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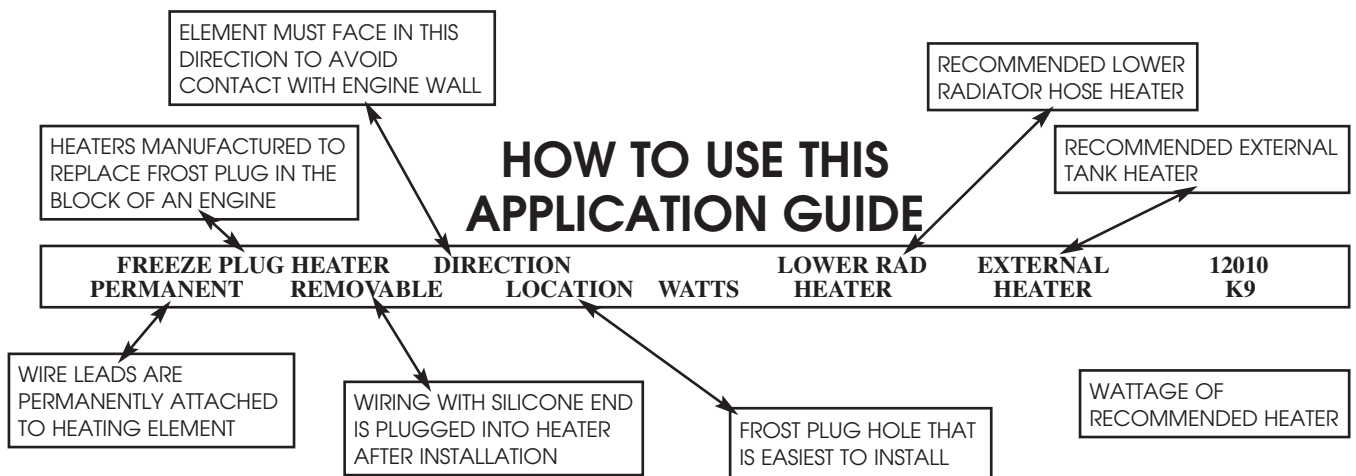


Engine Heater Application Guide

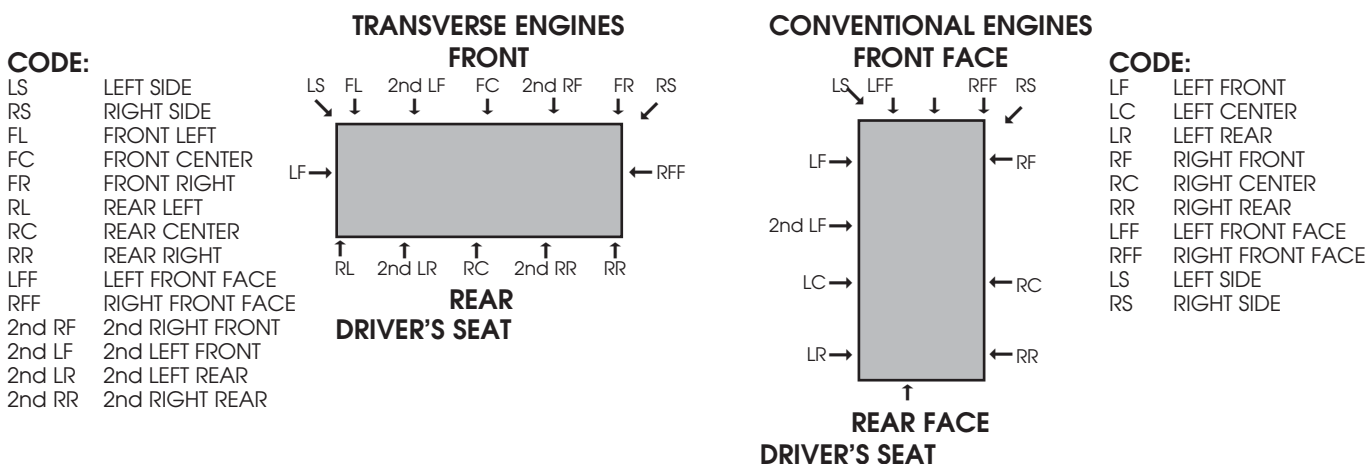
Guide d'application pour chauffe-moteurs

Guía de Aplicación de Calefacción de Motor





LOCATION OF BLOCK HEATER INSTALLATION POINTS



IF REQUIRED VIN CODE IS 8TH CHARACTER IN VEHICLE IDENTIFICATION NUMBER.

5

MOST COMMON FAILURE CAUSES FROM INSTALLATION OR OPERATOR ERRORS

- Pre-heater plugged in while engine is running.
- Air not bled from system (run engine until maximum system pressure is reached before plugging it in).
- Plugged in before it is installed to see if it gets hot (trust us IT WILL).
- Tank style heater installed in the wrong physical location.
- Tank style heater not connected to the right locations.



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IMPORTANT...

To obtain satisfactory results from your engine heater, please read the following information carefully:

DO NOT USE A KAT'S ENGINE HEATER WHEN USING A 100% SOLUTION OF ANTIFREEZE.

- A. These heaters are equipped with a three prong (grounding) plug and should be connected to a properly grounded circuit.
- B. If an extension cord is used in conjunction with this heater, be certain that the wire size of the extension cord is of adequate size for the wattage of the heater and distance from the receptacle to the heater. Consult a licensed electrician if further information is required.
- C. Do not start engine with heater plugged in. Element hot spots could occur causing the element to burn out.



AUTOMOTIVE & LIGHT TRUCK APPLICATION GUIDE

FREEZE PLUG HEATER	DIRECTION	mm SIZE	LOCATION	CORD	WATTS	LOWER RAD HEATER	EXTERNAL HEATER	PG 70 79400
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ACURA

4 CYLINDER

2006-04	2.4	78284	THD	28	RL	79680	400	NO	NO	NO
1999-98	2.3	78284	THD	28	RL	79680	400	NO	NO	NO
1997-95	2.2	78284	THD	28	RL	79680	400	NO	NO	NO
2006-02	2.0	78284	THD	28	RL	79680	400	NO	NO	NO
2001-90	1.8	78284	THD	28	FR	79680	400	NO	NO	NO
2005-02	1.7	78284	THD	28	RL	79680	400	NO	NO	NO
2005-90	1.7	78284	THD	28	FR	79680	400	NO	NO	NO
2001-97	1.6	78284	THD	28	FL	79680	400	NO	NO	NO

5 CYLINDER

1999-92	2.5	78284	THD	28	FR	79680	400	NO	NO	NO
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6 CYLINDER

2006-96	3.5	78284	THD	28	FL	79680	400	NO	NO	NO
2003-91	3.2	78284	THD	28	LC	79680	400	NO	NO	NO
2006-93	3.2 NSX	78306	_____	35	RC	79680	400	NO	NO	NO
1999-91	3.0 NSX	78306	_____	35	RC	79680	400	NO	NO	NO
2003-97	3.0	78284	THD	28	FL	79680	400	NO	NO	NO
1990-87	2.7 Legend	78306	_____	35	RC	79680	400	NO	NO	NO
1990-86	2.5 Legend	78306	_____	35	RC	79680	400	NO	NO	NO

AMC

4 CYLINDER

1987-83	2.5 AMC	78265	11	44.5	LR	79786	600	78162	79401/79986	NO
1983-80	2.5 Pontiac	78300	12	41	LR	79786	600	78162	79401/79986	YES
1979-77	2.0	78270	12	36.5	RC	79786	400	NO	NO	NO

6 CYLINDER

1987-71	4.2 258	78266	12	51	LF	79786	600	78162	79402/78237	NO
1988-87	4.0 242	78266	12	51	LF	79786	600	78162	NO	NO
1987-71	3.8 232	78266	12	51	LF	79786	600	78162	79402/78237	NO
1986-84	2.8 173	78298	12	34	RFF	79786	400	78162	79402/78237	NO
1987-64	199	78266	6	51	LR	79786	600	NO	79402/78237	NO

8 CYLINDER

1978-71	6.6 401	78260	7	38	RR	79786	600	78162	79403/78238	NO
1987-71	5.9 360	78260	7	38	RR	79786	600	78162	79403/78238	NO
1987-71	5.0 304	78260	7	38	RR	79786	600	78162	79403/78238	NO
1980-66	390, 343, 290	78260	6	38	RR	79786	600	78162	79403/78238	NO
1962-56	327	78260	6	38	LC	79786	600	78162	79403/78238	NO

AUDI

4 CYLINDER

1990-86	2.0	78270	6	36.5	RC(11)	79786	400	NO	NO	NO
1990-86	1.6	78270	6	36.5	RC(11)	79786	400	NO	NO	NO
1988-73	1715	78270	6	36.5	RC(11)	79786	400	NO	79401/79886	NO
1988-73	1588	78270	6	36.5	RC(11)	79786	400	NO	79401/79886	NO
1988-73	1471	78270	6	36.5	RC(11)	79786	400	NO	79401/79886	NO

5 CYLINDER

1996-95	S6	79626	4	36.5	RF	79786	400	NO	NO	NO
1994-92	S4	79626	3	36.5	RF	79786	400	NO	NO	NO

6 CYLINDER

2006-92	ALL	79626	9	36.5	LC	79786	400	NO	NO	NO
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AUSTIN

4 CYLINDER

1976-59	ALL	_____	_____	_____	_____	79786	_____	NO	79401/79886	NO
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6 CYLINDER

1959-UP	ALL	79809	9	44.5	LC	79786	600	NO	79402/78237	NO
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BMW

4 CYLINDER

1998-91	1.8 318I	79624	3	36	RR	79786	400	NO	NO	NO
1988-77	1.8 318I, 320I	78268	6	36	RF	79786	400	NO	79401/79886	NO
1998-97	1.9 318	79624	3	36	RR	79786	400	NO	NO	NO
1991-88	2.3	79849	10	36	RF	79786	400	NO	79401/79886	NO

FREEZE PLUG HEATER		DIRECTION	mm SIZE	LOCATION	CORD	WATTS	LOWER RAD HEATER	EXTERNAL HEATER	PG 70 79400
BMW (CONTINUED)									
06 CYLINDER									
1993-85	3.5 ALL	79646	9	44.5	RC	79786	400	NO	NO
1998-97	3.2 24V	79646	1	44.5	RC	79786	400	NO	NO
1984-78	3.2 533,633,&733	79646	9	44.5	RC	79786	400	NO	79402/78237
2006-01	3.0	79646	1	44.5	RC	79786	400	NO	NO
2000-95	2.8	79646	1	44.5	RC	79786	400	NO	NO
1991-82	2.7 325 & 528	79646	1	44.5	RC	79786	400	NO	79402/78237
1982-76	2.7 528	78268	3	36	LF	79786	400	NO	79402/78237
2006-92	2.5 325 & 525	79646	1	44.5	RC	79786	400	NO	79402/78237
1991-88	2.5 325 & 525	79646	7	44.5	RC	79786	400	NO	NO
1986-84	2.4 Diesel 524	79646	11	44.5	RF	79786	400	NO	NO
1995-92	2.0 325 & 525	79646	1	44.5	RC	79786	400	NO	NO
BUICK									
4 CYLINDER									
1992-90	2.5 (Code U)	78287	1	41	FL	79786	400	NO	79401/79886
1992-90	2.5 (Code R)	78300	6	41	FL	79786	600	NO	79401/79886
1993-80	2.5 (153)	78300	6	41	LR	79786	600	78162	79401/79886
2001-96	2.4 Twin Cam	78916	THD	1/2" NPT	Water Pump	78064	400	NO	NO
1996-94	2.3 Quad IV	78916	THD	1/2" NPT	Water Pump	78064	400	NO	NO
1993-88	2.3 Quad IV	78309	THD	3/4" NPT	Water Pump	78064	400	NO	NO
2004-85	2.2 (exp)VinK&M	79850	5	42.5	FL	79786	400	NO	79401/79886
1993-85	2.2 Vin K&M	79641	5	34	2nd FL	79786	400	NO	79401/79886
1996-85	2.0 (exp)VinK&M	79850	5	42.5	FL	79786	400	NO	79401/79886
1993-85	2.0 Vin K&M	79641	1	34	2nd FL	79786	400	NO	79401/79886
1986-82	2.0 (exp)VinO&J	78282	12	34	FL	79786	400	NO	79401/79886
1984-83	2.0	78282	9	34	FL	79786	400	NO	79401/79886
1989-82	1.8 Vin O&J	79641	1	34	FC(11)	79786	400	NO	79401/79886
1986-82	1.8 (exp)Vin O&J	78282	12	34	FL	79786	400	NO	79401/79886
1986	1.8	78298	1	34	FC	79786	400	NO	79401/79886
6 CYLINDER									
1985-82	4.3 Diesel	79678	12	38	RR	79786	600	78162	79402/78237
2006-03	4.2	78075	THD	28	LF	79680		NO	NO
1987-75	4.1	79678	12	38	RR (1)	79786	600	78162	79402/78237
2006-88	3.8 L36	78303	12	38	FL (12)	79786	400	78162	NO
1987-84	3.8 (Transverse)	78303	12	38	RR	79786	400	NO	79402/78237
1987-75	3.8 (Conventional)	79678	12	38	RR (1)	79786	600	78162	79402/78237
2006-02	3.4	78298	3	34	RC (11,15)	79786	400	NO	NO
1996-93	3.4	79641	9	34	FC (15)	79786	400	NO	NO
1998-89	3.3	78303	12	38	FR	79786	400	78162	NO
1979-78	3.2 (196)	78260	12	38	RR	79786	600	78162	79402/78237
1985-80	252	78943	12	38	RR (1)	79786	600	78162	79402/78237
1976-75	250	78302	12	41	LR	79786	600	78162	79402/78237
1974-68	250	79809	6	41	LF	79786	600	78162	79402/78237
2006-93	3.1 LG8	79641	9	34	RC (15)	79786	400	NO	NO
1992-89	3.1	79641	11	34	RC (11,13)	79786	400	NO	NO
1989-82	3.0	78303	3	38	FR	79786	400	78162	79402/78237
1996-93	2.8	79641	9	34	FC (15)	79786	400	NO	NO
1992-80	2.8	78298	11	34	RC (1,6)	79786	400	78162	NO
8 CYLINDER									
2006	6.0	78075	THD	28	LR	79680	400	NO	NO
1996-91	5.7	78263	9	41	LR	79786	600	78162	79403/78238
1991-75	5.7	78260	9	38	LR	79786	600	78162	79403/78238
1985-80	5.7 Diesel	78260	12	38	LR	79786	600	NO	79403/78238
2006-03	5.3	78075	THD	28	LR	79680	400	NO	NO
1996-91	5.0	78263	9	41	LR	79786	600	78162	79403/78238
1981-77	4.9 (301)	78275	11	49	LC	79786	600	78162	79403/78238
1982-81	4.4 (267)	79809	9	41	LR	79786	600	78162	79403/78238
1981-80	4.3 (265)	78275	11	49	LC	79786	600	78162	79403/78238
1976-71	455	78266	12	51	RR (1)	79786	600	78162	79403/78238
1977-75	400	78275	12	49	LF	79786	600	78162	79403/78238
1989-75	403, 307, 260	78260	12	38	LC	79786	600	78162	79403/78238
1970-67	455, 430, 401 340, 300	78260	12	38	LF	79786	600	78162	79403/78238
CADILLAC									
4 CYLINDER									
1987-85	2.0	78301	3	42	FL	79786	400	NO	79401/79886
1984-83	2.0	78282	6	34	FL	79786	400	NO	79401/79886
1985-87	1.8	78298	1	34	FC	79786	400	NO	79401/79886
1982	1.8	78282	12	34	FL	79786	400	NO	79401/79886

(1) May be necessary to remove starter or radiator fan to get to frost plug. (6) Remove RF wheel for access to plug hole. (7) 78267 produced after November of 1988. (11) Must pry or pull plug outward. (12) May be necessary to remove AC compressor (13) GM 3.1 litre may require transmission removal. (15) Use front freeze plug hole if available. (17) Heavy duty cooling packages require a 78163. (19) May require steel tube from GM.

AUTOMOTIVE & LIGHT TRUCK APPLICATION GUIDE

FREEZE PLUG		DIRECTION	mm SIZE	LOCATION	CORD	WATTS	LOWER RAD	EXTERNAL	PG 70	
HEATER	HEATER						HEATER	79400		
CADILLAC (CONTINUED)										
6 CYLINDER										
1985-84	4.3 Diesel	79678	12	38	RR	79786	600	NO	78402/78237	NO
1984-80	4.1	78943	12	38	RR (1)	79786	600	78162	78402/78237	NO
2005-02	3.2	78075	THD	28	LR	79680	400	NO	NO	NO
2002-00	3.0	78284	THD	28	RL	79680	400	NO	NO	NO
1989-85	2.8	78298	11	34	RC(6,11)	79786	400	78162	78402/78237	NO
8 CYLINDER										
2006-01	6.0 MPV	78075	THD	28	LR	79680	400	NO	NO	NO
1996-90	5.7	78263	9	41	LR	79786	600	78162	NO	NO
1985-78	5.7 Diesel	79678	6	38	RR	79786	600	NO	79403/78238	NO
1985-76	5.7	79678	6	38	RR	79786	600	78162	79403/78238	NO
2005-01	5.3 MPV	78075	THD	28	LR	79680	400	NO	NO	NO
1996-90	5.0	78263	9	41	LR	79786	600	78162	NO	NO
1992-86	5.0	78260	6	38	RC	79786	600	78162	79403/78238	NO
1999-82	4.9	NO	—	—	—	—	—	78162	NO	NO
2002-82	4.5	NO	—	—	—	—	—	78162	NO	NO
1995-82	4.1	NO	—	—	—	—	—	78162	NO	NO
1984-68	500,472,425	78265	12	44.5	RC	79786	600	78162	79403/78238	NO
1967-64	429	79678	12	38	LC	79786	600	78163	79403/78238	NO
1984-80	368	78265	12	44.5	RC	79786	600	78162	79403/78238	NO
CHEVROLET										
3 CYLINDER										
1988-86	1.0	—	—	—	—	—	—	78160	NO	NO
2002-01	1.0	—	—	—	—	—	—	78160	NO	NO
4 CYLINDER										
2005-04	2.5	78284	THD	28	LF	79680	400	NO	NO	NO
1993-91	2.5 Vin code U	78287	1	41	FL	79786	400	NO	NO	NO
1993-90	2.5 Vin code R	78300	6	41	2nd FL	79786	600	NO	79401/79886	NO
1993-80	2.5 Conventional	78300	6	41	LR	79786	600	NO	79401/79886	NO
1993-80	2.5 Transvers	78300	12	41	FL	79786	600	NO	79401/79886	NO
1970-62	2.5 (153)	78300	6	41	LR	79786	600	78162	79401/79886	YES
2006-05	2.4	78075	THD	28	RC	79680	400	NO	NO	NO
2003-96	2.4 Twin Cam	78916	THD	1/2" NPT	Water Pump	78064	400	NO	NO	NO
1997-93	2.3 Quad IV	78916	THD	1/2" NPT	Water Pump	78064	400	NO	NO	NO
1993-90	2.3 Quad IV	78309	THD	3/4" NPT	RC	78064	400	NO	NO	NO
2006-93	2.2	79850	4	42.5	FL(1)	79786	400	NO	NO	NO
1995	2.2 CONVENTIONAL	78301	4	42	LR(9)	79786	400	NO	NO	NO
1992-87	2.2	78301	2	42	FL	79786	400	NO	79401/79886	NO
2006-05	2.0	78292	THD	36	—	78064	400	NO	NO	NO
1992-87	2.0	79850	2	42.5	FL	79786	400	NO	79401/79886	NO
1986-85	2.0 (122)	78301	4	42	LF	79786	400	NO	NO	NO
1984-83	2.0	78282	6	34	LF	79786	400	78161	79401/79886	NO
1985-82	1.9 Isuzu	78077	12	35	LF	79786	400	NO	79401/79886	NO
2004-99	1.8	78091	12	35	2nd RR	79786	400	NO	NO	NO
1987-82	1.8 Diesel	78077	12	35	RR	79786	400	NO	NO	NO
1985-83	1.8	78298	4	34	FC	79786	400	NO	79401/79886	NO
1982	1.8	78282	12	34	FL	79786	400	NO	79401/79886	NO
1981-76	1.8	78077	12	35	LF	79786	400	78161	79401/79886	NO
2006-04	1.6	78292	THD	36	—	78064	400	NO	NO	NO
1999	1.6	78084	12	40	2nd RR	79786	400	NO	NO	NO
1996	1.6	—	—	—	—	—	400	78161	79401/79886	NO
1993-90	1.6 Prism	78084	3	40	2nd FL	79786	400	NO	79401/79886	NO
1991	1.6 Storm	78291	8	35	RC	79786	400	78161	79401/79886	NO
1988-85	1.6	78084	12	40	FC	79786	400	NO	79401/79886	NO
1987-76	1.6	78298	6	34	RF	79786	400	78162	79401/79886	NO
1988-85	1.5	78291	12	35	CR	79786	400	78162	79401/79886	NO
1987-76	1.4	78298	6	34	RF	79786	400	78162	79401/79886	NO
2002-99	1.3	—	—	—	—	—	—	78160	NO	NO
6 CYLINDER										
1996-55	4.3 262	78263	6	41	LF	79786	600	78162	79402/78237	NO
1984-82	4.3 Diesel	78260	12	38	RR	79786	600	NO	79402/78237	NO
2006	3.9	78075	THD	28	RC	79680	400	NO	NO	NO
2003-96	3.8 Camaro	79655	9	38	RR	79786	400	NO	NO	NO
2005-86	3.8 231	78303	12	38	FL(12)	79786	400	78162	79402/78237	NO
1986	3.8 231	78305	6	38	RR	79786	400	NO	79402/78237	NO
1985-82	3.8 231	78943	12	38	FR(1)	79786	600	78162	79402/78237	NO
1981-80	3.8 Buick	78943	12	38	RR	79786	600	78162	79402/78237	NO
1980-78	3.8 (231)	78943	12	38	RR	79786	600	78162	79402/78237	NO
2006-00	3.5	78075	THD	28	RC	79680	400	NO	NO	NO

(1) May be necessary to remove starter or radiator fan to get to frost plug. (2) 78298 will not fit flush against this engine block due to the taper of the steel section of the heater. (6) Remove RF wheel for access to plug hole. (7) 78287 produced after November of 1988. (9) May be necessary to move wheel well liner. (11) Must pry or pull core plug outward. (12) May be necessary to remove AC compressor. (19) May require steel tube from GM.

FREEZE PLUG HEATER	DIRECTION	mm SIZE	LOCATION	CORD	WATTS	LOWER RAD HEATER	EXTERNAL HEATER	PG 70 79400
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CHEVROLET (CONTINUED)

6 CYLINDER (CONTINUED)

1996-89	3.4 Conv.	78298	3	34	LR(11,12,15)	79786	400	NO	79402/78237	NO
2005-89	3.4 Transvers	78298	3	34	RC(11,15)	79786	400	NO	NO	
1980-78	3.2 (196)	78943	12	38	RR	79786	600	78162	NO	NO
2003-89	3.1 Transvers	78298	3	34	RC(11,12,15)	79786	400	NO	NO	NO
1996-89	3.1 Conv	78298	3	34	LR(11,12,15)	79786	400	NO	79402/78237	NO
1985-82	3.0	78303	12	38	FR	79786	400	78162	79402/78237	NO
1996-93	2.8	79641	3	34	FC(11,15)	79786	400	NO	NO	NO
1992-82	2.8 Conv	79641	9	34	RFF	79786	400	78161	79402/78237	NO
1992-82	2.8 Transvers	79641	11	34	RC(6)	79786	400	78162	79402/78237	NO
1984-80	252	78943	12	38	RR(1)	79786	600	78162	79402/78237	NO
1984-75	250	78302	12	41	LR	79786	600	78162	79402/78237	NO
1974-68	250	79809	12	41	LF	79786	600	78162	79402/78237	NO
1984-78	229, 200	79809	6	41	LR	79786	600	78162	79402/78237	NO

8 CYLINDER

1999-91	7.4	79809	3	41	LR	79786	600	78162	79403/78238	NO
1990-73	7.4	78265	6	44.5	RC	79786	600	78163	79403/78238	NO
1994-82	6.5 Diesel	78263	12	41	LC	79786	600	NO	79403/78238	NO
1994-82	6.2 Diesel	78263	12	41	LC	79786	600	NO	79403/78238	NO
2006	6.0	78075	THD	28	LR	79680	400	NO	NO	NO
1992-91	6.0	79809	12	41	LF	79786	600	NO	79403/78238	NO
2005-74	5.7 LS6	78263	9	41	LR	79786	600	78162(3)	79403/78238	NO
2005-98	5.7 LS1	78075	THD	28	LR	79680	400	NO	79403/78238	NO
2005-98	5.7 LS1	78075	THD	28	LR	79680	400	NO	79403/78238	NO
2006	5.3	78075	THD	28	LR	79680	400	NO	NO	NO
1996-74	5.0 (305,302)	78263	9	41	LR	79786	600	78162(3)	79403/78238	NO
1993-65	402, 427	78265	6	44.5	LF	79786	600	78162	79403/78238	NO
1973-70	400 (2bbl)	79809	6	41	LC	79786	600	78163(3)	79403/78238	NO
1973-70	400 (4bbl)	78265	6	44.5	LC	79786	600	78163	79403/78238	NO
1993-65	396, 366	78265	6	44.5	LF	79786	600	78162	79403/78238	NO
1986-80	350,260 Diesel	78260	6	38	Any	79786	600	NO	79403/78238	NO
1994-55	327,282,267,262	78263	9	41	LR	79786	600	78163(3)	79403/78238	NO
1981-77	301, 265	78275	6	49	LF	79786	600	78161	79403/78238	NO
1996-55	283,307,350	78263	9	41	LR	79786	600	78162	79403/78238	NO

CHEVROLET GMC TRUCK

4 CYLINDER

2005-04	2.8	78075	THD	28	LC	79680	400	NO	NO	NO
1993-80	2.5	78300	6	41	LF	79786	600	78162(16)	79401/79886	NO
2003-90	2.2	79850	2	42.5	LR(9)	79786	400	NO	79401/79886	NO
1985-81	2.2 Diesel	78285	12	45	LF	79786	400	NO	79401/79886	NO
1992-85	2.0	78301	3	42	FL	79786	400	NO	79401/79886	NO
1984-83	2.0	78298	12	34	RF	79786	400	78161	79401/79886	NO
1985-82	1.9	78077	12	35	LF	79786	400	NO	79401/79886	NO
1985-83	1.8	78298	1	34	LC	79786	400	NO	79401/79886	NO
1982	1.8	78282	12	34	FL	79786	400	NO	79401/79886	NO
1981-76	1.8	78077	12	35	LF	79786	400	78161	79401/79886	NO
1988	1.6	—	—	—	—	79786	—	78160	NO	NO
1987	1.6	78084	12	40	FC	79786	400	NO	79401/79886	NO
1986	1.6	78273	3	35	FC	79786	400	NO	79401/79886	NO
1964-62	153	78300	12	41	LF	79786	600	78162	79401/79886	NO

5 CYLINDER

2006-04	3.5	78075	THD	28	LC	79680	400	NO	NO	NO
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6 CYLINDER

2006-85	4.3	78263	6	41	LR	79786	600	78162	79402/78237	NO
1984-82	4.3 Diesel	78260	12	38	RR	79786	600	NO	79402/78237	NO
2006-02	4.2	78075	THD	28	LR	79680	400	NO	NO	NO
2006-	3.9	78075	THD	28	RC	79680	400	NO	NO	NO
1996-92	3.8	78303	3	38	LF	79786	400	78162	NO	NO
2006-04	3.5	78075	THD	28	RC	79680	400	NO	NO	NO
2006-89	3.4	78298	9	34	RC	79786	400	NO	79402/78237	NO
1996-89	3.1	78298	11	34	RC(11)	79786	400	NO	79402/78237	NO
1993-82	2.8 Trans	79641	3	34	RF	79786	400	78162	79402/78237	NO
1993-82	2.8 Conv.	79641	9	34	RFF	79786	400	78162	79402/78237	NO
1993-73	292, 250	79809	6	41	LF	79786	600	78162	79402/78237	NO
1974-55	292,261,250,235	79809	6	41	LF	79786	600	78163	79402/78237	YES
1984-80	252	78943	12	38	RR(1)	79786	600	78162	79402/78237	NO

(1) May be necessary to remove starter or radiator fan to get to frost plug. (2) 78298 will not fit flush against this engine block due to the taper of the steel section of the heater. (3) Except Malibu or Caprice. (6) Remove RF wheel for access to plug hole. (9) May be necessary to remove wheel liner. (11) Must pry off pull plug outward. (12) May be necessary to remove A/C compressor/alternator/oil filter dipstick tube. (15) Use front center freeze plug hole if available. Front center is behind starter in some models open in others. Some GM vehicles with transverse engines require removal of transmission and or exhaust system for access to rear freeze plug hole. (16) Except 1989.

