

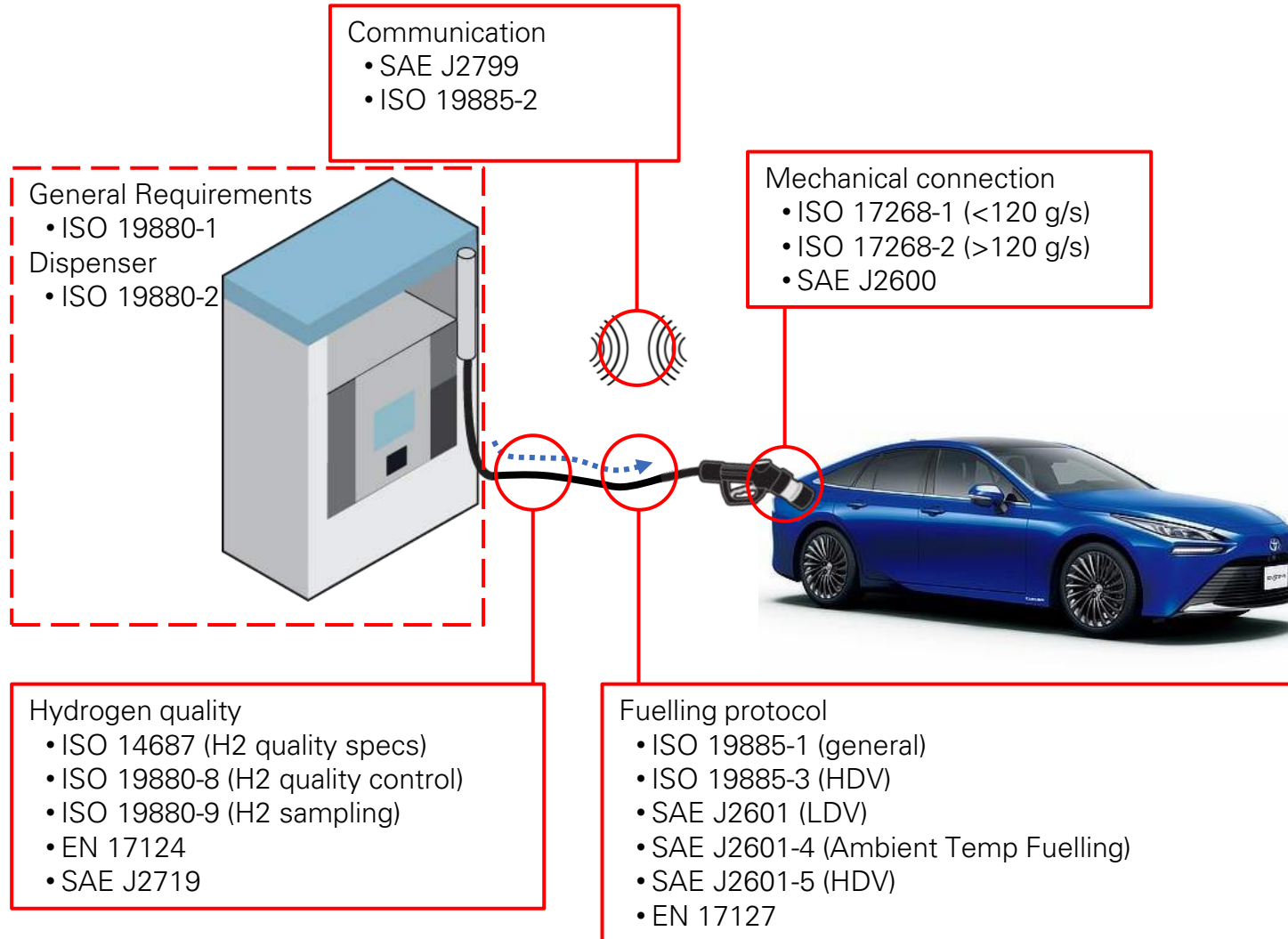
# H2 FUELLING STANDARDS

**VINCENT MATTELAER**

*SENIOR ENGINEER*

**TOYOTA**

# STANDARDS ON INTER-OPERABILITY BETWEEN VEHICLE AND DISPENSER FOR CGH2



This presentation will not cover:

- Liquid fuelling
- Cryo-compressed gas fuelling
- Standards of the tank system (ISO 19881, UNR 134, ISO 19882)
- Standards of the vehicle fuelling system (e.g. ISO 19887)
- Standards of the dispenser or station. (e.g. 19880-1, -2)

