

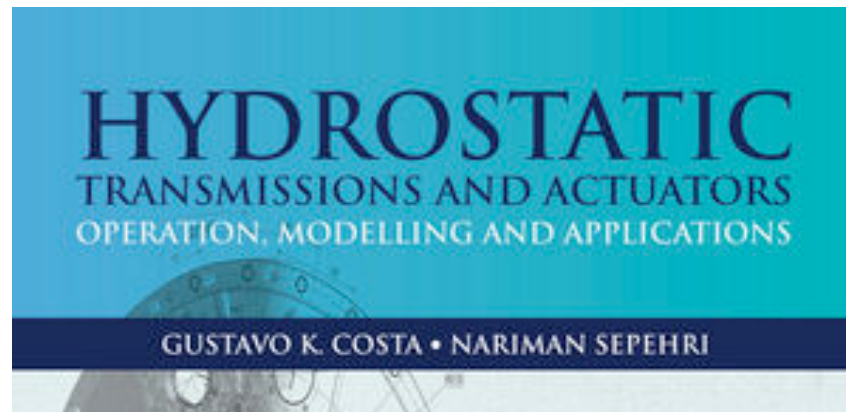
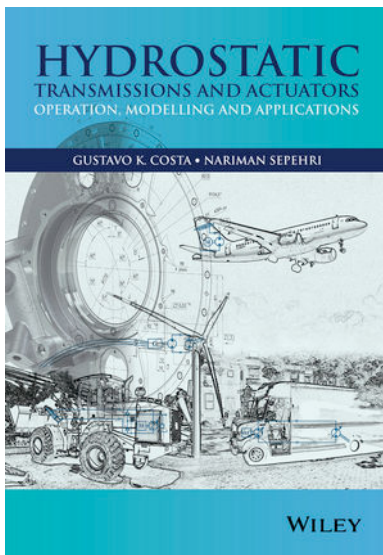
# Hydrostatic Transmissions and Actuators