AUTOMOTIVE & LIGHT TRUCK APPLICATION GUIDE

FREEZE PLUG HEATER		DIRECTION	mm SIZE	LOCATION	CORD	WATTS	LOWER RAD HEATER	EXTERNAL HEATER	PG 70 79400	
CHEVROLET GMC TRUCK (CONTINUED)										
6 CYLINDER (CONTINUED)										
1985-82	231	78943	12	38	FR(1)	79786	600	78162	79402/78237	NO
1981-78	231	79678	12	38	RR(1)	79786	600	78162	79402/78237	NO
1982-78	229, 200	79809	6	41	LR	79786	600	78162	79402/78237	NO
1995-84	W7H, W7T Forward Tiltmaster	79313	THD	1" NPT	RS	78064	600	NO	NO	NO
1995-84	W4, W5, W6, W7 Forward Tiltmaster	79313	THD	1" NPT	LS	78064	600	NO	NO	NO
8 CYLINDER										
2006-00	8.1	78075	THD	28	LF	79680	400	NO	79403/78238	NO
2002-91	7.4	79809	3	41	LC	79786	600	78162	79403/78238	NO
1990-69	7.4	78265	6	44.5	RC	79786	600	78163	79403/78238	NO
1997-90	7.0	78263	6	41	LC	79786	600	NO	79403/78238	NO
2006-01	6.6 Diesel Duramax	79870	3	38	LC	79786	750	NO	79403/78238	NO
2002-93	6.5 Diesel	78263	12	41	LC	79786	600	78163	79403/78238	NO
1993-82	6.2 Diesel	78263	12	41	LC	79786	600	78163	79403/78238	NO
2006-98	6.0 LQ4	78075	THD	28	LR	79680	—	NO	NO	NO
2006-90	6.0 LQ9	78263	6	41	LC	79786	600	NO	79403/78238	NO
2002-99	5.7 LS1	78263	9	41	LR	79786	600	78162	79403/78238	NO
2006-98	5.3 LM7	78075	THD	28	LR	79680	—	NO	NO	NO
2006-98	4.8 LR4	78075	THD	28	LR	79680	—	NO	NO	NO
1996-94	4.3	79809	11	41	LR	79786	600	78162	NO	NO
1989-69	427,402,396,366	78265	6	44.5	RC	79786	600	78163	79403/78238	NO
1973-70	400 (2 bbl)	79809	6	41	LC	79786	600	78163	79403/78238	NO
1973-70	400 (4bbl)	78265	6	44.5	LC	79786	600	78163	79403/78238	NO
1998-74	400,350,305,302	78263	9	41	LR	79786	600	78162	79403/78238	NO
2000-55	350,327,305 282,267,262	78263	3	41	LR	79786	600	78163	79403/78238	NO
1965-58	348,409	78265	12	44.5	LR	79786	600	78163	79403/78238	YES
1986-79	350,260 Diesel	78260	6	38	Any	79786	600	NO	79403/78238	NO
1981-77	301,265	78275	6	49	LF	79786	600	78162	79403/78238	NO

CHRYSLER - DODGE

4 CYLINDER										
1987-84	2.6 Conv	78084	3	40	RR	79786	400	78162	79401/79886	NO
1989-83	2.6 Transverse	78084	9	40	RR	79786	400	78161	79401/79886	NO
Thru 1984	2.6 Conv	78084	9	40	RF	79786	400	78161	79401/79886	NO
1997-81	2.5 Transverse	78263	3	41	FL	79786	600	NO	NO	NO
1992	2.5 Vin code K	78263	3	41	FL	79786	600	78161	79401/79886	NO
2006-90	2.4	78291	3	35	RL	79786	400	NO	79401/79886	NO
1993	2.4 AWD	78084	3	40	RS	79786	400	NO	NO	NO
1997-81	2.2	78287 (7)	6	41	RC	79786	400	NO	NO	NO
2004-95	2.0 Neon	78291	3	35	RL	79786	400	NO	NO	NO
1993-84	2.0 Turbo					79786		78162	79401/79886	NO
1993-84	2.0 Transverse	78291	3	35	FR	79786	400	NO	79401/79886	NO
1988-86	2.0	78091	3	35	RL	79786	400	NO	79401/79886	NO
1982-74	2.0	78084	6	40	RF	79786	400	78161	79401/79886	NO
1983-76	1.7 Transverse	78084	6	36.5	RC	79786	400	NO	79401/79886	NO
1993-79	1.6 Transverse	78091	5	35	2ndLR	79786	400	78161	79401/79886	NO
1989-85	1.6	78091	12	35	RC	79786	400	78161	79401/79886	NO
1979-78	1.6 Conv	78091	6	35	RR	79786	400	78161	79401/79886	NO
1977-72	1.6	78091	6	35	LC	79786	400	NO	NO	NO
1996-85	1.5 Transverse	78091	6	35	FL	79786	400	NO	79401/79886	NO
1993-79	1.4 Transverse	78091	6	35	2ndLR	79786	400	78161	79401/79886	NO
6 CYLINDER										
1997-86	3.9	79809	12	41	RR	79786	600	78162	79402/78237	NO
1997-94	3.8	78302	12	41	RL	79786	600	NO	79402/78237	NO
1998-93	3.5	78302	12	41	RR	79786	600	NO	NO	NO
1999-88	3.3 Transverse	78302	12	41	RL	79786	600	NO	79402/78237	NO
1997-93	3.3 Conv	78302	12	41	RR	79786	600	NO	NO	NO
2005-01	3.0	79809	12	41	RR	79786	600	NO	NO	NO
1998-87	3.0 Transverse	79809	11	41	RL	79786	600	NO	79402/78237	NO
1991-88	3.0	78274	9	36	RRF	79786	400	NO	NO	NO
2002-95	2.5	78263	9	41	RL	79786	600	NO	NO	NO
1983-61	170,198,225	78302	12	41	LF	79786	600	78162	79402/78237	NO
8 CYLINDER										
1994-91	5.2	78300	6	41	RC	79786	600	78163	79403/78238	NO
2002-64	All other V8's	78263	12	41	RC	79786	600	78162	79403/78238	NO
10 CYLINDER										
2005-94	8.3	79677	1	41	RR	79786	600	NO	79403/78238	NO

(7) 78287 produced after November 1988.

FREEZE PLUG HEATER	DIRECTION	mm SIZE	LOCATION	CORD	WATTS	LOWER RAD HEATER	EXTERNAL HEATER	PG 70 79400
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DODGE TRUCK

4 CYLINDER

1990-84	2.6	78084	3	40	RR	79786	400	78161	79401/79886	NO
Thru 1983	2.6	78084	9	40	RF	79786	400	78161	79401/79886	NO
2002-87	2.5	78287	12	41	RC(9)	79786	400	78161	79401/79886	NO
2004-87	2.4	78291	3	35	RR	79786	400	NO	79401/79886	NO
1985-83	2.3 DIESEL	78084	9	40	LR	79786	400	NO	NO	NO
1997-82	2.2	78287	12	41	RC(9)	79786	400	78161	79401/79886	NO
1991-83	2.0	78091	3	35	RR	79786	400	NO	79401/79886	NO
1982-78	2.0	78084	6	40	RC	79786	400	NO	79401/79886	NO
1996-92	1.8	78289	3	35	RF	79786	400	NO	NO	NO

6 CYLINDER

2006-98	5.9 6BTCummins	79100	THD	3/4" NPT	RS	78064	750	NO	79403/78238	NO
1997-89	5.9 Cummins	79104	6	58	RF	78064	750	78163	79403/78238	NO
2004-89	3.9	79809	12	41	RR	79786	600	78163	79402/78237	NO
2006-87	3.8	78302	12	41	RL	79786	600	NO	NO	NO
2006-02	3.7	79854	6	35	2ndRR	79786	600	NO	NO	NO
2006-87	3.3	78302	12	41	RL	79786	600	NO	NO	NO
1999-88	3.0	79809	12	41	RR	79786	600	NO	79402/78237	NO
1987-61	225,198,170	78302	12	41	LF	79786	600	78162	79402/78237	NO

8 CYLINDER

Thru 2003	5.9	78300	6	41	LR	79786	600	78162	79403/78238	NO
2003-91	5.2	78300	6	41	RR	79786	600	NO	79403/78238	NO
2006-00	4.7	79854	6	35	RR	79786	600	NO	NO	NO
1992-65	All V8'S	79809	12	41	RC	79786	600	78162	79403/78238	NO

10 CYLINDER

2004-94	8.0	79677	1	41	RR	79786	600	NO	79403/78238	NO
2006-05	8.2	79677	1	41	RR	79786	600	NO	79403/78238	NO

DAEWOO

4 CYLINDER

2002-99	2.2	79641	6	34	FR	79786	400	NO	79401/79886	NO
2002-99	2.0	79641	6	34	FR	79786	400	NO	79401/79886	NO
2002-99	1.6	79641	6	34	FR	79786	400	NO	79401/79886	NO

6 CYLINDER

2002-01	3.2	78281	THD	38	RS	78064	400	NO	79402/78237	NO
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EAGLE

4 CYLINDER

1988	4.2	78266	12	51	LR	79786	600	78162	79401/79886	NO
1996-88	2.5	78265	11	44.5	LR	79786	600	NO	NO	NO
1996-92	2.4	78291	3	35	RF	79786	400	NO	NO	NO
1989-88	2.2	78313	THD	1" NPT	RF	78064	400	NO	79401/79886	NO
1997-89	2.0 (incl. Turbo)	78291	3	35	RL	79786	400	NO	NO	NO
1996-89	1.8	78291	3	35	RF	79786	400	NO	NO	NO
1990-89	1.6	78291	4	35	2ndLR	79786	400	NO	NO	NO
1996-89	1.5	78291	9	35	2ndRL	79786	400	NO	79401/79886	NO

6 CYLINDER

1997-93	3.5	79809	12	41	RR	79786	600	NO	NO	NO
1997-93	3.3	79809	12	41	RR	79786	600	NO	NO	NO
1993-88	3.0	78274	12	36	RFF	79786	400	NO	NO	NO

FIAT

4 CYLINDER

1983-79	2.0	78084	12	40	RF	79786	400	NO	79401/79886	NO
1983-68	1.8 1800, 1756CC	78084	12	40	RF	79786	400	NO	79401/79886	NO
1983-79	1.5 1500 X1/9	79727	5	32	RR	79857	750	NO	NO	NO
1983-68	1.5 1498cc	78084	6	40	RF	79786	400	NO	79401/79886	NO
1983-68	1.3 1290cc	78084	6	40	RF	79786	400	NO	79401/79886	NO
1983-68	1.2 1197cc	78084	6	40	RF	79786	400	NO	79401/79886	NO
1983-71	1.2 1166cc	78084	8	40	LS	79786	400	NO	79401/79886	NO

FORD MOTOR CO.

4 CYLINDER

1995-84	2.5 HSC TRANS	78265	6	44.5	RR	79786	600	NO	79401/79886	NO
2006-05	2.3 HSC Trans	78309	THD	3/4" NPT	RC	78064	400	NO	NO	NO
1995-93	2.3 OHC Conv	78303	6	38	RR(9)	79786	400	78163	79401/79886	NO
1995-84	2.3 HSC Trans	78265	6	44.5	RR	79786	600	NO	79401/79886	NO
1995-74	2.3 OHC Conv	78260	6	38	RR	79786	600	78161	79401/79886	NO
1992-91	2.2 Mazda	78077	12	35	2ndRF	79786	400	NO	79401/79886	NO
1992-89	2.2 Turbo	78304	12	35	2ndRF	79786	400	NO	NO	NO

AUTOMOTIVE & LIGHT TRUCK APPLICATION GUIDE

FREEZE PLUG		DIRECTION	mm SIZE	LOCATION	CORD	WATTS	LOWER RAD HEATER	EXTERNAL HEATER	PG 70 79400	
FORD MOTOR CO. (CONTINUED)										
4 CYLINDER (CONTINUED)										
1985-83	2.2 Perkins Diesel	78273	12	35	RF	79786	400	78162	79401/79886	NO
1996-95	2.0 14 Probe	78293	12	30	lowerFL	79786	400	NO	NO	NO
2004-97	2.0 Zetec	78283	3	35	RR	79786	400	78162	NO	NO
2006-95	2.0	78291	12	35	RL	79786	400	NO	NO	NO
1988-83	2.0	78260	6	38	RR	79786	600	78161	79401/79886	NO
1987-84	2.0 Diesel	78091	12	35	2ndRF	79786	400	NO	79401/79886	NO
1974-72	2.0	78260	6	38	RF	79786	600	NO	79401/79886	NO
1996-91	1.9	78077	12	35	RR	79786	400	NO	79401/79886	NO
1990-81	1.9	78287	1	41	FL	79786	400	NO	79401/79886	NO
1996-91	1.8	78291	12	35	2ndRF	79786	400	NO	79401/79886	NO
1997-88	1.6	78091	12	35	2ndFR	79786	400	NO	79401/79886	NO
1987-81	1.6	78287	11	41	FL	79786	400	NO	79401/79886	NO
1980-71	1.6 96.6CID	78263	11	41	FL	79786	600	NO	79401/79886	NO
1998-88	1.3	78291	12	35	2ndRF	79786	400	78160	79401/79886	NO
1990-71	1.3	78287	11	41	FL	79786	400	NO	79401/79886	NO
6 CYLINDER										
1995-90	4.9	78303	6	38	RF(9)	79786	400	78162	79402/78237	NO
1997	4.2	79678	12	38	LR	79786	600	78162	79402/78237	NO
2006-05	4.0	78303	7	38	RR	79786	400	NO	NO	NO
2005-82	3.8 Conv	78303	12	38	RR	79786	400	78162	79402/78237	NO
1996-88	3.8 Transverse	78303	12	38	FL	79786	400	NO	79402/78237	NO
1998-96	3.4 SHO	78309	THD	3/4" NPT	FR	78064	400	NO	NO	NO
1994-89	3.2	78077	6	35	LF	79786	400	NO	NO	NO
2006-00	3.0 Duratec	78309	THD	3/4" NPT	RR	78064	400	NO	79402/78237	NO
1999-93	3.0 SHO	78309	THD	3/4" NPT	FR	78064	400	NO	NO	NO
2006-86	3.0	78303	6	38	FC	79786	400	78162	79402/78237	NO
1991-86	3.0	78303	6	38	FC	79786	400	NO	79402/78237	NO
1990-86	2.9	78305	3	38	LFF	79786	400	78162	NO	NO
1986-83	2.8	78305	8	38	LFF	79786	400	78161	79402/78237	NO
1981-72	2.8	78305	7	38	LFF	79786	400	78161	79402/78237	NO
1981-72	2.6	78305	7	38	LFF	79786	400	78161	79402/78237	NO
2003-93	2.5 Duratec	78309	THD	3/4" NPT	FR	78064	400	NO	NO	NO
1997-93	2.5 Probe	78091	8	35	RR(1)	79786	400	NO	NO	NO
1983-64	250,200,170,144	78265	12	44.5	RC	79786	400	78162	79402/78237 thru 80	NO
1979-65	240	79809	12	41	2ndRF	79786	600	78162	79402/78237	NO
8 CYLINDER										
1999-91	5.4 EFI OHC	78260	6	38	LR	79786	600	NO	NO	NO
2006-91	4.6 SFI OHC	78260	6	38	LR	79786	600	NO	NO	NO
2006-01	4.6 Mustang	78260	9	38	LF	79786	600	NO	NO	NO
2000-99	4.6 Mustang	78260	9	38	RR	79786	600	NO	NO	NO
2006-00	3.9	79851	THD	30	LR	79680	400	NO	NO	NO
1994-63	490	79678	12	38	Any	79786	600	78162	79403/78238	NO
1994-63	460	79678	12	38	Any	79786	600	78162	79403/78238	NO
1994-63	429	79678	12	38	Any	79786	600	78162	79403/78238	NO
1976-54	428	78265	6	44.5	LF	79786	600	78162	79403/78238	NO
1993-66	400	78260	12	38	RR	79786	600	78162	79403/78238	NO
1976-54	390	78265	6	44.5	LF	79786	600	78162	79403/78238	NO
1994-63	370	79678	12	38	Any	79786	600	78162	79403/78238	NO
1976-54	360,361	78265	6	44.5	LR	79786	600	78162	79403/78238	NO
1976-54	352	78265	6	44.5	LF	79786	600	78162	79403/78238	NO
1996-66	351M	78260	12	38	RR	79786	600	78162	79403/78238	NO
1996-66	351W, 351C	79678	12	38	RR	79786	600	78162	79403/78238	NO
1976-54	332	78265	6	44.5	LF	79786	600	78162	79403/78238	NO
1976-54	330	78265	6	44.5	LR	79786	600	78162	79403/78238	NO
1996-66	5.0 302, 289	78260	12	38	RR(1)	79786	600	78162	79403/78238	NO
1976-54	292	78265	6	44.5	LF	79786	600	78162	79403/78238	NO
1994-63	260	79678	12	38	Any	79786	600	78162	79403/78238	NO
1982-69	255	78260	12	38	RR	79786	600	78162	79403/78238	NO
FORD TRUCK										
4 CYLINDER										
2002-98	2.5	78303	3	38	LR	79786	600	NO	NO	NO
1993	2.5	78091	8	35	RR	79786	400	NO	79401/79886	NO
2004-01	2.3	78309	THD	3/4" NPT	RR	78064	400	NO	NO	NO
1997-95	2.3	78303	3	38	LR	79786	400	NO	NO	NO
1988-85	2.3 Mitsu. Diesel Turbo	78084	9	40	LR	79786	400	NO	NO	NO
1995-74	2.3 OHC	78303	6	38	RR(1)	79786	400	78161	79401/79886	NO
2004-02	2.0	78283	3	35	RR	79786	400	78162	79401/79886	NO
1988-83	2.0	78260	6	38	RR	79786	600	78161	79401/79886	NO
1984	2.0 Diesel	78091	12	38	3ndRF	79786	400	NO	79401/79886	NO

(1) May be necessary to remove starter or radiator fan to get to frost plug. (9) May be necessary to remove wheel liner.

FREEZE PLUG HEATER	DIRECTION	mm SIZE	LOCATION	CORD	WATTS	LOWER RAD HEATER	EXTERNAL HEATER	PG 70 79400
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FORD TRUCK (CONTINUED)

4 CYLINDER (CONTINUED)

1983-72	2.0 2000cc	78272	9	50	LF	79786	400	NO	79401/79886	NO
1983-72	1.8 1800cc	78272	9	50	LF	79786	400	NO	79401/79886	NO
6 CYLINDER										
1989-86	7.8 Diesel	80053	—	38	2ndRR	79857	1500	NO	79403/78238	NO
1989-86	6.6 Diesel	80053	—	38	2ndRR	79857	1500	NO	79403/78238	NO
1997-65	4.9	78300	6	41	2ndRF	79786	600	78163	79402/78237	NO
2003-96	4.2	78260	12	38	LR	79786	600	NO	NO	NO
2005-98	4.0	79881	6	38	RF	79786	—	78162	79402/78237	NO
2003-90	4.0 OHV	78303	6	38	RF(9)	79786	400	78162	79402/78237	NO
1997-65	3.9	78300	6	41	RF	79786	600	78163	79402/78237	NO
2003-95	3.8	78260	12	38	FL	79786	600	NO	NO	NO
1996-82	3.8	78303	12	38	RR	79786	400	78162	79402/78237	NO
2002-99	3.3 Villager	78293	6	30	FL	79786	400	NO	NO	NO
1999-93	3.0 Villager	78293	6	30	FL	79786	400	NO	NO	NO
2003-86	3.0 Inc Aerostar	78303	6	38	LS	79786	400	78162	79402/78237	NO
2006-01	3.0 Duratec	78309	THD	3/4NPT	RF	78064	400	NO	NO	NO
1992-86	2.9	78305	3	38	LFF	79786	400	78162	NO	NO
1986-83	2.8	78305	7	38	RFF	79786	400	78161	79402/78237	NO
1983-64	250,200,170,144	78265	12	44.5	RC	79786	600	78162	79402/78237	NO

8 CYLINDER

1998-64	7.5	79678	12	38	Any	79786	600	78164	79403/78238	NO
2003-93	7.3 Diesel	78303 (20)	12	38	LR and RR	79786	400	78164	79403/78238	NO
2003-93	7.3 Diesel	79713	THD	3/4NPT	RS	78064	1000	78164	79403/78238	NO
1992-83	7.3 Diesel	79885	12	38	RR	79786	600	78164	79403/78238	NO
1992-83	7.3 Diesel	78297	11	38	RR	79857	1000	78164	79403/78238	NO
1998-83	6.9 Diesel	79885	12	38	RR	79786	600	78164	79403/78238	NO
1998-83	6.9 Diesel	80053	11	38	RR	79857	1000	78164	79403/78238	NO
2006-03	6.0 Diesel	79871	THD	27	RR	78064	1000	NO	NO	NO
1998-66	5.8 400, 361M	78260	12	38	RR	79786	600	78164	79403/78238	NO
2006-91	5.4	78260	6	38	LR	79786	600	NO	79403/78238	NO
1999-66	5.0 302, 289	78260	12	38	RR	79786	600	78162	79403/78238	NO
2006-64	4.6 289	79678	12	38	LR(1)	79786	600	78163	79403/78238	NO
1981-60	534,477,475,401	78265	6	44.5	RR	79786	600	NO	79403/78238	NO
1993-64	490	79678	12	38	Any	79786	600	78162	79403/78238	NO
1992-64	460	79678	12	38	Any	79786	600	78162	79403/78238	NO
1993-64	429	79678	12	38	Any	79786	600	78162	79403/78238	NO
1979-54	428,391,389 361,360,330	78265	6	44.5	RC	79786	600	78164	79403/78238	NO
1982-69	400	78260	12	38	RR	79786	600	78162	79403/78238	NO
1979-54	390,352,332,292	78265	6	44.5	LF	79786	600	78162	79403/78238	NO
1993-64	370	79678	12	38	Any	79786	600	78162	79403/78238	NO
1974-60	292	78265	6	44.5	LR	79786	600	78163	79403/78238	NO
1993-64	260	79678	12	38	Any	79786	600	78162	79403/78238	NO
1982-69	255	78260	12	38	RR	79786	600	78162	79403/78238	NO

10 CYLINDER

2006-97	6.8	79678	12	38	LR	79786	600	NO	NO	NO
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GEO

3 CYLINDER

1997-89	1.0 Metro	79783	—	—	—	—	—	78160	—	—
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4 CYLINDER

1999-92	1.8 Storm	78091	12	35	2ndRR	79786	400	NO	NO	NO
1999-89	1.6 Prism	78084	12	40	FC	79786	400	NO	NO	NO
1997-90	1.6 Storm	78091	12	35	2ndRR	79786	400	78161	79401/79886	NO
1999-88	1.6 Tracker	78785	—	—	—	—	—	78160	NO	NO
1989	1.5	78077	12	35	CR	79786	400	NO	NO	NO
1999-89	1.3	79784	—	—	—	—	—	78160	NO	NO

HONDA

4 CYLINDER

2006-02	2.4	78284	THD	28	RL	79680	400	NO	NO	NO
2002-92	2.3	78284	THD	28	RC	79680	400	NO	NO	NO
2001-92	2.2 Prelude	78284	THD	28	RC	79680	400	NO	NO	NO
1997-90	2.2 Accord	78284	THD	28	RL	79680	400	NO	NO	NO
1991-88	2.1	78306	—	35	RR	79680	400	NO	NO	NO
2006-97	2.0 CRV	78284	THD	28	FR	79680	400	NO	NO	NO
1989-79	2.0 Accord	78291	9	35	RFF	79786	400	NO	NO	NO
2006-05	1.8	78284	THD	28	RC	79680	400	NO	NO	NO
1987-79	1.8	78291	9	35	RFF	79786	400	NO	NO	NO
1994	1.8 112 CID	78273	8	35	RL	79786	400	NO	NO	NO
2005-01	1.7	78284	THD	28	RL	79680	400	NO	NO	NO

(1) May be necessary to remove starter or radiator fan to get to frost plug. (9) May be necessary to remove wheel well liner. (20) 2 heaters required.

AUTOMOTIVE & LIGHT TRUCK APPLICATION GUIDE

FREEZE PLUG		DIRECTION	mm SIZE	LOCATION	CORD	WATTS	LOWER RAD	EXTERNAL	PG 70	
HEATER	HEATER						HEATER	79400		
HONDA (CONTINUED)										
4 CYLINDER										
1992-84	1.3	79744	---	---	Clamp On	---	200	NO	NO	NO
1992-84	1.5	78744	---	---	Clamp On	---	200	NO	NO	NO
2000-88	1.6	78284	THD	28	FR	79680	400	NO	NO	NO
1987-79	1.6	78291	9	35	RFF	79786	400	NO	NO	NO
1999-88	1.5	78284	THD	28	RR	79680	400	NO	NO	NO
2006-03	1.3	78284	THD	28	RR	79680	400	NO	NO	NO
6 CYLINDER										
2006-98	3.5	78284	THD	28	FL	79680	400	NO	NO	NO
2005-94	3.2	78075	THD	28	RL	79680	400	NO	NO	NO
2006-98	3.0	78284	THD	28	FL	79680	400	NO	NO	NO
1996-95	2.7	78284	THD	28	RL	79680	400	NO	NO	NO
HUMVEE										
2005-03	6.0	78075	THD	28	LR	79680	400	NO	NO	NO
HYUNDAI										
4 CYLINDER										
2006-88	2.4	78091	9	35	2ndLR	79786	400	NO	NO	NO
2006-88	2.0	78091	9	35	2ndLR	79786	400	NO	NO	NO
1988-86	2.0 Conv	78091	9	35	2ndLF	79786	400	NO	NO	NO
1999-92	1.8	78291	3	35	2ndRR	79786	400	NO	NO	NO
2006-01	1.6	78091	4	35	2ndLR	79786	400	NO	NO	NO
1999-92	1.6	78291	3	35	2ndRR	79786	400	NO	NO	NO
1987-85	1.6	78091	9	35	LC	79786	400	NO	NO	NO
1998-88	1.5 Excel	78091	9	35	2ndLR	79786	400	NO	NO	NO
2005-95	1.5 Accent	78481	9	35	2ndLR	79786	400	NO	NO	NO
1987-83	1.4	78091	12	35	LC	79786	400	NO	NO	NO
6 CYLINDER										
2006	3.8	80054	THD	25	RC	78064	400	NO	NO	NO
2006-02	3.5	79809	12	41	RL	79786	600	NO	NO	NO
2006-05	3.3	80054	THD	25	RC	78064	400	NO	NO	NO
2002-89	3.0	78300	12	41	RF	79786	600	NO	NO	NO
2002-99	2.5	78091	6	35	RL	79786	400	NO	NO	NO
2006-03	2.7	78091	12	35	RL	79786	400	NO	NO	NO
INFINITI										
4 CYLINDER										
2001-91	2.0	78945	THD	30	LR	79680	400	NO	NO	NO
6 CYLINDER										
2006-02	3.5 VQ35DE	78945	THD	30	FR	79680	400	78162	NO	NO
2001-97	3.3 VG33	---	6	30	RL	79786	400	78162	NO	NO
2001-96	3.0 I30 VQ30	78945	THD	30	FR	79680	400	78162	NO	NO
1992-89	3.0 I30 VG30	---	6	30	LF	79786	400	78162	NO	NO
8 CYLINDER										
2006-04	5.7 VK56DE	78945	THD	30	Rear	79680	400	NO	NO	NO
2006-01	4.5 VH45DE	78945	THD	30	Rear	79680	400	NO	NO	NO
1996-90	4.5 VK45DE	78945	THD	30	Rear	79680	400	NO	NO	NO
2001-97	4.1 VH41DE	78945	THD	30	Rear	79680	400	NO	NO	NO
INTERNATIONAL HARVESTER										
4 CYLINDER										
ALL	196, 152	79809	12	41	RF	79786	600	78164	79401/79886	NO
6 CYLINDER										
ALL	265, 264, 241, 240, 220	79809	12	41	LF	79786	600	78164	79402/78237	NO
ALL	258, 232	78266	12	51	LR	79786	600	NO	79402/78237	NO
ALL	225	78302	12	41	LF	79786	600	NO	79402/78237	NO
ALL	198 3.2 Diesel	78077	12	35	2ndLF	79786	400	NO	79402/78237	NO
ALL	DT360, DT466	78216	12	32	LS	79857	1250	NO	79402/78237	NO
8 CYLINDER										
2000-95	7.3 T44E	79713	THD	3/4" NPT	LR	78064	1000	NO	79403/78238	NO
1995-93	7.3 Diesel	78303(20)	12	38	RR and LR	79786	400	78164	79403/78238	NO
1992-83	7.3 Diesel	78297	12	38	RR	79857	1000	78164	79403/78238	NO
1995-93	6.9 Diesel	78303(20)	12	38	RR and LR	79786	400	78164	79403/78238	NO
1992-83	6.9 Diesel	79885	12	38	RR	79786	600	78164	79403/78238	NO
ALL	550,549,478, 462,461,401	78943	12	38	Any	79786	600	NO	79403/78238	NO
ALL	401 AMC	78260	5	38	RR	79786	600	NO	79403/78238	NO
ALL	400,392,345, 304,266	79809	12	41	RF	79786	600	78164	79403/78238	NO

(20) 2 heaters required.

