F	Sektion	SECTION F — MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING
F01	Untersektion	ENGINES OR PUMPS
F01	Klasse	MACHINES OR ENGINES IN GENERAL (combustion engines F02; machines for liquids F03, F04); ENGINE PLANTS IN GENERAL; STEAM ENGINES
F01P	Unterklasse	COOLING OF MACHINES OR ENGINES IN GENERAL; COOLING OF INTERNAL-COMBUSTION ENGINES (arrangements in connection with cooling of propulsion units in vehicles B60K 11/00; heat-transfer, heat-exchange or heat-storage materials C09K 5/00; heat-exchange in general, radiators F28)
		Air cooling; Liquid cooling (propelling cooling-air or liquid coolants F01P 5/00; controlling supply or circulation of coolants F01P 7/00; cylinders, pistons, valves, fuel injectors, sparking-plugs, or
		other engine or machine parts, modified to facilitate cooling, see the relevant classes for such
		parts)
F01P 1/00	Hauptgruppe	Air cooling
F01P 1/02	1-Punkt Untergruppe	. Arrangements for cooling cylinders or cylinder heads, e.g. ducting cooling-air from its pressure source to cylinders or along cylinders
F01P 1/04	1-Punkt Untergruppe	. Arrangements for cooling pistons
F01P 1/06	1-Punkt Untergruppe	. Arrangements for cooling other engine or machine parts
F01P 1/08	2-Punkt Untergruppe	for cooling intake or exhaust valves
F01P 1/10	2-Punkt Untergruppe	for cooling fuel injectors or sparking-plugs
F01P 3/00	Hauptgruppe	Liquid cooling
F01P 3/02	1-Punkt Untergruppe	. Arrangements for cooling cylinders or cylinder heads
F01P 3/04	2-Punkt Untergruppe	Liquid-to-air heat-exchangers combined with, or arranged on, cylinders or cylinder heads
F01P 3/06	1-Punkt Untergruppe	. Arrangements for cooling pistons
F01P 3/08	2-Punkt Untergruppe	Cooling of piston exterior only, e.g. by jets
F01P 3/10	2-Punkt Untergruppe	Cooling by flow of coolant through pistons
F01P 3/12	1-Punkt Untergruppe	. Arrangements for cooling other engine or machine parts
F01P 3/14	2-Punkt Untergruppe	for cooling intake or exhaust valves
F01P 3/16	2-Punkt Untergruppe	for cooling fuel injectors or sparking-plugs
F01P 3/18	1-Punkt Untergruppe	. Arrangement or mounting of liquid-to-air heat-exchangers (such arrangements on cylinders or cylinder heads F01P 3/04; relative to vehicles B60K 11/04)
F01P 3/20	1-Punkt Untergruppe	. Cooling circuits not specific to a single part of engine or machine (F01P 3/22 takes precedence)
F01P 3/22	1-Punkt Untergruppe	. characterised by evaporation and condensation of coolant in closed cycles (other cooling by evaporation F01P 9/02); characterised by the coolant reaching higher temperatures than normal atmospheric boiling-point
		Pumping cooling-air or liquid coolants; Controlling circulation or supply of coolants
F01P 5/00	Hauptgruppe	Pumping cooling-air or liquid coolants (controlling circulation or supply of coolants by influencing drive of pumps F01P 7/00)
F01P 5/02	1-Punkt Untergruppe	. Pumping cooling-air; Arrangements of cooling-air pumps, e.g. fans or blowers

FOIP 5:06 2-Punkt Untergruppe Purns-driving arrangements  FOIP 5:08 2-Punkt Untergruppe Use of engine exhaust gases for pumping cooling-air  FOIP 5:00 1-Punkt Untergruppe Pump-driving arrangements of coolant-pumps  FOIP 5:01 2-Punkt Untergruppe Pump-driving arrangements of coolant-pumps  FOIP 5:02 2-Punkt Untergruppe Pump-driving arrangements of coolant-pump drives, e.g. shutting engine down; Means for indicating functioning of coolant pumps  FOIP 7:00 Hauptgruppe Controlling of coolant flow  FOIP 7:00 1-Punkt Untergruppe the coolant being cooling-air  FOIP 7:00 2-Punkt Untergruppe by varying pump speed, e.g. by changing pump-drive gear ratio  FOIP 7:00 2-Punkt Untergruppe by varying pump speed, e.g. by changing pump-drive gear ratio  FOIP 7:00 2-Punkt Untergruppe by striving in or out of pumps  FOIP 7:01 2-Punkt Untergruppe by striving amount of air flowing through liquid to air