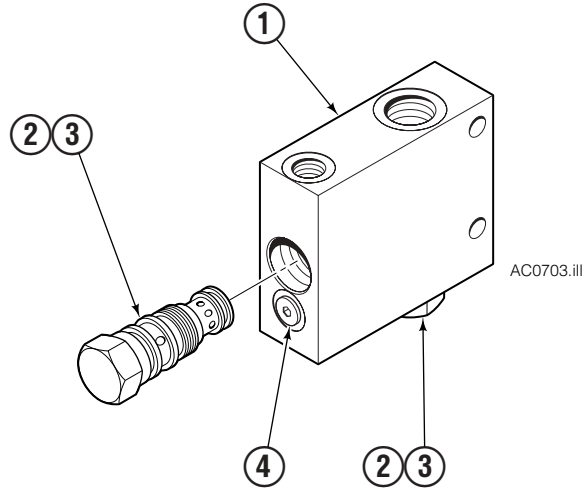
REF	QTY	PART NO.	DESCRIPTION
		6004643	Priority Flow Valve
1	1	6025463	Valve Body, No. 10 Ports
2	1	211219	Priority Flow Control Cartridge
3	1	6024964	Seal Kit

# Valve Body



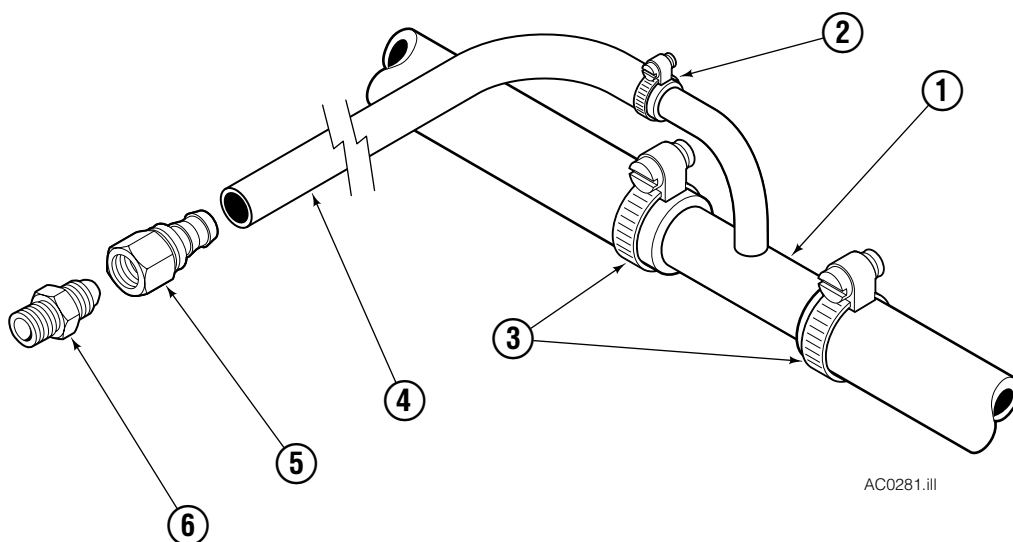
REF	QTY	PART NO.	DESCRIPTION
1	1	211220	Valve Body, No. 12 Ports