FREEZE PLUG HEATER	DIRECTION	mm SIZE	LOCATION	CORD	WATTS	LOWER RAD HEATER	EXTERNAL HEATER	PG 70 79400
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ISUZU

4 CYLINDER

ALL	4BD1	78313	THD	1" NPT	LR	78064	400	78161	79401/79886	NO
1995-88	2.6	78091	6	35	RF	79786	400	NO	NO	NO
1995-85	2.3	78289	3	35	RF	79786	400	NO	79401/79886	NO
2002-98	2.2	79850	9	42.5	LR	79786	400	NO	NO	NO
1986-82	2.2 Diesel	78285	6	45	LF	79786	400	NO	79401/79886	NO
1988-81	2.0	78091	12	35	LC	79786	400	NO	79401/79886	NO
1988-81	1.9	78091	12	35	LC	79786	400	NO	79401/79886	NO
1993-81	1.8	78091	12	35	LC	79786	400	NO	79401/79886	NO
1985-81	1.8 DIESEL	78291	12	35	RR	79786	400	NO	79401/79886	NO
1993-90	1.6	78091	12	35	RR	79786	400	NO	NO	NO
1989-85	1.5	78291	3	35	RF	79786	400	78162	79401/79886	NO
1985-82	1.1 116CC	78091	12	35	LC	79786	400	NO	79401/79886	NO

6 CYLINDER

1993-89	6.5	79313	THD	1" NPT	LR	78064	—	NO	79402/78237	NO
1993-89	5.8	79313	THD	1" NPT	LR	78064	—	NO	79402/78237	NO
1993-89	4.8	—	—	—	—	—	—	NO	79402/78237	NO
2006-04	4.2	78075	THD	28	FL	79680	400	NO	NO	NO
2004-92	3.2	78075	THD	28	LR	79680	400	NO	79402/78237	NO
1993-91	3.1	79641	3	34	LC	79786	400	NO	NO	NO
1991-89	3.1	78298	3	34	RFF	79786	400	78161	NO	NO
1993-89	2.8	79641	3	34	RFF	79786	400	78161	NO	NO
ALL	6SA1	79313	THD	41	RS	78064	600	NO	79403/78238	NO

JAGUAR

BEFORE 1997	6 & 12 Cyl	78313	THD	1" NPT	—	78064	400	NO	NO	NO
2006-01	3.0 6 Cyl	78309	THD	3/4" NPT	RR	78064	400	NO	NO	NO
2005-02	2.5 6 Cyl	78309	THD	3/4" NPT	RR(21)	78064	400	NO	79402/78237	NO
2006-05	4.2 8 Cyl	79851	THD	30	LR	78064	400	NO	NO	NO
2005-98	4.0 8 Cyl	79851	THD	30	LR	79680	400	NO	NO	NO

JEEP

4 CYLINDER

2006-02	2.4	78289	12	35	RS	79786	400	NO	NO	NO
2001-84	2.4	78265	6	44.5	RR	79786	600	NO	79401/79886	NO
1983-80	2.5 Pontiac	78300	6	41	LR	79786	600	NO	79401/79886	NO
1987-85	2.1 Diesel	78313	THD	1" NPT	—	78064	400	78162	NO	NO
1979-77	2.0 2000CC	78084	6	36.5	RC	79786	400	NO	79401/79886	NO

6 CYLINDER

1990-68	4.2	78266	12	51	LR	79786	600	NO	79402/78237	NO
2006-87	4.0	78266	6	51	LR	79786	600	78162	79402/78237	NO
1990-68	3.8	78266	12	51	LR	79786	600	NO	79402/78237	NO
2006-02	3.7	79854	12	35	RR	79786	600	NO	79402/78237	NO
1989-80	2.8	78298	11	34	RC	79786	400	78162	79402/78237	NO
1990-64	258,232,199	78266	6	51	LR	79786	600	NO	79402/78237	NO
1971-63	230	78263	6	41	LS	79786	600	NO	79402/78237	NO
1971-66	225	78943	2	38	LR	79786	600	NO	79402/78237	NO

8 CYLINDER

1999-98	5.9	79809	6	41	RR	79786	600	NO	79403/78238	NO
1991-88	5.9	78260	7	38	RR	79786	600	NO	79403/78238	NO
1999-93	5.2	78300	6	41	RR	79786	600	NO	NO	NO
2006-99	4.7	79854	12	35	RR	79786	400	NO	NO	NO
1991-72	401,360,304	78260	6	38	RR	79786	600	78161	79403/78238	NO
1971-68	350	78943	12	38	RR	79786	600	NO	NO	NO

KIA

2006-02	3.8	80055	9	41.5	RL	79786	400	NO	NO	NO
2006-02	3.5	79809	12	41	FR	79786	600	NO	NO	NO
2006-02	2.7	79809	12	41	FR	79786	600	NO	NO	NO
2006-02	2.4	78291	6	35	RL	79786	400	NO	NO	NO
2006-95	2.0	78091	12	35	2nd LS	79786	400	NO	NO	NO
2003-98	1.8	78091	12	35	2nd LS	79786	400	NO	NO	NO
2003-01	1.5	78291	6	35	FR	79786	400	NO	NO	NO

LADA

4 CYLINDER

1993-87	1.3	78918	3	36	LF	79786	400	NO	NO	NO
1993-87	1.5 Trans	78918	3	36	LF	79786	400	NO	NO	NO
1993-78	1.5	78084	9	40	LF	79786	400	NO	NO	NO
1993-81	1.6	78084	9	40	LS	79786	400	NO	NO	NO

(21) Transverse engine use FR location.

AUTOMOTIVE & LIGHT TRUCK APPLICATION GUIDE

		FREEZE PLUG HEATER	DIRECTION	mm SIZE	LOCATION	CORD	WATTS	LOWER RAD HEATER	EXTERNAL HEATER	PG 70 79400
LEXUS										
2006-99	4.7	78289	12	35	FR	79786	400	NO	NO	NO
2006-04	3.3	78289	3	35	FR	79786	400	NO	NO	NO
2004-93	3.0 2JZ-GE	78084	12	40	FL	79786	400	NO	NO	NO
1992-91	3.0 Transverse	78289	12	35	PC	79786	400	NO	NO	NO
1992	3.0 CONV	78289	12	35	ANY	79786	400	NO	NO	NO
1991-90	2.5 Transverse	78289	5	35	FC	79786	400	NO	NO	NO

MAZDA										
4 CYLINDER										
1995-92	2.6	78289	9	35	2ndLS	79786	400	78161	NO	NO
1991-87	2.6	78084	6	40	RF	79786	400	78162	NO	NO
2006-03	2.3	78309	THD	3/4" NPT	RL	78064	400	NO	NO	NO
1995-88	2.2	78091	9	35	2ndRF	79786	400	NO	NO	NO
1987-83	2.2	78091	12	35	2ndRF	79786	400	NO	79401/79886	NO
2005-93	2.0 Transverse	78291	8	35	RR	79786	400	NO	NO	NO
1992-88	2.0 Transverse	78091	8	35	RR	79786	400	NO	NO	NO
1987-86	2.0 Conv.	78091	12	35	2ndLF	79786	400	NO	79401/79886	NO
1987-85	2.0 Diesel	78091	12	35	2ndRF	79786	400	NO	NO	NO
1984-80	2.0 Conv	78275	12	49	LC	79786	600	NO	79401/79886	NO
2004-90	1.8	78289	6	35	2ndRF	79786	400	NO	79401/79886	NO
1978-71	1.8	78272	12	50	LC	79786	400	NO	79401/79886	NO
2002-99	1.6	78289	6	35	2ndRF	79786	400	NO	79401/79886	NO
1997-89	1.6 Conv	78091	12	35	2ndLF	79786	400	NO	NO	NO
1998-88	1.6 Transverse	78091	12	35	2ndRF	79786	400	NO	NO	NO
1989-86	1.6	78091	12	35	2ndRF	79786	400	NO	NO	NO
1980-71	1.6	78091	6	35	LC	79786	400	NO	79401/79886	NO
1989-88	1.6 Turbo	78304	12	35	2ndRF	79786	400	NO	NO	NO
1999-95	1.5	78291	12	35	2ndRF	79786	400	NO	NO	NO
1985-81	1.5 OHC	78289	6	35	RL	79786	400	NO	79401/79886	NO
1980-76	1.4 OHC	78091	6	35	LF	79786	400	NO	79401/79886	NO
1980-76	1.3 OHC	78091	6	35	LF	79786	400	NO	79401/79886	NO
6 CYLINDER										
2006-03	3.0	78309	THD	3/4" NPT	FR	78064	400	NO	NO	
2002-88	3.0	78091	6	35	RF	79786	400	NO	79402/78237	
1997-92	2.5 Transverse	78091	8	35	Rear	79786	400	NO	NO	NO
2003-92	2.5	78091	1	35	Rear	79786	400	NO	NO	NO
1998-92	2.3	78091	1	35	Rear	79786	400	NO	NO	NO
1996-92	1.8	78091	8	35	Rear	79786	400	NO	NO	NO

MAZDA TRUCKS										
4 CYLINDER										
2005-89	2.6 Mazda	78289	9	35	2ndLF	79786	400	78161	79401/79886	NO
1988-86	2.6 Mitsubishi	78084	6	40	RF	79786	400	78162	79401/79886	NO
2002-98	2.5 Ford	78943	3	38	RR	79786	600	NO	NO	NO
2006-01	2.3	78309	THD	3/4" NPT	RF	78064	400	NO	NO	NO
1999-94	2.3 Ford	78943	12	38	RR	79786	600	NO	NO	NO
1993-86	2.2 Conv	78091	12	35	2ndLF	79786	400	NO	79401/79886	NO
1993-89	2.2	78091	6	35	2ndLS	79786	400	NO	79401/79886	NO
1987-82	2.2 Diesel	78077	12	35	2ndRF	79786	400	NO	79401/79886	NO
1993-86	2.0	78091	12	35	2ndLF	79786	400	NO	79401/79886	NO
1985-79	2.0	78275	12	49	LC	79786	600	NO	NO	NO
1993-92	1.8	78091	8	35	Rear	79786	400	NO	NO	NO
1984-71	1.8	78272	12	50	LF	79786	400	NO	79401/79886	NO
1997-88	1.6 Transverse	78091	9	35	2ndRF	79786	400	NO	NO	NO
1997-89	1.6 Conv	78091	6	35	2ndLS	79786	400	NO	79401/79886	NO
1980-71	1.6	78272	6	50	LC	79786	400	NO	79401/79886	NO
1999-95	1.5	78291	6	35	2ndRF	79786	400	NO	79401/79886	NO
1985-81	1.5 Trans	78289	6	35	RL	79786	400	NO	79401/79886	NO
1980-76	1.4 OHC	78091	6	35	LF	79786	400	NO	79401/79886	NO
1980-76	1.3 OHC	78091	6	35	LF	79786	400	NO	79401/79886	NO
6 CYLINDER										
2005-91	4.0 Ford	78943	12	38	RF(6)	79786	600	NO	NO	NO
2006-02	3.0 MPV	78309	THD	3/4" NPT	RF	78064	400	NO	NO	NO
2005-94	3.0 Ford	78943	12	38	RR	79786	600	NO	NO	NO
1993-88	3.0	78091	6	35	RF	79786	400	NO	79402/78237	NO
2001-00	2.5	78309	THD	3/4" NPT	RF	78064	400	NO	NO	NO
1993-92	2.5	78091	8	35	Rear	79786	400	NO	NO	NO

		FREEZE PLUG HEATER	DIRECTION	mm SIZE	LOCATION	CORD	WATTS	LOWER RAD HEATER	EXTERNAL HEATER	PG 70 79400
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MERCEDES

ALL	230 Gas	78281	THD	38	Right	78064	400	78161	79402/78237	NO
ALL	Diesel 1984&Newer	78281	THD	38	Right	78064	400	NO	79402/78237	NO

MITSUBISHI

4 CYLINDER										
1989-83	2.6	78084	3	40	RR	79786	400	78162	79401/79886	NO
2006-87	2.4	78289	3	35	FC	79786	400	NO	NO	NO
1985-83	2.3 Diesel	78084	9	40	LR	79786	400	NO	NO	NO
1999-89	2.0	78291	9	35	2nd LR	79786	400	NO	79401/79886	NO
1993-83	2.0 Galant	78291	3	35	LR	79786	400	NO	NO	NO
1986	2.0	78091	3	35	RF(Con) RR(Trans)	79786	400	NO	79401/79886	NO
2002-89	1.8	78291	3	35	FR	79786	400	NO	NO	NO
1992-89	1.6	78291	4	35	2ndRR	79786	400	NO	NO	NO
1995-86	1.5 Percis	78091	9	35	2ndLR	79786	400	NO	NO	NO
2002-86	1.5 Ex Percis	78091	12	35	RC	79786	400	NO	79401/79886	NO
6 CYLINDER										
2006-03	3.8	79809	12	41	RR	79786	600	NO	NO	NO
2006	3.7	78943	6	41	2ndRR	79786	600	NO	NO	NO
2005-97	3.5	78300	6	41	LR	79786	600	78162	NO	NO
2005-90	3.0 Ex 3000GT	78300	12	41	RF	79786	600	NO	NO	NO
1999-90	3.0 3000 GT	————	————	————	————	————	————	78162	79402/78237	NO
2003-89	3.0 Truck	78300	12	41	RR	79786	600	78162	NO	NO
1989-88	3.0	79809	7	41	RR(Con) RL(Tran)	79786	600	NO	NO	NO
1996-95	2.5	78300	9	41	RF	79786	600	NO	NO	NO

NISSAN (DATSUN)

4 CYLINDER										
2006-02	2.5	78945	THD	30	FR	79680	400	NO	NO	NO
1985-84	2.5 Diesel	78946	6	35	LF	79786	400	NO	79401/79886	NO
2002-93	2.4 Altima	78084	12	40	RC	79786	400	NO	NO	NO
1998-85	2.4 Ex Altima	78084	12	40	LF	79786	400	NO	79401/79886	NO
1999-89	2.4 240SX	78084	12	40	RR	79786	400	NO	NO	NO
1984-81	2.4 Maxima	78091	11	35	3rdRS	79786	400	NO	79401/79886	NO
1985-80	2.2	78084	12	40	LF	79786	400	NO	NO	NO
1983-81	2.2 Diesel	78084	12	40	LF	79786	400	NO	NO	NO
2002-91	2.0	78945	THD	30	RR	79680	400	78162	NO	NO
1989-82	2.0 Transverse	78293	7	30	FL	79786	400	NO	NO	NO
1988-84	2.0 Conv	78293	6	30	LF	79786	400	NO	NO	NO
1985-80	2.0 710, 200SX	78084	12	40	LF	79786	400	NO	79401/79886	NO
1980-68	2.0	78084	12	40	RR	79786	400	NO	79401/79886	NO
2006-01	1.8	78293	9	30	FR	79786	400	NO	79401/79886	NO
1991-83	1.8 Transverse	78293	8	30	RR(1)	79786	400	NO	79401/79886	NO
1988-84	1.8	78293	3	30	RC	79786	400	78161	NO	NO
1980-68	1.8	78084	12	40	RR	79786	400	NO	79401/79886	NO
1987-83	1.7 Diesel	78293	7	30	LF	79786	400	NO	79401/79886	NO
1999-92	1.6 GA160DE	78293	9	30	FR(12)	79786	400	NO	79401/79886	NO
1991-89	1.6	78293	11	30	FR(12)	79786	400	NO	79401/79886	NO
1988-83	1.6 Transverse	78293	8	30	RR(1)	79786	400	NO	79401/79886	NO
1980-68	1.6 Conv.	78084	12	40	RR	79786	400	NO	79401/79886	NO
1984-82	1.5 Sentra, 310	78293	8	30	RR	79786	400	NO	79401/79886	NO
1982-72	1.5 210	78091	12	35	LF	79786	400	NO	79401/79886	NO
1981-79	1.5 310	78091	12	35	FL	79786	400	NO	79401/79886	NO
1982-72	1.4 210	78091	12	35	LF	79786	400	NO	79401/79886	NO
1981-79	1.4 310	78091	12	35	FL	79786	400	NO	79401/79886	NO
1976-69	1.3	78946	4	35	LF	79786	400	NO	79401/79886	NO
1991-84	1.2	79745	---	---	Clamp On	---	250	NO	79401/79886	NO
1982-72	1.2 210	78091	12	35	LF	79786	400	NO	79401/79886	NO
1980-69	1.2	78946	4	35	LF	79786	400	NO	79401/79886	NO
1980-69	1.0	78946	4	35	LF	79786	400	NO	79401/79886	NO
6 CYLINDER										
2006-02	3.5	78945	THD	30	FR	79680	400	78162	NO	NO
2002-95	3.0 VQ30DE	78945	THD	30	FR	79680	400	78162	NO	NO
1995-84	3.0 VG30, 300ZX	78293	6	30	RL	79786	400	NO	NO	NO
1994-86	3.0 VG30	78293	6	30	FL	79786	400	NO	NO	NO
1983-81	2.8 Turbo 280ZX	78091	12	35	FR	79786	400	NO	79402/78237	NO
1983-75	2.8 280ZX	78077	12	35	FR	79786	400	78161	79402/78237	NO
1984-81	2.8 Diesel 810	78273	12	35	LR	79786	400	NO	79402/78237	NO
1983-81	2.6 Diesel	78091	12	35	5thLS	79786	400	NO	79402/78237	NO
1980-74	2.6	78077	12	35	3rdRS	79786	400	NO	NO	NO
1984-80	2.4 2393cc 810	78077	12	35	RF	79786	400	NO	79402/78237	NO

(1) May be necessary to remove starter or radiator fan to get to frost plug. (12) May be necessary to remove AC compressor.

AUTOMOTIVE & LIGHT TRUCK APPLICATION GUIDE

FREEZE PLUG HEATER		DIRECTION	mm SIZE	LOCATION	CORD	WATTS	LOWER RAD HEATER	EXTERNAL HEATER	PG 70 79400
NISSAN TRUCK									
4 CYLINDER									
1988-81	2.5 Diesel	78077	6	35	LF	79786	400	NO	79401/79886 NO
2004-90	2.4	78084	12	40	LR	79786	400	NO	79401/79886 NO
1989-81	2.4	78084	12	40	LR	79786	400	NO	79401/79886 NO
1989-81	2.2	78084	12	40	LR	79786	400	NO	79401/79886 NO
1983-81	2.2 Diesel	78091	6	35	LF	79786	400	NO	79401/79886 NO
1989-81	2.0	78084	12	40	LR	79786	400	NO	79401/79886 NO
1989-82	2.0 Transverse	78293	9	30	FL	79786	400	NO	79401/79886 NO
1989-82	2.0 Conv	78293	8	30	LF	79786	400	NO	79401/79886 NO
1980-74	2.0	78084	12	40	3rdRS	79786	400	NO	79401/79886 NO
1976	2.0 1952cc	78084	12	40	LF	79786	400	NO	79401/79886 NO
1980-74	1.8	78084	12	40	3rdRS	79786	400	NO	79401/79886 NO
1973-70	1.6	78084	12	40	LF	79786	400	NO	79401/79886 NO
6 CYLINDER									
2003-01	3.5	78945	THD	30	FR	79680	400	NO	NO NO
2002-91	3.3 Conv	78293	6	30	LR	79786	400	NO	NO NO
2004-99	3.3 Trans	78293	6	30	FL	79786	400	NO	NO NO
1997-84	3.0 Conv	78293	6	30	LR	79786	400	NO	NO NO
1997-93	3.0 Transverse	78293	6	30	FL(8)	79786	400	NO	NO NO
8 CYLINDER									
2006-04	5.7	78945	THD	30	FR	79680	400	NO	NO NO
OLDSMOBILE									
4 CYLINDER									
1992-80	2.5 Transverse	78300	6	41	FL	79786	600	78162	79401/79886 NO
1991-90	2.5 Trans Code U	78287 (7)	1	41	FL	79786	400	NO	79401/79886 NO
1990	2.5 Trans Code R	78300	6	41	FL	79786	600	NO	79401/79886 NO
1981-78	2.5 Conv	78300	12	41	LR	79786	600	78162	NO NO
2001-96	2.4 Twin Cam	78916	THD	1/2" NPT	RC	78064	400	NO	NO NO
1995-94	2.3	78916	THD	1/2" NPT	RC	78064	400	NO	NO NO
1993-87	2.3	78309(19)	THD	3/4" NPT	RC	78064	400	NO	NO NO
1992-85	2.2 Ex VIN K, M	79850	3	42.5	FL	79786	400	NO	79401/79886 NO
1993-85	2.2 VIN K, M	79641	3	34	FL(11)	79786	400	NO	79401/79886 NO
1996-93	2.0 Ex VIN K, M	79850	3	42.5	FL	79786	400	NO	79401/79886 NO
1992-85	2.0 Ex VIN K, M	78301	3	42	FL	79786	400	NO	79401/79886 NO
1993-85	2.0 VIN K, M	79641	3	34	FL(11)	79786	400	NO	79401/79886 NO
1984-83	2.0	78298	9	34	FL	79786	400	NO	79401/79886 NO
1986-83	1.8	78298	1	34	FC	79786	400	NO	79401/79886 NO
1982	1.8	78282	12	34	FL	79786	400	NO	79401/79886 NO
6 CYLINDER									
1996-91	4.3 Conv	78263	6	41	LR	79786	400	78162	NO NO
1985-82	4.3 Diesel	78260	12	38	RR	79786	600	NO	79402/78237 NO
1987-75	4.1 Conv	78303	12	38	RR(1)	79786	400	NO	NO NO
1999-84	3.8 Trans	78303	12	38	FL(12)	79786	400	78162	NO NO
1988-75	3.8 Conv	78303	12	38	RR(1)	79786	400	NO	79402/78237 NO
1995-92	3.4 Conv	79641	8	34	LR	79786	400	78161	NO NO
2004-93	3.4 Trans	78298	9	34	RC	79786	400	NO	NO NO
1992-89	3.4 Trans	78298	11	34	RC(11)	79786	400	NO	79402/78237 NO
1998-89	3.3 Trans	78303	12	38	FR	79786	400	78162	79402/78237 NO
2001-93	3.1 Trans	79641	9	34	RC	79786	400	NO	NO NO
1992-89	3.1 Trans	78298	11	34	RC(11)	79786	400	NO	79402/78237 NO
1989-82	3.0 Trans	78303	3	38	FR	79786	400	NO	79402/78237 NO
1995-93	2.8 Trans	78298	9	34	FC	79786	400	NO	NO NO
1992-80	2.8 Trans	78298	11	34	RC(2,6)	79786	400	NO	79402/78237 NO
1984-80	252	78943	12	38	RR(1)	79786	400	78162	79402/78237 NO
Thru 76	250	79809	12	41	RF	79786	600	78163	79402/78237 NO
1985-82	231	79678	12	38	RR(1)	79786	600	78162	79402/78237 NO
1981-78	231	78943	12	38	FR(1)	79786	600	78162	79402/78237 NO
8 CYLINDER									
1995-91	5.7	78263	6	41	LR	79786	600	78162	79403/78238 NO
1990-64	5.7	78260	12	38	LF	79786	600	78162	79403/78238 NO
1995-91	5.0	78263	6	41	LR	79786	600	78162	79403/78238 NO
1990-64	5.0	78260	12	38	LF	79786	600	78162	79403/78238 NO
1996-91	4.3	78263	6	41	LR	79786	600	78162	79403/78238 NO
1990-64	455,400,260	78260	6	38	LC	79786	600	78162	79403/78238 (18) NO
1967-65	425	78260	12	38	RF	79786	600	78163	79403/78238 NO
1992-74	400,350,305,302	78263	9	41	LR	79786	600	78162	79403/78238 (18) NO
1979-64	403,330	78260	12	38	AnyES	79786	600	78162	79403/78238 NO
1985-80	350,260 Diesel	78260	6	38	Any	79786	600	NO	79403/78238 NO
1981-77	301,265	78275	6	49	AnyLS(1)	79786	600	78162	79403/78238 NO

(1) May be necessary to remove starter or radiator fan to get to frost plug. (2) 78298 will not fit flush against this engine block due to the taper of the steel section of the heater. (6) Remove R.F. wheel for access to plug hole. (7) 78287 produced after November of 1988. (8) Must remove engine exhaust bracket. (11) Must pry or pull core plug outward. (12) May be necessary to remove A/C compressor / Alternator / Oil filter / Dipstick tube. (18) Thru 1979. (19) May require steel tube from GM.

		FREEZE PLUG HEATER	DIRECTION	mm SIZE	LOCATION	CORD	WATTS	LOWER RAD HEATER	EXTERNAL HEATER	PG 70 79400
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OPEL

1978-76	1877	78291	12	35	LF	79786	400	78161	79401/79886	NO
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PLYMOUTH

4 CYLINDER										
1989-84	2.6 Conv	78084	3	40	RR	79786	400	78162	79401/79886	NO
1987-83	2.6 Transverse	78084	9	40	RR	79786	400	78161	79401/79886	NO
Thru 82	2.6 Conv	78084	9	40	RF	79786	400	78161	79401/79886	NO
1997-81	2.5 Transverse	78263	3	41	FL	79786	600	NO	NO	NO
1992	2.5 VIN Code K	78263	3	41	FL	79786	600	78161	79401/79886	NO
2001-90	2.4	78291	3	35	FR	79786	400	NO	79401/79886	NO
1993	2.4 AWD	78084	3	40	RS	79786	400	NO	NO	NO
1997-81	2.2	78287 (7)	6	41	RC	79786	400	NO	NO	NO
2001-95	2.0 Stratus	78291	3	35	RL	79786	400	NO	NO	NO
1993-84	2.0 Turbo	—	—	—	—	—	—	78162	79401/79886	NO
1991-89	2.0 Transverse	78291	3	35	FR	79786	400	NO	79401/79886	NO
1988-86	2.0	78091	3	35	RF	79786	400	NO	79401/79886	NO
1979-74	2.0	78084	6	40	RF	79786	400	78162	79401/79886	NO
1996-89	1.8	78291	3	35	FR	79786	400	NO	NO	NO
1983-76	1.7 Transverse	78084	6	36.5	RC	79786	400	NO	79401/79886	NO
1993-79	1.6 Transverse	78091	5	35	2ndLR	79786	400	78161	79401/79886	NO
1989-85	1.6	78091	12	35	RC	79786	400	78161	79401/79886	NO
1979-78	1.6 Conv	78091	6	35	RR	79786	400	78161	79401/79886	NO
1977-72	1.6	78091	6	35	LC	79786	400	NO	NO	NO
1996-93	1.5 Transverse	78291	12	35	FL	79786	400	NO	79401/79886	NO
1989-85	1.5 Transverse	78091	6	35	FL	79786	400	NO	79401/79886	NO
1993-79	1.4 Transverse	78091	6	35	2ndLR	79786	400	78161	79401/79886	NO
6 CYLINDER										
1995-86	3.9	79809	12	41	RR	79786	600	78162	79402/78237	NO
1996-94	3.8	78302	12	41	RL	79786	600	NO	79402/78237	NO
1998-93	3.5	78302	12	41	RR	79786	600	NO	NO	NO
1996-94	3.3	78302	12	41	RL	79786	600	NO	79402/78237	NO
1997-93	3.3 Conv	78302	12	41	RR	79786	600	NO	NO	NO
1992-88	3.3 Conv	79809	6	41	RL	79786	600	NO	79402/78237	NO
1997-90	3.0 Transverse	79809	11	41	RL	79786	600	NO	79402/78237	NO
1989-88	3.0	79809	11	41	RL	79786	600	NO	79402/78237	NO
2001-95	2.5	78263	9	41	RL	79786	600	NO	NO	NO
1983-61	170,198,225	78302	12	41	LF	79786	600	78162	79402/78237	NO
8 CYLINDER										
1994-91	5.2	78300	6	41	RR	79786	600	78163	79403/78238	NO
2001-64	All other V8's	78263	12	41	RC	79786	600	78162	79403/78238	NO

PONTIAC

3 CYLINDER										
1999-85	1.0	—	—	—	—	—	—	78160	NO	NO
4 CYLINDER										
1995-80	2.5	78300	6	41	FL	79786	600	NO	79401/79886	NO
1992-90	2.5 Trans Code U	78287 (7)	1	41	FL	79786	400	NO	79401/79886	NO
1989-77	2.5	78300	6	41	LR	79786	400	78162 (16)	79401/79886	NO
2006-05	2.4	78075	THD	28	RC	79786	400	NO	NO	NO
2002-96	2.4 Twin Cam	78916	THD	1/2" NPT	Water Pump	78064	400	NO	79401/79886	NO
1995-94	2.3 Quad IV	78916	THD	1/2" NPT	Water Pump	78064	400	NO	79401/79886	NO
1993-87	2.3 Quad IV	78309(19)	THD	3/4" NPT	RC	78064	400	NO	79401/79886	NO
2005-95	2.2	79850	9	42.5	LF	79786	400	NO	79401/79886	NO
1994-87	2.2 Ex VIN K, M	78301	3	42	FL	79786	400	NO	79401/79886	NO
2006	2.0	78292	THD	36	FL	79786	400	NO	NO	NO
1995-87	2.0 Ex VIN K, M	78301	3	42	FL	79786	400	NO	79401/79886	NO
1986-85	2.0	78301	3	42	FL	79786	400	NO	79401/79886	NO
1984-83	2.0 Transverse	78298	9	34	LF	79786	400	NO	79401/79886	NO
1994-87	2.0 VIN K, M	79641	9	34	FC(11)	79786	400	NO	79401/79886	NO
1987-82	1.8 Diesel	78077	12	35	RR	79786	400	NO	79401/79886	NO
1994-84	1.8	78298	1	34	FC	79786	400	NO	79401/79886	NO
1985-83	1.8	78298	1	34	FC	79786	400	NO	79401/79886	NO
1982	1.8	78282	12	34	FL	79786	400	NO	79401/79886	NO
1993-81	1.6 Transverse	78298	6	34	FR(11)	79786	400	78162	79401/79886	NO
1988-81	1.6 Conv	79641	3	34	FL	79786	400	78161	NO	NO
1987-85	1.5 Transverse	78077	12	35	CR	79786	400	NO	NO	NO
1987-76	1.4 Transverse	78298	12	34	RF	79786	400	NO	NO	NO
1999-87	1.3	—	—	—	—	—	—	78160	NO	NO

(7) 78287 produced after November 1988. (11) Must pry or pull core plug outward. (16) Except 1989. (19) May require steel tube from GM.