heat exchangers  FOIP 7:12 3-Punkt Untergruppe by threatting amount of air flowing through liquid to air heat exchangers  FOIP 7:14 1-Punkt Untergruppe by threatting amount of air flowing through liquid for in, or of Interest apart from, groups  FOIP 9:00 2-Punkt Untergruppe by threatting flowing pertinent characteristics not provided for in, or of Interest apart from, groups  FOIP 9:00 1-Punkt Untergruppe by shermostatic control  FOIP 9:00 1-Punkt Untergruppe by simultaneous or alternative use of direct air cooling and liquid cooling froil 9:00 5:00 5:00 5:00 5:00 5:00 5:00 5:00	Symbol	Тур	Titel
F01P 5/10 1-Punkt Untergruppe Use of engine exhaust gases for pumping cooling-air  1-Punkt Untergruppe Pump-driving arrangements of coolant pumps  F01P 5/12 2-Punkt Untergruppe Pump-driving arrangements of coolant-pump drives, e.g. shutting engine down; Means for indicating functioning for coolant pumps  F01P 7/00 Hauptgruppe Controlling of coolant flow  F01P 7/00 1-Punkt Untergruppe by varying pump speed, e.g. by changing pump-drive gear ratio  F01P 7/00 2-Punkt Untergruppe by varying blade pltch  F01P 7/00 2-Punkt Untergruppe by varying blade pltch  F01P 7/00 2-Punkt Untergruppe by the coolant being cooling-air  F01P 7/00 2-Punkt Untergruppe by the coolant being cooling-air  F01P 7/10 2-Punkt Untergruppe by the coolant being liquid  F01P 7/10 2-Punkt Untergruppe by the coolant being liquid  F01P 7/10 2-Punkt Untergruppe by the mostatic control  F01P 7/11 1-Punkt Untergruppe by the mostatic control  F01P 7/10 2-Punkt Untergruppe by the mostatic control  F01P 9/00 Hauptgruppe by the mostatic control  F01P 9/00 1-Punkt Untergruppe by the coolant being liquid  F01P 9/00 1-Punkt Untergruppe by the mostatic control  F01P 9/00 1-Punkt Untergruppe by simultaneous or alternative use of direct air cooling and liquid cooling F02D 5000)  F01P 9/00 1-Punkt Untergruppe by simultaneous or alternative use of direct air cooling and liquid cooling (F01P 9/02 takes precedence)  F01P 1/100 1-Punkt Untergruppe by see of refrigerating apparatus, e.g. of compressor or absorber type  Component parts, details, or accessories, not provided for in, or of interest apart from, groups  F01P 1/100 1-Punkt Untergruppe by see of refrigerating apparatus, e.g. of compressor or absorber type  Component parts, details, or accessories, not provided for in, or of interest apart from, groups  F01P 1/100 1-Punkt Untergruppe Liquid-coolant overflow, venting, or draining devices (automatic draining during freezing conditions F01P 1/102  1-Punkt Untergruppe Liquid-c	F01P 5/04	2-Punkt Untergruppe	Pump-driving arrangements
FOIP 5/10	F01P 5/06	2-Punkt Untergruppe	Guiding or ducting air to or from ducted fans
F01P 5/12 2-Punkt Untergruppe . Pump-driving arrangements F01P 5/14 1-Punkt Untergruppe Controlling of coolant pumps F01P 7/00 Hauptgruppe Controlling of coolant pumps F01P 7/02 1-Punkt Untergruppe . the coolant being cooling-air F01P 7/04 2-Punkt Untergruppe . by varying pump speed, e.g. by changing pump-drive gear ratio F01P 7/06 2-Punkt Untergruppe . by varying blade pitch F01P 7/08 2-Punkt Untergruppe . by throttling amount of air flowing through liquid-to-air heat-exchangers F01P 7/10 2-Punkt Untergruppe . by throttling amount of air flowing through liquid-to-air heat-exchangers F01P 7/12 3-Punkt Untergruppe . by thermostatic control F01P 7/14 1-Punkt Untergruppe . by thermostatic control F01P 7/16 2-Punkt Untergruppe . by thermostatic control F01P 9/00 4-Punkt Untergruppe . by thermostatic control F01P 9/00 4-Punkt Untergruppe . cooling by exporation, e.g. by spraying water on to cylinders (exaporation and condensation of liquid coolant in closed cycles F01P 3/22) F01P 9/04 1-Punkt Untergruppe . by use of refrigerating apparatus, e.g. of compressor or absorber type F01P 11/00 4-Punkt Untergruppe . Unjudic-coolant