BMW Intercooler Pump Data

RENNtech
PERFORMANCE WITHOUT COMPROMISE

BMW Pump

- **Technical data (nominal)**
  - Nominal voltage 12,5 V
  - Power consumption 70 W
  - Speed 6000 RPM
  - Total efficiency 38 %

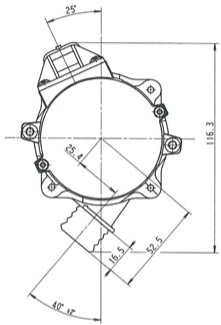
Electrical driven water pump with wet runner rotor and integrated electronics for infinitely variable control (speed control) of the cooling circulation system flow.

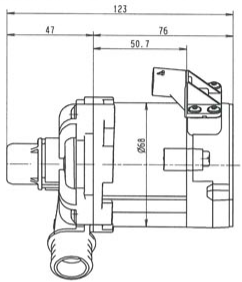
BMW Pump

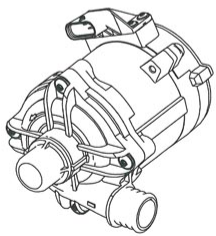
Features (nominal)

Pump duty point	6.4 GPM / 8.7 PSI
Ambient temperature	-40℃ to 140℃
Coolant temperature	-40℃ to 120℃
Voltage supply	min. 8 V, max. 16 V
Power consumption P_1	70 W
Average current	< 5,7 A
Quiescent current	< 100 µA
Lifetime	6000h
Interface(s)	PWM, LIN
Enclosure	IP 67
Speed resolution	24 RPM

BMW Electric Cooling Pump



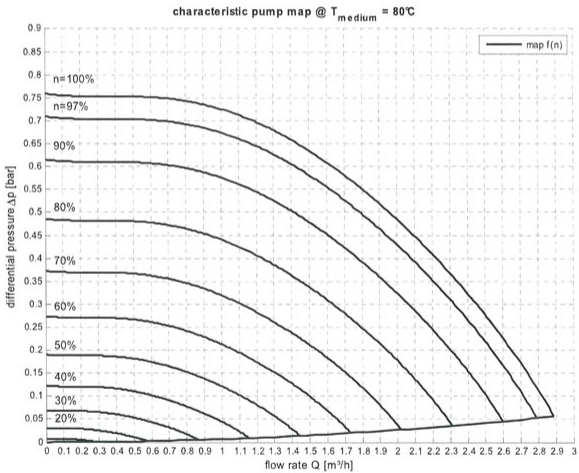




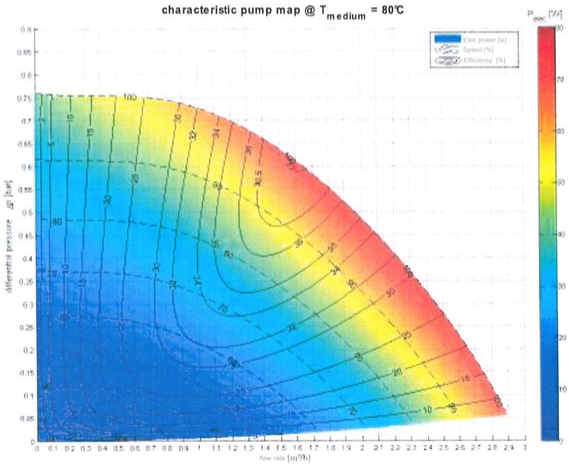
Technical data

- Nominal voltage 12,5 V
- Power consumption 70 W
- Speed 6000 RPM
- Total efficiency 35 %
- Weight 1 kg

Overview duty curves for BMW Pump



Efficiency/power consumption BMW pump



RENNtech Intercooler Pump Data

RENNtech
PERFORMANCE WITHOUT COMPROMISE

RENNtech Pump

- **Technical data (nominal)**
  - Nominal voltage 12,5 V
  - Power consumption 125 W
  - Speed 7200 RPM
  - Total efficiency 40 %
  - Weight 1,1 kg

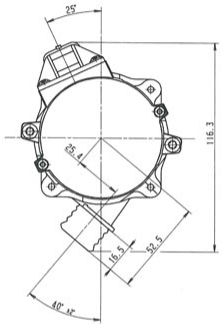
Electrical driven water pump with wet runner rotor and integrated electronics for infinitely variable control (speed control) of the cooling circulation system flow.