AUTOMOTIVE & LIGHT TRUCK APPLICATION GUIDE

FREEZE PLUG HEATER	DIRECTION	mm SIZE	LOCATION	CORD	WATTS	LOWER RAD HEATER	EXTERNAL HEATER	PG 70 79400
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PONTIAC (CONTINUED)

6 CYLINDER

1987-85	4.3	78263	6	41	LR	79786	600	78162	79402/78237	NO
1985-82	4.3 Diesel	78260	12	38	RR	79786	600	NO	79402/78237	NO
2006-05	3.9	78075	THD	28	RC	78064	400	NO	NO	NO
2002-96	3.8 Firebird	79655	9	38	RF	79786	400	NO	NO	NO
2006-93	3.8 Transverse	78303	12	38	FR(12)	79786	400	78162	79402/78237	NO
1992-86	3.8 Transverse	78305	12	38	FL	79786	400	78162	79402/78237	NO
1988-80	3.8	78263	6	41	LR	79786	600	78162	79402/78237	NO
2006-05	3.5	78075	THD	28	RC	79064	400	NO	NO	NO
2006-93	3.4 Transverse	78298	9	34	RC(15)	79786	400	NO	NO	NO
1997-90	3.4 Conv	78298	8	34	LR(11)	79786	400	NO	NO	NO
1992-88	3.4 Transverse	78298	11	34	RC(11)	79786	400	NO	79402/78237	NO
1999-93	3.3 Transverse	78303	12	38	FR(1)	79786	400	NO	NO	NO
1992-89	3.3	78303	12	38	FL	79786	400	78162	79402/78237	NO
2002-93	3.1 Transverse	78298	9	34	RC(15)	79786	400	NO	NO	NO
1997-90	3.1 Conv	78298	8	34	LR(11)	79786	400	NO	NO	NO
1992-87	3.1 Transverse	78298	11	34	RC(11)	79786	400	NO	79402/78237	NO
1992-87	3.1 APV	78298	11	34	FC(11)	79786	400	NO	79402/78237	NO
1989-82	3.0 Transverse	78303	3	38	FL	79786	400	NO	79402/78237	NO
1995-93	2.8 Transverse	79641	9	34	RC(15)	79786	400	NO	NO	NO
1992-82	2.8 Conv	79641	9	34	RFF(9)	79786	400	78162	79402/78237	NO
1992-80	2.8 Transverse	79641	11	34	RC(2,11)	79786	400	78162	79402/78237	NO
1976-64	330	79809	6	41	LF	79786	600	78162	79402/78237	NO
1984-80	252	78943	12	38	RR(1)	79786	600	78162	79402/78237	NO
Thru 76	250	79809	6	41	LF	79786	600	78162	79402/78237	NO
1985-82	231	78943	12	38	FR(1)	79786	600	78162	79402/78237	NO
1981-78	231	79678	12	38	RR(1)	79786	600	78162	79402/78237	NO
1976-64	215	79809	6	41	LF	79786	600	78162	79402/78237	NO

8 CYLINDER

2006-05	6.0	78075	THD	28	FL	79680	400	NO	NO	NO
2004-98	5.7 Gen III	78075	THD	28	LF	79680	400	NO	79403/78238	NO
2006-05	5.3	78075	THD	28	FL	79680	400	NO	NO	NO
1979-66	455	78275	6	49	RF	79786	600	78162	79403/78238	NO
1977-70	454	78265	6	44.5	RC	79786	600	78162	79403/78238	NO
1979-66	428	78275	6	49	RF	79786	600	78162	79403/78238	NO
1970-62	427,409,396	78265	12	44.5	RC	79786	600	78162	79403/78238	NO
1990-75	403 Olds	78260	12	38	RC	79786	600	78162	79403/78238	NO
1995-74	400 Chev	78263	9	41	LR	79786	600	78162	79403/78238	NO
1979-66	400	78275	6	49	RF	79786	600	78162	79403/78238	NO
1979-66	384	78275	6	49	RF	79786	600	78162	79403/78238	NO
1995-74	350 Chev	78263	9	41	LR	79786	600	78162	79403/78238	NO
1990-75	350 Olds	78260	12	38	RC	79786	600	78162	79403/78238	NO
1985-80	350 Diesel	78260	6	38	AnyLS	79786	600	NO	79403/78238	NO
1979-66	350 Pont	78275	6	49	RF	79786	600	78162	79403/78238	NO
1979-66	326	78275	6	49	RF	79786	600	78162	79403/78238	NO
1995-58	305,302,283Chev	78263	9	41	LR	79786	600	78162	79403/78238	NO
1990-74	307	78260	12	38	RC	79786	600	78162	79403/78238	NO
1981-77	301	78275	6	49	AnyLS(1)	79786	600	78162	79403/78238	NO
1982-78	267	78263	9	41	LR	79786	600	78163	79403/78238	NO
1981-77	265	78275	6	49	AnyLS(1)	79786	600	78162	79403/78238	NO
1990-74	260	78260	12	38	RC	79786	600	78162	79403/78238	NO
1985-80	260 Diesel	78260	6	38	AnyES	79786	600	NO	79403/78238	NO

RENAULT

1988-84	2.2	78313	THD	1" NPT	RF	78064	400	NO	NO	NO
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ROVER

4 CYLINDER

1958 & UP	Gas or Diesel	78272	6	50	LC	79786	400	78161	NO	NO
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6 CYLINDER

1958 & UP	161,182.7 CID	78313	THD	1" NPT	Block	78064	400	NO	NO	NO
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8 CYLINDER

2004-96	4.6	79881	6	38	LC	79786	400	NO	NO	NO
1995-87	4.2	78943	6	38	LC	79786	600	NO	NO	NO
2002-96	4.0	79881	6	38	LC	79786	400	NO	NO	NO
1995-87	3.9	78943	6	38	LC	79786	600	NO	NO	NO

(1) May be necessary to remove starter or radiator fan to get to frost plug. (2) 78298 will not fit flush against this engine block due to the taper of the steel section of the heater. (9) May be necessary to remove wheel well liner. (11) Must pry or pull core plug outward. (12) May be necessary to remove A/C compressor / Alternator / Oil filter / Dipstick tube. (15) Use front center freeze plug hole if available. Front center is behind starter in some models—open in others. Some GM vehicles with transverse engines require removal of transmission and or exhaust system for access to rear center freeze plug hole.

FREEZE PLUG HEATER	DIRECTION	mm SIZE	LOCATION	CORD	WATTS	LOWER RAD HEATER	EXTERNAL HEATER	PG 70 79400
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SAAB

4 CYLINDER

2005-90	2.3	78081	9	36	LF	79786	400	NO	NO	NO
1993-85	2.1	78226	THD	26	—	78064	400	NO	NO	NO
1984-75	2.1	78276	3	41.5	RR	79786	400	NO	79401/79886	NO
1993-85	2.0	78226	THD	26	—	78064	400	NO	NO	NO
1984-75	2.0	78276	3	41.5	RR	79786	400	NO	NO	NO

6 CYLINDER

2004-99	3.0	78284	THD	28	—	79680	400	NO	NO	NO
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SATURN

4 CYLINDER

2006-05	2.4	78075	THD	28	RC	79680	400	NO	NO	NO
2006	2.2	79850	4	42.5	FL(1)	79786	400	NO	NO	NO

6 CYLINDER

2005-00	3.0	78284	THD	28	LF	79680	400	NO	NO	NO
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SUBARU

3 CYLINDER

1995-88	1.2	78292	THD	36	RL	79680	400	NO	NO	NO
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4 CYLINDER

2003-96	2.5	78292	THD	36	FL	79680	400	NO	NO	NO
2002-78	2.0	78292	THD	36	FL	79680	400	NO	NO	NO
1996-78	1.8	78292	THD	36	RF	79680	400	NO	NO	NO
1992-78	1.6	78292	THD	36	RF	79680	400	NO	NO	NO

6 CYLINDER

1996-92	3.3	78292	THD	36	RF	79680	400	NO	NO	NO
2003-01	3.0	78292	THD	36	FL	79680	400	NO	NO	NO
1989-88	2.8	78292	THD	36	RR	79680	400	NO	NO	NO
1993-88	2.7	78292	THD	36	RF	79680	400	NO	NO	NO

SUZUKI

3 CYLINDER

2000-85	1.0	79783	—	—	CLAMP ON	—	—	78160	NO	NO
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4 CYLINDER

2000-89	1.6	79785	—	—	CLAMP ON	—	—	78160	NO	NO
1999-85	1.3	79784	—	—	CLAMP ON	—	—	78160	NO	NO

TOYOTA

4 CYLINDER

2001-92	2.2 5S-FE	78084	12	40	LF	79786	400	NO	NO	NO
1999-90	2.2 5S-FE	78291	9	35	2ndRR	79786	400	NO	NO	NO
1980-75	2.2 20R	78084	12	40	FR	79786	400	NO	79401/79886	NO
1999	2.2 5S-FE Solara	78084	12	40	2ndLR	79786	400	NO	NO	NO
1993-91	2.0 3S-GTE	78291	9	35	2ndLR	79786	400	NO	NO	NO
1991-86	2.0 2S-FE,3S-GE	78289	12	35	2ndRR	79786	400	NO	NO	NO
1986-83	2.0 2SE 25GE	78084	6	40	2ndLF	79786	400	NO	NO	NO
1985-72	2.0 2SE	78084	6	40	FR	79786	400	NO	NO	NO
1985-74	2.0 20R,22R,22RE	78084	12	40	FR	79786	400	NO	79401/79886	NO
1974-72	2.0 18RC	78084	12	40	RR	79786	400	NO	79401/79886	NO
1999-94	1.8 7A-FE	78084	12	40	FC	79786	400	NO	NO	NO
1987-82	1.8 3TC	78273	9	35	FL	79786	400	NO	79401/79886	NO
1987-82	1.6 2TC	78273	9	35	FL	79786	400	NO	79401/79886	NO
ALL	1.6 4A-GE	78289	12	35	LC	79786	400	NO	NO	NO
ALL	1.6 4A-C	78084	12	40	2ndLF	79786	400	NO	79401/79886	NO
1993-90	1.6 4A-FE	78084	12	40	FC	79786	400	NO	NO	NO
1997-88	1.6 4AF,7AFE	78084	12	40	FC	79786	400	NO	NO	NO
1989-86	1.6 4A-GE, 4A-GZE MR2	78289	6	35	FR	79786	400	NO	NO	NO
1991-85	1.6 4A-GE	78289	12	35	RC	79786	400	NO	NO	NO
1999-92	1.5 5E-FE	78293	3	30	FL	79786	400	NO	NO	NO
1998-96	1.5 5E-FE Paseo	78293	12	30	FL	79786	400	NO	NO	NO
1995-92	1.5 5E-FE	78293	3	30	2ndRF	79786	400	NO	NO	NO
1994-90	1.5 3E-E	78091	9	35	FL	79786	400	NO	NO	NO
1991-87	1.5 3E	78091	12	35	FL	79786	400	NO	NO	NO
1988-80	1.5 1AC,3A,3AC	78084	6	40	2ndLF	79786	400	NO	79401/79886	NO

(1) May be necessary to remove starter or radiator fan to get to frost plug.

AUTOMOTIVE & LIGHT TRUCK APPLICATION GUIDE

FREEZE PLUG		DIRECTION	mm SIZE	LOCATION	CORD	WATTS	LOWER RAD HEATER	EXTERNAL HEATER	PG 70 79400	
HEATER										
TOYOTA (CONTINUED)										
6 CYLINDER										
2006-04	3.3	78289	3	35	FR	79786	400	NO	NO	NO
2004-94	3.0 1MZ-FE	78289	3	35	FR	79786	400	NO	NO	NO
1993-92	3.0 3VZ-FE	78273	6	35	FL	79786	400	NO	NO	NO
1992-86	3.0 7M-GE	78084	12	40	FL	79786	400	NO	NO	NO
1992-86	3.0 7M-GE,7M-GTE	78084	6	40	FL	79786	400	NO	NO	NO
1988-86	3.0 7M-GE	78084	12	40	FL	79786	400	NO	79402/78237	NO
1999	3.0 1MZ-FE	78289	3	35	FR	79786	400	NO	NO	NO
1992-86	2.8 5M-GE	78084	12	40	FL	79786	400	NO	79402/78237	NO
1985-80	2.8 5ME,5ME-GE	78084	10	40	FR	79786	400	NO	NO	NO
1985-79	2.6 4ME	78084	10	40	FR	79786	400	NO	79402/78237	NO
1979-71	2.6 4M	78084	10	40	RR	79786	400	78161	79402/78237	NO
1991-88	2.5 2VZ-FE	78273	12	35	FC	79786	400	NO	NO	NO

TOYOTA TRUCK										
4 CYLINDER										
1987-81	3.4 3B, 2B	78289	12	35	RL	79786	400	NO	79402/78237	NO
2006-96	2.7 3RZ-FE	78273	9	35	LF	79786	400	NO	NO	NO
2006-94	2.7 3RZ-FE Tacoma	80056	9	35	LF	79786	400	NO	NO	NO
2006-95	2.4 2RZ-FE	80056	2	35	FL	79786	400	NO	NO	NO
1997-91	2.4 2TZ-FE, 2TZ-FZE	78289	12	35	FR	79786	400	NO	79401/79886	NO
1996-81	2.4 22R, 22R-E, 22R-TE	78084	12	40	FL	79786	400	NO	79401/79886	NO
1995-81	2.4 22R, 22R-E 22R-TE	78084	6	40	RF	79786	400	NO	79401/79886	NO
1989-86	2.2 4YE	78273	12	35	RL	79786	400	NO	79401/79886	NO
1980-75	2.2 20R	78084	12	40	RF	79786	400	NO	79401/79886	NO
ALL	2.2 2L, 2LT	78291	3	35	LR	79786	400	NO	NO	NO
2003-97	2.0 3S-FE	78289	12	35	2ndRR	79786	400	NO	79401/79886	NO
1985-84	2.0 3Y	78273	12	35	RL	79786	400	NO	NO	NO
ALL	1.8 L	78291	3	35	LR	79786	400	NO	79401/79886	NO
6 CYLINDER										
1989-88	3.9 3F-E	78272	12	50	LC	79786	400	NO	NO	NO
1987-86	3.9 2H Diesel	78273	6	35	RR	79786	400	NO	79402/78237	NO
2004-96	3.4 5VZ-FE 4-Runner & Tundra	78289	6	35	LR	79786	400	NO	NO	NO
2001-95	3.4 5VZ-FE	80062	6	35	RL	79786	400	78161	NO	NO
2006	3.3	78289	3	35	FR	79786	400	NO	NO	NO
2006-02	3.0 1MZFE	80062	3	35	FR	79786	400	NO	NO	NO
1995-88	3.0 3VZ-FE	78291	7	35	RL	79786	400	NO	NO	NO
1995-88	3.0 3V-ZE	78291	6	35	LF	79786	400	78161	NO	NO
8 CYLINDER										
2006-00	4.7 2UZ-FE Tundra	78289	6	35	LF	79786	400	NO	NO	NO
2003-98	4.7 2UZ-FE Land Cruiser	78289	12	35	RF	79786	400	NO	NO	NO
2001-00	4.7 2UZ-FE Tundra	78289	12	35	RC	79786	400	NO	NO	NO
2006-03	4.0 IGR-FE	80062	6	35	RL	79786	400	NO	NO	NO

VOLKSWAGEN (suggests the use of a 24150 Silicone Pad on the oil pan in place of a Frost Plug.)										
4 CYLINDER										
1995-87	2.0 Conv	78270	12	36.5	RF(11)	79786	400	NO	NO	NO
1999-83	2.0 Transverse	78270	12	36.5	RF(11)	79786	400	NO	NO	NO
1999-93	1.9 Diesel	78270	12	36.5	RL(11)	79786	400	NO	NO	NO
1995-87	1.8 Conv	78270	12	36.5	RF(11)	79786	400	NO	NO	NO
1995-83	1.8 Transverse	78270	12	36.5	RR(11)	79786	400	NO	NO	NO
1994-74	1.7	78270	12	36.5	RC(11)	79786	400	78160	79401/79886	NO
1994-74	1.6	78270	12	36.5	RC(11)	79786	400	78160	79401/79886	NO
1994-74	1.5	78270	12	36.5	RC(11)	79786	400	78160	79401/79886	NO
5 CYLINDER										
1995-87	2.3	79626	3	36.5	RF	79786	400	NO	NO	NO
1995-87	2.2	79626	3	36.5	RF	79786	400	NO	NO	NO
2000-60	AIR-COOLED EXCEPT 911, 914, VW411, VW412	79751	---	---	CLAMP ON	---	200	NO	NO	NO
2000-71	PORCHE 911, 914, VW411, VW412	79752	---	---	CLAMP ON	---	200	NO	NO	NO
1997-92	VR6	79749	---	---	CLAMP ON	---	200	NO	NO	NO

(6) Remove R.F. wheel for access to plug hole. (11) Must pry or pull core plug outward.

FREEZE PLUG HEATER	DIRECTION	mm SIZE	LOCATION	CORD	WATTS	LOWER RAD HEATER	EXTERNAL HEATER	PG 70 79400*
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VOLKSWAGEN TRUCK

1991-84	2.1 Vanagon	79753	---	---	Clamp On	---	250	NO	NO	NO
1991-84	1.9 Vanagon	79753	---	---	Clamp On	---	250	NO	NO	NO
1995-92	2.5 Euro Van	79747	---	---	Clamp On	---	250	NO	NO	NO

VOLVO

4 CYLINDER

1993	2.4	---	---	---	---	---	---	NO	79401/79886	NO
1990-85	2.3	78084	9	40	RF	79786	400	78161	NO	NO
1996-85	2.3	78084	6	40	RF	79786	400	78162	79401/79886	NO
1985-69	2.3	78278	3	44.5	RR	79786	400	78161	79401/79886	NO
1985-69	2.1	78278	3	44.5	RR	79786	400	78161	79401/79886	NO

6 CYLINDER

1975-69	3.0	78278	9	44.5	RR	79786	400	78161	79402/78237	NO
1990-76	2.8	78274	9	36	RFF	79786	400	78161	79402/78237	NO
1990-76	2.7	78274	9	36	RFF	79786	400	78161	79402/78237	NO
1985-80	2.4 Diesel	78084	6	36.5	4THRS	79786	400	NO	79402/78237	NO

YUGO

1992-88	1.3	78088	3	40	RC	79786	400	NO	NO	NO
1992-88	1.1	78088	3	40	RC	79786	400	NO	NO	NO

(6) Remove R.F. wheel for access to plug hole. (11) Must pry or pull core plug outward.

Agricultural Applications

	Frost Plug	Watts	Diameter	Location	Direction	Lower Radiator	External Tank
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ALLIS CHALMERS

170 Diesel	78262	600		RR	12	78163	79403/78238
XP170, XP190						78163	79403/78238
XP180, XP210, XP220						78164	79403/78238
7030,7040,7045,7050 7060,7080,7580	79865	1500	1"	RR	THD	78162	79403/78238
W,WC,WD,WF,WR						78162	79403/78238
180, 185, 200, 7000, 7010, 7020	78989	1000	Plate	RR			79403/78238

BELARUS

500,800,900 Series	78309 or 78313	400 400	3/4" NPT 1" NPT	RF RF	THD THD		79402/78237
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BOLENS

TS1910, TS3420 2 Cyl	78286	400	1 3/4"	LS	6		79402/78237
G2102, 2104, 3 Cyl 2702, 2704	78286	400	1 3/4"	LC	12		79402/78237
TX1502, TX1504, TX1704	78286	400	1 3/4"	RS	12		79402/78237
5117H	78084	400	1 9/16"	LR	9		79402/78237

DAVID BROWN

900, 995, 1200 1212	78478	400	1 3/4"	LC	12		
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CASE

336,401,451,504,1470TK,W2A 301B,301BD,336B,336BD, 336BDT,401B,401BD,451BD, 451BDT,504BD,504B,504BDT	78200	1000	2"	RR	4		79402/78237
4-390,6T-590,4T-390 4TA-390,6-590,6T-590	79104	750	2 1/4"	RS	6		79402/78237
430,730,830, 930 (188D, 251G, 267D,284D, 310D, 401D)	79184	400	3/8" NPT	LS	THD		79402/78237
530C,531C,630C,400 500,600,700B, 800B,900B						78163	79402/78237
6T-830,6TA-830	79721	1000	2 1/4"	RR	4		79403/78238
All 6 Cyl 930-377G, 401D,1200-451D	79184	400	3/8"	LS	THD	78163	79402/78237
2090,2290,2390	78200	1000	2"	RR	6		79403/78238

	Frost Plug	Watts	Diameter	Location	Direction	Lower Radiator	External Tank
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CASE (CONTINUED)

V1100B	78309	400	3/4" NPT	RS	THD		79402/78237
V2203	78934	400	1 3/8"	RF	12		79402/78237

CATERPILLAR

1140,1145,1150, 1160,3206	78265	600	1 3/4"	RS	12		79402/78237
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COCKSHUTT

500 Hercules 560 Perkins	78309	400	3/4" NPT				79402/78237
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FORD

2000,3000,4000 5000,6000 Pre 1968						78163	79402/78237
3000,4000,5000, 6000,9000 (1968-70)	78265	600	1 3/4"	LS	6	78163	79402/78237
3000,4000,5000,7000 8000,9000 Since 1970	78260	600	1 1/2"	RS	6	78164	79402/78237
8000,9000	78265	600	1 3/4"	LS	6	78164	79402/78237

INTERNATIONAL

Cub Lo-Boy						78163	79402/78237
D150,D170,D190	78943	600	1 1/2"	RS	12		79403/78238
460,560,660,706 TD62 TD92	78314	600	1 5/8"	RS	6		79402/78237
806,856,1206,1256 (1963-67)	78314	600	1 5/8"	RS	6		79402/78237
All 4-Cylinder 390	79104	750	2 1/4"	RS	6		79401/79886
All 6-Cylinder 590	79104	750	2 1/4"	RS	6		79402/78237
All 6-Cylinder 830	79721	1000	2 1/4"	RR	4		79402/78237
504, 606 Since 1964	78302	600	1 5/8"	RC	6		79402/78237
966,1066,1086,1466	79727	750	1 1/4"	LS	6		79402/78237
970	78266	600	2"	LC	6		79402/78237
2590 & 1175	78266	600	2"	LC	6		79403/78238
7100 Series	79104	750	2 1/4"	LR	12		79403/78238
All Neuss Engines	78216	1250	1 1/4"	RS	6		79403/78238
D407,DT407,D166,D188,D236, D282,D301,C152,C175,C200, C221,C263,C282,C291,C301	78314	600	1 5/8"	RS	6		79403/78238

Agricultural Applications

	Frost Plug	Watts	Diameter	Location	Direction	Lower Radiator	External Tank
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JOHN DEERE

All 50,60,70,730,3029 Series A,B,D,&G	78309	400	3/4" NPT	THD			79402/78237
520,560,630,720,730 820,830,A,B,G Thru 1982						78163	79402/78237
2010						78162	79402/78237
3020,4000,4320,4520 4620,4640,531	78200	1000	2"	LS	12	78163	79402/78237
All 4230,4430,4630,6030,6404, 6466,6619,7020,7520	78200	1000	2"	LS	12		79403/78238
1020, 2020, 3010, 3020, 4000 4010,4020						78163	79403/78238
All Tractors Since 1976 w/large hex plug outside engine	79103	1000	1 5/8"	LS	12		

KUBOTA

B Series	78309	400	3/4" NPT	THD			79402/78237
L Series	78309	400	3/4" NPT	THD			79402/78237
M Series	78309	400	3/4" NPT	THD			
70000-92500	79822	400					79402/78237

MASSEY FERGUSON

30B Backhoe 20,20C,40	79855	600	Bushing	RS	6	78163	79402/78237
MF35,40,50,135,150,203,205, 230,231,235,240,245,250,253, 254-4,282,283,298,360,364S, 399,698,2135,&2200	79727 or 79855	750 600	1 1/4" Bushing	RS THD	6		79402/78237
MF65,165,255,302,304, 365&3165	78309	400	3/4" NPT	THD			79402/78237
88,333, 444,445P,555	78300	600	1 5/8"	RF	12		79402/78237
MF90,285,1080,1085	78309	400	3/4" NPT	THD			79402/78237
MF175,180,265	78262	600	1 1/4"	LC	6		79402/78237
1100						78164	79403/78238
MF1100,1105,1130,1135	78262	600	1 1/4"	RR	12		79403/78238
MF1150,1155	78313	400	1" NPT	THD			79403/78238
2775	78413	1500	1" NPT	THD			79403/78238
MF1120,1125,1240, 1250,1260,3120,3140	78943	600	1 1/2"	RR	12		79403/78238

	Frost Plug	Watts	Diameter	Location	Direction	Lower Radiator	External Tank
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MASSEY FERGUSON (CONTINUED)

3150,3160,3165	78265	600	1 3/4"	RS	12	78163	79402/78237
3670, 3685, 3688, 3690, 8140, 8102, 8160	79853	600	1 9/16"	LR	12		79402/78237
4800,4840,4880,4900	78201	1500	Plate				79403/78238
MF1140, 1145	78478	600	1 3/4"	LF	3	No	No

MINNEAPOLIS MOLINE

M602,604,670,G705 706,900,1000	78943	600	1 1/2"	All	12		79402/78237
Jetstar 3 206CID	79184	400	3/8" NPT	THD			79401/79886
U302 220 CID	79184	400	3/8" NPT	THD			79401/79886

OLIVER

All Except 1265,1365 & 1900	79713	1000	3/4" NPT	THD			79403/78238
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SATOH

669cc 1980	78084	400	1 9/16"	RS	10		79402/78237
849cc 1980	78265	600	1 3/4"	RR	9		79402/78237
1777cc 1980	78265	600	1 3/4"	LF	5		79402/78237
5373 1980	78265	600	1 3/4"	RR	9		79402/78237

YANMAR

3T72HLE	78313	400	1" NPT	THD			79402/78237
4TN82E	78313	400	1" NPT	THD			79402/78237
3TN66, 3TN72	78632	400	Plate	RR			79402/78237

ZETOR

All except 278 & 417	78265	600	1 3/4"	LR	12		79402/78237
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Heavy Duty Truck Applications

Make & Model	Part No.	Watts	Volts	Diameter	Service Parts
ALLIS CHALMERS					
3500, 3700 (670T & I, 426 CID) 10000, 11000 (685 T & I, 516 CID)	78413 78640	1500 1500	120 240	1" NPT	Cordset: 120V 78064 240V 78751
17000, 21000, 25000 (6138LT, or 844 CID)	78413 78640	1500 1500	120 240	1" NPT	Cordset: 120V 78064 240V 78751
AGCO Allis 5040, 545, 5050	79849	400	120	36mm	Cordset 79786
CASE (SEE AGRICULTURE LISTING)					
CATERPILLAR					
C10, C12, 3196, 3406 (with Brake Saver 1994 & newer)	79865 79105	1500 1500	120 240	1" NPT	Cordset: 120V 78064 240V 78751
C9, C15, C16	78176 78638 78413 78640	1000 1000 1500 1500	120 240 120 240	1" NPT	Cordset: 120V 78064 240V 78751
C11, C13	80049 80050	1500 1500	120 240	1 5/16"	Cordset: 120V 78064 240V 78751
1100 & 3100 Series	79714 79929 79864 79931	1000 1000 1500 1500	120 240 120 240	1 3/4"	Cordset: 120V 78064 240V 78751
1670, 1674, G & D33	79863 79928	1500 1500	120 240	Plate	Cordset: 120V 78064 240V 78751
1693 & D343 (893 CID)	78676 80051	1500 1500	120 240	Plate	Cordset: 120V 78064 240V 78751
1693 T & TA	78678 79930	1500 1500	120 240	Plate	Cordset: 120V 28500
3054 C & E	80068	750	120	1 1/4"	Cordset: 120V 78064 240V 78751
3054 3056	78943	600	120	1 1/2"	Cordset 79786
3114 (4.4L) 3116 (6.6L) 3126 (7.2L) C7	78414 78415	1000 1000	120 240	1 3/4"	Cordset: 120V 78064 240V 78751