overflow, venting, or draining devices (automatic draining during freezing conditions F01P 11/04 1-Punkt Untergruppe . Component parts, details, or accessories, not provided for in, or of interest apart from, groups F01P 11/04 1-Punkt Untergruppe . Component parts, details, or accessories, not provided for in, or of interest apart from, groups F01P 11/04 1-Punkt Untergruppe . Arrangements of liquid pipes or hoses F01P 11/04 1-Punkt Untergruppe . Cleaning (in general B088); Combating corrosion (in general C23F) F01P 11/09 1-Punkt Untergruppe . Filtering, cooling, or silencing cooling-air to or from liquid-to-air heat-exchangers F01P 11/14 1-Punkt Untergruppe . Filtering, cooling, or silencing cooling-air	F01P 5/08	2-Punkt Untergruppe	Use of engine exhaust gases for pumping cooling-air
FOIP 5/14 1-Punkt Untergruppe	F01P 5/10	1-Punkt Untergruppe	. Pumping liquid coolant; Arrangements of coolant pumps
Indicating functioning of coolant pumps	F01P 5/12	2-Punkt Untergruppe	Pump-driving arrangements
F01P 7/02 1. Punkt Untergruppe by varying pump speed, e.g. by changing pump-drive gear ratio F01P 7/08 2. Punkt Untergruppe by varying pump speed, e.g. by changing pump-drive gear ratio F01P 7/08 2. Punkt Untergruppe by the pump speed, e.g. by changing pump-drive gear ratio F01P 7/10 2. Punkt Untergruppe by the pump speed, e.g. by changing pump-drive gear ratio F01P 7/10 2. Punkt Untergruppe by the pump static control F01P 7/12 3. Punkt Untergruppe by thermostatic control F01P 7/14 1. Punkt Untergruppe by thermostatic control F01P 9/06 F01P 1/06 1. Punkt Untergruppe by thermostatic control F01P 9/00 F01P 9/00 1. Punkt Untergruppe by thermostatic control F01P 9/02 1. Punkt Untergruppe Cooling having pertinent characteristics not provided for in, or of interest apart from, groups F01P 1/00-F01P 7/00 (profiting from waste heat of combustion-engine cooling F02G 5/00) F01P 9/02 1. Punkt Untergruppe Cooling by evaporation, e.g. by spraying water on to cylinders (evaporation and condensation of liquid coolant in closed cycles F01P 3/22) F01P 9/04 1. Punkt Untergruppe by simultaneous or alternative use of direct air cooling and liquid cooling (F01P 9/02 takes precedence) F01P 11/00 Hauptgruppe Component parts, details, or accessories, not provided for in, or of interest apart from, groups F01P 1/00-F01P 9/00 F01P 11/02 1. Punkt Untergruppe Liquid-coolant overflow, venting, or draining devices (automatic draining during freezing conditions F01P 11/20) F01P 11/06 1. Punkt Untergruppe Arrangements of liquid pipes or hoses F01P 11/06 1. Punkt Untergruppe Arrangements of liquid pipes or hoses F01P 11/06 1. Punkt Untergruppe Arrangements of liquid pipes or hoses F01P 11/08 1. Punkt Untergruppe Arrangements of liquid pipes or hoses F01P 11/10 1. Punkt Untergruppe Arrangements of liquid pipes or hoses F01P 11/10 1. Punkt Untergruppe Filtering, cooling, or silencing cooling-air F01P 11/14 1. Punkt Untergruppe Filtering, cooling, or silencing cooling	F01P 5/14	1-Punkt Untergruppe	
F01P 7/04 2-Punkt Untergruppe by varying pump speed, e.g. by changing pump-drive gear ratio  2-Punkt Untergruppe by varying blade pitch  F01P 7/08 2-Punkt Untergruppe by cutting in or out of pumps  F01P 7/10 2-Punkt Untergruppe by throttling amount of air flowing through liquid-to-air heat-exchangers  F01P 7/12 3-Punkt Untergruppe by thermostatic control  F01P 7/14 1-Punkt Untergruppe by thermostatic control  F01P 7/16 2-Punkt Untergruppe by thermostatic control  F01P 9/00 Hauptgruppe Cooling having pertinent characteristics not provided for in, or of interest apart from, groups F01P 1/00-F01P 7/00 (profiting from waste heat of combustion-engine cooling F02G 5/00)  F01P 9/02 1-Punkt Untergruppe . Cooling by evaporation, e.g. by spraying water on to cylinders (evaporation and condensation of liquid coolant in closed