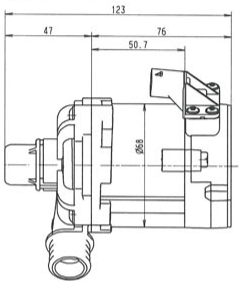
RENNtech Pump

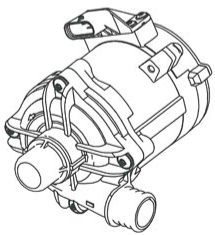
Features (nominal)

Pump duty point	8.7 GPM / 11.6 PSI
Ambient temperature	-40℃ to 120℃
Coolant temperature	-40℃ to 100℃
Voltage supply	min. 8 V, max. 16 V
Power consumption P_1	125 W
Average current	< 10 A
Quiescent current	< 100 µA
Lifetime	6000h
Interface(s)	PWM, LIN
Enclosure	IP 67
Speed resolution	29 RPM

RENNtech Electric Cooling Pump



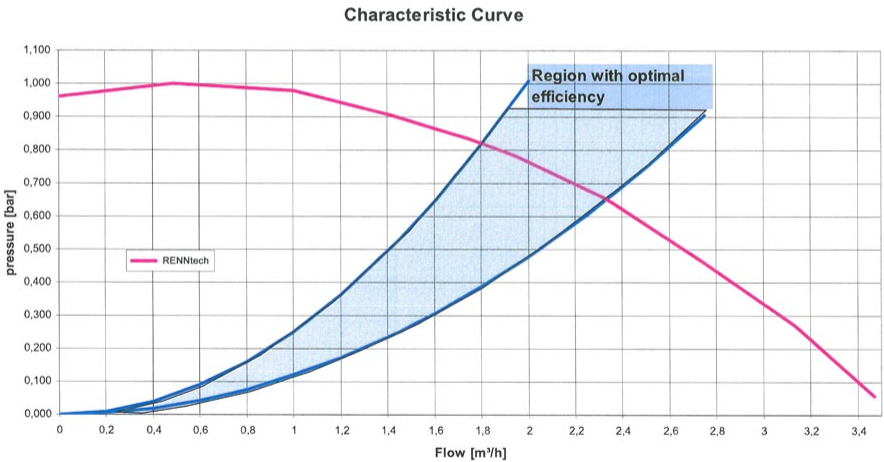




Technical data

Nominal voltage	12,5 V
Power consumption	125 W
Speed	7200 RPM
Total efficiency	40 %
Weight	1,1 kg