# ISO/TC197/WG5 ISO 17268



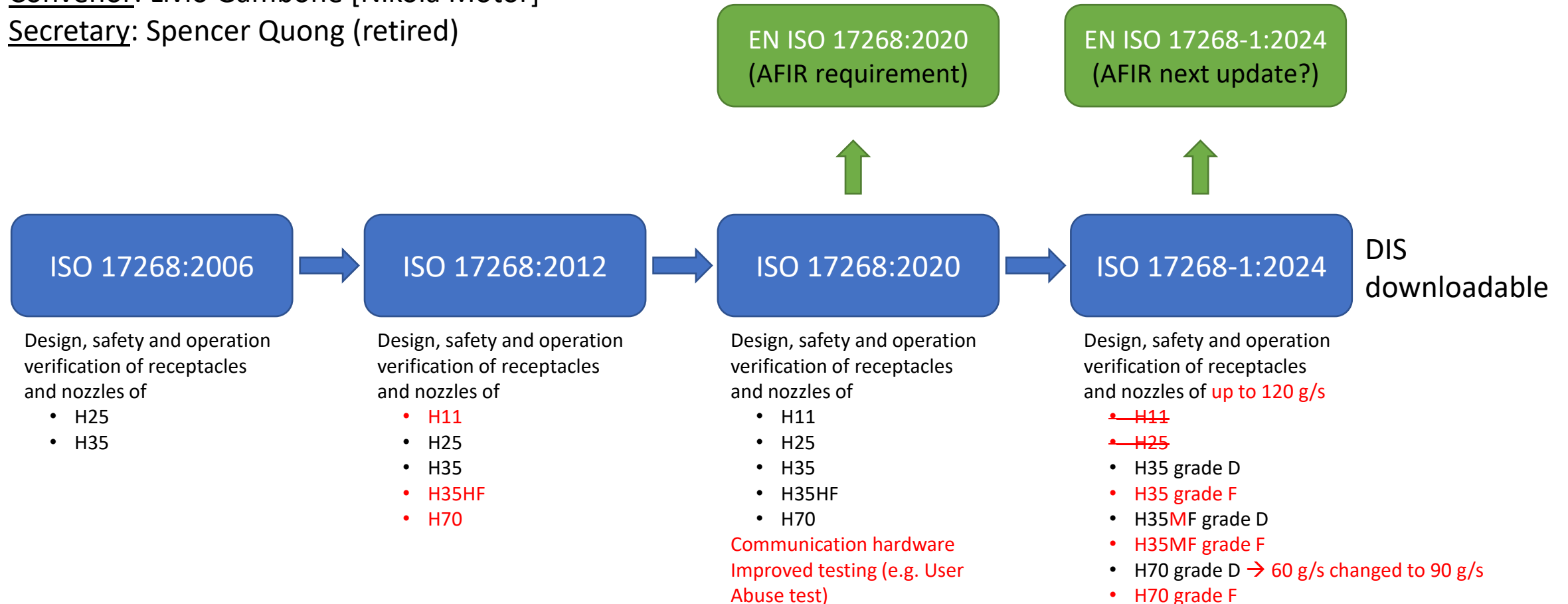
WG5 defines the mechanical connection between vehicle and dispenser

