



SURFACE VEHICLE RECOMMENDED PRACTICE

J641™

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Hydrodynamic Drives Terminology

RATIONALE

SAE J641 is revised to update wording and figures.

1. SCOPE

Since the torque converter and fluid coupling are commonly used components of automatic transmissions in industry, SAE appointed a committee to standardize terminology, test procedures, data recording, design symbols, and so forth in this field. The following committee recommendations will facilitate a clear understanding for engineering discussions, comparisons, and the preparation of technical papers.

The recommended usages represent the predominant practice or the acceptable practice. Where agreement is not complete, alternates have been included for clarification.

EXAMPLE: Two systems of blade angle designations are described. Consequently, when a blade angle is specified, the system should be designated.

This SAE Recommended Practice deals only with the physical parts and dimensions and does not attempt to standardize the design considerations, such as the actual fluid flow angle resulting from the physical blade shape.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (U.S. and Canada only) or +1 724-776-4970 (Outside U.S. and Canada), www.sae.org.

SAE J1087 One-Way Clutches - Nomenclature and Terminology

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3. DEFINITIONS

3.1 HYDRODYNAMIC DRIVE

In contrast with electrical or mechanical drives, a hydrodynamic drive transmits power solely by dynamic fluid action in a closed recirculating path.

3.2 FLUID COUPLING

A hydrodynamic drive that transmits power without ability to change torque. (Ideal torque ratio is 1:1 at all speed ratios.) See Figure 1.

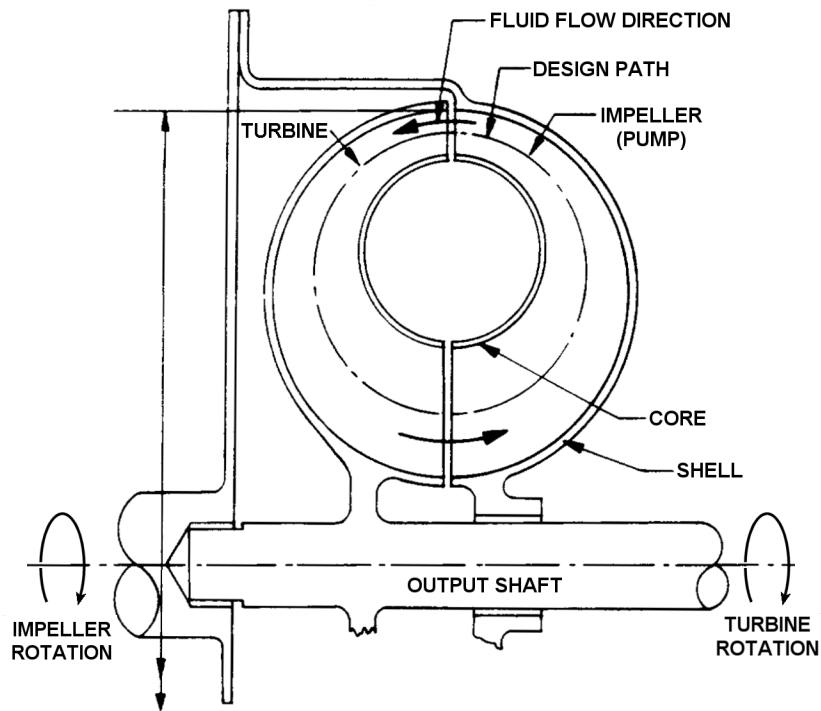


Figure 1 - Fluid coupling

3.3 TORQUE CONVERTER

A hydrodynamic drive that transmits power with ability to multiply torque. (Torque ratio changes as speed ratio changes.) See Figure 2.