# Dual Priority Flow Valve



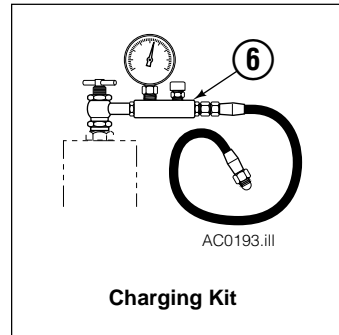
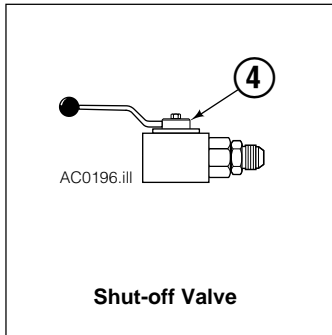
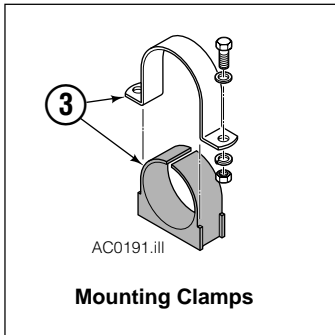
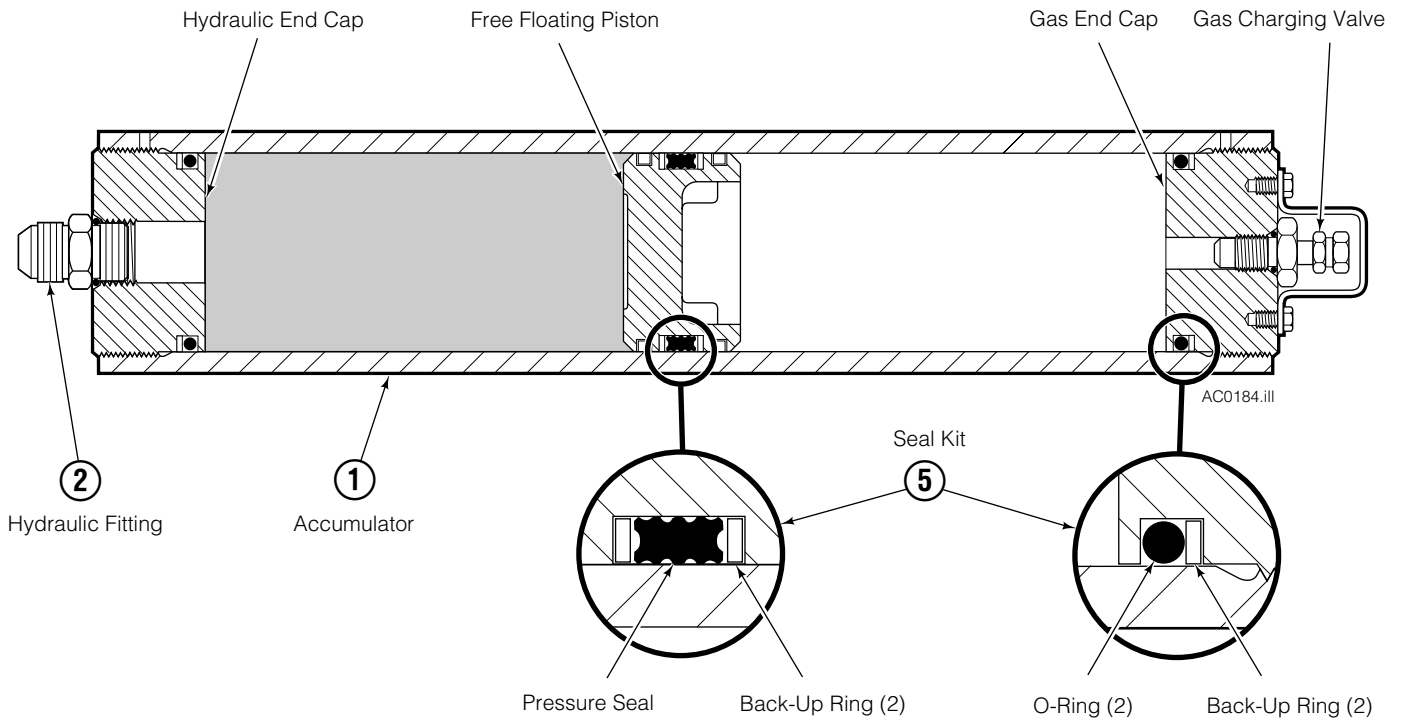
REF	QTY	PART NO.	DESCRIPTION
		6027083	Dual Priority Flow Valve
1	1	6025976	Valve Body
2	2	211219	Priority Flow Control Cartridge
3	1	6024964	Seal Kit
4	1	609234	Plug

# Connector Kits



REF	QTY	PART NO.	DESCRIPTION
		214062	Connector Kit – .75 in.
		211745	Connector Kit – 1.00 in.
		214066	Connector Kit – 1.25 in.
1	1	214056	Adapter Tee – .75 in.
	1	211739	Adapter Tee – 1.00 in.
	1	212891	Adapter Tee – 1.25 in.
2	1	211742	Hose Clamp
3	2	211743	Hose Clamp – .75 in.
	2	211743	Hose Clamp – 1.00 in.
	2	213140	Hose Clamp – 1.25 in.
4	1	211740	Hose, 72 in.
5	1	211741	Fitting, 8
6	1	601377	Fitting, 8-8

# Accumulator Kit



REF	QTY	PART NO.	DESCRIPTION
		227201	Accumulator Kit w/Mount (29 cu. in.) ●
		227202	Accumulator Kit w/Mount (58 cu. in.) ●
1	1	227199	Accumulator (4000 psi, 29 cu. in.)
1	1	227197	Accumulator (4000 psi, 58 cu. in.)
2	2	601377	Fitting, 8-8 SAE 37°/O-Ring
3	2	227200	Mounting Clamps
4		227839	Shut-off Valve
5		227253	Seal Service Kit
6		228235	Charging Kit

● Includes Items 1, 2 and 3.

# Recommended Spare Parts List

Force Control 250			
PART NUMBER	DESCRIPTION	UNITS SERVICED	
		1-5	6-19
227835	Solenoid Coil – 12V	1	4
227836	Solenoid Coil – 12V	1	4
225587	Pressure Transducer	1	4
211219	Priority Flow Control Cartridge	1	4
228739	Priority Flow Control Solenoid Valve	1	4
6024964	Seal Kit	1	4
6024967	Seal Kit	1	4
6024970	Seal Kit	1	4
6024968	Seal Kit	1	4
6024969	Seal Kit	1	4
228154	Fuse-7.5 Amp	2	4
6016073	Cable Pin Tool	1	4



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