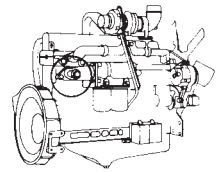
Installation Information

ALLIS CHALMERS

Replaces 1" pipe plug on right rear of block

Replaces 1" pipe plug in oil cooler

Replaces right rear frost plug



CATERPILLAR

Replace Plug in right rear of oil cooler

Replaces 1" plug in oil cooler

Replace plug in rear of cooler

Replaces front frost plug

Replaces water inspection plate on left side of engine 1670 G & D33

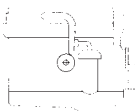
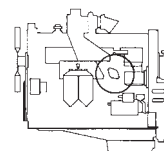
Replaces water inspection plate on side of engine

RR 3 O'clock

Replaces water jacket access plate on side of engine

Install in 1 1/2" frost plug on right side front or right side of engine

Install in center frost plug on right side

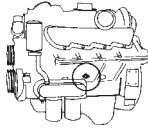
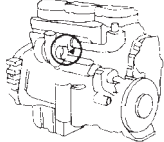
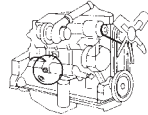
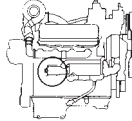


Heavy Duty Truck Applications

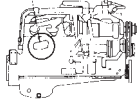
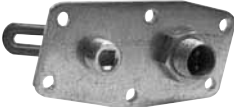
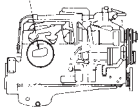
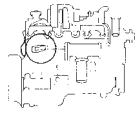
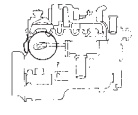
Make & Model	Part No.	Watts	Volts	Diameter	Service Parts
CATERPILLAR (CONTINUED)					
3117	79720 78689	1500 1500	120 240	3/4" NPT	Cordset: 120V 78064 240V 78751
3176 1996 & Newer 3196 3406 w/Brake Saver	79865	1500	120	1" NPT	Cordset: 120V 78064
3204 3208	78265	600	120	1 3/4"	Cordset 79786
3208 Stationary Engine	79723 79720 78689	1000 1500 1500	120 120 240	3/4" NPT	Cordset: 120V 78064 240V 78751
3176 1995 & Older 3304 3306	79713 78656 78184 78659	1000 1000 1500 1500	120 240 120 240	3/4" NPT	Cordset: 120V 78064 240V 78751
3406 (893 CID) 3406 (Steiger ST325) w/o Brake Saver 3406E 3456	78176 78638 78413 78640	1000 1000 1500 1500	120 240 120 240	1" NPT	Cordset: 120V 78064 240V 78751
3406E 3456 1998 only	79916	1500	120	1" NPT	Cordset: 120V 78064
3408 (1099 CID) 3412 (Use 2)	78176 78638 78413 78640	1000 1000 1500 1500	120 240 120 240	1" NPT	Cordset: 120V 78064 240V 78751
CUMMINS					
855 N & NH w/o full flow cooling, Big Cam III & IV N14 Reverse Plate on New Big Cam IV	78658 79925 78222 78660	1000 1000 1500 1500	120 240 120 240	Plate	Cordset: 120V 78064 240V 78751 Gasket 78712
Big Cam IV alternate installation	78185 78186	1500 1500	120 240	Plate	Cordset: 120V 78064 240V 78751
855 N, NH, NTC, with full flow cooling	79717 78662	1500 1500	120 240	Plate	Cordset: 120V 78064 240V 78751
855 full flow high mount oil cooler (exhaust partially blocks rear port)	79717 78662	1500 1500	120 240	Plate	Cordset: 120V 78064 240V 78751
855 full flow cooling high mount oil cooler Prior to 1975	78205 78684	1500 1500	120 240	Plate	Cordset: 120V 78064 240V 78751
855 (alternate installation) 1995 and older	79189	1500	120	1 1/2" NPT	Cordset: 120V 78064

Installation Information

CATERPILLAR

Replaces 3/4" pipe plug on right rear side of engine		
Replaces 1" pipe plug in oil cooler		
3204: replaces right rear frost plug 3208: replaces center frost plug on each side of engine—2 required		
Replaces 3/4" pipe plug on rear of oil cooler on left side of engine. Hold element stationary while tightening adapter.		
3176: replaces 3/4" pipe plug on right front of engine. 3304/3306: replaces pipe plug in water jacket on left side of engine.		
Replaces 1" pipe plug on oil cooler bonnet		
Replace plug in top of cooler		
Replaces 1" pipe plug behind oil cooler on right side of engine		

CUMMINS

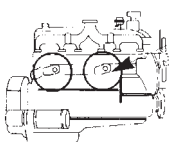
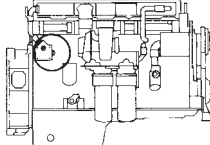
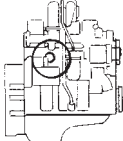
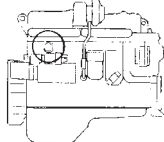
Replaces water inspection plate on right side of engine		
Replaces rear inspection plate. Includes 1/2" NPT hose connection		
Install in rear header or water inspection plate on right rear of engine	 1.5"	
Replaces water jacket plate on side of engine	 1.5"	
Replaces heating element in casting		
Rear of engine block		

Heavy Duty Truck Applications

Make & Model	Part No.	Watts	Volts	Diameter	Service Parts
CUMMINS (CONTINUED)					
855 (alternate installation)	79861	1500	120	1 5/8"	Cordset: 120V 78064
855 full flow cooling low mount oil cooler	79717 78662	1500 1500	120 240	Plate	Cordset: 120V 78064 240V 78751
V6—140, 155 VT225, V555, VT555 V8—170, 185, 210, 470	78199	1000	120	Plate	Cordset: 120V 78064 240V 78751
V6—195, 200, 215, 280 V8—235, 265, 300, 370, 430, 903	78201	1500	120	Plate	Cordset: 120V 78064 240V 78751
L10 (10 Liter), 6 cyl., 611 CID ISM, QSM11 M11 (10.8 Liter) 6 cyl., 661 CID	79719 78637	1500 1500	120 240	38mm THD	Cordset: 120V 78064 240V 78751
“A” Series, 4 & 6 cyl	78266	600	120	2"	Cordset 120V 79786
“B” Series 4B3.9, 4BT3.9 (3.9L, 289 CID) 4 cyl 6B5.9, 6BT5.9 (5.9L, 359 CID) 6 cyl	79104 79721 78202	750 1000 1500	120 120 120	2 1/4"	Cordset: 120V 78064
“ISB” “QSB” Series 3.9L, 5.9L	79100	750	120	3/4" NPT	Cordset: 120V 78064
“B” 3.3L	79853	600	120	40mm	Cordset 120V 79786
“C” Series 6C8.3L, 6CT8.3L, 6CTA 8.3L (8.3L, 505 CID)	79721 78675 78202	1000 1000 1500	120 240 120	2 1/4"	Cordset: 120V 78064 240V 78751
“ISC” Series, 8.3L “ISL” Series, 8.9L	79713 78656	1000 1000	120 240	3/4" NPT	Cordset: 120V 78064 240V 78751
“K” Series KT19, KT450, KT1150, KTA525, QSK19, KV38 (6 cyl. 1150 CID)	78416 79926	1500 1500	120 240	1 3/4"-18	Cordset: 120V 78064 240V 78751
L-423, 140 CID (4A2.3) L-634, 210 CID (6A3.4)	78266	600	120	2"	Cordset 120V 79786

Installation Information

CUMMINS

Rear of engine block		
Replaces front water jacket plate on side of engine Note: Use position 2	 1.5"	
Replaces water inspection plate on front of left bank	 3 3/4" x 4 5/8"	
Replaces water inspection plate on front of left bank	 3 7/8" x 5 5/8"	
Install in heater casting on right rear of engine		
RS 12 o'clock		
Replaces frost plug on right side of engine in any available hole		
Rear of oil cooler		
LR 6 o'clock		
Replaces frost plug on right side of engine		
Front of oil cooler		
Replaces large hex plug at either upper front or center position on oil cooler cover element at 2:00 or 10:00		
Any 2" cored plug on right side		

Heavy Duty Truck Applications

Make & Model	Part No.	Watts	Volts	Diameter	Service Parts
CUMMINS (CONTINUED)					
11 Litre	79862	1500	120	Plate	Cordset: 120V 78064
M11 2000 and newer					
ISX, QSX, Signature 600	79206	1500	120	Plate	Cordset: 120V 78064 240V 78751
V903, VT903, VT350 Formula VT300 (902 CID) V6-195, 200, 215, 280 (588 CID) V8-235, 265, 300, 370 (785 CID) 350 & 430 (950 CID)	78214 79927	1500 1500	120 240		Cordset: 120V 78064 240V 78751
V903, VT903, VT350 Formula VT300 (Alternative installation. Not available on all engines)	78184 78659	1500 1500	120 240	3/4"	Cordset: 120V 78064 240V 78751
DETROIT DIESEL					
3-53, 4-53, 3-71 & 4-71 without water cooled compressor	78178 78179 78648	750 1000 1000	120 120 240	Plate	Cordset: 120V 78064 240V 78751
3-53, 4-53, 3-71 & 4-71 with water cooled compressor	78188 78189 79932	750 1000 1000	120 120 240	Plate	Cordset: 120V 78064 240V 78751
6V-53	79099	1000	120	Plate	Cordset: 120V 78064
6-71 with water cooled compressor	78189 79932 78190 78667	1000 1000 1500 1500	120 240 120 240	Plate	Cordset: 120V 78064 240V 78751
6-71 w/o water cooled compressor	78179 78648 78180 78650	1000 1000 1500 1500	120 240 120 240	Plate	Cordset: 120V 78064 240V 78751
6V-71, 8V-71, 12V-71, 16V-71, 6V-92, 8V-92, 12V-92, 16V-92 w/air conditioning compressor mounted next to water jacket access plate except GMC General w/92 Series	78194 78196 78672	1000 1500 1500	120 120 240	Plate	Cordset: 120V 78064 240V 78751
Silver Series (6V-92, 8V-92), also 6V-71, 8V-71, 12V-71, 16V-71, 6V-92, 8V-92, 12V-92, 16V-92 w/o air conditioning plate next to water jacket access plate	79866 79867 78671	1000 1500 1500	120 120 240	Plate	Cordset: 120V 78064 240V 78751
6V-71, 8V-71 w/o air conditioning or power steering	78176 78413 78640	1000 1500 1500	120 120 240	1" NPT	Cordset: 120V 78064 240V 78751

Installation Information

CUMMINS

RR



Replace two bolt plate at front of engine on right side



Replacement element only



Replaces 3/4" plug on bottom rear of oil cooler

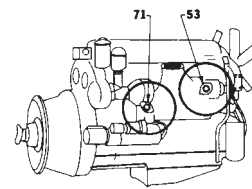


DETROIT DIESEL

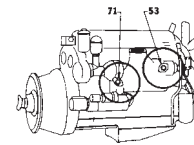
Replaces water jacket plate on side of engine



Replaces water jacket plate on side of engine



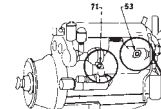
Replaces water jacket plate on side of engine



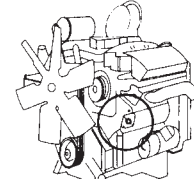
Replaces water jacket plate on side of engine



Replaces water jacket plate on side of engine



Replaces water jacket plate on left front cyl. bank



Replaces water jacket plate on left front cyl. bank



Replaces pipe plug in front of block



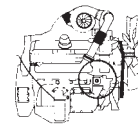
Heavy Duty Truck Applications

Make & Model	Part No.	Watts	Volts	Diameter	Service Parts
DETROIT DIESEL (CONTINUED)					
Silver Series (6V-92, 8V-92), also 12V-71, 16V-71, 12V92, 16V-9 & General w/92 Series alternate installation	79723 80052 79720 78689	1000 1000 1500 1500	120 240 120 240	3/4" NPT	Cordset: 120V 78064 240V 78751
Series 10 6 cylinder	79729	1500	120	1 1/2"	Cordset 79857
Series 30	78943 79678	600	120	1 1/2"	Cordset 79786
Series 40	79727 78216 78225	750 1250 1250	120 120 240	1 1/4"	Cordset: 79857
Series 50 (with low-mount turbo)	79092	1000	120	1 1/2"	Cordset: 120V 78064
Series 55	78213	1500	120	Plate	Cordset: 120V 78064
Series 50 (w/o low-mount turbo) Series 60	78413 78640	1500 1500	120 240	1" NPT	Cordset: 120V 78064 240V 78751
6V-71 and 8V-71 w/o power steering and/or air conditioning	78176 78413 78640	1000 1500 1500	120 120 240	1" NPT	Cordset: 120V 78064 240V 78751
6.2L, 6.5L Diesel	78263	600	120	1 5/8"	Cordset 120V 79786
D638	78720	600	120	3/4" NPT	Cordset: 120V 78064
8.2L, V8 501 CID	79713 78656	1000 1000	120 240	3/4" NPT	Cordset: 120V 78064
FIAT					
8060, 8061, 8065 (5.5L—335 CID)	78644 78646	1000 1000	120 240	42mm Hex Nut	Cordset: 120V 78064 240V 78751
8360, 8361 (8.1L)	78176 78638	1000 1000	120 240	1" NPT	Cordset: 120V 78064 240V 78751
FORD					
6 cyl. 1060 "B" Series Cummins (5.9L, 359 CID) 1460 "C" Series Cummins (8.3L, 505 CID)	79104 79721 78675	750 1000 1000	120 120 240	2 1/4"	Cordset: 120V 78064 240V 78751
8 cyl. 6.6L, 7.8L Ford Diesel 401, 474 cu. in. since Aug. 1989	79868 78734	1250 1250	120 240	Plate	Cordset: 120V 78064 240V 78751

Installation Information

DETROIT DIESEL

Replaces pipe plug in front face of cyl. bank on driver's side or pipe plug in oil cooler elbow pipe. Pipe bushing may be required. Pipe plug not available on all engines.



RS

1 1/2" frost plug on right front

Engines built prior to September 1993



Replaces 3rd or 4th frost plug on left side of engine. Engines built after Aug. 93: install in boss on left side of engine

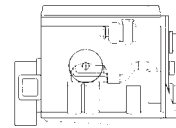


Installs in frost plug hold behind oil cooler



Replace water jacket place on left side of engine

1991 & older replaces 1" pipe plug in water pump; 1991 & newer replaces 1" plug in oil cooler casting



Replaces pipe plug in left front of block

Install in 1 5/8" frost plug on left center of engine



Install on right side



Replaces 3/4" pipe plug on right front side of block



FIAT

Installs in 42mm threaded opening on right rear of engine



1" pipe in coolant casing



FORD

Replaces front frost plug on right side of engine



Replaces 2nd frost plug from rear, right side



Heavy Duty Truck Applications

Make & Model	Part No.	Watts	Volts	Diameter	Service Parts
FORD (CONTINUED)					
6.6L, 7.8L, 1986-89	80053 78677	1500 1500	120 240	1 1/2"	Cordset 120V 79857
8 cyl. 6.9L, 7.3L Diesel 1993 to Present	78303	400	120	1 1/2"	Cordset 120V 78786:
Alternate Navistar Installation	79713	1000	120	3/4" NPT	120V 78064
8 cyl. 6.9L, 7.3L Diesel 1983 thru 1992	78297	1000	120	1 1/2"	Cordset 120V 79857
GMC					
V8—350 Diesel 1978 to Present	78260	600	120	1 1/2"	Cordset 120V 79786
V-6—305, 351, 401 (Gas)	79714 79929	1000 1000	120 240	1 3/4"	Cordset: 120V 78064 240V 78751
379-396 Diesel	79809 78263	600	120	1 5/8"	Cordset 120V 79786
478 Diesel	79714 79929 79864 79931	1000 1000 1500 1500	120 240 120 240	1 3/4"	Cordset: 120V 78064 240V 78751
HINO					
3.8L, 5.7L, 6.0L, 6.4L & 6.7L	79713 78656	1000 1000	120 240	3/4"	Cordset: 120V 78064 240V 78751
J Series 5.3L, 8.0L	79096	1000	120	50MM	Cordset: 120V 78064
INTERNATIONAL—NAVISTAR					
6.9L & 7.3L 1983 thru 1993	78297	1000	120	1 1/2"	Cordset: 120V 79857
T444E, 6.9L & 7.3L 1993 to Present	79713 78656	1000 1000	120 240	3/4" NPT	Cordset: 120V 78064 240V 78751
D150, D170, D190	78943	600	120	1 1/2"	Cordset: 120V 78786
D312, DT360, DTA360, D414, DT414, D436, DT466, DTA466 (thru 1993)	78216 78225 79728	1250 1250 1000	120 240 120	1 1/4"	Cordset: 120V 79857 240V 79859
DT408, DT466, DT466E, 530 (1994 to Present)	78216 79728	1250 1000	120 120	1 1/4"	Cordset: 120V 79857

Installation Information

FORD

Replaces 2nd frost plug from rear, right side



2 heater units recommended. Install LR & RR at 12:00
Install in oil cooler



Replaces right rear frost plug w/element at 11:00



GMC

Install in front frost plug on either side—element at 12:00

Install on right side—element at 9:00



Install in center frost plug on left side—element at 12:00

Install on right side—element at 9:00



HINO

Replaces 3/4" pipe plug. Water transfer casting, oil cooler cover



RF

INTERNATIONAL—NAVISTAR

Replaces frost plug on right rear of engine—element at 11:00



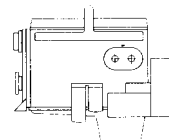
Replaces threaded hole in oil cooler



Install in any available frost plug



Install in 3rd or 4th frost plug on left side of engine



Install in 1 1/4" frost plug in boss on left side of engine



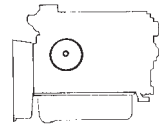
Heavy Duty Truck Applications

Make & Model	Part No.	Watts	Volts	Diameter	Service Parts
INTERNATIONAL—NAVISTAR (CONTINUED)					
9L DT550 MV 404, 466, 485, 537	78279	600	120	1 1/2" Disk Type	Cordset 120V 79786
V800 (789 CID)	78413 78640	1500 1500	120 240	1" NPT	Cordset: 120V 78064 240V 78751
817	78181 78655	1500 1500	120 240	1 3/4"	Cordset 120V 78064 240V 78751
806, 1206 w/0282 Eng. 1963-1967	78943	600	120	1 1/2"	Cordset 120V 79786
VT365	79871	1000	120	27mm	Cordset 120V 78064
IVECO					
Z110, Z120, Z220, Z230, Z240	78644 78646	1000 1000	120 240	42mm	Cordset: 120V 78064 240V 78751
JOHN DEERE					
Series 300: 3164, 3179, 4219, 4239, 4276, 6329, 6359, 6414 without obstruction to rear face of block	78224	1000	120	3/4" NPT	Cordset: 120V 78064
6404, 6466, 6619 with smooth bore frost plug hole	78200	1000	120	2"	Cordset 120V 78064
Series 300: 3164, 4039, 4045, 4219, 4239, 4276, 6059, 6068, 6329, 6359, 6414 Series 400: 6076, 6081, 6101, 6414, 6466, 6619 (with threaded frost plug hole)	79103	1000	120	1 5/8"	Cordset: 120V 78064
6105, 6125	79865	1500	120	1" NPT	Cordset: 120V 78064
Power Tech 4045, 6068	79098	1000	120	1 5/8"	Cordset: 120V 78064
MACK					
E3 MS200, MS250 E5 MS300, MS350, MS400	78643 78649	1500 1500	120 240	Plate	Cordset: 120V 78064 240V 78751
Power Tech 250	80063	600	120	1 1/4"	

Installation Information

INTERNATIONAL—NAVISTAR

Replaces any frost plug—point element between cyl.



Replaces 1" pipe plug on oil cooler bonnet



Install in right side frost plug 1, 2, or 5—element at 6:00



Install in 3rd or 4th frost plug on left side of engine element at 1:00



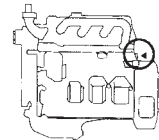
IVECO

Right rear of engine of head



JOHN DEERE

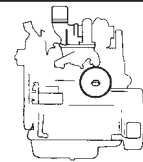
Replaces 3/4" pipe plug on rear face of engine. Some engines may require a 1" x 3/4" pipe reducer bushing.



Replaces 2" diameter core plug on left side of engine



Replaces 1 5/8" threaded plug on left side of engine



Replaces 1" NPT plug in oil cooler



Replaces 1-5/8" threaded plug on RS off engine



MACK

E3: Replaces plug in rear face of block
E5: Install in oil cooler water feed pipe



LS

Heavy Duty Truck Applications

Make & Model		Part No.	Watts	Volts	Diameter	Service Parts
MACK (CONTINUED)						
E6, EM6 END465, 711, EN438, 504, 707, 673, 675, 676	Threaded	78181	1500	120	1 3/4"	Cordset: 120V 78064 240V 78751 78181 Only
	Bore	78655	1500	240		
	Smooth	78220	1500	120	1 3/4"	
	Bore	78772	1500	240		
E7 & EM7		79924 78740	1500 1500	120 240	Plate	Cordset: 120V 78064 240V 78751
865, 866, & 1000 Series EM9-400		79713 78656 78184 78659	1000 1000 1500 1500	120 240 120 240	3/4" NPT	Cordset: 120V 78064 240V 78751
EM6237-675		78220 78772	1500 1500	120 240	1 3/4"	
E-Tech		79188	1500	120	Plate	Cordset: 120V 78064
MERCEDES						
MBE 900 Series		79917	1000	120	60 mm	Cordset 120V 78064
UD TRUCK						
FD 35T		78293	400	12	30mm	Cordset: 120V 79786
TD 42T		78479	600	120	35mm	Cordset: 120V 79786
FE6 & FE6T		78686	1000	120	40mm	Cordset: 120V 78064
NE6 & NE6T		78687	1500	120	50mm	Cordset: 120V 78064
FD46TA		79852	400	120	40mm	Cordset: 120V 79786
VOLVO						
TD60, TD61 (334 CID), TD70, TD71 (409 CID), TD100, TD101, VE10 (586 CID), TD120, TD121, TD123 (732 CID)		78639 78642	1500 1500	120 240	44mm	Cordset: 120V 78064 240V 78751
VE-D7		79208	1500	120	1 3/4"	Cordset: 120V 78064
VED-12		79177	1500	120	Plate	Cordset: 120V 78064

Installation Information

MACK

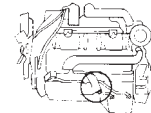
Replaces 1 3/4" frost plug on left side of engine



Replaces 1 3/8" core plug on right side of block



Installs in 3/4" NPT plug in oil cooler casting
Use 2 heaters



Install in 1 3/4" frost plug hole with smooth bore



Mounts in water pump



MERCEDES

RR

UD TRUCK

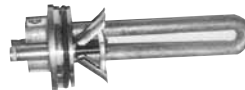
RF 3 o'clock



Replaces plate in center of oil cooler 6:00



RC 5:00



LR 12:00



LR 12:00



VOLVO

Replaces 44mm threaded plug on left front of engine



LR



Industrial Applications

Frost Plug	Watts	Voltage	Diameter	Related Parts
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See Case in Agriculture Section

CATERPILLAR

1404	78950	400	120	2 1/8"	Cordset 120V 79786
3003	78091	400	120	35mm	Cordset 120V 79786
3013, 3024, 3914	78084	400	120	40mm	Cordset 120V 79786
3034	79653	400	120	50mm	Cordset 120V 79786
3046	78926	600	120	35mm	Cordset 120V 79786

For additional Caterpillar listings Heavy Duty section Page

CONTINENTAL

F162	78287	400	120	1 5/8"	Cordset 120V 79786
F163	78287	400	120	1 5/8"	Cordset 120V 79786
F227	78287	400	120	1 5/8"	Cordset 120V 79786
F245	78287	400	120	1 5/8"	Cordset 120V 79786
TM27, TMD27	78287	400	120	1 5/8"	Cordset 120V 79786
Y112 (Since 1981)	78287	400	120	1 5/8"	Cordset 120V 79786

For Cummins listing see Heavy Duty section Page

For Detroit Diesel listings see Heavy Duty section Page

DEUTZ ALLIS

1012, 1013, 1013	79741	1000	120	Plate	Cordset 120V 78064
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Installation Instructions	
LC 12 o'clock	
LF 6 o'clock	
LF 6 o'clock	
Rear face 4 o'clock	
LR 6 o'clock	

LS 12:00	
LS 12:00	
LS 12:00	
LS 12:00	
LS 12:00	
LS 12:00	

Install in oil cooler	
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Industrial Applications

Frost Plug		Watts	Voltage	Diameter	Related Parts
FORD					
3 CYLINDER					
158, 175, 183, 201	78260	600	120	1 1/2"	Cordset 120V 79786
4 CYLINDER					
KSG411, KSG416 67, 98 C.I.D.	78287	400	120	1 5/8"	Cordset 120V 79786
091PV, GSG417 91, 104 C.I.D.	78305	400	120	1 1/2"	Cordset 120V 79786
134, 172, 192 C.I.D.	78949	600	120	2.05"	Cordset 120V 79786
LRG423, LRG425	79843	600	120	1 1/2"	Cordset 120V 79786
LSG423, 140 C.I.D.	79678	600	120	1 1/2"	Cordset 120V 79786
DSD442, ESD442, 254 C.I.D	78265	600	120	1 3/4"	Cordset 120V 79786.
233, 256, 268	78260	600	120	1 1/2"	Cordset 120V 79786
6 CYLINDER					
LSG633, 200 C.I.D.	78265	600	120	1 3/4 "	Cordset 120V 79786
CSG649, 300 C.I.D.	78300	600	120	1 5/8"	Cordset 120V 79786
SSD655, 335 C.I.D.	78644	1000	120	42 mm	Cordset 120V 78064
DSD & ESD 659,660,680 362, 363, 380 C.I.D	78314	600	120	1 5/8"	Cordset 120V 79786.
BSD666 401 C.I.D.	78260	600	120	1 1/2"	Cordset 120V 79786

Installation Instructions	
RF 6 o'clock	
LF 12 o'clock	
RFF 9 o'clock	
LS 12 o'clock	
LR 3 o'clock	
LC 12 o'clock	
LC 12 o'clock	
	
RF 12 o'clock	
RF 12 o'clock	
RR	
Left Side	
Right side 6 o'clock	

Industrial Applications

Frost Plug	Watts	Voltage	Diameter	Related Parts	
FORD (CONTINUED)					
8 CYLINDER					
WSG858 255, 302, 351W, C.I.D.	79678	600	120	1 1/2"	Cordset 120V 79786
LSG861,870, 875 370, 429, 460 C.I.D.	79678	600	120	1 1/2"	Cordset 120V 79786
401, 477, 534 C.I.D.	79714	1000	120	1 3/4"	Cordset 120V 79786

For additional Ford listing see Heavy Duty section Page

HERCULES					
G1600 2.7 163 C.I.D.	78950	400	120	2 1/8"	Cordset 120V 79786
D2300, DT2300, D3400 since 1982 3.7 & 5.8 & 5.6	78946	400	120	35 mm	Cordset 120V 79786
D3400, 3400T, 3400GT Thru 1982 5.6 339 C.I.D.	79678	600	120	1 1/2"	Cordset 120V 79786
D4800 7.8L	78200	1000	120	2"	Cordset 120V 78064

For Hino listing see Heavy Duty section Page

For International (Navistar) listing see Heavy Duty section Page

ISUZU					
2 CYLINDER					
QD27, QT15, 2AA1	78286	400	120	45 mm	Cordset 120V 79786
3 CYLINDER					
3ABI QD40,QD60,C201, C223,C240 108 C.I.D.	78285	400	120	45 mm	Cordset 120V 79786
QT23, QT35, 3AA 3KC-1, 3KR-1-60	78286	400	120	45 mm	Cordset 120V 79786
QT23 3KC-1	78933	400	120	35 mm	Cordset 120V 79786
3LD1-2 3LD2	78481	400	120	35 mm	Cordset 120V 79786

Installation Instructions	
RR 6 o'clock	
Right side 12 o'clock	
Front frost plug hole	

LC 12 o'clock	
RC 12 o'clock	
RD 12 o'clock	
Install in any available frost plug hole	

RF 10 o'clock	
LS 6 o'clock	
RF 10 o'clock	
LF 9 o'clock	
LS 9 o'clock	

Industrial Applications

Frost Plug	Watts	Voltage	Diameter	Related Parts	
ISUZU (CONTINUED)					
4 CYLINDER					
4FB1 111 C.I.D.	78077	400	120	1 3/8"	Cordset 120V 78786
4HE1	79856	600	120	1 3/4"	Cordset 120V 78786
4BB1, 4BD1, 6BD1, 6BG1, 6HE1, 6SA1, QD90, QD100, QD130, QD145	79313	600	120	1" NPT	Cordset 120V 78064
	or 78265	600	120	1 3/4"	Cordset 120V 78786
4LE1, 4LE2	78481	400	120	35 mm	Cordset 120V 78064
4JB1, 456 4JG	78285	400	120	45 mm	Cordset 120V 78064
6 CYLINDER					
329 C.I.D. QD130 (6BB1)	78265	600	120	1 3/4"	Cordset 120V 78064
6SA1,6SA1-T,6BD1,6BG1, 6HE1,6SD1,QD145, QD170,6HK1,QD170T	79313	600	120	1" NPT	Cordset 120V 78064
8.4 L	79920	1000	120	45mm	Cordset 120V 78064
E-120 6RB-1 733, 839 C.I.D.	79869	1000	120	45 mm	Cordset 120V 78064