# ISO/TC197/WG5 ISO 17268

## WG5

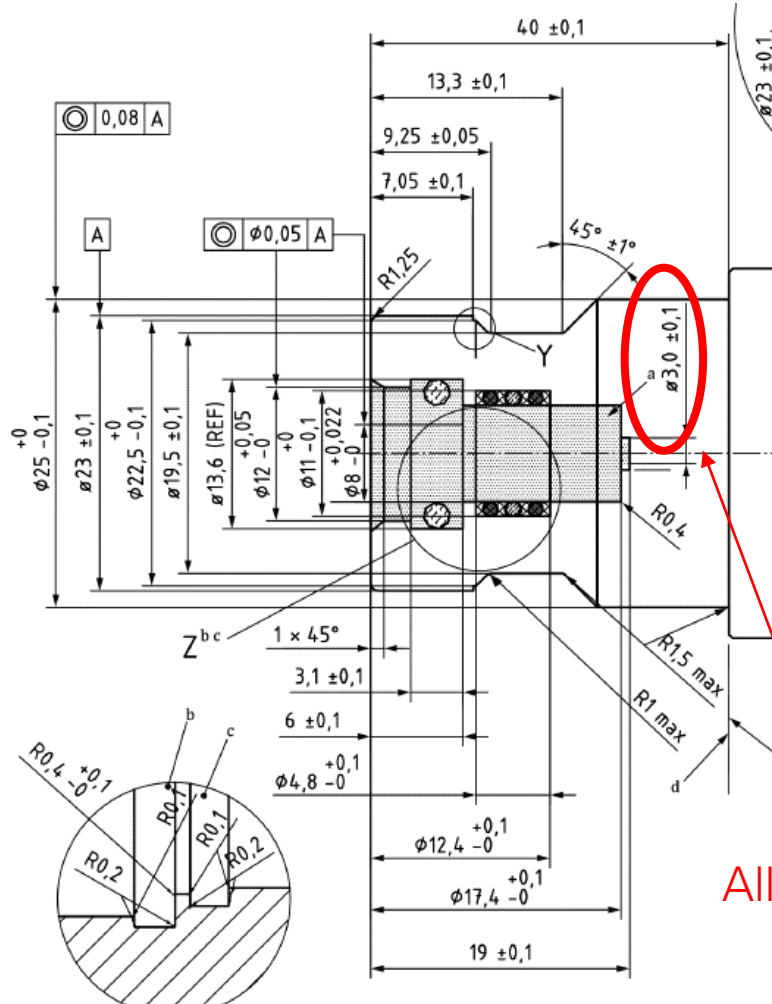
Convenor: Livio Gambone [Nikola Motor]

Secretary: Spencer Quong (retired)