cycles F01P 3/22)  F01P 9/04 1-Punkt Untergruppe . by simultaneous or alternative use of direct air cooling and liquid cooling (F01P 9/02 takes precedence)  F01P 11/00 Hauptgruppe Component parts, details, or accessories, not provided for in, or of interest apart from, groups F01P 11/00-F01P 9/00  F01P 11/00 1-Punkt Untergruppe . Liquid-coolant overflow, venting, or draining devices (automatic draining during freezing conditions F01P 11/20)  F01P 11/06 1-Punkt Untergruppe . Arrangements of liquid pipes or hoses F01P 11/06 1-Punkt Untergruppe . Cleaning (in general B08B); Combating corrosion (in general C23F) F01P 11/08 1-Punkt Untergruppe . Guiding or ducting cooling-air to or from liquid-to-air heat-exchangers  F01P 11/10 1-Punkt Untergruppe . Filtering, cooling, or silencing cooling-air F01P 11/14 1-Punkt Untergruppe . Indicating devices; Other safety devices	F01P 7/00	Hauptgruppe	Controlling of coolant flow
FOIP 7/06 2-Punkt Untergruppe by varying blade pitch FOIP 7/08 2-Punkt Untergruppe by cutting in or out of pumps FOIP 7/10 2-Punkt Untergruppe by throttling amount of air flowing through liquid-to-air heat-exchangers FOIP 7/12 3-Punkt Untergruppe by thermostatic control FOIP 7/14 1-Punkt Untergruppe by thermostatic control FOIP 7/16 2-Punkt Untergruppe by thermostatic control FOIP 9/00 Hauptgruppe Cooling having pertinent characteristics not provided for in, or of interest apart from, groups FOIP 1/00-FOIP 7/00 (profiting from waste heat of combustion-engine cooling FO26 5/00) FOIP 9/02 1-Punkt Untergruppe . Cooling by evaporation, e.g. by spraying water on to cylinders (evaporation and condensation of liquid coolant in closed cycles FOIP 3/22) FOIP 9/06 1-Punkt Untergruppe . by simultaneous or alternative use of direct air cooling and liquid cooling (FOIP 9/02 takes precedence) FOIP 9/06 1-Punkt Untergruppe . by use of refrigerating apparatus, e.g. of compressor or absorber type FOIP 11/00 Hauptgruppe Component parts, details, or accessories, not provided for in, or of interest apart from, groups FOIP 11/00-FOIP 9/00 FOIP 11/02 1-Punkt Untergruppe . Liquid-coolant overflow, venting, or draining devices (automatic draining during freezing conditions FOIP 11/20 1-Punkt Untergruppe . Arrangements of liquid pipes or hoses FOIP 11/08 1-Punkt Untergruppe . Cleaning (in general BO88): Combating corrosion (in general C23F) FOIP 11/08 1-Punkt Untergruppe . Arrangements of liquid-coolers (in lubrication apparatus FOIM) FOIP 11/10 1-Punkt Untergruppe . Filtering, cooling, or silencing cooling-air to or from liquid-to-air heat-exchangers FOIP 11/14 1-Punkt Untergruppe . Indicating devices; Other safety devices	F01P 7/02	1-Punkt Untergruppe	. the coolant being cooling-air
F01P 7/08 2-Punkt Untergruppe by cutting in or out of pumps F01P 7/10 2-Punkt Untergruppe by throttling amount of air flowing through liquid-to-air heat-exchangers F01P 7/12 3-Punkt Untergruppe by thermostatic control F01P 7/14 1-Punkt Untergruppe by thermostatic control F01P 7/16 2-Punkt Untergruppe by thermostatic control F01P 9/00 Hauptgruppe Cooling having pertinent characteristics not provided for in, or of interest apart from, groups F01P 1/00-F01P 7/00 (profiting from waste heat of combustion-engine cooling F02G 5/00) F01P 9/02 1-Punkt Untergruppe by spraying water on to cylinders (evaporation and condensation of liquid coolant in closed cycles F01P 3/22) F01P 9/04 1-Punkt Untergruppe by use of refrigerating apparatus, e.g. of compressor or absorber type F01P 11/00 Hauptgruppe Component parts, details, or accessories, not provided for in, or of interest apart from, groups F01P 11/02 1-Punkt Untergruppe Liquid-coolant overflow, venting, or draining devices (automatic draining during freezing conditions F01P 11/20) F01P 11/04 1-Punkt Untergruppe Arrangements of liquid pipes or hoses F01P 11/06 1-Punkt Untergruppe Cleaning (in general B08B); Combating corrosion (in general C23F) F01P 11/08 1-Punkt Untergruppe Guiding or ducting cooling-air to or from liquid-to-air heat-exchangers F01P 11/12 1-Punkt Untergruppe Filtering, cooling, or silencing cooling-air F01P 11/14 1-Punkt Untergruppe Filtering, cooling, or silencing cooling-air	F01P 7/04	2-Punkt Untergruppe	by varying pump speed, e.g. by changing pump-drive gear ratio