For Iveco listing see Heavy Duty section Page

JOHN DEERE					
3029	78720	600	120	3/4" NPT	Cordset 120V 78064
6105, 6125	79865	1500	120	1" NPT	Cordset 120V 78064

For additional John Deere listings see Heavy Duty section Page

Installation Instructions	
RR 12 o'clock	
RF 6 o'clock	
LR	
Rear Face 1 o'clock	or 
LS 9 o'clock	
LR 6 o'clock	
FR 1 o'clock	
RS 6 o'clock Engines over 7L may require 2 heaters	
	
Rear 6 o'clock	

	
In oil cooler housing	

Industrial Applications

	Frost Plug	Watts	Voltage	Diameter	Related Parts
KOMATSU					
SA6D125	78220	1500	120	1 3/4"	Cordset 120V 78064
S6D-95L, SA6D-95L	79853	600	120	1 9/16"	Cordset 120V 79786
4D95 164 C.I.D.	78930	400	120	1 9/16"	Cordset 120V 79786
S6D140	78725	1500	120	1 3/8"	Cordset 120V 78064
S6D170	79872	1500	120	Plate	Cordset 120V 78064
Z400, Z482, D722	79181	400	120	30 mm	Cordset 120V 79786

KUBOTA					
D3000B,D3200B	78313	400	120	1" NPT	Cordset 120V 78064
D1402	78934	400	120	1 3/8"	Cordset 120V 79786
D650, D750, D850, D950	78309	400	120	3/4" NPT	Cordset 120V 78064
V4000B, V4300B	78313	400	120	1" NPT	Cordset 120V 78064
D600, D640, WG600, D622, D722, DG750 WG750, Z400, Z482 V800	79181	400	120	30 mm	Cordset 120V 79786
D1102, D1302, D1402, D1403, V1702, D1703, V1703, V1902, V1903, V2003, V2003T, V2203, S2800, F2803	78934	400	120	1 3/8"	Cordset 120V 79786
V1100, VH1100, V1200, V3300	78309	400	120	3/4" NPT	Cordset 120V 78064

Installation Instructions	
RS	
LR 12 o'clock	
LR 12 o'clock	
RR	
RR	
Back of Head	

LF Threaded hole	
RF 2 o'clock	
RF Threaded hole	
LF Threaded hole	
Rear Face	
RF 2 o'clock	
RF Threaded hole	

Industrial Applications

Frost Plug	Watts	Voltage	Diameter	Related Parts
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KUBOTA (CONTINUED)

Z600, ZH600	78309	400	120	3/4" NPT	Cordset 120V 78064
D905, DH905, D1005, DH1005, D1105, V1105, V1205, V1305, VH1305, V1505	78313	400	120	1" NPT	Cordset 120V 78064

LISTER-PETTER

LPW Series	78925	400	120	1 1/4"	Cordset 120V 79786
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MITSUBISHI

3 CYLINDER

L3A	78084	400	120	1 9/16"	Cordset 120V 79786
K3A, K3B	78286	600	120		Cordset 120V 79786

4 CYLINDER

4G32, 4G33	78946	400	120	1 3/8"	Cordset 120V 79786
4G52, 4G53, 4G54	78272	400	120	50 mm	Cordset 120V 79786
S4L2 S4S	78304	400	120	1 3/8"	Cordset 120V 79786
4G63, 4G64	78077	400	120	1 3/8"	Cordset 120V 79786

6 CYLINDER

S6E, S6E2	78304	400	120	1 3/8"	Cordset 120V 79786
6G72	79809	600	120	1 5/8"	Cordset 120V 79786

MITSUBISHI FUSO

4D31, 4M40, 4D36, 6D14, 6D31, 6D16	78720	600	120	3/4" NPT	Cordset 120V 78064
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Installation Instructions	
	
LF Threaded hole	
RS 12 o'clock	
RR 9 o'clock	
RS 12 o'clock	
LS 12 o'clock	
RC 3 o'clock	
RR 11 o'clock	
LF 3 o'clock	
LR 3 o'clock	
RR 9 o'clock	
LR	

Industrial Applications

	Frost Plug	Watts	Voltage	Diameter	Related Parts
MWM MURPHY					
D225 & D226	78272	400	120	50 mm	Cordset 120V 79786

NISSAN					
4 CYLINDER					
H20-2, H25 (1.2, 1.5)	78946	400	120	35 mm	Cordset 120V 79786
A12, A15, H20, SD22, SD4-47, SD25 (2.2)	78289	400	120	35 mm	Cordset 120V 79786
TD42	78479	600	120	35 mm	Cordset 120V 79786
Z24	78084	400	120	40 mm	Cordset 120V 79786
6 CYLINDER					
FD6 (5.6)	78084	400	120	40 mm	Cordset 120V 79786
LD28 (2.8)	78946	400	120	35 mm	Cordset 120V 79786
P Series (4.0)	78084	400	120	40 mm	Cordset 120V 79786
SD33, SD6-72 (3.2)	78291	400	120	35 mm	Cordset 120V 79786

OLIVER					
All except 1265, 1365, 1900	79713	1000	120	3/4" NPT	Cordset 120V 78064

PERKINS					
3 CYLINDER					
103.06, 103.07, 103.09 103.10	78946	400	120	35 mm	Cordset 120V 79786

Installation Instructions	
	
LF 6 o'clock	
LR 12 o'clock	
RC	
LC 12 o'clock	
RF 3 o'clock	
LR 12 o'clock	
RF 12 o'clock	
LS 12 o'clock	
Front	
LF 6 o'clock	

Industrial Applications

Frost Plug		Watts	Voltage	Diameter	Related Parts
PERKINS (CONTINUED)					
03.12, 103.13, 103.15	78084	400	120	40 mm	Cordset 120V 79786
3-152	78262	600	120	1 1/4"	Cordset 120V 79786
	or 79855	600	120	Bushing	120V 79858
4 CYLINDER					
104.19, 104.22	78084	400	120	40 mm	Cordset 120V 79786
4-108	78262	600	120	1 1/4"	Cordset 120V 79684
	or 79855	600	120	Bushing	120V 79858
4-135	78291	400	120	35 mm	Cordset 120V 79786
4-154	78293	400	120	30 mm	Cordset 120V 79786
4-203	78309	400	120	3/4" NPT	Cordset 120V 78064
4-204	78929	400	120	30 mm	Cordset 120V 79786
4-236	78262	600	120	1 1/4"	Cordset 120V 79786
4-248, 4-248-2	78262	600	120	1 1/4"	Cordset 120V 79786
"N" Series 4-300, 4-318	78309	400	120	3/4" NPT	Cordset 120V 78064
700 Series	79653	400	120	50 mm	Cordset 120V 79684
400 Series 5 1004	78943	600	120	38 mm	Cordset 120V 79786
6 CYLINDER					
"T" Series 6-354, 6-354.4, 6-372	78262	600	120	1 1/4"	Cordset 120V 79786
1006	78943	600	120	38 mm	Cordset 120V 79786

For Nissan listings see Heavy Duty section Page

Installation Instructions	
LF 6 o'clock	
2nd from rear LS 6 o'clock	
LF 6 o'clock	
RC 12 o'clock	
RS 12 o'clock	
LS 12 o'clock	
LS 12 o'clock	
LS 12 o'clock	
2nd from rear LS of block 12 o'clock	
LR 12 o'clock	
LS	
In head 4 o'clock	
RR 12 o'clock	
LR 12 o'clock	
RR 12 o'clock	

Industrial Applications

Frost Plug	Watts	Voltage	Diameter	Related Parts
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PERKINS (CONTINUED)

8 CYLINDER

8-540	78313	400	120	1" NPT	Cordset: 120V 78064
8-640	78413	1500	120	1" NPT	Cordset 120V 78064

TOYOTA

4 CYLINDER

5R, 2J (1.9, 2.5)	78272	400	120	50 mm	Cordset 120V 79786
4Y (2.2)	78289	400	120	35 mm	Cordset 120V 79786

6 CYLINDER

2F (4.2)	78272	400	120	50 mm	Cordset 120V 79786
3F	79653	400	120	50 mm	Cordset 120V 79786

VOLKSWAGEN

1588	78270	400	120	36.5 mm	Cordset 120V 79786
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Installation Instructions	
LS & RS	
LR	

LF 12 o'clock	
LR 9 o'clock	
LR 9 o'clock	
LR 2 o'clock	

RC 6 o'clock	



COLD WEATHER STARTING FLUID INJECTION SYSTEMS

FAST, SAFE, DEPENDABLE — STARTS EVERY TIME

Suitable for Diesel, Gasoline, and Gasohol Engines

Pat. Nos. 3, 198, 404 and 3960131 and Foreign Patent

KATS was created and developed as a truly effective product for cold weather and hard starting problems. Owners and operators of diesel and gas operated equipment have long known that delayed starts and slow starts mean big money losses in labor, maintenance and operating revenue. KATS Ether Start are designed to do one thing — **Start Engines FAST!**

KATS Ether Start systems are truly superior heavy duty patented products. Our components are 100% made in the USA. Customers will find KATS Ether Start are unbeatable in pricing, quality, and performance anywhere. KATS manufacturing quality control procedures assure you the very best anytime you install and operate a KATS system.

KATS Ether Start SYSTEMS BURN POLLUTION FREE AND ARE ENVIRONMENTALLY HELPFUL BY REDUCING EMISSIONS.

Systems are available for a variety of application types and equipment sizes. KATS manufactures three separate series of KATS Fuel Injection Systems. We offer the Automatic Electric Series, Push-Button Electric Series, and the Pull-Cable Manual Control Series.

The KATS Ether Start portion of this catalog contains ordering information of Systems Series Descriptions & Applications, Fuel Cylinders & Replacement Components, Thermostats, Drawings, and Nozzle Vaporizers.

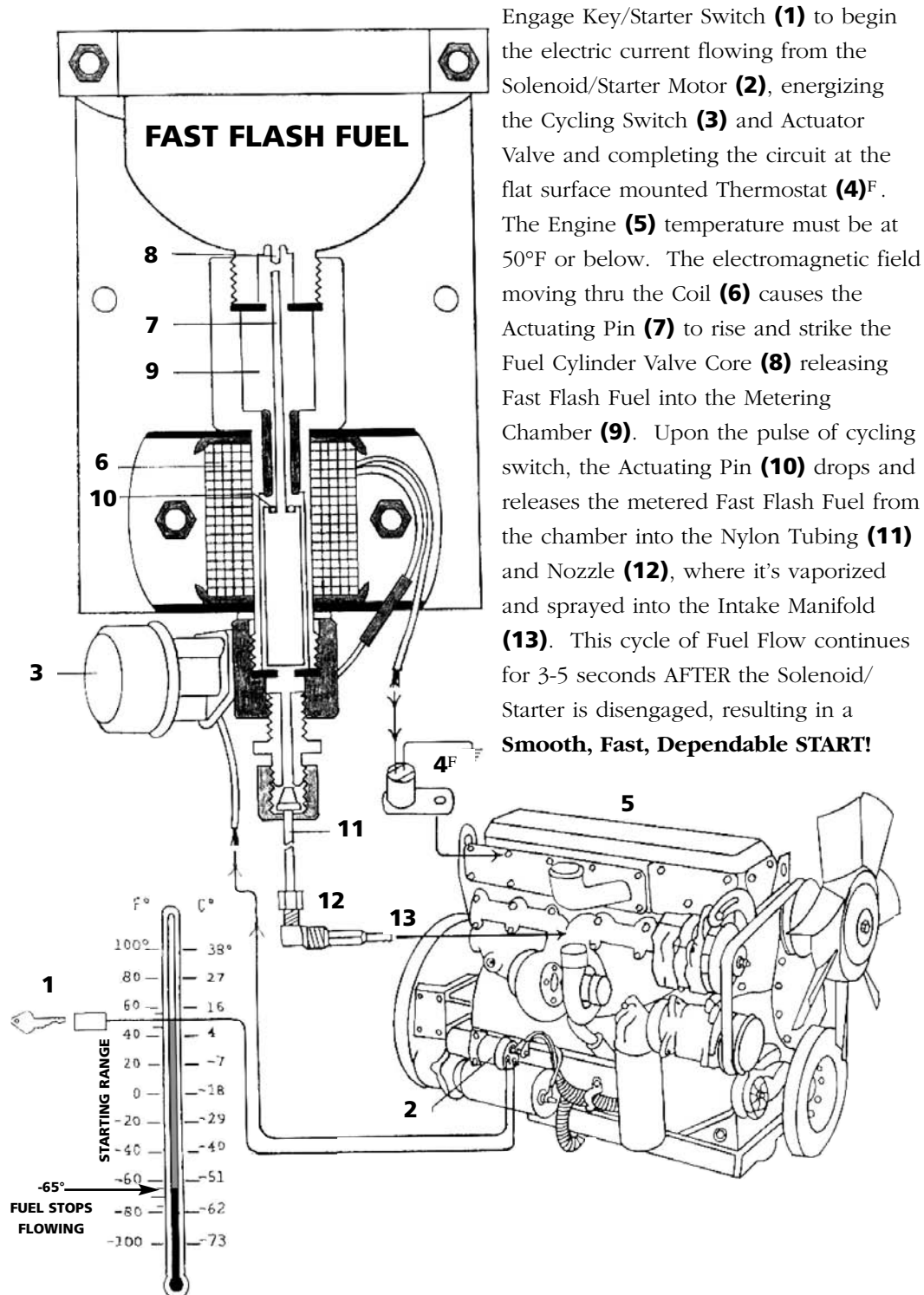
Please contact us directly for custom requirements, special orders, sizes, and application types.

Thank you!



HOW THE KATS ETHER SYSTEMS OPERATE:

These functional drawings provide a visual understanding of the operational characteristics of our Automatic Electric KATS Start. These features are particularly important to those looking for top quality and highly durable starting fluid systems.



KATS MODEL AUTOMATIC SERIES

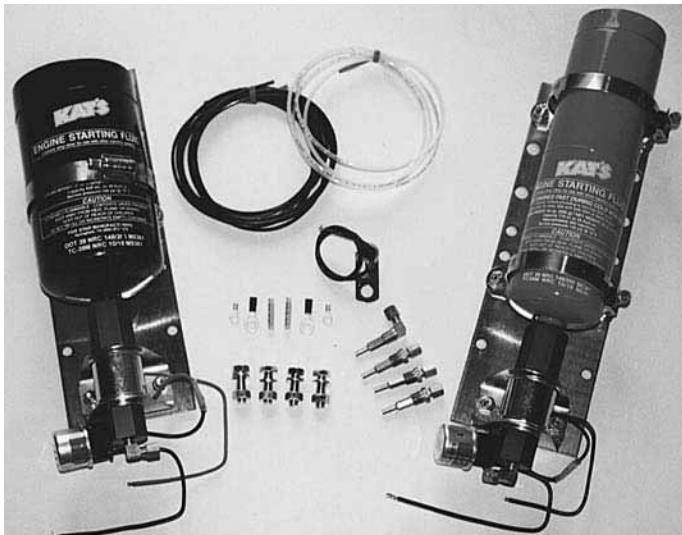
THE KATS SERIES IS A FULLY AUTOMATIC ELECTRIC OPERATED ETHER INJECTION SYSTEM.

Our most popular system combines the advantages of no operator control and thermostatic system control into **Fast, Reliable**, cold weather starts everytime. All this prevents pre-loading, overloading, and power boosting of the engine. The ether injection system will only operate at 50°F or below. See page 63 for thermostats that open at higher or lower starting temperatures. These systems are available with an 18 oz. or 21 oz. ether fuel cylinder. The 21 oz. system features a larger reservoir and is a shorter, more compact unit.

The Automatic system uses 35% less Fast Flash Fuel than our competitors without sacrificing performance. This is achieved by our superior design and Fast Flash Fuel mixture. The system comes preassembled and is easy to install. Systems are available to operate on 12 or 24 volt requirements. Virtually no maintenance is required other than changing a Fuel Cylinder once per year if needed.

All this adds up to an increase in equipment performance, monetary savings, and operator attitude.

EACH 33200 SERIES KIT CONTAINS:



*Actuating Valve Assembly with Cycling Switch, Heavy Duty Rigid Mounting Plate and Quick Release Clamp Assembly with all hardware, Nozzle with Built-In Filter Assembly, Thermostat +50°F (+10°C) Surface Mount Type, Nylon Tubing (5 Feet), Electrical Wiring Kit with Terminals (12 Feet — 16 Gauge), Protective Caps, Plugs, & Gaskets, Installation Instruction Guide
Three (3) Year Limited Warranty*

APPLICATION AND ORDERING GUIDE

ENGINE CID	MODEL NUMBER			
	12 VOLT		24 VOLT	
	18 oz.	21 oz.	18 oz.	21 oz.
500 and up	79973	79985	79992	79998
300 — 499	79972	79984	79991	79997
200 — 299	79971	79983	79990	79996
100 — 199	79969	79982	79989	79995
Universal Kit ^F	79966	79981	79988	79994

^F Includes four (4) NOZZLES for all the Engine CID Sizes listed above.

^F Excellent for the Stocking Warehouse / Distributor.

NOTE: All model numbers come without fuel cylinders.

KATS MODEL PUSH BUTTON SERIES

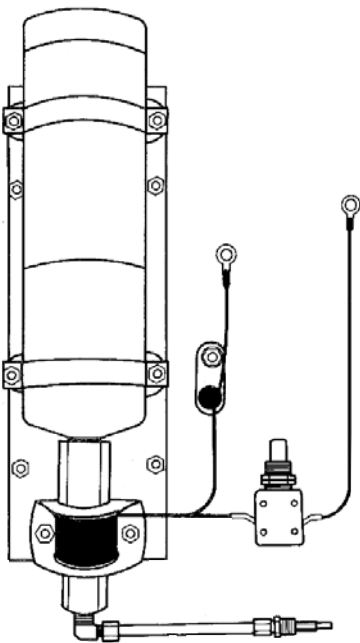
THE KATS SERIES IS A PUSH BUTTON ELECTRIC OPERATED ETHER INJECTION SYSTEM.

The Push Button Series has all the great high quality features of the Automatic Series except the operator has “limited control” over the use of the system.

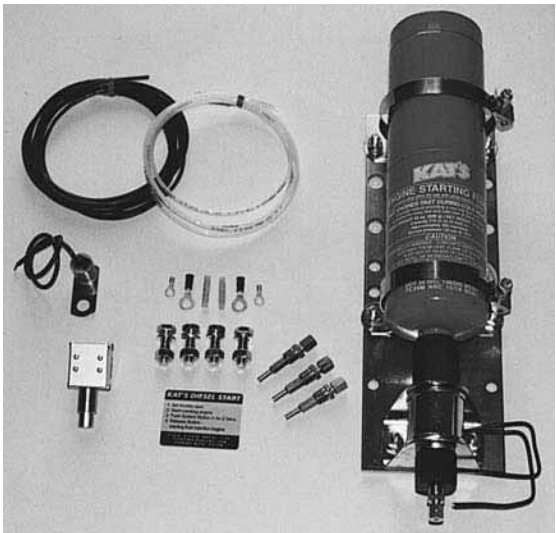
Providing the engine temperature is at 50°F or below, the operator engages and releases the push button at the dashboard or suitable location, causing a 5 - 6 cc metered shot of Fast Flash Fuel to be injected into the engine manifold. ONLY one (1) metered shot of fuel can be injected per push of the button. Holding the push button down WILL NOT allow a continuous flow of ether fuel to the engine.

This system is even designed to operate at battery voltage as low as 6.5 volts. This is especially important for “low battery” cold weather cranking which often bogs down the starting of the engine.

Each type of equipment or engine may have its own personality for which the Push Button System can be an excellent choice.



EACH 33100 SERIES KIT CONTAINS:



Actuating Valve Assembly, Heavy Duty Rigid Mounting Plate and Clamp Assembly with all hardware, Nozzle with Built-In Filter Assembly, Thermostat +50°F (+10°C) Surface Mount Type, Push Button Switch and Dash Decal SPST 10 Amp — Momentary ON, Nylon Tubing (4 Feet), Electrical Wiring Kit with Terminals (12 Feet — 16 Gauge), Protective Caps, Plugs, & Gaskets, Installation Instruction Guide Three (3) Year Limited Warranty

APPLICATION AND ORDERING GUIDE

ENGINE CID	MODEL NUMBER	
	12 VOLT	24 VOLT
500 and up	78609	78610
300 — 499	78142	78608
100 — 299	78151	79987
Universal Kit ^F	78140	79986

^F Includes three (3) NOZZLES for all the Engine CID Sizes listed above.

^F Excellent for the Stocking Warehouse / Distributor.

NOTE: All models numbers come without fuel cylinders.

KATS MODEL PULL CABLE SERIES

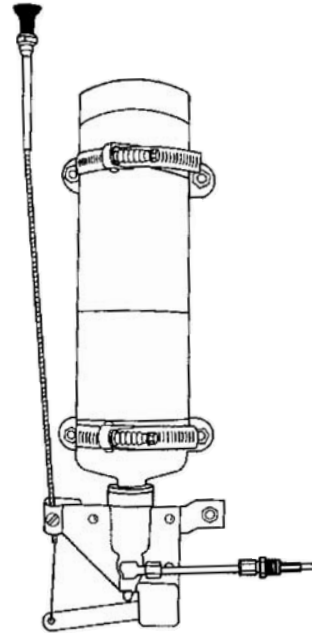
THE KAT'S SERIES IS A MANUALLY OPERATED ETHER INJECTION SYSTEM.

The Pull Cable Series is a fully operator controlled manual Ether Injection System. It's designed to withstand even the toughest of cold weather conditions and applications.

If the operator determines that any given "hard starting" situation exists, he/she can engage the Pull Cable to inject a metered shot of Ether Fuel to the engine. Each pull and release of the cable injects only ONE metered amount of the fuel.

This system is easy to install, comes preassembled, and requires no electricity.

This system is ideal for many application types which require an "economical" heavy duty cold weather starting system.



EACH 33180 SERIES KIT CONTAINS:



Actuating Valve Assembly, Pull Cable (7 foot with knob and sleeve), Nozzle with Built-In Filter Assembly, Nylon Tubing (4 Feet), Cylinder Quick Release Clamp, Cradle, Hardware, Installation Instruction Guide Three (3) Year Limited Warranty

APPLICATION AND ORDERING GUIDE

ENGINE CID	MODEL NUMBER
500 and up	78131
200 – 499	78555
Universal Kit ^F	79965

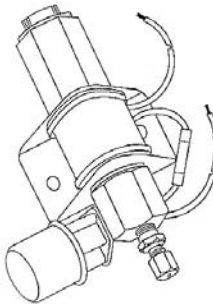
^F Includes two (2) NOZZLES for all the Engine CID Sizes listed above.

^F Excellent for the Stocking Warehouse / Distributor.

NOTE: All model numbers come without fuel cylinders.

COMPONENT PARTS AND ASSEMBLIES

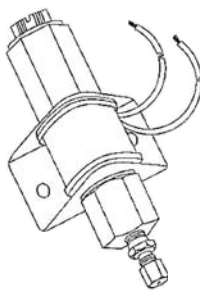
THE FOLLOWING COMPONENTS, PARTS, AND ASSEMBLIES CAN BE PURCHASED AS REPLACEMENT PARTS, OR AS STAND-ALONE ASSEMBLIES IF SO REQUIRED. ORDER BY PART NUMBER.



ACTUATOR VALVE ASSEMBLY WITH MOUNTED CYCLING SWITCH

Assembly includes Cycling Switch and Cycling Switch Socket. 12 or 24 Volt, 5-cc metering chamber, 6-8 Amps, 8" of 16 gauge wire leads, intermittent duty, 65-120 cycles per minute (CPM), straight valve fitting, gaskets, and protective valve plug.

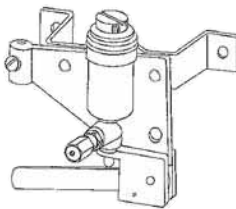
PART NO. 79974 (12 volt)
PART NO. 79993 (24 volt)



ACTUATOR VALVE ASSEMBLY

Assembly includes 5-cc metering chamber, 12 or 24 Volt, intermittent duty, 8" of 16 gauge wire leads, straight valve fitting, gaskets, and protective valve plug.

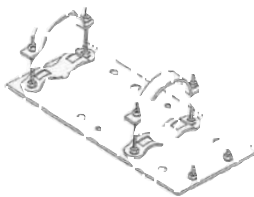
PART NO. 78615 (12 volt)
PART NO. 78590 (24 volt)



MANUAL ACTUATOR VALVE ASSEMBLY

Includes mounting bracket, pull lever, 5-cc metering chamber, straight valve fitting, gaskets, and protective valve plug.

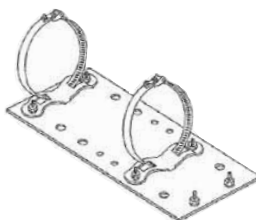
PART NO. 78585



MOUNTING PLATE AND CLAMPS

Fits all push button and automatic Series units, Super Heavy Duty Back Plate dual clamps, dual cradles, heavy duty nuts, bolts and washers.

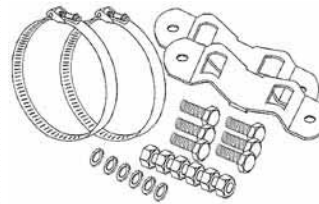
PART NO. 79967



MOUNTING PLATE AND QUICK RELEASE CLAMPS

Fits all Automatic and Push Button Series units, dual cradles, dual quick release clamps, heavy duty nuts, bolts, and washers.

PART NO. 79968

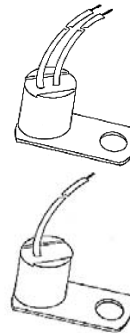


QUICK RELEASE CLAMPS, CRADLES, AND MOUNTING HARDWARE KIT

Same heavy duty quality. Fits Pull Cable Series. Can be used as a Universal Cradle

and Clamp assembly. Quick Release clamps are stainless steel and meets 35842 Mil-standard. Includes two (2) cradles, two (2) quick release clamps, and all nuts and bolts.

PART NO. 79964 CLAMP ONLY **PART NO. 78596**

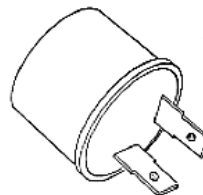


THERMOSTATS SURFACE MOUNT TYPE

Recommended to be mounted on the flat surface of the engine block. Circuit operates at 50°F and below, 15 Amp, 12" of 14 gauge wire lead(s). Internal Ground (IG) style has only one lead.

Packaged one (1) per pack.

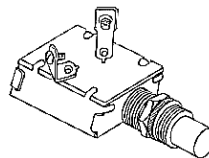
PART NO. 78150 2 WIRE
79938 1 WIRE
78583 1/2" NPT



CYCLING SWITCH KIT

Heavy duty. Available in 6, 12, and 24 volt, 10 amp, 60-120 cycles per minute (CPM), Intermittent action, moisture proof case.

PART NO. 79976 6V
79975 12V
79977 24V



PUSH BUTTON SWITCH KIT

Single Pole - Single Throw (SPST), 10 amp, momentary ON, heavy duty.

PART NO. 78598

DASH LABEL ONLY

PART NO. 78597



ELECTRIC WIRE AND TERMINALS KIT

Kit contains 12 feet of 16 gauge, up to 500 volts DC, copper strand; (2) each 3/8" 16 gauge ring style terminals; (2) each #8 16 gauge ring style copper terminals; (2) each female 14-16 gauge butt splice connectors; (2) each 14-16 gauge female slip terminals; (2) each 10-12 gauge female slip terminals.

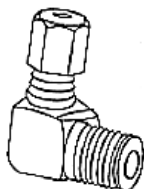
PART NO. 79978



NUT AND COMPRESSION SLEEVE KIT

1/8" Cone Style.
Ten (10) per pack.

PART NO. 79934



VALVE FITTING, ELBOW DESIGN, COMPRESSION NUT & SLEEVE

Fits all Jet-Start Series actuator valves. 1/8" Tube x 1/8" NPT.

Five (5) per pack.

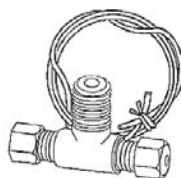
PART NO. 78592



VALVE FITTING, STRAIGHT DESIGN, COMPRESSION NUT & SLEEVE

Fits all Jet-Start Series actuator valves. 1/8" Tube x 1/8" NPT. Five (5) per pack.

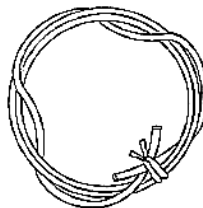
PART NO. 79935



DUAL NOZZLE ADAPTOR KIT

Valve T-fitting 1/8" Tube x 1/8 NPT, 4 feet nylon tubing (TBN-005), compression nuts and sleeves. Converts single manifold ether injection to dual injection type. **NOTE:** See next page for ordering extra Nozzles

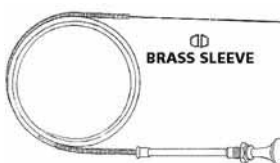
PART NO. 79936



NYLON TUBING

Five (5) feet, 1/8" O.D. x .078 I.D., operating pressure to 625 PSI, burst pressure to 2500 PSI, temperature range -65°F (-54°C) and above. Melt down temperature 490°F. Type 6/6.