Overview and Applications

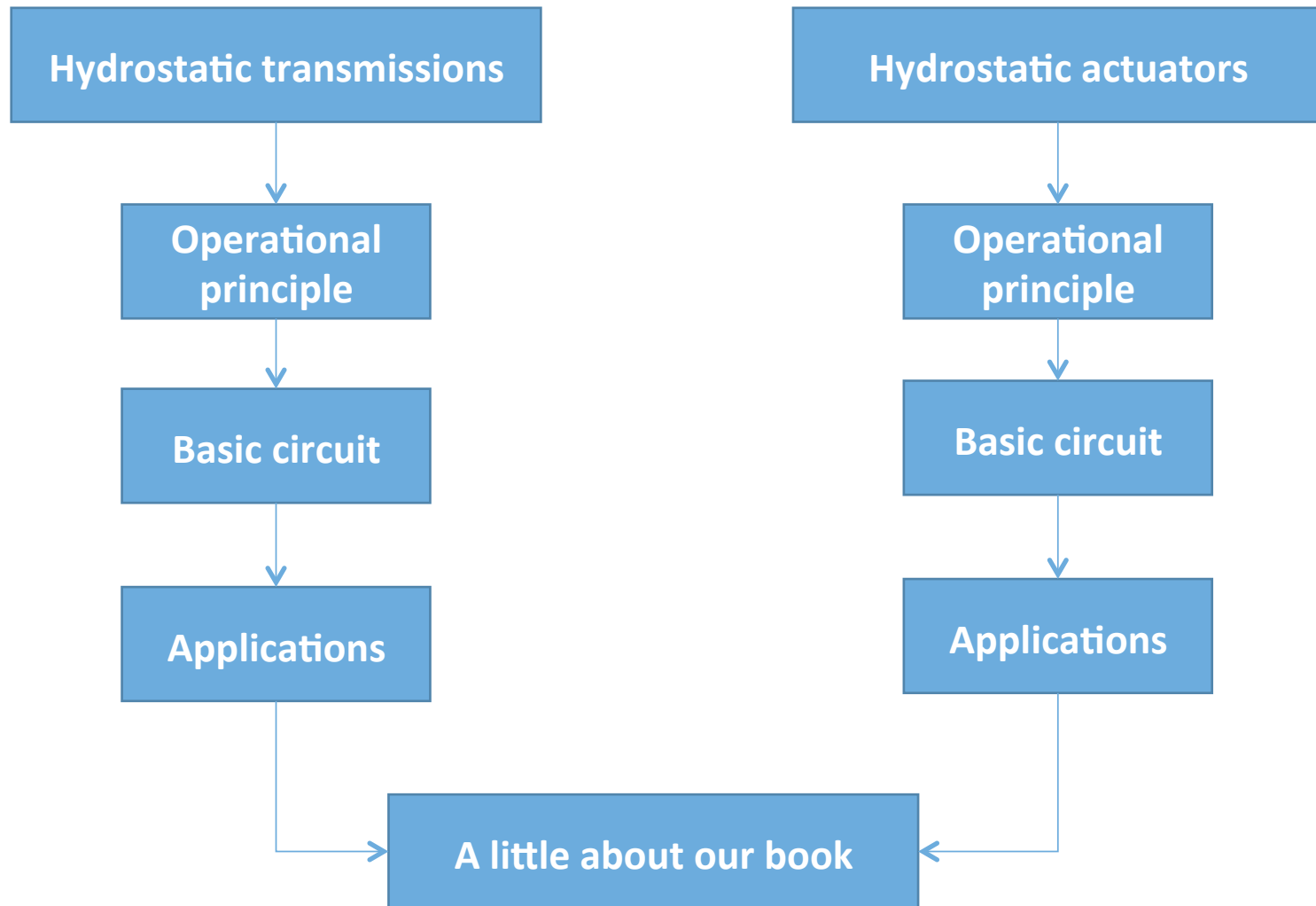
Gustavo Koury Costa

Instituto Federal de Pernambuco – IFPE, Recife

# A little history



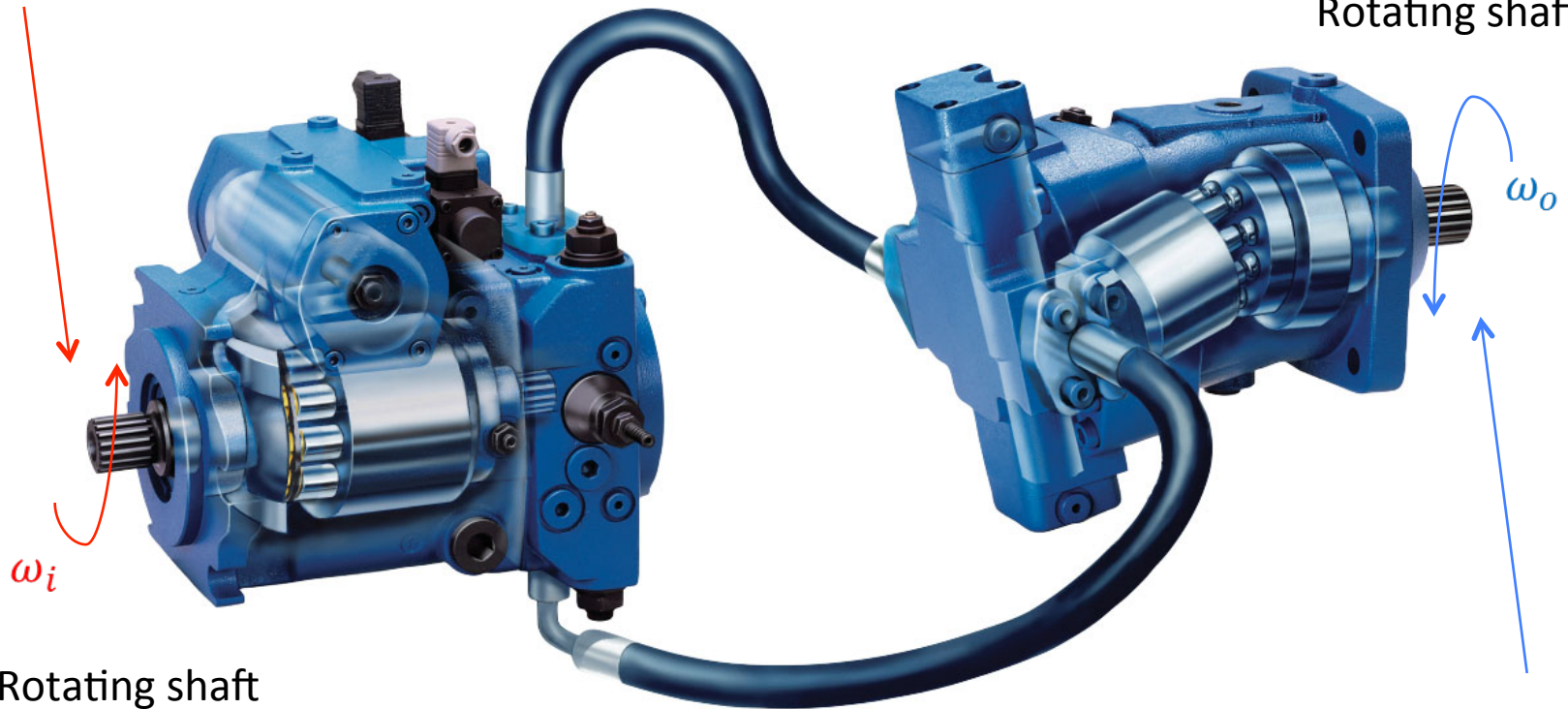