Overview duty curves for RENNtech Pump



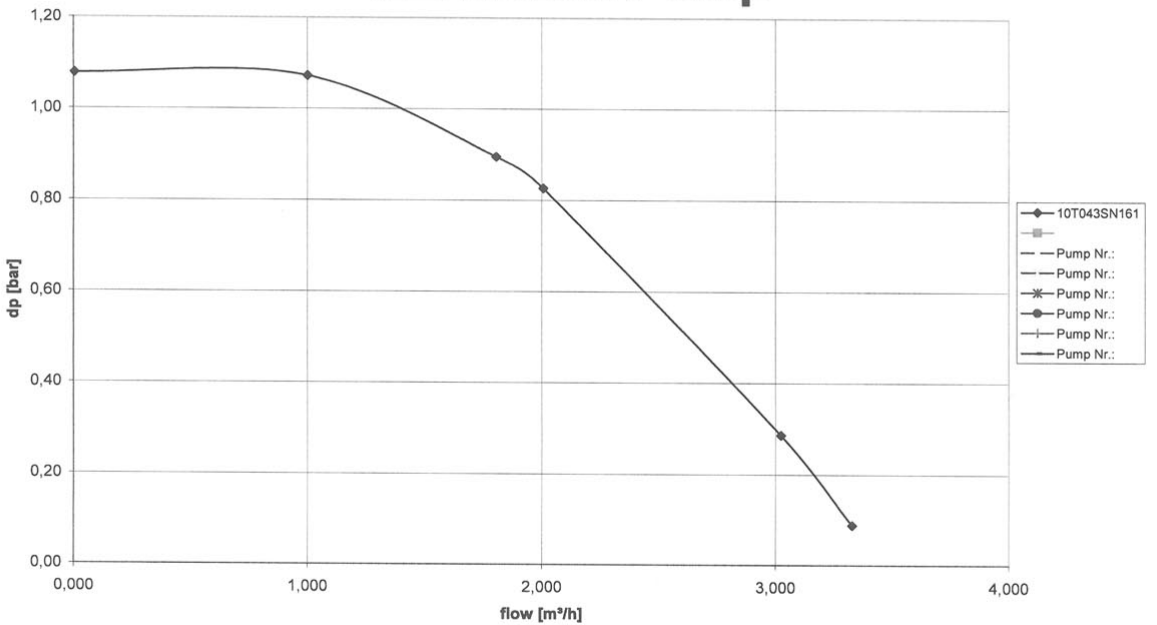
RENNtech	Pumpenmessung : 33-2010 1/2 Seiten	Datum: 24.02.2010
Teilebennenung: renn_icp-002	Hardware 1100G	Musterstand
Zeichnungsnummer: 7.02500.05.0	Software V01.02.00	
Auftragsabruf: 01/021/2010		

100%-geregelt

Einbaustelle	909	Q [m³/h]	dp [bar]	U [V]	Iges.DC [A]	n [1/min]	T1 Medium [°C]
Protokollnr.	8019476	3,328	0,088	13,53	9,060	7002	81,605
Pumpe	renn_icp-002	3,024	0,286	13,53	9,323	6982	79,949
K / SN-Nummer	50% Glykol / 50% Wasser	2,007	0,826	13,53	9,247	7013	80,654
Pump Nr.:	10T0435N161	1,807	0,895	13,53	8,927	7008	81,036
Empfänger:	Renntech Mercedes	1,002	1,072	13,53	7,178	7010	80,981
Medium	50% Glykol / 50% Wasser	0,004	1,078	13,53	4,284	7007	80,204
Rho Medium [kg/m³]	1036,0						
Protokollnr.							
Pumpe							
K / SN-Nummer							
Pump Nr.:							
Empfänger:							
Medium							
Rho Medium [kg/m³]							
Protokollnr.							
Pumpe							
K / SN-Nummer							
Pump Nr.:							
Empfänger:							
Medium							
Rho Medium [kg/m³]							
Protokollnr.							
Pumpe							
K / SN-Nummer							
Pump Nr.:							
Empfänger:							
Medium							
Rho Medium [kg/m³]							
Protokollnr.							
Pumpe							
K / SN-Nummer							
Pump Nr.:							
Empfänger:							
Medium							
Rho Medium [kg/m³]							
Protokollnr.							
Pumpe							
K / SN-Nummer							
Pump Nr.:							
Empfänger:							
Medium							
Rho Medium [kg/m³]							
Protokollnr.							
Pumpe							
K / SN-Nummer							
Pump Nr.:							
Empfänger:							
Medium							
Rho Medium [kg/m³]							
Protokollnr.							
Pumpe							
K / SN-Nummer							
Pump Nr.:							
Empfänger:							
Medium							
Rho Medium [kg/m³]							

RENNtech Pump

24.02.2010



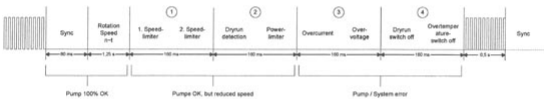
CAN diagnostics

The CAN diagnostics pull down the CAN line for specified time which represents the state of the pump. In case of no error or reduction only the pump speed or sync is displayed (= CAN diagnostics mode 0).