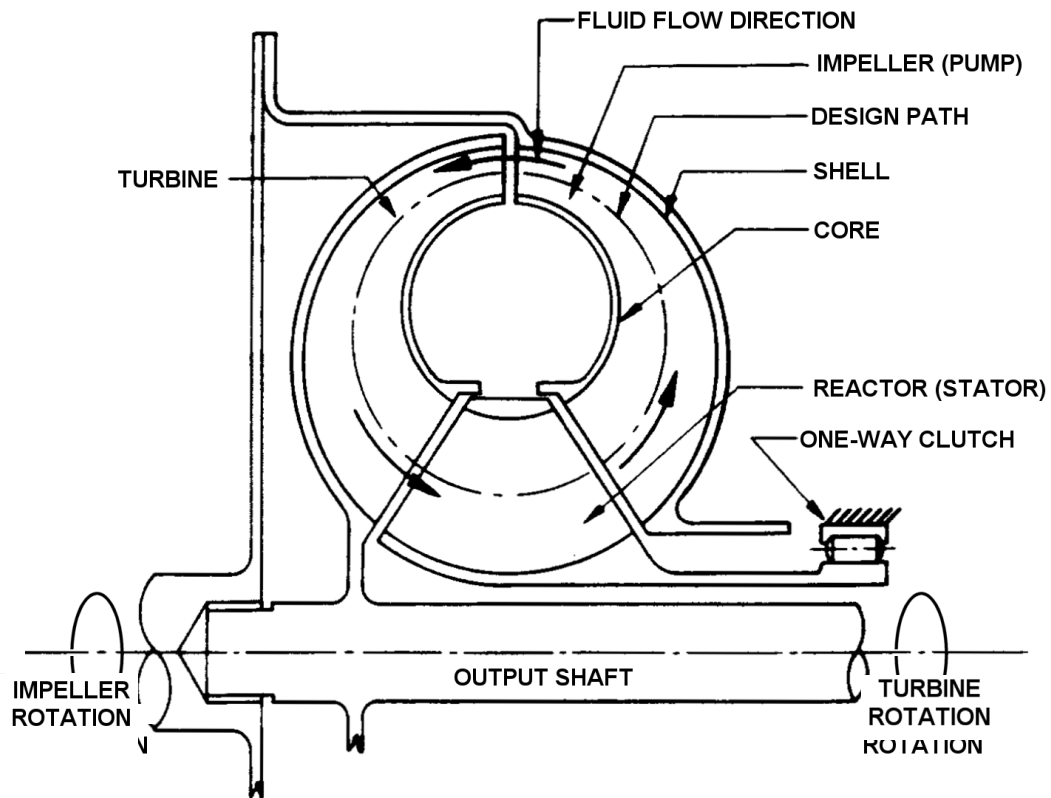


**Figure 2 - Two-phase, single-stage torque converter
(single-phase, single-stage if one-way clutch is deleted)**

3.4 ELEMENT

An element consists of a single row of flow directing blades. See Figure 3.

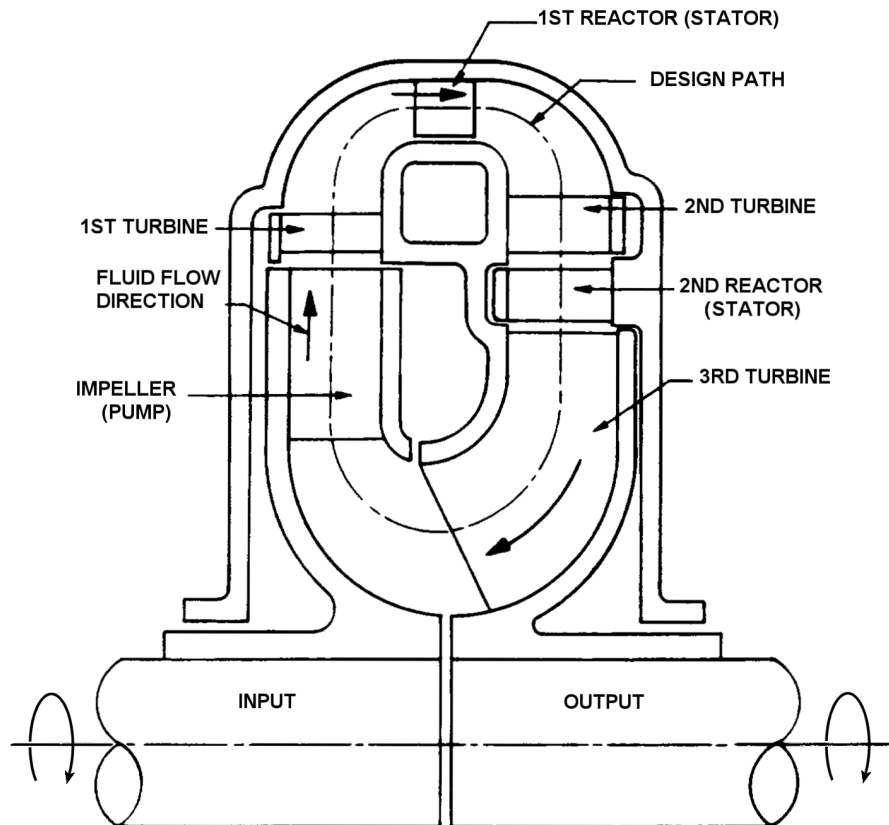


Figure 3 - Three-member, six-element, single-phase, three-stage torque converter

3.5 MEMBER

A member is an independently rotating element of a hydrodynamic unit such as an impeller (pump), reactor (stator), or turbine. It may comprise one or more elements. See Figure 3.

3.6 STAGE (SINGLE-, TWO-, THREE-, ETC.)

A stage is a turbine element interposed between elements of other members. The number of stages is the number of such elements of the turbine member. See Figures 2 and 3.

3.7 PHASE (SINGLE-, TWO-, THREE-, ETC.)

Applied to a torque converter, refers to the number of functional arrangements of the working elements when the functional change is produced by a one-way clutch or other mechanical means such as a clutch or brake. See Figures 2 and 3.

3.8 IMPELLER (PUMP)

Designates the power input member.

3.9 TURBINE

Designates the output member.