# Presentation outline



# Hydrostatic transmissions

Mechanical power input

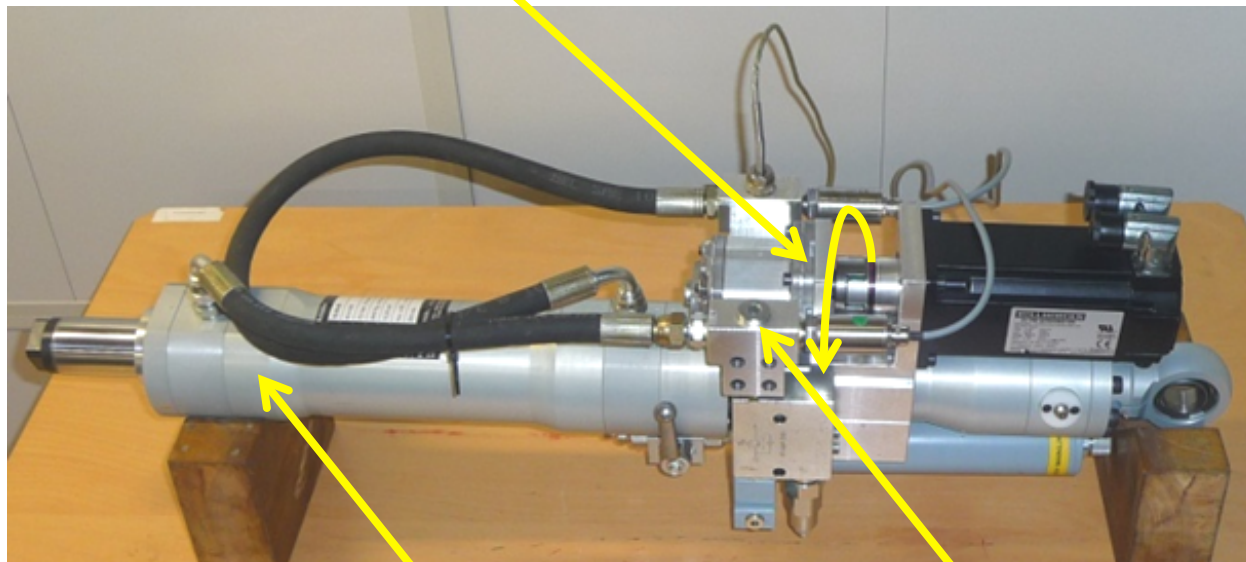
Rotating shaft



Rotating shaft

Mechanical power output

Mechanical power input