FOIP 7/10 2-Punkt Untergruppe by throttling amount of air flowing through liquid-to-air heat-exchangers  FOIP 7/12 3-Punkt Untergruppe by thermostatic control  FOIP 7/14 1-Punkt Untergruppe by thermostatic control  FOIP 7/16 2-Punkt Untergruppe by thermostatic control  FOIP 9/00 Hauptgruppe Cooling having pertinent characteristics not provided for in, or of interest apart from, groups FOIP 1/00-FOIP 7/00 (profitting from waste heat of combustion-engine cooling FOZG 5/00)  FOIP 9/00 1-Punkt Untergruppe by use of refrigerating apparatus, e.g. of compressor or absorber type  FOIP 11/00 Hauptgruppe Component parts, details, or accessories, not provided for in, or of interest apart from, groups FOIP 11/02 1-Punkt Untergruppe by use of refrigerating apparatus, e.g. of compressor or absorber type  FOIP 11/00 Hauptgruppe Component parts, details, or accessories, not provided for in, or of interest apart from, groups FOIP 11/02 1-Punkt Untergruppe Liquid-coolant overflow, venting, or draining devices (automatic draining during freezing conditions FOIP 11/20)  1-Punkt Untergruppe Arrangements of liquid pipes or hoses  FOIP 11/06 1-Punkt Untergruppe Arrangements of liquid pipes or hoses  FOIP 11/10 1-Punkt Untergruppe Arrangements of liquid cooling-air to or from liquid-to-air heat-exchangers  FOIP 11/10 1-Punkt Untergruppe Guiding or ducting cooling-air to or from liquid-to-air heat-exchangers  FOIP 11/14 1-Punkt Untergruppe Filtering, cooling, or silencing cooling-air  FOIP 11/14 1-Punkt Untergruppe Filtering, cooling, or silencing cooling-air	F01P 7/06	2-Punkt Untergruppe	by varying blade pitch
FOIP 7/12 3-Punkt Untergruppe by thermostatic control  1-Punkt Untergruppe by thermostatic control  2-Punkt Untergruppe by thermostatic control  Cooling having pertinent characteristics not provided for in, or of interest apart from, groups FOIP 1/00-FOIP 7/00 (profiting from waste heat of combustion-engine cooling FO2G 5/00)  1-Punkt Untergruppe Cooling by evaporation, e.g. by spraying water on to cylinders (evaporation and condensation of liquid cooling for 19/04 (coolant in closed cycles FOIP 3/22)  FOIP 9/04 1-Punkt Untergruppe by simultaneous or alternative use of direct air cooling and liquid cooling (FOIP 9/02 takes precedence)  FOIP 9/06 1-Punkt Untergruppe by use of refrigerating apparatus, e.g. of compressor or absorber type  FOIP 11/00 Hauptgruppe Component parts, details, or accessories, not provided for in, or of interest apart from, groups FOIP 1/00-FOIP 9/00  1-Punkt Untergruppe Liquid-coolant overflow, venting, or draining devices (automatic draining during freezing conditions FOIP 11/20)  1-Punkt Untergruppe Arrangements of liquid pipes or hoses  FOIP 11/08 1-Punkt Untergruppe Arrangements of lubricant coolers (in lubrication apparatus FOIM) 1-Punkt Untergruppe Guiding or ducting cooling-air to or from liquid-to-air heat-exchangers  FOIP 11/12 1-Punkt Untergruppe Filtering, cooling-air to or from liquid-to-air heat-exchangers  FOIP 11/14 1-Punkt Untergruppe Indicating devices; Other safety devices	F01P 7/08	2-Punkt Untergruppe	by cutting in or out of pumps