# ISO/TC197/WG5 ISO 17268

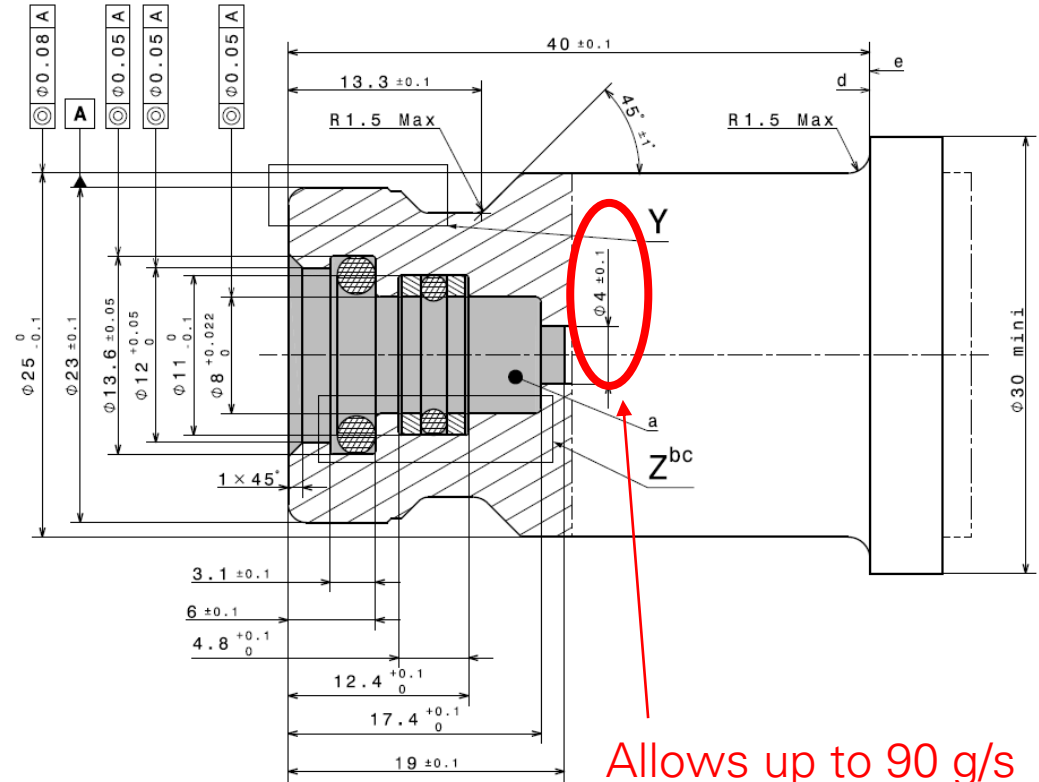
ISO 17268:2020



Replace

Allows up to 60 g/s

ISO 17268-1:2024



Allows up to 90 g/s

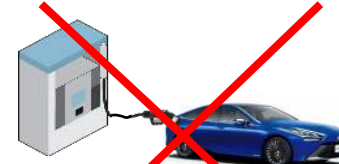
# ISO/TC197/WG5    ISO 17268



700 bar    700 bar  
60 g/s    60 g/s



350 bar    700 bar  
60 g/s    60 g/s



~~350 bar    700 bar  
120 g/s    60 g/s~~



~~700 bar    350 bar  
60 g/s    120 g/s~~



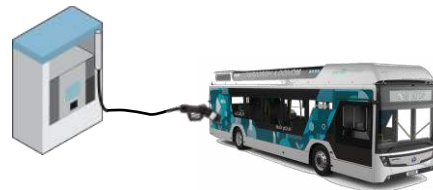
350 bar    350 bar  
60 g/s    120 g/s



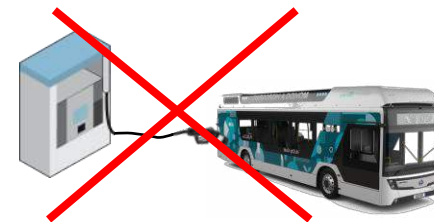
350 bar    350 bar  
120 g/s    120 g/s



~~700 bar    350 bar  
60 g/s    60 g/s~~



350 bar    350 bar  
60 g/s    60 g/s



~~350 bar    350 bar  
120 g/s    60 g/s~~

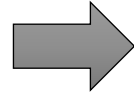
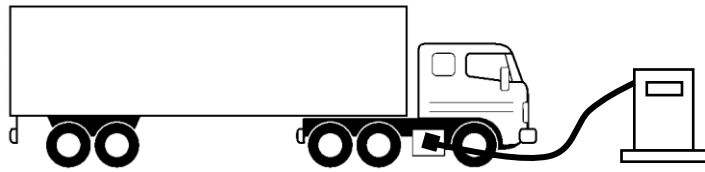
# ISO/TC197/WG5 ISO 17268

## ISO 17268-2

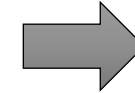
Receptacle and nozzle for **HIGH-FLOW** applications.

- 4 different prototypes available
- Discussions concerning dimensions, specifications and tests still need to start
- Current target date: 12/2026

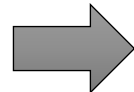
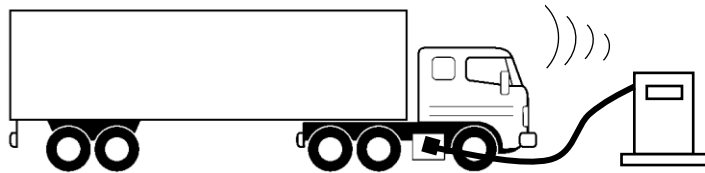
# STANDARDS ON COMMUNICATION



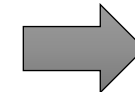
No communication



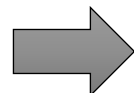
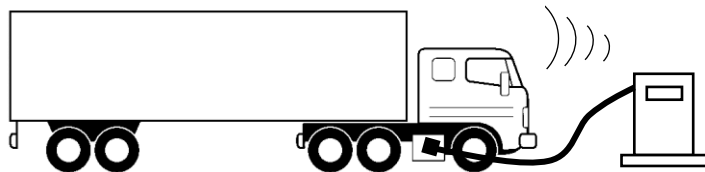
Low Speed  
Low SOC



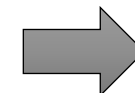
SAE J2799 v1.00, 1.10  
IrDA MT, MP, TV, RT



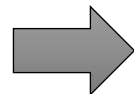
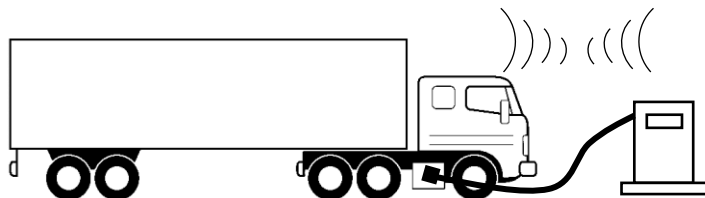
Normal performance  
Good SOC



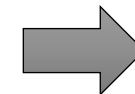
SAE J2799 v2.0  
IrDA MT, MP, TV, RT, OD  
TV: expanded up to 9999.9 L  
OD: includes protocol, FXXX and TVL