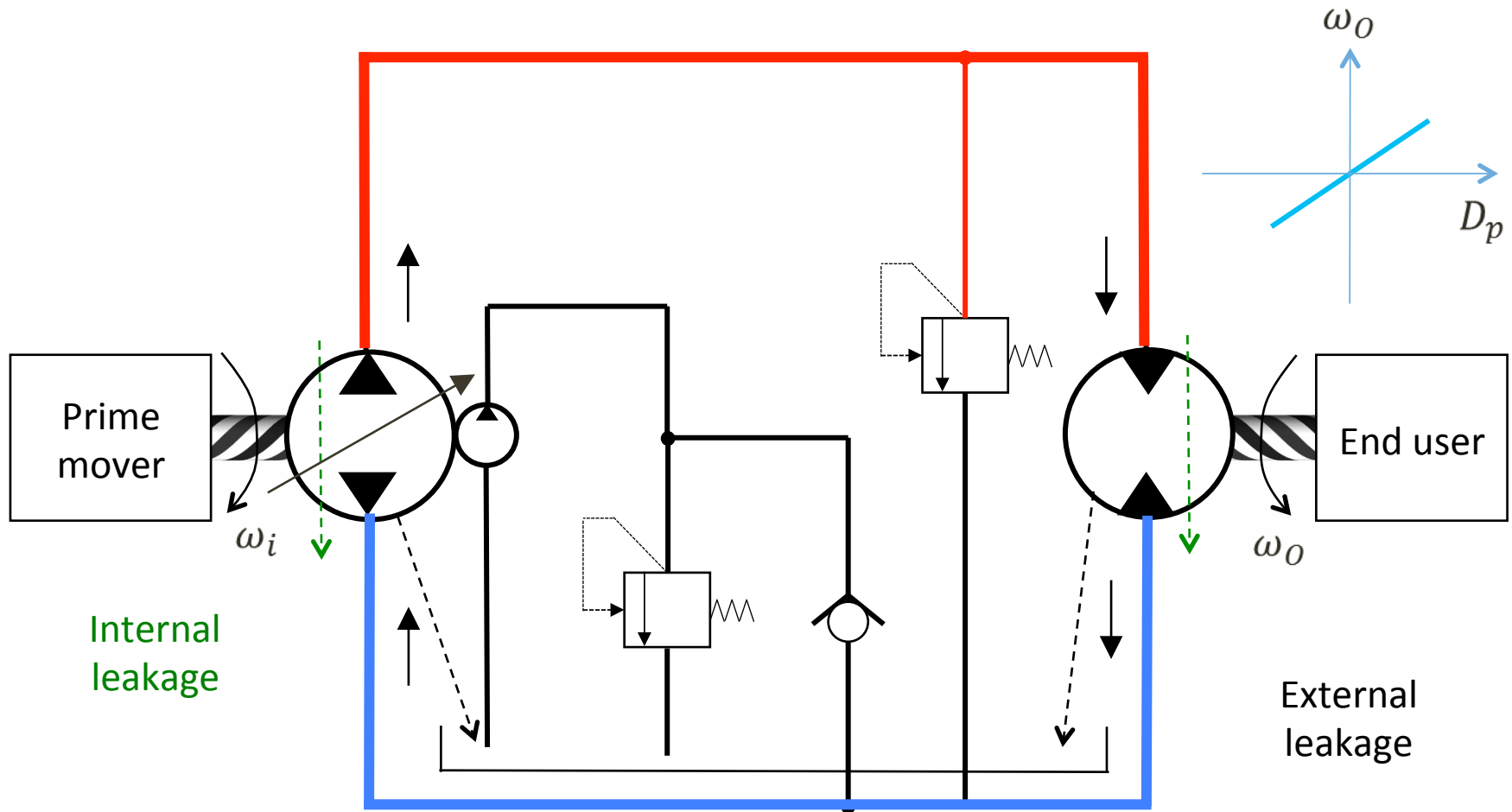


Hydrostatic pump

Hydraulic actuator

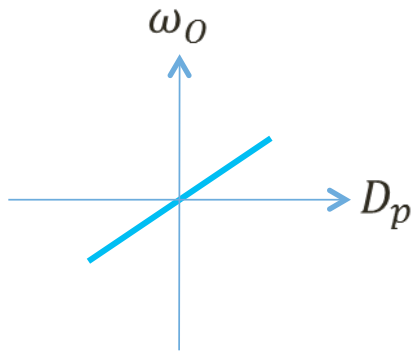
<http://move.unibg.it/previdi/cometha.htm>. Design by Fabio Previdi, Italy