F01P 7/14 1-Punkt Untergruppe . the coolant being liquid F01P 7/16 2-Punkt Untergruppe by thermostatic control  Cooling having pertinent characteristics not provided for in, or of interest apart from, groups F01P 1/00-F01P 7/00 (profiting from waste heat of combustion-engine cooling F02C 5/00) F01P 9/02 1-Punkt Untergruppe . Cooling by evaporation, e.g. by spraying water on to cylinders (evaporation and condensation of liquid coolant in closed cycles F01P 3/22) F01P 9/04 1-Punkt Untergruppe . by simultaneous or alternative use of direct air cooling and liquid cooling (F01P 9/02 takes precedence) F01P 9/06 1-Punkt Untergruppe . by use of refrigerating apparatus, e.g. of compressor or absorber type F01P 11/00 Hauptgruppe Component parts, details, or accessories, not provided for in, or of interest apart from, groups F01P 11/00-F01P 9/00 F01P 11/02 1-Punkt Untergruppe . Liquid-coolant overflow, venting, or draining devices (automatic draining during freezing conditions F01P 11/20 1-Punkt Untergruppe . Arrangements of liquid pipes or hoses F01P 11/06 1-Punkt Untergruppe . Cleaning (in general B08B); Combating corrosion (in general C23F) F01P 11/08 1-Punkt Untergruppe . Guiding or ducting cooling-air to or from liquid-to-air heat-exchangers F01P 11/12 1-Punkt Untergruppe . Filtering, cooling, or silencing cooling-air F01P 11/14 1-Punkt Untergruppe . Indicating devices; Other safety devices	F01P 7/10	2-Punkt Untergruppe	by throttling amount of air flowing through liquid-to-air heat-exchangers
FOIP 7/16 2-Punkt Untergruppe Cooling having pertinent characteristics not provided for in, or of interest apart from, groups FOIP 1/00-FOIP 7/00 (profiting from waste heat of combustion-engine cooling FO2G 5/00) FOIP 9/02 1-Punkt Untergruppe Cooling by evaporation, e.g. by spraying water on to cylinders (evaporation and condensation of liquid coolant in closed cycles FOIP 3/22) FOIP 9/04 1-Punkt Untergruppe by simultaneous or alternative use of direct air cooling and liquid cooling (FOIP 9/02 takes precedence) FOIP 9/06 1-Punkt Untergruppe Component parts, details, or accessories, not provided for in, or of interest apart from, groups FOIP 11/00 FOIP 11/02 1-Punkt Untergruppe Liquid-coolant overflow, venting, or draining devices (automatic draining during freezing conditions FOIP 11/20) FOIP 11/04 1-Punkt Untergruppe Cleaning (in general BOBB); Combating corrosion (in general C23F) FOIP 11/10 1-Punkt Untergruppe Cleaning or ducting cooling-air to or from liquid-to-air heat-exchangers FOIP 11/12 1-Punkt Untergruppe Filtering, cooling, or silencing cooling-air FOIP 11/14 1-Punkt Untergruppe Indicating devices; Other safety devices	F01P 7/12	3-Punkt Untergruppe	by thermostatic control
F01P 9/00  Hauptgruppe Cooling having pertinent characteristics not provided for in, or of interest apart from, groups F01P 1/00-F01P 7/00 (profiting from waste heat of combustion-engine cooling F02G 5/00)  F01P 9/02  1-Punkt Untergruppe Cooling by evaporation, e.g. by spraying water on to cylinders (evaporation and condensation of liquid coolant in closed cycles F01P 3/22)  F01P 9/04  1-Punkt Untergruppe by use of refrigerating apparatus, e.g. of compressor or absorber type  F01P 11/00  Hauptgruppe Component parts, details, or accessories, not provided for in, or of interest apart from, groups F01P 1/00-F01P 9/00  F01P 11/02  1-Punkt Untergruppe Liquid-coolant overflow, venting, or draining devices (automatic draining during freezing conditions F01P 11/20)  F01P 11/04  1-Punkt Untergruppe Arrangements of liquid pipes or hoses  F01P 11/06  1-Punkt Untergruppe Cleaning (in general B08B); Combating corrosion (in general C23F)  F01P 11/10  1-Punkt Untergruppe Guiding or ducting cooling-air to or from liquid-to-air heat-exchangers  F01P 11/12  1-Punkt Untergruppe Lidicating devices; Other safety devices	F01P 7/14	1-Punkt Untergruppe	. the coolant being liquid