PART NO. 78593



PULL CABLE KIT

Fits all 33180 Series, 5 foot length, 50" sleeve, with barrel sleeve clip and instructions.

PART NO. 78594

FAST FLASH FUEL CYLINDERS

The superiority of the KATS Fast Flash Fuel is backed by cold room tests conducted by the United States Department of the Army, at Fort Blevoir, Virginia. Faster starting times down to a freezing -65°F (-54°C), are the major result of our superior fuel formula.

Our proprietary formula contains 80 - 90% High Grade Ethyl Ether, 20 - 25% more than our competition. Less than 1% special lubricant is mixed within each fuel cylinder to provide upper cylinder engine lubrication. The balance of the formula components are proprietary.

SPECIFICATIONS:

- 18 or 21 Ounces of Fast Fuel Mix.
- 200 Starts Approximately.
- Ethyl Ether at 99% Purity or Better.
- Non-Clogging Formula.
- Cylinders Rated at 1000 Pound Test Burst Pressure.
- Cylinder Relief Valve Pressure up to 650 PSI Max.
- Fuel cylinders are pressured from 140 to 170 PSI at 70°F.
- Sizes Available in 7/8" or 1" Thread * See Below
- DOT Specified Safety and Caution Labeling
- Meets Federal Safety Specification 0-F-1004B
- Material Safety Data Sheets (MSDS) Available Upon Request.
- All cylinders come complete with Protective Caps to eliminate dust, moisture, or debris during storage.

* Specify neck thread size of 1" or 7/8"

FAST FLASH FUEL

FC ORDER NUMBERS AND DESCRIPTIONS:

Single Flash Fuel

Cylinder 18 oz. 1"

Part No. 78132

Cylinder 18 oz. 7/8"

Part No. 78133

Cylinder 21 oz.

Part No. 78135

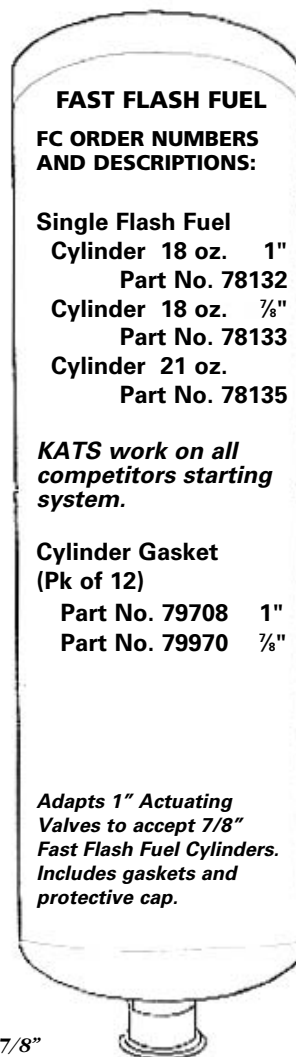
KATS work on all competitors starting system.

Cylinder Gasket (Pk of 12)

Part No. 79708 1"

Part No. 79970 7/8"

Adapts 1" Actuating Valves to accept 7/8" Fast Flash Fuel Cylinders. Includes gaskets and protective cap.

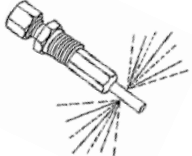
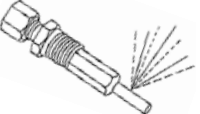
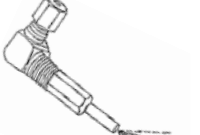


NOZZLES

NOZZLES ARE THE HEART OF THE KATS ETHER START SYSTEM.

Nozzles must be able to vaporize Fast Flash Fuel, meter the delivery of the fuel, and prevent manifold "back-flash", without failure. All Nozzles contain a filter assembly rated at 25 microns, which prevents possible engine "blow-by" from clogging the nozzles and nylon tubing. The filter assembly helps prevent foreign contamination from installation.

TO ORDER NOZZLES SPECIFY BY: ENGINE CID, KATS ETHER SERIES NUMBER, AND ORIFICE DESIGN AND MANIFOLD PORT LOCATION.

	33200 AUTOMATIC		33100 PUSH-BUTTON		33180 PULL-CABLE	
	ENGINE CID	PART NO.	ENGINE CID	PART NO.	ENGINE CID	PART NO.
 Straight Dual Side (SDS)	500 & UP	78137 F	500 & UP	78138 F	500 & UP	78138 F
	300 - 499	79942 F	200 - 499	78137 F	200 - 499	78137 F
 Straight End (SEN)	500 & UP	78599	500 & UP	79943	500 & UP	79943
	300 - 499	79939	200 - 499	78599	200 - 499	78137
	200 - 299	79940 F	100 - 199	79940 F		
	100 - 199	79941 F				
 Straight One Side (SOS)	500 & UP	78600	500 & UP	79175	500 & UP	79175
	300 - 499	79944	200 - 499	78600	200 - 499	78600
	200 - 299	79946	100 - 199	79946		
	100 - 199	79947				
 Elbow Dual Side (EDS)	500 & UP	79947	500 & UP	79949	500 & UP	79949
	300 - 499	79948	200 - 499	79947	200 - 499	79947
 Elbow End (EEN)	500 & UP	79950	500 & UP	79954	500 & UP	79954
	300 - 499	79951	200 - 499	79950	200 - 499	79950
	200 - 299	79952	100 - 199	79952		
	100 - 199	79953				
 Elbow One Side (EOS)	500 & UP	79955	500 & UP	79959	500 & UP	79959
	300 - 499	79956	200 - 499	79955	200 - 499	79955
	200 - 299	79957	100 - 199	79957		
	100 - 199	79958				

F NOZZLE IN STANDARD KITS

ALL NOZZLES ARE A STANDARD 1" IN LENGTH.

For Nozzles in 1 1/4" length, add the suffix (125) to the part numbers above. Example: 78137-125

For Nozzles in 2" lengths, add the suffix (200) to the part numbers above. Example: 78137-200

ALL NOZZLES ARE A STANDARD 1/8" NPT THREAD SIZE

1/4" BUSHING 78604

Custom thread size adapters are available upon request.

NOTE:

A F next to the Nozzle numbers in the chart above indicate the Nozzle included in any standard KATS Ether Start standard kit. Example: 78137 F is the nozzle included in the 33250 KATS Start system.

KATS Start Systems include the correct Nozzle size and standard orifice spray pattern. Orifice spray pattern requirements may vary from one installation to the next. Spray pattern is dictated by manifold port location.



FROST PLUG HEATERS

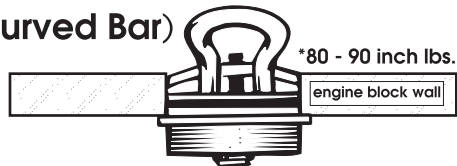
***Simple installation directly into engine block.
Saves Wear & Tear on your engine.***



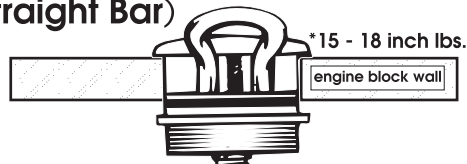
SIMPLE TO INSTALL

**DO NOT USE
A KAT'S ENGINE HEATER
WHEN USING A
100% SOLUTION
OF ANTI-FREEZE.**

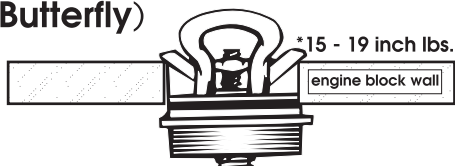
EXAMPLE A (Curved Bar)



EXAMPLE B (Straight Bar)



EXAMPLE C (Butterfly)

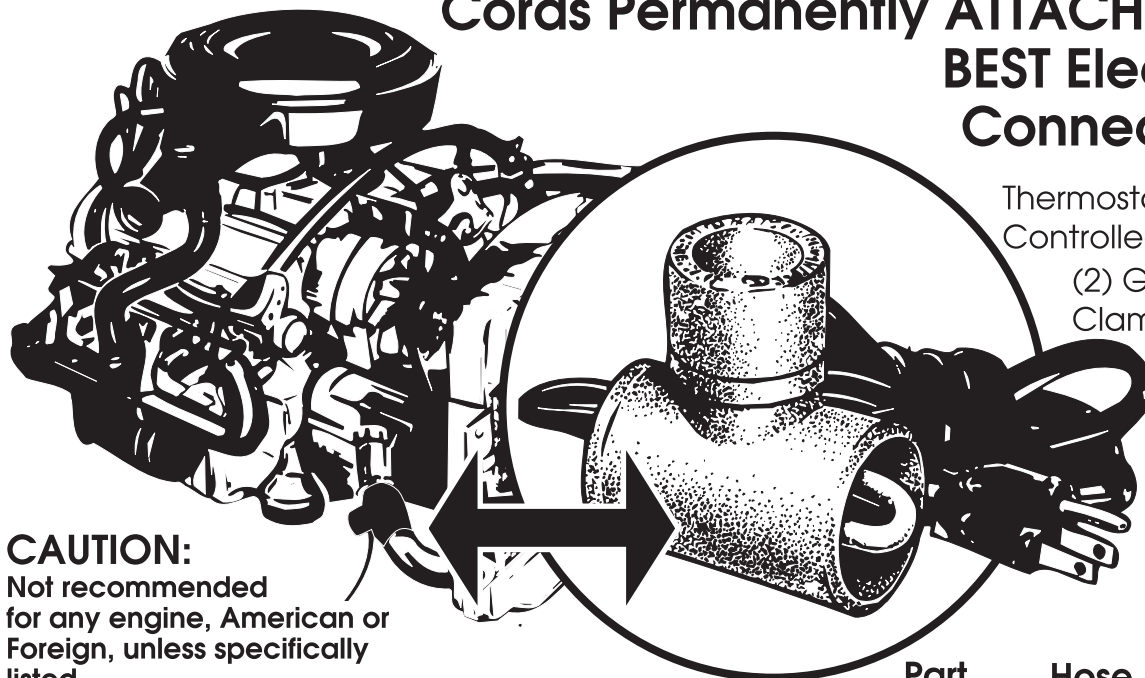


***Torque Properly**

INSTRUCTIONS:

1. Drain and flush radiator and block.
2. Remove correct frost plug or core plug - depending on type of engine.
3. Clean frost plug hole with a cleaning agent to remove any dirt, grease or paint. (Lubricate "O" ring with a light weight grease only, oil is not as satisfactory) before installing heater in frost plug opening.
4. Place engine heater in frost plug opening. Position of element is dependent on specific engine. The shoulder on the steel section of the heater must be against the face of the engine block wall. This allows the "O" ring to seal the unit for a leak proof installation.
5. Models with a toggle or flat cross bar on the back side of steel adapter must be installed with bar behind block wall. Tighten the Hex head or nut to 15 to 18 inch pounds torque until the cross bar is tight against inside block wall. Only use these models where recommended. (see example B above.)
- *6. Models with a curved cross bar need to be torqued to 80 to 90 inch pounds to expand the cross bar on the back side of the heater in the frost plug opening. Only use these models where recommended. (See example A above.)
- *7. Models with a butterfly cross bar need to be tightened to 14 to 19 inch pounds. Only use these models where recommended. (See example C above.)
8. Place the electric cord from the heater through radiator grille or other convenient opening and tape or fasten in position, making sure it is clear of all moving parts (fan blades) and heater parts (manifold).
9. Refill radiator, run engine long enough to build up a maximum pressure and check for leaks to complete installation.
10. Connect the Kat's Engine Heater to any 120 volt AC or DC electric outlet. Use your heater for 60 minutes or longer before vehicle is to be operated. Heater can be left on all night without overheating.
11. This heater is equipped with a three prong (grounding) plug and should be connected to a properly grounded circuit.
12. If an extension cord is used in conjunction with this heater, be certain that the wire size of the extension cord is of adequate size for the wattage of the heater and distance from the receptacle to the heater. Consult a licensed electrician if further information is required.

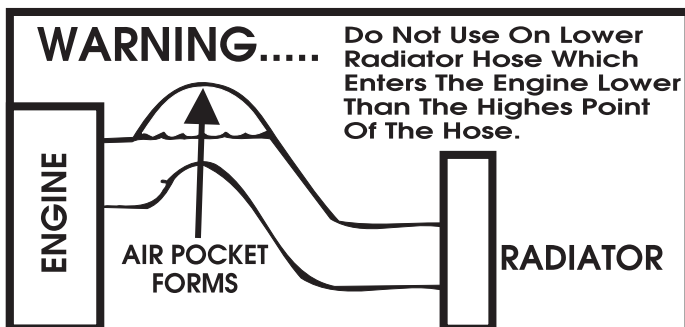
The High Performance **ENGINE HEATER.**
 Cords Permanently **ATTACHED** For
BEST Electrical
Connections.



Thermostatically
 Controlled
 (2) Gear Type
 Clamps

CAUTION:

Not recommended
 for any engine, American or
 Foreign, unless specifically
 listed.



WHEN INSTALLING A HOSE HEATER, CHECK THE CONDITION
 OF THE LOWER HOSE. IF CRACKED OR WORN, REPLACE WITH
 NEW HOSE BEFORE INSTALLING ELECTRIC HOSE HEATER.

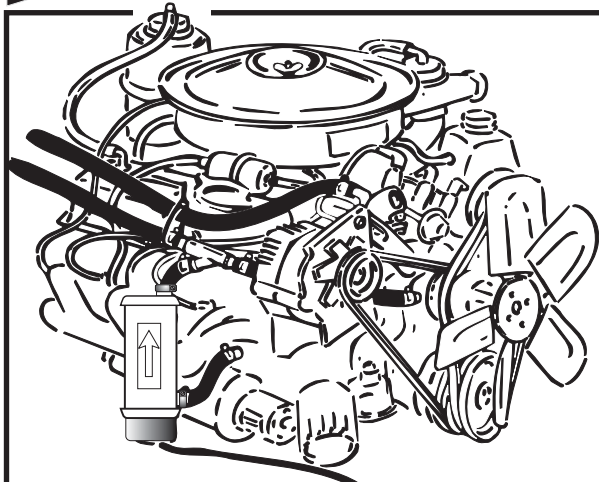
Part No.	Hose Dia.	Wattage.
78160	1"	400
78161	1 1/4"	600
78162	1 1/2"	600
78163	1 3/4"	600
78164	2"	600
79892	2 1/4"	750
79893	2 1/2"	750
79894	2 3/4"	750
79895	3"	750

INSTRUCTION FOR INSTALLING AND OPERATING

1. Drain and clean cooling system.
2. Cut and remove 1" section from the lower radiator hose at a point close to the water pump that will accept the heater. Make certain that the heater has a rise toward the water pump.
 Install with cap down at 5-7 o'clock position and element pointing toward engine block.
3. Run cord through grill and secure making sure it is clear of all moving or heated parts.
4. Refill cooling system, start engine and check for leaks.
5. Before energizing heater all air must be bled out of system by running the engine until internal thermostat opens.
 Continue to run the engine for 30 minutes to eliminate all air pockets.
6. Connect to properly grounded power source to check heater operation.

CAUTION:

NOT RECOMMENDED FOR ANY ENGINE UNLESS SPECIFICALLY LISTED. DO NOT USE ON FLEXIBLE WIRE REINFORCED RADIATOR HOSE. AN ADEQUATE SIZE EXTENSION CORD MUST BE USED. CONSULT LICENSED ELECTRICIAN IF FURTHER INFORMATION IS NEEDED.



INLET CONNECTION MADE FROM RADIATOR OR BLOCK DRAIN USING HOSE CONNECTOR OUTLET CONNECTION MADE TO TOP CAB HEATER HOSE AT WATER PUMP USING "Y" CONNECTOR

INSTRUCTIONS FOR INSTALLING AND OPERATING

1. Drain and clean the cooling system. (Recommend that this be done annually for more efficient heater operation.)
2. Mount heater vertically with the heater inlet (cold water line) connected to the engine block drain, radiator drain or lower radiator hose.
3. Heater outlet (hot water line) may be connected to the engine block at several locations.
Examples:
A. heater hose entering motor block.
B. hose line entering water pump.
C. engine block drain.
4. Use a 5/8" diameter heater hose for connecting heater inlet and outlet to engine. Use a minimum length of heater hose to prevent formation of air pockets.
5. Refill cooling system.
6. Bleed the air from the hose lines at the highest connection.
OPERATE ENGINE FOR 30 MINUTES TO OPEN ENGINE THERMOSTAT BEFORE TESTING HEATER.
7. Place the electric cord from heater through radiator grille or other convenient opening and tape or fasten in position, making sure it is clear of all moving parts (fan blades) and heater parts (manifold).
8. Connect extension cord to the proper voltage outlet. Check the circulation of COOLANT TO MAKE ABSOLUTELY SURE THAT THE HEATED COOLANT CIRCULATES THROUGH THE HEATER HOUSING. If the radiator becomes warm before the engine block, the hot water is possibly being returned to the block too close to the thermostat, thus causing it to open prematurely. Relocate your hot water return line.
9. This heater is equipped with a three prong (grounding) plug and should be connected to a properly grounded circuit.

Heater failure is usually caused by lack of circulation.
Check for the following when this happens:

- (a) Improper installation
- (b) Trapped air, preventing siphoning action
- (c) Water too low in the radiator
- (d) Coolant frozen
- (e) Car heater control closed
- (f) Antifreeze solution too strong

10. If an extension cord is used in conjunction with this heater, be certain that the wire size of the extension cord is of adequate size for the wattage of the heater and distance from the receptacle to the heater. Consult a licensed electrician if further information is required.

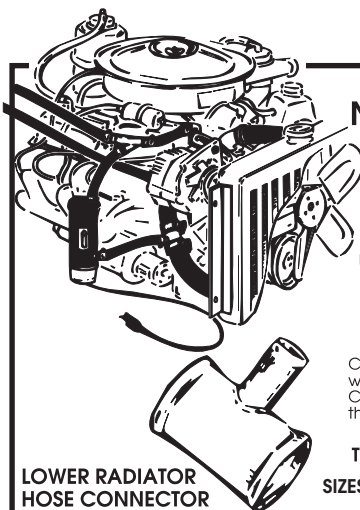
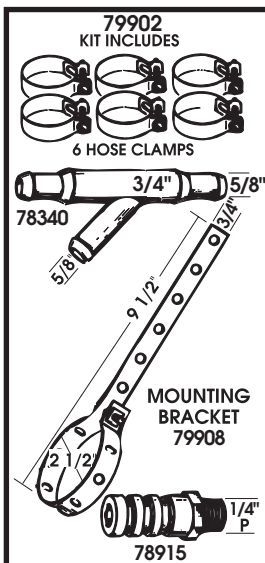
1. Equipped with check valve.
 2. A Model Available for all size engines.
- MODEL SPECIFICATIONS AND HEATERS RECOMMENDED FOR VARIOUS SIZE COOLING SYSTEMS

MODELS	VOLTS	WATTS	AMPS	CAPACITY
79401	120	850	7.00	Up to 18 qts.
79402	120	1000	8.3	16 - 25 qts.
79406	240	1000	4.16	16 - 25 qts.
79403	120	1500	12.5	26 - 40 qts.
79405	240	1500	6.25	26 - 40 qts.
79404	120	2000	16.6	41 - 60 qts.*
79407	240	2000	8.3	41 - 60 qts.
79408	120	2000	16.6	41 - 60 qts.**
79409	240	2500	10.4	Over 60 qts.

Short warm-up periods should be avoided when it is extremely cold. It is better to operate the heater all night. This will eliminate frozen water hoses. Our heaters are thermostatically controlled to obtain the most efficient operation.

*with 15 amp plug

**CSA approved with 20 amp plug



NEW LOWER RADIATOR HOSE CONNECTORS MAKE EXTERNAL HEATER INSTALLATIONS EASIER AND SIMPLER

USE TO SUPPLY THE COOLANT TO THE INLET OF AN EXTERNAL TYPE HEATER.
USE WHEN NO BLOCK DRAIN OR RADIATOR DRAIN IS AVAILABLE.
DO NOT USE ON FLEXIBLE WIRE REINFORCED RADIATOR HOSE.

Cut and remove a 1" section from the lower (MOLDED) radiator hose at a point that will accept the connector without changing the form of the original radiator hose. Cut and remove two or three inches of the wire coil that reinforces the hose where the connector will be placed.

THESE HOSE CONNECTORS SOLD SEPARATELY. CONSULT YOUR PRICE SHEET.
SIZES: 79909=1 IN., 79614=1 1/4 IN., 79615=1 1/2 IN., 79616=1 3/4 IN., 79617=2 IN.



INTRODUCING THE NEW IMPROVED CIRCULATING TANK HEATER



Hardware Kit 79902

- Made of die cast aluminum
 - Corrosion and impact resistant
 - Recyclable
- One piece molding
 - Eliminates possibility of leaks
- Tapered outlet design, pushes coolant more efficiently than other styles
- Available in 850W 1000W 1500W and 2000W 120V and 240V
- Thermostatically controlled 135° - 175°
- 5' HPN 105°C cord
- Uses versatile strap type mounting
- CSA approved

SAVES FUEL COST

STARTS QUICKER

RUNS SMOOTHER

WARMS CAB QUICKER

AIDS DEFROSTING

SAVE ENGINE WEAR AND TEAR

MODEL	WATTS	VOLTS	AMPS	CAPACITY
79886	850	120	7.0	up to 18 Qts
78237	1000	120	8.3	16-25 Qts
79887	1000	240	4.16	16-25 Qts
78238	1500	120	12.5	26-40 Qts
79888	1500	240	6.25	26-40 Qts
79889*	2000	120	15.0	41-60 Qts
79890	2000	240	8.3	41-60 Qts
79891**	2000	120	16.6	41-60 Qts

*With 15 Amp Plug

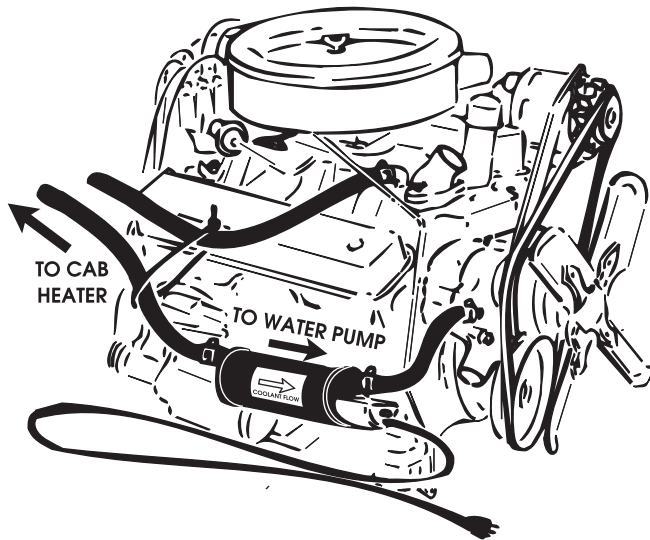
**CSA approved with 20 amp plug



EXTERNAL HEATER 79400



**NO NEED TO DRAIN COOLANT!
KAT'S ENGINE HEATERS ARE EQUIPPED WITH
AUTOMATIC THERMOSTATS TO GIVE
MAXIMUM PROTECTION AND CONTROLLED HEAT
850 WATTS - 120 VOLTS**



INSTRUCTIONS FOR INSTALLING AND OPERATING

1. Remove the radiator cap
2. Install the heater in a horizontal position in the hose line that returns the coolant to the water pump from the cab heater. Heater must be mounted a minimum of 4" below the outlet of the cab heater. The lower the heater is mounted, the better the circulation.

It is not necessary to drain the coolant to install this heater. Hose can be clamped with two locking type pliers before cutting. It may be necessary to add hose between cab heater and engine heater to comply with instruction number 2.

CAUTION
**NOT RECOMMENDED FOR
ANY ENGINE, AMERICAN OR
FOREIGN, UNLESS SPECIFICALLY
LISTED**

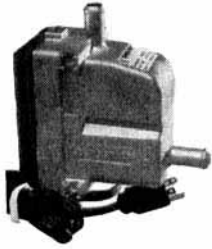
CAUTION
**NOT RECOMMENDED FOR
ANY MAKE OR MODEL ENGINE
ON WHICH THE CAB HEATER
RETURN HOSE IS ROUTED TO
THE RADIATOR, OR ON
ENGINES EQUIPPED WITH
A VACUUM CONTROLLED
HEATER VALVE THAT IS
INOPERABLE UNLESS THE
ENGINE IS OPERATING**

It is not necessary to drain the coolant to install this heater. Hose can be clamped with two locking type pliers before cutting. It may be necessary to add hose between cab heater and engine heater to comply with instruction number 2.

3. After cutting hose, place a gear type clamp on each hose end. Install engine heater into heater hose with the arrow on the heater pointing toward the water pump. Make sure that the engine heater is positioned so that both inlet and outlet are on the top side. Arrow must point in direction of normal water flow. If installed improperly, neither the cab heater nor engine heater will function properly.
4. Place clamps into position and secure. If necessary, use furnished tie down straps on heater hose to help support engine heater. Do not place tie downs on engine heater housing. Replace radiator cap. Place the electric cord from heater through radiator grill or other convenient opening and tape or fasten in position, making sure it is clear of all moving parts (fan blades) and Heated parts (manifold).
5. With the heat control on dashboard set at maximum heat, run engine until thermostat opens to insure that water is in the heater prior to engine heater operation. (The dashboard heater control must be set at maximum heat when engine heater is in operation.)
6. Bleed the air from the engine block, hoses and heater housing before connecting the engine heater to the power supply.
7. Connect the engine heater to the proper voltage outlet. The heater is thermostatically controlled and can be operated all night or for several hours prior to starting the engine.
8. This heater is equipped with a three prong (grounding) plug and should be connected to a properly grounded circuit.
9. If an extension cord is used in conjunction with this heater, be certain that the wire size of the extension cord is of adequate size for the wattage of the heater and distance from the receptacle to the heater. Consult a licensed electrician if further information is required.



CIRCULATION TYPE ENGINE HEATER



PART NUMBER	WATTS	HIGH LIMIT	AMPS	REPLACEMENT CORD
78236	750	250 F	15	N/A

- Thermostatically controlled • Heavy duty cast aluminum housing • Anti back flow valve • Can be installed in any liquid-cooled gasoline diesel engine • Built in thermostat protects from burnouts and provides economical operation
- Element does not come in contact with coolant, resulting in longer element life • Faster defroster action • Motor oil lasts longer during cold weather • 5/8" fittings • Includes mounting hardware



HIGH CAPACITY CIRCULATION HEATER

PART NUMBER	WATTS	VOLTS	APPLICATION	REPLACEMENT ELEMENT
79780	1500	120	350-500-C.I.D. @ ambient above -30C 200-300-C.I.D. @ ambient above -30C	79777
79781	2000	120	500-600-C.I.D. @ ambient above -30C 300-400-C.I.D. @ ambient above -30C	79778
79782	2250	120	600-800-C.I.D. @ ambient above -30C 400-500-C.I.D. @ ambient above -30C	79779

- Constant circulation of coolant through the engine block. All coolant in block circulates through heater 4 to 5 times an hour.
- One way valve eliminates by-pass of normal coolant circulation when engine is operating.
- Heavy duty non-corrosive pressure die cast aluminum tank.
- High limit safety sensor.



THERMOSTATS FOR CIRCULATION HEATER

Part No.	Temperature Range F°	
	ON	OFF
80064	80°	100°
80065	100°	120°
80066	120°	140°



MAGNETIC HEATERS

SPECIFICATION	78345	78344 ☞	79880 ☞
Heating Area	Approx. 8 sq. in.	Approx. 8 sq. in.	Approx. 20 sq. in.
Heat Output	300 – 400° F.	300 – 400° F.	300 – 400° F.
Power Req.	110 Volt AC	110 Volt AC	110 Volt AC
Warranty	One-Year Limited	One-Year Limited	One-Year Limited

U.S. Patent No. Re.32643



**MAGNUM
79880
300 WATTS**

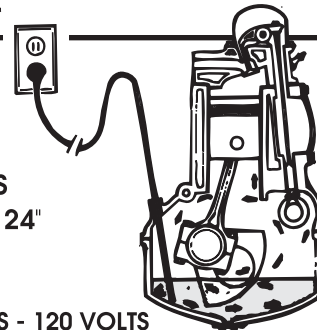
Applications include:

- Oil pan, intake manifold, battery holder or engine block.
- Snowblowers, chainsaws, snowmobiles, or other small engines.
- It may also be used for warming hydraulic systems or thawing frozen locks, pipes, gutters, livestock feeders, etc.

MAGNUM

The magnum is an upscale version of the Handi-Heat, featuring two powerful magnets and expanded heating surface. It can be used in many of the same applications as Handi-Heat, plus its larger size makes it ideal for use on trucks, diesels and farm machinery.

KAT'S HEATERS OIL HEATER



MODELS 78331 - 24"

90 WATTS - 120 VOLTS

- FITS MOST OIL STICK OPENINGS OF 1/4" OR MORE.
- STAINLESS STEEL TUBING IS FLEXIBLE MAKING IT POSSIBLE TO BE INSTALLED IN MOST ENGINES. THIS FLEXIBLE FEATURE ALLOWS GREATER COVERAGE.
- ECONOMICAL TO OPERATE
- HEATS OIL AND AIR IN CRANKCASE.
- ELEMENT LENGTH IS 23".