# Hydrostatic transmissions



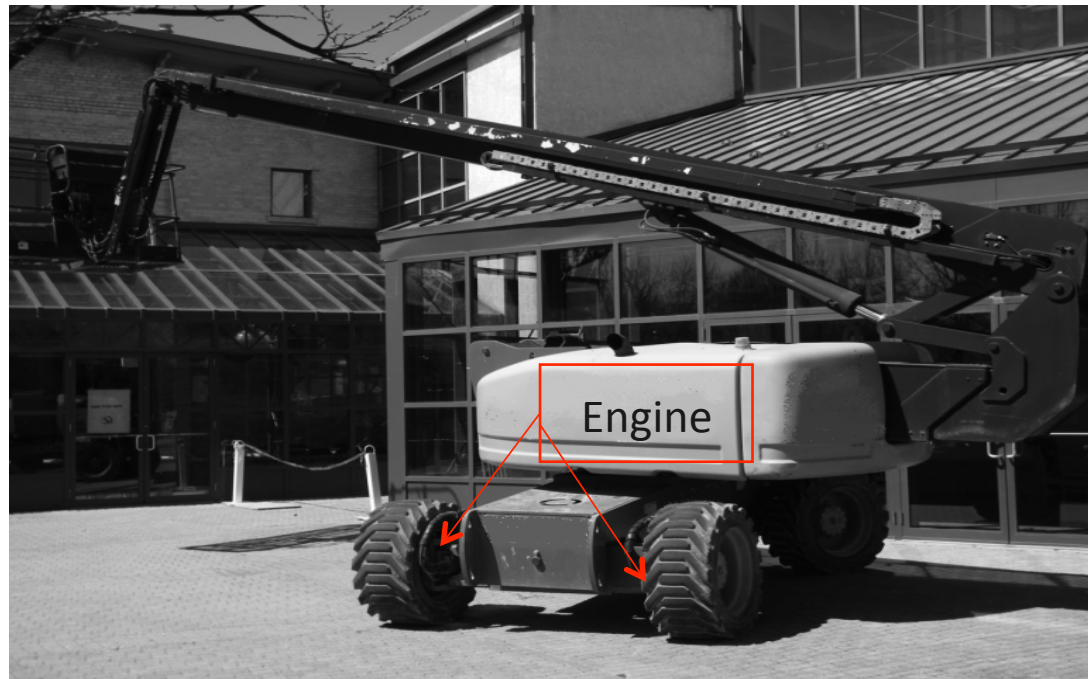


## Wheel loaders



Rapid change of the wheels speed by adjusting the pump displacement

## Bucket lifts



Spatial flexibility between the input and output shafts