F01P 1/00-F01P 7/00 (profiting from waste heat of combustion-engine cooling F02G 5/00)  F01P 9/02 1-Punkt Untergruppe . Cooling by evaporation, e.g. by spraying water on to cylinders (evaporation and condensation of liquid coolant in closed cycles F01P 3/22)  F01P 9/04 1-Punkt Untergruppe . by simultaneous or alternative use of direct air cooling and liquid cooling (F01P 9/02 takes precedence)  F01P 9/06 1-Punkt Untergruppe . by use of refrigerating apparatus, e.g. of compressor or absorber type  F01P 11/00 Hauptgruppe Component parts, details, or accessories, not provided for in, or of interest apart from, groups F01P 1/00-F01P 9/00  F01P 11/02 1-Punkt Untergruppe . Liquid-coolant overflow, venting, or draining devices (automatic draining during freezing conditions F01P 11/20)  F01P 11/04 1-Punkt Untergruppe . Arrangements of liquid pipes or hoses  F01P 11/06 1-Punkt Untergruppe . Cleaning (in general B08B); Combating corrosion (in general C23F)  F01P 11/10 1-Punkt Untergruppe . Arrangements of lubricant coolers (in lubrication apparatus F01M)  F01P 11/10 1-Punkt Untergruppe . Guiding or ducting cooling-air to or from liquid-to-air heat-exchangers  F01P 11/12 1-Punkt Untergruppe . Filtering, cooling, or silencing cooling-air  F01P 11/14 1-Punkt Untergruppe . Indicating devices; Other safety devices	F01P 7/16	2-Punkt Untergruppe	by thermostatic control
coolant in closed cycles F01P 3/22)  1-Punkt Untergruppe by simultaneous or alternative use of direct air cooling and liquid cooling (F01P 9/02 takes precedence)  1-Punkt Untergruppe by use of refrigerating apparatus, e.g. of compressor or absorber type  F01P 11/00 Hauptgruppe Component parts, details, or accessories, not provided for in, or of interest apart from, groups F01P 11/00-F01P 9/00  1-Punkt Untergruppe Liquid-coolant overflow, venting, or draining devices (automatic draining during freezing conditions F01P 11/20)  F01P 11/04 1-Punkt Untergruppe Arrangements of liquid pipes or hoses  F01P 11/06 1-Punkt Untergruppe Arrangements of lubricant coolers (in lubrication apparatus F01M)  F01P 11/10 1-Punkt Untergruppe Guiding or ducting cooling-air to or from liquid-to-air heat-exchangers  F01P 11/12 1-Punkt Untergruppe Indicating devices; Other safety devices	F01P 9/00	Hauptgruppe	
F01P 11/00  Hauptgruppe Component parts, details, or accessories, not provided for in, or of interest apart from, groups F01P 11/02 1-Punkt Untergruppe Liquid-coolant overflow, venting, or draining devices (automatic draining during freezing conditions F01P 11/20)  F01P 11/04 1-Punkt Untergruppe Arrangements of liquid pipes or hoses F01P 11/06 1-Punkt Untergruppe Cleaning (in general B08B); Combating corrosion (in general C23F) F01P 11/08 1-Punkt Untergruppe Arrangements of lubricant coolers (in lubrication apparatus F01M) F01P 11/10 1-Punkt Untergruppe Guiding or ducting cooling-air to or from liquid-to-air heat-exchangers F01P 11/12 1-Punkt Untergruppe Indicating devices; Other safety devices	F01P 9/02	1-Punkt Untergruppe	
F01P 11/00 Hauptgruppe Component parts, details, or accessories, not provided for in, or of interest apart from, groups F01P 11/00-F01P 9/00 F01P 11/02 1-Punkt Untergruppe Liquid-coolant overflow, venting, or draining devices (automatic draining during freezing conditions F01P 11/20) F01P 11/04 1-Punkt Untergruppe Arrangements of liquid pipes or hoses F01P 11/06 1-Punkt Untergruppe Component parts, details, or accessories, not provided for in, or of interest apart from, groups F01P 11/20  1-Punkt Untergruppe Arrangements of liquid pipes or hoses F01P 11/06 1-Punkt Untergruppe Arrangements of liquid pipes or hoses F01P 11/08 1-Punkt Untergruppe Arrangements of lubricant coolers (in lubrication apparatus F01M) F01P 11/10 1-Punkt Untergruppe F01P 11/12 1-Punkt Untergruppe Filtering, cooling, or silencing cooling-air F01P 11/14 1-Punkt Untergruppe Indicating devices; Other safety devices	F01P 9/04	1-Punkt Untergruppe	. by simultaneous or alternative use of direct air cooling and liquid cooling (F01P 9/02 takes precedence)