INSTRUCTIONS FOR OPERATING & INSTALLING

1. Measure dipstick to see that 4" of heater is in the oil.
2. replace oil stick with Kat's Heater. This flexible oil heater will conform with most curves in the present opening.
3. connect oil heater into any 120 Volt outlet and operate on an all-night basis. It is important to begin operating oil heater when car engine is still warm. Check heater clearance from hood, before closing hood. Be sure no wires or cables come in contact with heater.
4. Remove the oil heater before starting your engine. After each use, wipe oil heater clean of oil and sludge. This will greatly prolong the life of your oil heater.

Fax: 1-800-793-4806
Toll Free: 1-888-872-7278



AUTOMOTIVE INTERIOR HEATER

120 VOLTS



Part No. 78037

- Pre-heated interior comfort
- 900 Watts of power (120V)
- Slim, compact, lightweight design
- 900 Watt heat setting
- Thermostatically controlled
- Ergonomically designed to blend into any car or truck interior
- Easily installed, mounting bracket included



12 VOLT INTERIOR HEATERS



Part No. 80014

- Provides heat to interior of car, boat, campers or RV's
- 150 Watt, 12 Volt
- Plugs into the cigarette lighter outlet
- Mounts on dash or under console



Part No. 80013

- Provides heat to interior of car, boat, campers or RV's
- 300 Watt, 12 Volt
- 7x7x2.5 inches included



UNIVERSAL HOT PAD HEATER

SILICONE COVERED / ACID RESISTANT / PLIABLE

MODEL	DIMENSIONS	VOLTS	WATTS
79500	1" x 5"	120	25
79501	2" x 5"	120	50
79502	4" x 5"	120	100
79503	4" x 5"	120	150
79504	4" x 5"	120	250
79505	5½" x 8½"	120	500

- For Cars, Truck, Tractors
- Use as Oil Pan heater
- Use as Transmission Pan heater
- Easy to install



NOTE: Not for use on batteries

Do not cut pad

**Always place heater on metal reservoir
before plugging in heater**

**Application ranges may vary depending
on outside temperature**

**Do not use pads with higher than
recommended wattage for specific
capacities**



USAGE GUIDE

	100 WATTS	150 WATTS	250 WATTS	500 WATTS
Engine Oil Pan	2-5 quarts	5-8 quarts	8-20 quarts	20-35 quarts
Diesel Tank	5-7 gallons	7-10 gallons	10-20 gallons	20-30 gallons
Hydraulic Tank	1-5 gallons	5-10 gallons	10-20 gallons	20-30 gallons
Water Tank	0-2 gallons	2-4 gallons	4-7 gallons	7-10 gallons



VOLKSWAGEN AND PORSCHE HEATER

MODEL NO. 79788

INSTALLATION &

400 W

OPERATING

UNIVERSAL CLAMP ON HEATER

INSTRUCTIONS

1. Remove 1/2" nut from crankcase center bolts on each side of oil sump. Place heater pan eyelets over center studs and center heater on oil sump cover. Replace nuts and tighten.
2. Fasten extension cord to avoid interference with any moving parts.
3. For best results, it is recommended that the heater be operated on an all night basis.

- Prolongs Life of Engine Bearings
- Prevents Freezing of Oil Pump Intake
- Permanent Installation
- Easy to Install



BATTERY THERMAL WRAP



VINYL COVERED / ACID RESISTANT / PLIABLE

- 3 MODELS TO FIT MOST BATTERY SIZES
- FAST, EASY INSTALLATION - SIMPLY WRAPS AROUND BATTERY TO HEAT AND INSULATE
- OIL AND ACID RESISTANT VINYL COVER

MODEL	LENGTH	VOLTS	WATTS	BATTERY SIZE
78051	28"	120	60	SERIES 26, 26R, 70
78050	36"	120	80	SERIES 24, 24F, 27, 27F, 74
78515	72"	120	160	TRUCK BATTERIES



BATTERY HEATERS PAD STYLE

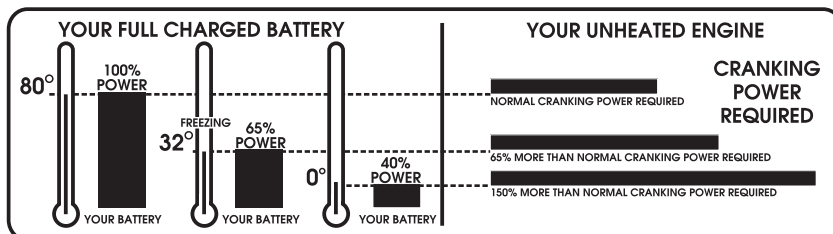


SILICONE COVERED / ACID RESISTANT / PLIABLE
FITS MOST CAR AND TRUCK BATTERIES

BATTERY SIZE	MODEL	DIMENSIONS	VOLTS	WATTS
24	80067	5 1/2" x 8 1/2"	240	60
24	79506	5 1/2" x 8 1/2"	120	60
27, 31, 40	79896	8 1/2" x 11 1/2"	120	60
8D	79897	11" x 18"	120	80
8D	79898	11" x 18"	240	80

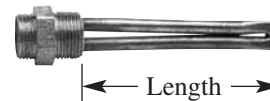
NOTE: If bottom of battery box is perforated with holes or has a waffle bottom use a sized piece of sheet metal or sheet aluminum between bottom of box and battery heater.

CAUTION:
DO NOT OPERATE BATTERY HEATER WHEN OUTSIDE TEMPERATURE IS ABOVE FREEZING





IMMERSION ELEMENTS THREADED



<u>MODEL #</u>	<u>WATTS</u>	<u>VOLTS</u>	<u>NPT THREAD SIZE</u>	<u>ELEMENT LENGTH</u>	<u>APPLICATION</u>	<u>ELEMENT CONSTRUCTION</u>
78768	150	120	1/2"	3 3/4"	WATER/OIL	STAINLESS STEEL
79873	150	120	3/4"	3 3/4"	WATER/OIL	STAINLESS STEEL
78748	150	120	1"	3 3/4"	WATER/OIL	STAINLESS STEEL
78693	150	120	22mm	3 3/4"	WATER/OIL	STAINLESS STEEL
79874	300	120	1/2"	3 3/4"	WATER/OIL	STAINLESS STEEL
79750	300	120	3/4"	3 3/4"	WATER/OIL	STAINLESS STEEL
78776	300	120	1"	3 3/4"	WATER/OIL	STAINLESS STEEL
78696	300	120	22mm	3 3/4"	WATER/OIL	STAINLESS STEEL
79184	400	120	3/8"	2 1/2"	WATER	COPPER
78916	400	120	1/2"	1 3/4"	WATER	COPPER
78309	400	120	3/4"	1 1/2"	WATER	COPPER
78313	400	120	1"	1"	WATER	COPPER
78771	450	120	1/2"	3 3/4"	WATER/OIL	STAINLESS STEEL
78720	600	120	3/4"	1 3/4"	WATER	COPPER
79313	600	120	1"	1 3/4"	WATER	COPPER
79100	750	120	3/4"	3 3/8"	WATER	COPPER
79713	1000	120	3/4"	3 1/4"	WATER	COPPER
78176	1000	120	1"	3 1/4"	WATER	COPPER
78184	1500	120	3/4"	5"	WATER	COPPER
78413	1500	120	1"	5"	WATER	COPPER
79865	1500	120	1"	3 1/4"	WATER	COPPER
79719	1500	120	38mm x 1.5	3"	WATER	COPPER

NOTE:

ALLOW 10 WATTS PER QT/OF OIL
ALL ABOVE ELEMENTS USE THE 78064 CORDSET
(ORDER SEPARATELY—OTHER ELEMENT LENGTHS/
WATTAGES AVAILABLE UPON REQUEST).



1/2" NPT

78692 Weld Bushing

OIL PRESSURE SWITCH

78905

For engines that have an automatic start up. This unit will sense oil pressure and turn off current to heater preventing the heater from burning out.



DIESEL FUEL HEATERS



MOUNTS TO FRAME

HELPS ELIMINATE WAXING OF FUEL.

UTILIZES HOT WATER FROM ENGINE ROUTED THROUGH CAB HEATER.

TEMPERATURE CONTROLLED BY CAB HEATER CONTROL.

<u>MODEL #</u>	<u>LENGTH</u>	<u>DIA.</u>	<u>WATER</u>	<u>FUEL</u>	<u>CAPACITY</u>
78147	13"	4 1/4"	3/4" NPT	3 3/8" NPT	90 TO 160 GPH



REPLACEMENT CORDS



	Part Number	Length	Wire	Volts	
	79898	1'	16/3	120	
	78064	6'	16/3	120	
	79113	10'	16/3	120	
	78751	6'	16/3	240	
	79786	5'	18/3	120	
	79857	5'	16/3	120	
	79671	1'	16/3	120	
	79859	6'	16/3	240	
	79773	8'	18/3	120	
	79680	5'	18/3	120	
	79860	1'	18/3	120	
	79913	5'	18/3	120	
	78060	1'	18/3	120	
					 WORK LIGHT 79876 Built in light indicates when power is on
					 79764



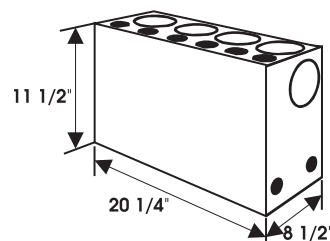
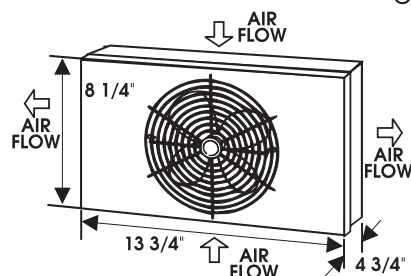
TRIPLE-CONNECTOR INDOOR/OUTDOOR 3-WIRE GROUNDED EXTENSION CORDS

PART NUMBER	LENGTH	AMPS	WATTS	WEIGHT
79693	2	15	1875	1 lb.



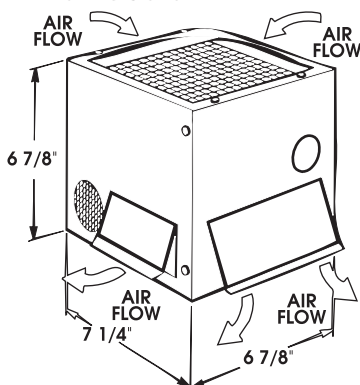
Part No. 80015 12V 24V
HEATING: 47,000 btu/hr.
MOTOR: 3 speed
POWER: 16 amps @ 12 volts
MOUNTING: Rear mounting weld nuts

Replacement Parts
 Motor 80016
 Core 80018
 Resistor 80017



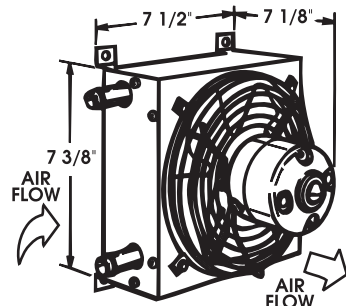
Part No. 80019 12V 24V
HEATING: 13,000 btu/hr.
MOTOR: 3 speed
POWER: 2.4 amps @ 12 volts
MOUNTING: Rear mounting studs

Replacement Parts
 Motor 80020
 Core 80021
 Fan Blade 80022
 Fan Guard 80023



Part No. 80024 12V 24V
HEATING: 12,500 btu/hr.
MOTOR: Multi-speed
POWER: 1.5 amps @ 12 volts
MOUNTING: Rear mounting studs

Replacement Parts
 Motor 80025
 Core 80026
 Fan Blade 80027
 Fan Guard 80028

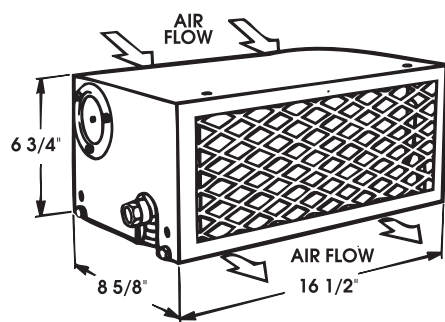


Part No. 80029 12V 24V
HEATING: 15,000 btu/hr.
MOTOR: Multi-speed
POWER: 1.5 amps @ 12 volts
MOUNTING:

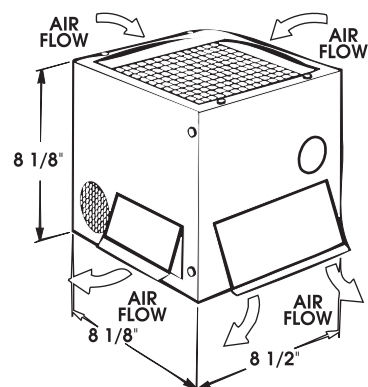
Replacement Parts
 Motor 80030
 Core 80031
 Fan Blade 80032
 Fan Guard 80033

Part No. 80034 12V 24V
HEATING: 20,000 btu/hr.
MOTOR: Multi-speed
POWER: 5 amps @ 12 volts
MOUNTING: Rear mounting studs

Replacement Parts
 Motor 80035
 Core 80036
 Fan Blade 80037



Part No. 80038 12V 24V
HEATING: 33,000 btu/hr.
MOTOR: 2 speed
POWER: 8.5 amps @ 12 volts
MOUNTING: Rear mounting studs



Replacement Parts
 Motor 80057
 Core 80039
 Fan Blade 80040

(39000 Series is for 24 volt.)



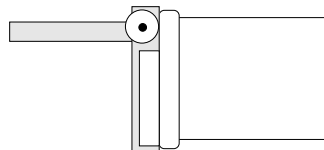
WEATHER PROOF TRUCK MOUNT RECEPTACLES



KITS:

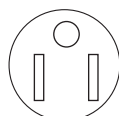
- 79775 • (120V-15 AMP) w/35108 Cord
- 80002 • (120V-20 AMP) w/35109 Cord
- 78697 • (240V-15 AMP) w/35110 Cord
- 80003 • (120V-15 AMP) w/35102 Cord
- 80004 • (120V-15 AMP) w/35125 Cord
- 80058 • (120V-15 AMP) w/35121 Cord

HINGE COVER
79776

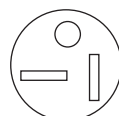


MALE WEATHER
PROOF PLUG

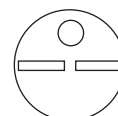
- 78714
- 79999
- 80000
- 80001
- 80007
- 80009
- 80059
- 80060
- 80061



120V 15 AMP



120V 20 AMP



240V 15 AMP

ALL KITS INCLUDE:

MOLDED RECESSED MALE RECEPTACLE CORD AND WEATHER PROOF HINGED COVER.

ACCESSORIES / REPLACEMENT PARTS

PART #	DESCRIPTION	VOLTS	AMPS
79776	CHROME HINGE COVER	N/A	N/A
79999	6' CORDSET w/MALE W/P PLUG	120V	15 AMP
80059	6' CORDSET w/MOLDED END + MALE W/P PLUG	120V	15 AMP
80000	6' CORDSET w/MALE W/P PLUG	120V	20 AMP
80060	6' CORDSET w/MOLDED END + MALE W/P PLUG	120V	20 AMP
80001	6' CORDSET w/MALE W/P PLUG	240V	15 AMP
80061	6' CORDSET w/MOLDED END + MALE W/P PLUG	240V	15 AMP
80009	10' CORDSET w/MALE W/P PLUG	120V	15 AMP
78714	"Y" CORDSET 6' / 10'	120V	20 AMP
78716	"Y" CORDSET 6' / 10'	240V	15 AMP
80006	OIL PAN THERMOSTAT (100°-120°)		
80005	OIL PAN THERMOSTAT (55°-75°)		
80007	"Y" CORD w/o THERMOSTAT 10'/10'	120V	15 AMP
78718	"Y" CORD w/35119 THERMOSTAT	120V	15 AMP
80011	"Y" CORD w/35118 THERMOSTAT	120V	15 AMP
80008	"Y" CORD w/o THERMOSTAT 10'/10'	240V	15 AMP
80010	"Y" CORD w/35119 THERMOSTAT	240V	15 AMP
80012	"Y" CORD w/35118 THERMOSTAT	240V	15 AMP
79194	SERVICE PLUG	120V	15 AMP

CARQUEST CORD LIST

Carquest	Kat's	Replacement Cord	Size	Watts	Carquest	Kat's	Replacement Cord	Size	Watts	Carquest	Kat's	Replacement Cord	Size	Watts
78075	11455	79680	28 THD	400	78632	11452	79786	Plate	400	79313	11602	78064	1" NTP	600
78077	11421	79786	35	400	78637	31106	78751	38 THD	1500	79624	11430	79786	36	400
78081	11436	79786	36	400	78638	31313	78751	1" NTP	1000	79626	11429	79786	36.5	400
78084	11401	79786	40	400	78639	30801	78064	44 THD	1500	79641	11415	79786	34	400
78088	11434	79786	40	400	78640	31303	78751	1" NTP	1500	79646	11431	79786	45	400
78091	11402	79786	35	400	78642	31801	78751	44 THD	1500	79653	11465	79680	50	400
78176	30313	78064	1" NTP	1000	78643	30704	78064	Plate	1500	79655	11432	79786	38	400
78178	30305	78064	Plate	750	78644	30401	78064	42	1000	79677	11601	79786	41	600
78179	30301	78064	Plate	1000	78646	31401	78751	42	1000	79678	11606	79786	38	600
78180	30318	78064	Plate	1500	78647	30708	78064	38	1500	79712	30324	78064	3/4" NTP	1250
78181	30701	78064	44.5 THD	1500	78648	31301	78751	Plate	1000	79713	30307	78064	3/4" NTP	1000
78184	30312	78064	3/4" NTP	1500	78649	31704	78751	Plate	1500	79714	30204	78064	44.5	1000
78185	30105	78064	Plate	1500	78650	31318	78751	Plate	1500	79717	30110	78064	Plate	1500
78186	31105	78751	Plate	1500	78655	31701	78751	44.5 THD	1500	79719	30106	78064	38 THD	1500
78188	30308	78064	Plate	750	78656	31307	78751	3/4" NTP	1000	79720	30317	78064	3/4" NTP	1500
78189	30309	78064	Plate	1000	78658	30111	78064	Plate	1000	79721	30108	78064	58	1000
78190	30311	78064	Plate	1500	78659	31312	78751	3/4" NTP	1500	79723	30319	78064	3/4" NTP	1000
78194	30316	78064	Plate	1000	78660	31101	78751	Plate	1500	79727	30501	79857	32	750
78195	31107	78751	58	750	78662	31110	78751	Plate	1500	79728	30512	78064	32	1000
78196	30304	78064	Plate	1500	78667	31311	78751	Plate	1500	79729	30514	78064	38	1500
78199	30102	78064	Plate	100	78671	31315	78751	Plate	1500	79732	30210	78064	1" NTP	1250
78200	30603	none	51	1000	78672	31304	78751	Plate	1500	79734	30117	78064	Plate	1500
78201	30103	78064	Plate	1500	78673	31102	78751	Plate	100	79741	30407	78064	Plate	1000
78202	30122	78064	58	1500	78675	31108	78751	58	1000	79748	30900	78064	1" NTP	150
78205	30114	78064	Plate	1500	78676	30203	78064	Plate	1500	79809	11607	79786	41	600
78213	30320	78064	Plate	1500	78677	31406	79859	38	1500	79849	11404	79786	36	400
78214	30113	78064	Plate	1500	78678	30205	78064	Plate	1500	79850	11435	79786	42.5	400
78216	30502	79857	32	1250	78679	30405	78064	42 THD	1000	79851	11463	79680	30 THD	400
78220	30702	none	44.5	1500	78684	31114	78751	Plate	1500	79852	11468	79680	40	400
78222	30101	78064	Plate	1500	78686	30803	79857	40	1000	79853	11617	79786	40	600
78224	30601	78064	3/4" NTP	1000	78687	30804	78064	50	1500	79854	11618	79786	35	600
78225	31502	78751	32	1250	78689	31317	78751	3/4" NTP	1500	79855	11620	78064	32 Collar	600
78226	11437	78064	28 THD	400	78693	30911	78064	22	150	79856	11622	79786	44.5	600
78260	11610	79786	38	600	78696	30910	78064	22	300	79861	30120	78064	1 5/8" THD	1500
78262	30508	79857	32	600	78720	11619	78064	3/4" NTP	600	79862	30121	78064	Plate	1500
78263	11612	79786	41	600	78725	30605	78064	35	1500	79863	30201	78064	Plate	1500
78265	11609	79786	44.5	600	78734	31402	78751	Plate	1250	79864	30206	78064	44.5	1500
78266	11611	79786	51	600	78740	31703	78751	Plate	1500	79865	30207	78064	1" NTP	1500
78268	11403	79786	36	400	78750	30905	78064	3/4" NTP	300	79866	30314	78064	Plate	1000
78270	11420	79786	36.5	400	78758	31104	78751	Plate	1500	79867	30315	78064	Plate	1500
78272	11410	79786	50	400	78768	30901	78064	1/2" NTP	150	79868	30402	78064	Plate	1250
78273	11424	79786	35	400	78769	31904	78751	1/2" NTP	300	79869	30506	none	45	1000
78274	11427	79786	36	400	78771	30906	78064	1/2" NTP	450	79870	30510	79857	38	750
78275	11608	79786	49	600	78772	31702	78751	44.5	1500	79871	30513	78064	27 THD	1000
78276	11438	79786	41.5	400	78774	31900	78751	1" NTP	150	79872	30606	78064	Plate	1500
78278	11450	79786	44.5	400	78776	30903	78064	1" NTP	300	79873	30902	78064	3/4" NTP	150
78279	30503	79621	38	600	78916	11423	78064	1/2" NTP	400	79874	30904	78064	1/2" NTP	300
78281	11460	78064	38 THD	400	78918	11451	79786	36	400	79881	11458	79786	38	400
78282	11413	79786	34	400	78925	11445	79786	32	400	79882	11461	78064	32 Collar	400
78283	11456	79786	35	400	78926	11439	78064	35	400	79885	11605	79786	38	600
78284	11419	79680	28 THD	400	78929	11454	79786	30	400	79914	30104	78064	Plate	1500
78285	11433	79786	45	400	78930	11443	79786	40	400	79917	30325	78064	Plate	1000
78286	11615	79786	45	600	78933	11442	79786	35	400	79920	30505	79857	45	1000
78287	11406	79786	41	400	78934	11444	79786	35	400	79924	30703	78064	Plate	1500
78289	11414	79786	35	400	78943	11604	79786	38	600	79925	31111	78751	Plate	1000
78291	11411	79786	35	400	78945	11412	79680	30 THD	400	79926	31112	78751	1 3/4" THD	1500
78292	11405	79680	36 THD	400	78946	11422	79786	35	400	79927	31113	78751	Plate	1500
78293	11417	79786	30	400	78949	11441	79786	52	400	79928	31201	78751	Plate	1500
78297	30403	79857	38	1000	78950	11440	79786	54	400	79929	31204	78751	44.5	1000
78298	11425	79786	34	400	78989	30208	78064	Plate	1000	79930	31205	78751	Plate	1500
78300	11603	79786	41	600	79092	30321	78064	38	1000	79931	31206	78751	44.5	1500
78301	11418	79786	42	400	79094	31320	78751	Plate	1500	79932	31309	78751	Plate	1000
78302	11613	79786	41	600	79096	30511	78064	50	1000	80049	30212	78064	1 5/16"	1500
78303	11416	79786	38	400	79098	30609	78064	41	1000	80050	31212	78751	1 5/16"	1500
78304	11447	79786	35	400	79099	30310	78064	Plate	1000	80051	31203	78751	Plate	1500
78305	11426	79786	38	400	79100	30115	78064	3/4" NPT	750	80052	31319	78751	3/4" NTP	1000
78306	11428	79680	35 THD	400	79103	30602	78064	41	1000	80053	30406	79857	38	1500
78309	11409	78064	3/4" NTP	400	79104	30107	78064	58	750	80054	11479	78064	25 Thd	400
78313	11407	78064	1" NTP	400	79105	31207	78751	1" NTP	1500	80056	11481	79680	35	400
78314	11614	79786	41	600	79177	30802	78064	Plate	1500	80055	11480	79786	41.5	400
78413	30303	78064	1" NTP	1500	79181	11469	79680	30	400	80062	11482	79680	35	400
78414	30202	none	44.5	1000	79184	11453	78064	3/8" NTP	400	80063	11624	79858	Plate	600
78415	31202	none	44.5	1000	79188	30707	78064	Plate	1500					
78416	30112	78064	1 3/4" THD	1500	79189	30119	78064	1 1/2" NPT	1500					
78478	11616	79786	44.5	600	79206	30118	78064	Plate	1500					
78479	11621	79786	35	600	79207	31707	78751	Plate	1500					
78481	11448	79786	35	400	79208	30805	78064	44.5	1500					

TECHNICAL INFORMATION

CARQUEST ENGINE HEATER - THERMOSTAT SETTINGS (RATINGS)

EXTERNAL HEATERS

LOWER RADIATOR HOSE HEATERS

OPEN (OFF) 175°F

CLOSE (ON) 135°F

79400 (IN LINE HEATER) OPEN (OFF) 284°F

CLOSE (ON) 170°F

MAGNETIC (78345, 78344)

OPEN (OFF) 275°F

CLOSE (ON) 271°F

TO OBTAIN SATISFACTORY RESULTS FROM YOUR ENGINE HEATER, PLEASE READ AND FOLLOW THESE GUIDELINES.

- DO NOT USE A CARQUEST ENGINE HEATER WHEN USING A 100% SOLUTION OF ANTIFREEZE—A 50/50 SOLUTION IS RECOMMENDED.
- CARQUEST HEATERS THAT ARE EQUIPPED WITH A THREE PRONG (GROUNDING) PLUG SHOULD BE CONNECTED TO A PROPERLY GROUNDED CIRCUIT OUTLET.
- IF AN EXTENSION CORD IS USED IN CONJUNCTION WITH A HEATER BE CERTAIN THAT THE WIRE SIZE OF THE EXTENSION CORD IS OF ADEQUATE SIZE FOR THE WATTAGE OF THE HEATER AND DISTANCE FROM THE RECEPTACLE. SEE CHART BELOW. CONSULT A LICENSED ELECTRICIAN IF FURTHER INFORMATION IS REQUIRED.
- DO NOT START VEHICLE ENGINE WITH HEATER PLUGGED INTO ELECTRICAL OUTLET. ELEMENT HOT SPOTS COULD OCCUR CAUSING THE HEATER ELEMENT TO BURN OUT.
- CARE SHOULD BE TAKEN WHEN REPLACING HEATER CORDS. THE 79786 REPLACEMENT CORD IS A 10 AMP, LOW WATTAGE REPLACEMENT CORD FOR 400/600 WATT HEATERS. THE 78064 (120V) CORDS ARE DIESEL HEATER REPLACEMENT CORDS.

SUGGESTED WIRE GAUGES FOR POWER SUPPLY CORDS

(Current carrying capacity shown in amperes)

	4	6	8	10	12	14	16	18	20	25
Length in Feet	Suggested wire Gauge									
15	18	18	16	16	16	16	14	14	12	12
25	18	18	16	16	14	14	12	12	12	10
50	18	18	16	16	14	14	12	12	12	10
100	16	16	14	14	14	12	12	10	10	10
150	16	14	12	12	12	12	10	10	10	8

TERMS OF LIMITED WARRANTY

WARRANTY: Products manufactured by Five Star Manufacturing Company are warranted for one year from date of sale to the original consumer against defects in workmanship and materials providing the installation and use of these products are in accordance with the manufacturer's instructions and applications. The manufacturer's only obligation shall be to repair or replace at the manufacturer's option the product provided it is returned transportation prepaid to the factory within one year from date of sale to original consumer.

Defects or failures due to incorrect installation, improper voltage, improper usage, improper alterations, or handling, or by any other conditions beyond our control, as to any and all of which the manufacturer will be the sole judge, are specifically excluded from this warranty. This may also have implied warranty rights which vary from state to state. No other liability of any kind, arising from the use of the product, whether defective or not, is assumed.

REPLACEMENT AND REPAIR POLICY

- I. In returning a heater for replacement or repair, include all the information possible as to what may have caused the trouble. Check the extension cord. In some cases it has been faulty. All returned heaters must be labeled and identified with warranty tags.
- II. Five Star Manufacturing Company cannot and does not refund labor.

IMPORTANT...CAUTION

To obtain satisfactory results from your external type engine heater, please read the following information carefully.

DO NOT USE A KAT'S ENGINE HEATER WHEN USING A 100% SOLUTION OF ANTI-FREEZE.

After the heater has been installed according to instructions, have your service station or garage check your antifreeze solution. On permanent type antifreeze, a solution too strong as well as too weak will freeze. If your coolant freezes or congeals, it will stop the flow of liquid through the heater housing and hoses and cause the heater to burn out. Our heater guarantee is void when this happens or when there is evidence of inadequate coolant.

To obtain the maximum protection from freezing, consult your antifreeze manufacturer's recommendations.

Five Star Manufacturing reserves the right to make any changes to the design or appearance it deems necessary to any of its products at anytime without notification, and these changes will not obligate Five Star to replace or change any previously manufactured products.

Manufactured by

FIVE STAR MFG. CO.

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