The following states can be displayed:

Item	Description	Category
Sync	80 ms duration; represents the start of the protocol	-
Rotation speed	Time proportional to actual speed (n~ t)	Speed information
1	1. or 2. speed limiter	Reduction
2	Dryrun detection or power limiter	Reduction
3	Overcurrent or overvoltage	Error
4	Dryrun switch off or overtemperature switch off	Error

CAN diagnostics protocol (mode 0):



CAN Interface

General

Supplier-Id: 0x0048

Function-Id: 0x8000

Initial NAD: 0x5A

Table of messages

Table1: Message overview

No.	Message	Pump => ECU	ECU => Pump	Message ID [hex]	default ID [hex]	default ID [Dez]	Typ
1	STATUS_AUWP	x		0x0010	0x38	56	Unconditional
2	VARIANT_AUWP		x	0x0011	0x3A	58	Unconditional
3	~~Control_AUWP_MS1~~		~~x~~	~~0x0001~~	~~Tbd.~~	~~Tbd.~~	~~Unconditional~~
4	Control_AUWP_MS2		x	0x0000	0x39	57	Unconditional
5	DBG_AUWP_RESP	x			0x3B	59	Unconditional
9	MasterReq		x		0x3C	60	Diagnostic
10	SlaveResp	x			0x3D	61	Diagnostic
11	**RENNtech**		x		0x3E	62	User-defined

General for this document: All functions/messages stated in grey are not functional implemented, they only serve as space holders for future implementations.

Status auxiliary waterpump

Message abbreviation:	STATUS_AUWP
Identifier:	56 (38h)
Message ID:	0x0010
Data length:	8 bytes
Transmitter:	Aux. waterpump
Receiver:	ECU

Message Layout:

	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte 7	COMM_ERR	ST_PRM_AUWP_LIN			NOD_ERR_AUWP_LIN		[illegible]	
Byte 6	ERR_ST_BLK_AUWP_LIN	ERR_ST_U_AUWP_LIN			ERR_ST_DRYR_AUWP_LIN		ERR_ST_OCU_AUWP_LIN	
Byte 5	ERR_ST_OTMP_AUWP_LIN	ST_EMMOD_IN_AUWP_LIN			ST_RPM_MONI_AUWP_LIN			
Byte 4	Current (I_AUWP_LIN)							
Byte 3	Temperature (TEMP_AUWP_LIN)							
Byte 2	Voltage (U_AUWP_LIN)							
Byte 1	Actual speed (AVL_VL_RPM_AUWP_LIN)							
Byte 0	Setspeed (ST_TARVL_RPM_AUWP_LIN)							

Variant auxiliary waterpump (VARIANT_AUWP)

Message abbreviation:	VARIANT_AUWP
Identifier:	58 (3Ah)
Message ID:	0x0011
Data length	2 bytes
Transmitter	Aux. waterpump
Receiver	ECU

Message Layout:

	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte 1	Reserved							
Byte 0	Version (VRS_AUWP_LIN)							

Control auxiliary waterpump message 2 (Control_AUWP_MS2)

Message abbreviation:	CONTROL_AUWP_MS1
Identifier:	57 (39h)
Message ID:	0x0000
Data length:	2 bytes
Transmitter:	ECU
Receiver:	Aux. waterpump

Message Layout:

	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte 1		FS_PRM_AUWP_LIN						
Byte 0	Setspeed (TARVL_RPM_AUWP_LIN)							