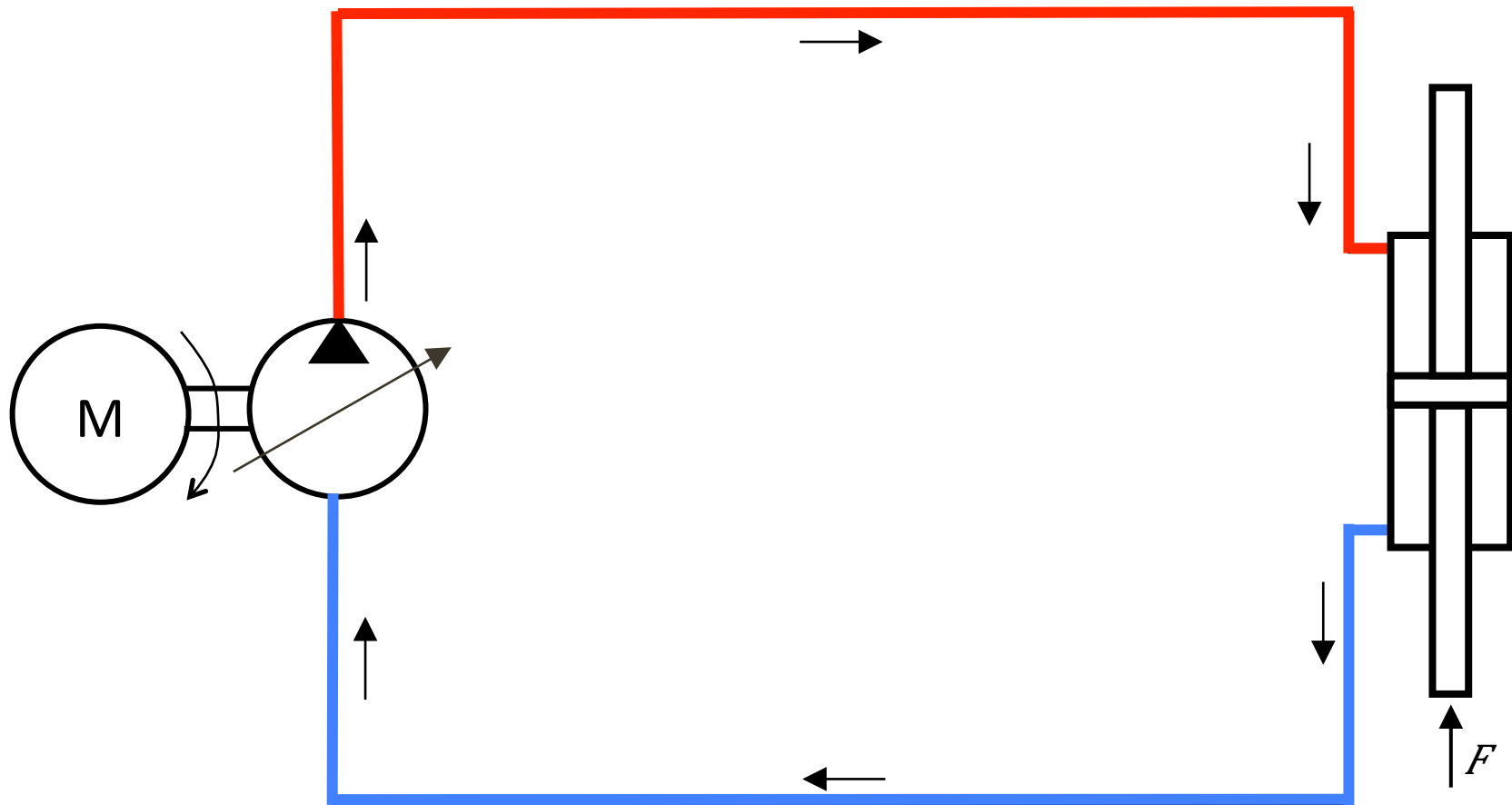


## Hybrid vehicles

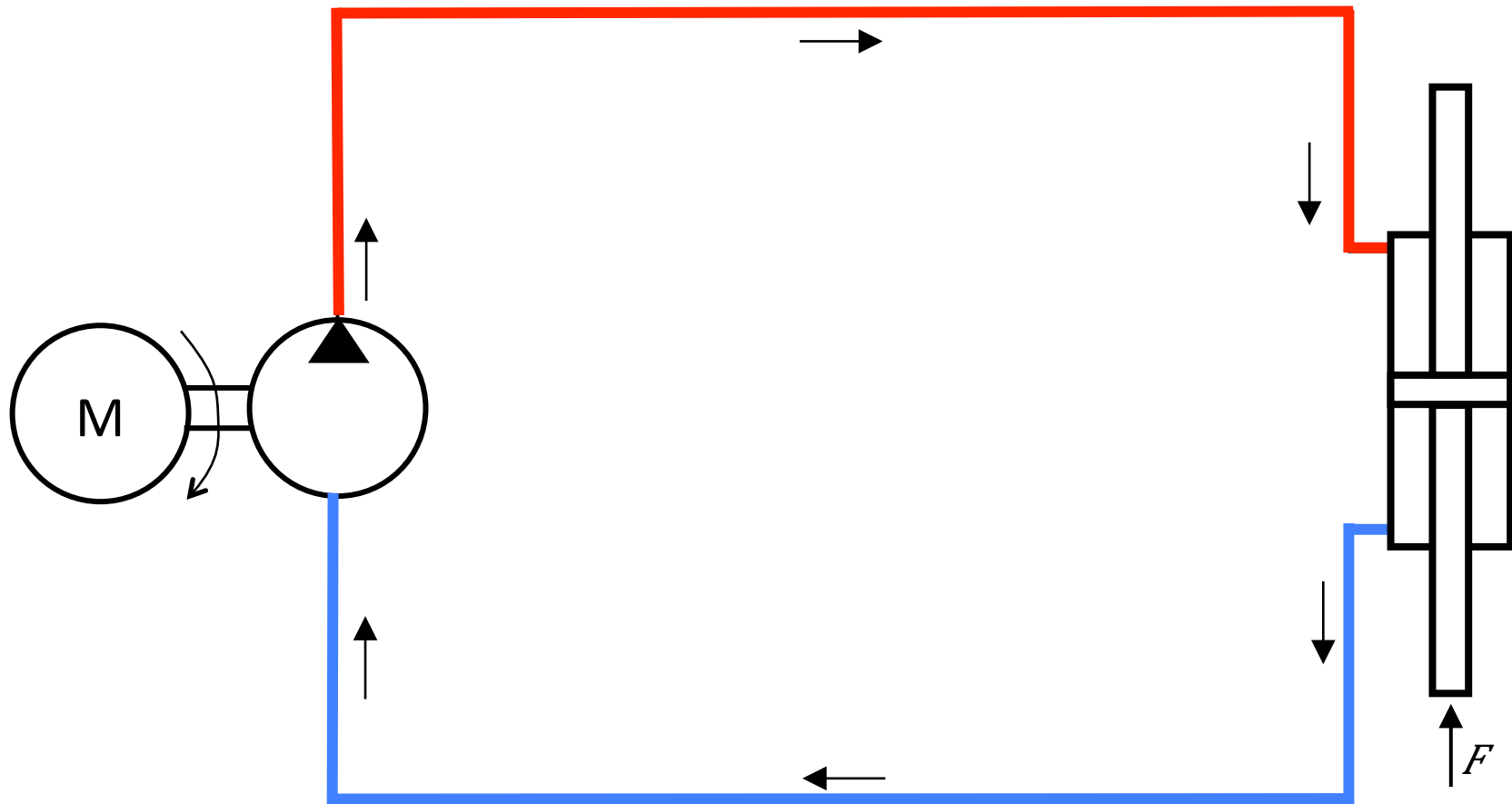


**PROBLEM**  
Hydrostatic Transmissions  
have a relatively poor  
efficiency when compared  
to Mechanical  
Transmissions