Better performance  
Good SOC



ISO 19885-2  
Advanced communication



Best performance  
Good SOC

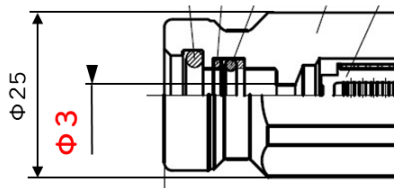


# SAE J2601 PROTOCOL FOR H70

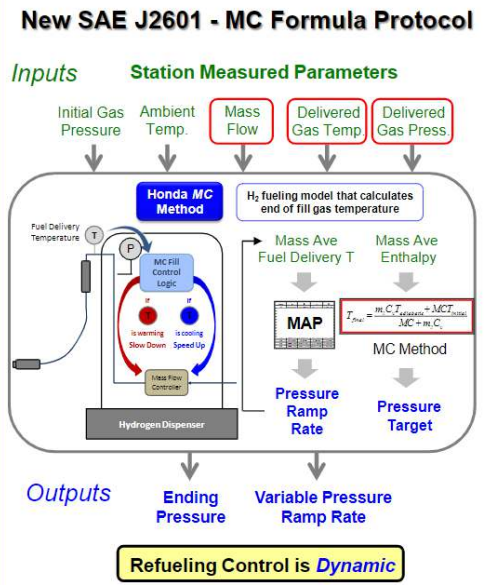
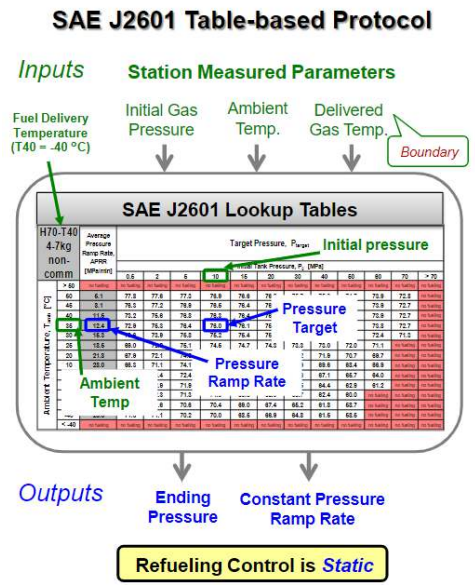
Pressure Class Designation	H70			
CHSS Capacity Range (Litres)	49.7 - 99.4	99.4 – 174.0	174.0 – 248.6	>248.6
CHSS Capacity Range (kg)	2 to 4	4 to 7	7 to 10	>10
CHSS Capacity Category	A	B	C	D
Maximum Flow Rate (g/s)	≤60	≤60	≤60	≤60
Fuel Delivery Temperature Category	T20, T30, T40	T20, T30, T40	T20, T30, T40	T20D, T30D, T40D

Category D will be removed in SAE J2601:2024.  
Category D will become a part of SAE J2601-5.

ISO 17268:2020  
H70\_F60



Review of SAE J2601 in 2024



Due to limitations on the maximum flow rate (60 g/s), D-category fuelling is not practical above 20~30 kg total tank capacity.

# SAE J2601-5:2023

Pressure Class Designation	H35	H70		
Protocol Name	MCF-HF-G	Category D HF	MCF-HF-G	
CHSS Capacity Range (Litres)	248.6 to 7500	248.6 to 5000		
CHSS Capacity Range (kg)	5.97 to 180	10 to 201		
Single Tank Size (Litres)	50 to 1000	50 to 800		
Maximum Flow Rate Class (g/s) COMM	FM120	FM90	FM90	FM300
Maximum Flow Rate Class (g/s) NON-COMM	FM120	FM60	FM60	FM300
Coupling Type	H35HF	H70 (4mm)	H70 (4mm)	H70HF
Fuel Delivery Temperature Category	Ta, T0, T10, T20, T30, T40	T20D, T30D, T40D	T0, T10, T20, T30, T40	

Ta: 0°C to 20°C

T0: -10°C to 0°C

T10: -17.5°C to -10°C

T20: -26°C to -17.5°C

T30: -33°C to -26°C

T40: -40°C to -33°C

T20D: -40°C to -17.5°C

T30D: -40°C to -26°C

T40D: -40°C to -33°C



# ISO/TC197/WG24 ISO 19885-3