F01P 11/02 1-Punkt Untergruppe Liquid-coolant overflow, venting, or draining devices (automatic draining during freezing conditions F01P 11/20)  F01P 11/04 1-Punkt Untergruppe . Arrangements of liquid pipes or hoses  F01P 11/06 1-Punkt Untergruppe . Cleaning (in general B08B); Combating corrosion (in general C23F)  F01P 11/08 1-Punkt Untergruppe . Arrangements of lubricant coolers (in lubrication apparatus F01M)  F01P 11/10 1-Punkt Untergruppe . Guiding or ducting cooling-air to or from liquid-to-air heat-exchangers  F01P 11/12 1-Punkt Untergruppe . Filtering, cooling, or silencing cooling-air  F01P 11/14 1-Punkt Untergruppe . Indicating devices; Other safety devices	F01P 9/06	1-Punkt Untergruppe	. by use of refrigerating apparatus, e.g. of compressor or absorber type
F01P 11/04 1-Punkt Untergruppe . Arrangements of liquid pipes or hoses  F01P 11/06 1-Punkt Untergruppe . Cleaning (in general B08B); Combating corrosion (in general C23F)  F01P 11/08 1-Punkt Untergruppe . Arrangements of lubricant coolers (in lubrication apparatus F01M)  F01P 11/10 1-Punkt Untergruppe . Guiding or ducting cooling-air to or from liquid-to-air heat-exchangers  F01P 11/12 1-Punkt Untergruppe . Filtering, cooling, or silencing cooling-air  F01P 11/14 1-Punkt Untergruppe . Indicating devices; Other safety devices	F01P 11/00	Hauptgruppe	
F01P 11/06  1-Punkt Untergruppe  . Cleaning (in general B08B); Combating corrosion (in general C23F)  F01P 11/08  1-Punkt Untergruppe  . Arrangements of lubricant coolers (in lubrication apparatus F01M)  F01P 11/10  1-Punkt Untergruppe  . Guiding or ducting cooling-air to or from liquid-to-air heat-exchangers  F01P 11/12  1-Punkt Untergruppe  . Filtering, cooling, or silencing cooling-air  F01P 11/14  1-Punkt Untergruppe  . Indicating devices; Other safety devices	F01P 11/02	1-Punkt Untergruppe	1 3 3
F01P 11/08 1-Punkt Untergruppe . Arrangements of lubricant coolers (in lubrication apparatus F01M)  F01P 11/10 1-Punkt Untergruppe . Guiding or ducting cooling-air to or from liquid-to-air heat-exchangers  F01P 11/12 1-Punkt Untergruppe . Filtering, cooling, or silencing cooling-air  F01P 11/14 1-Punkt Untergruppe . Indicating devices; Other safety devices	F01P 11/04	1-Punkt Untergruppe	. Arrangements of liquid pipes or hoses
F01P 11/10 1-Punkt Untergruppe . Guiding or ducting cooling-air to or from liquid-to-air heat-exchangers  F01P 11/12 1-Punkt Untergruppe . Filtering, cooling, or silencing cooling-air  F01P 11/14 1-Punkt Untergruppe . Indicating devices; Other safety devices	F01P 11/06	1-Punkt Untergruppe	. Cleaning (in general B08B); Combating corrosion (in general C23F)
F01P 11/12 1-Punkt Untergruppe . Filtering, cooling, or silencing cooling-air  F01P 11/14 1-Punkt Untergruppe . Indicating devices; Other safety devices	F01P 11/08	1-Punkt Untergruppe	. Arrangements of lubricant coolers (in lubrication apparatus F01M)
F01P 11/14 1-Punkt Untergruppe . Indicating devices; Other safety devices	F01P 11/10	1-Punkt Untergruppe	. Guiding or ducting cooling-air to or from liquid-to-air heat-exchangers
	F01P 11/12	1-Punkt Untergruppe	. Filtering, cooling, or silencing cooling-air
F01P 11/16 2-Punkt Untergruppe concerning coolant temperature (F01P 11/20 takes precedence)	F01P 11/14	1-Punkt Untergruppe	. Indicating devices; Other safety devices
	F01P 11/16	2-Punkt Untergruppe	concerning coolant temperature (F01P 11/20 takes precedence)
F01P 11/18 2-Punkt Untergruppe concerning coolant pressure, coolant flow, or liquid-coolant level	F01P 11/18	2-Punkt Untergruppe	concerning coolant pressure, coolant flow, or liquid-coolant level
F01P 11/20 2-Punkt Untergruppe concerning atmospheric freezing conditions, e.g. automatically draining or heating during frosty weather	F01P 11/20	2-Punkt Untergruppe	concerning atmospheric freezing conditions, e.g. automatically draining or heating during frosty weather