Possibility to store braking energy in hydraulic accumulators

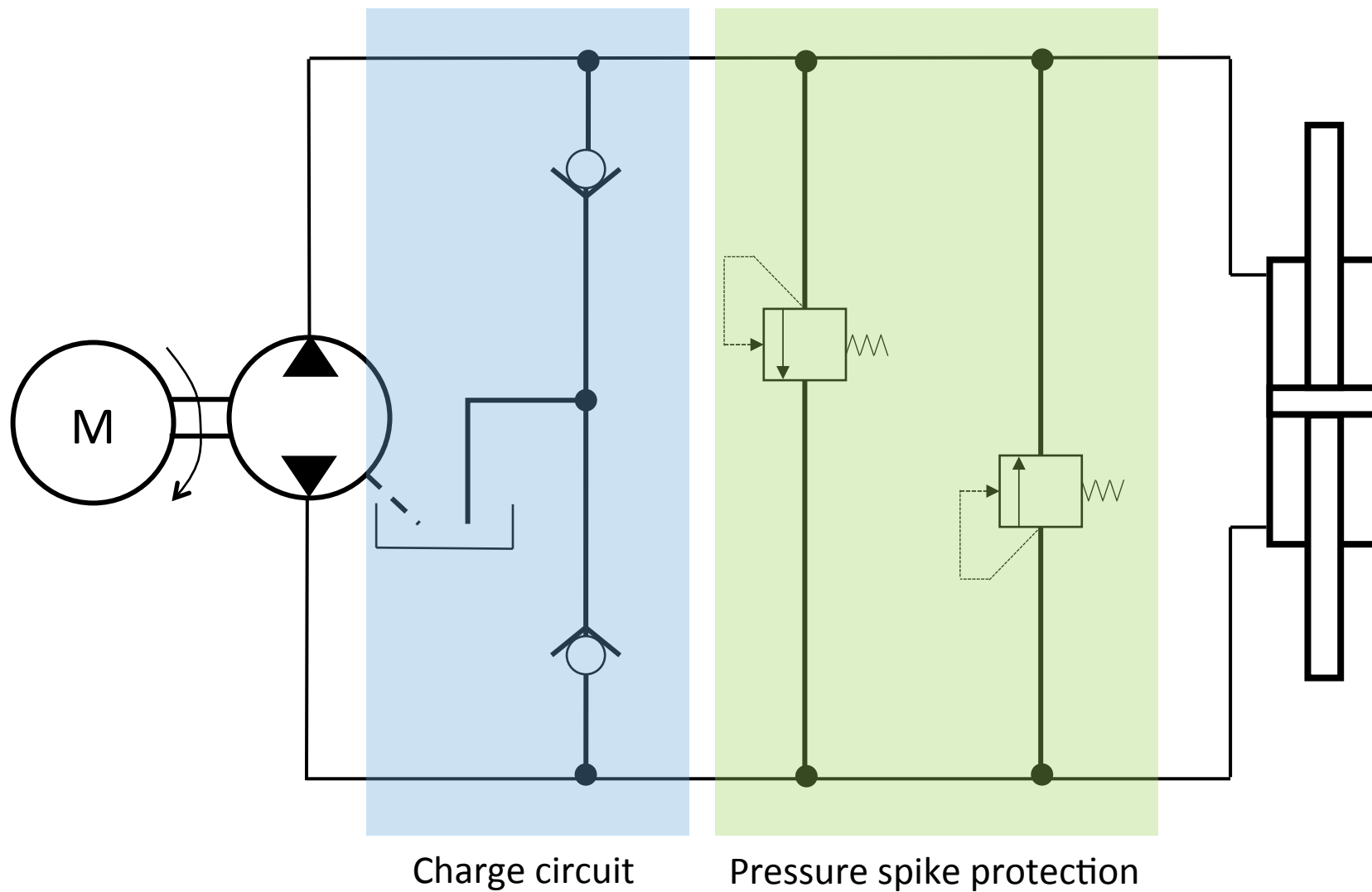


Displacement controlled actuator

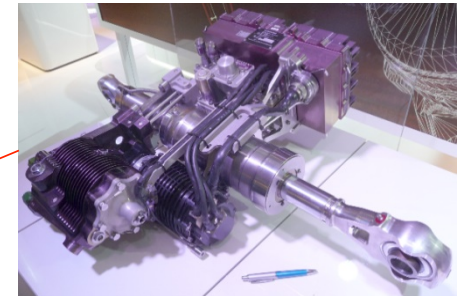
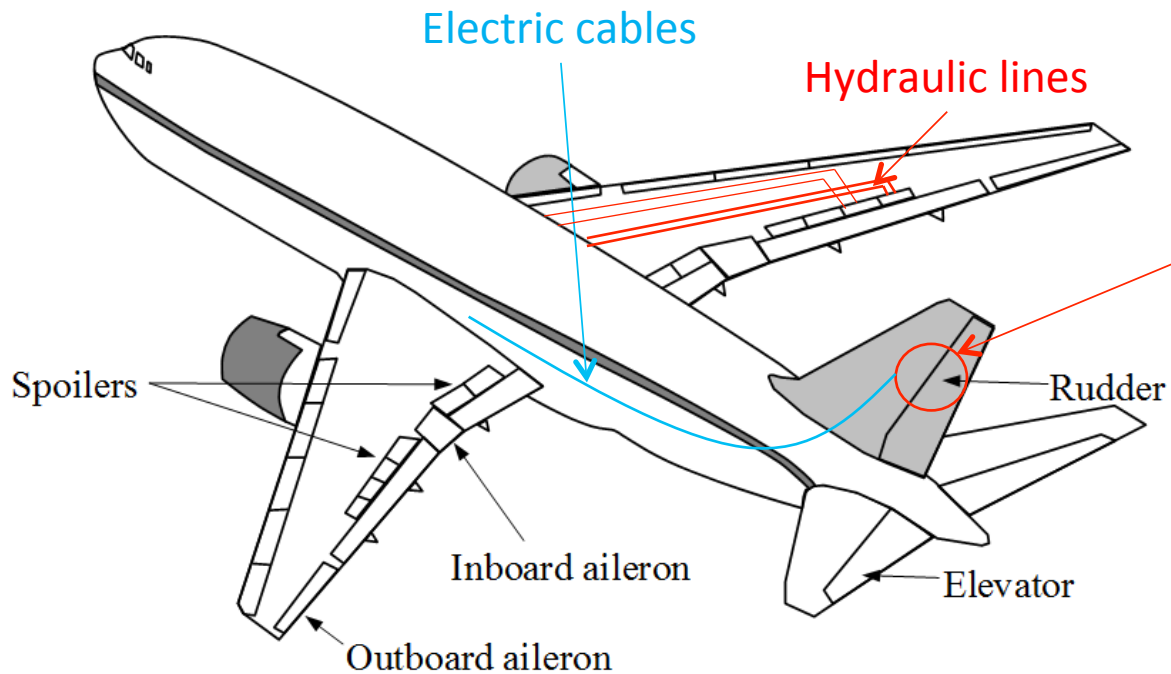


Electrohydrostatic actuator

# Hydrostatic actuators



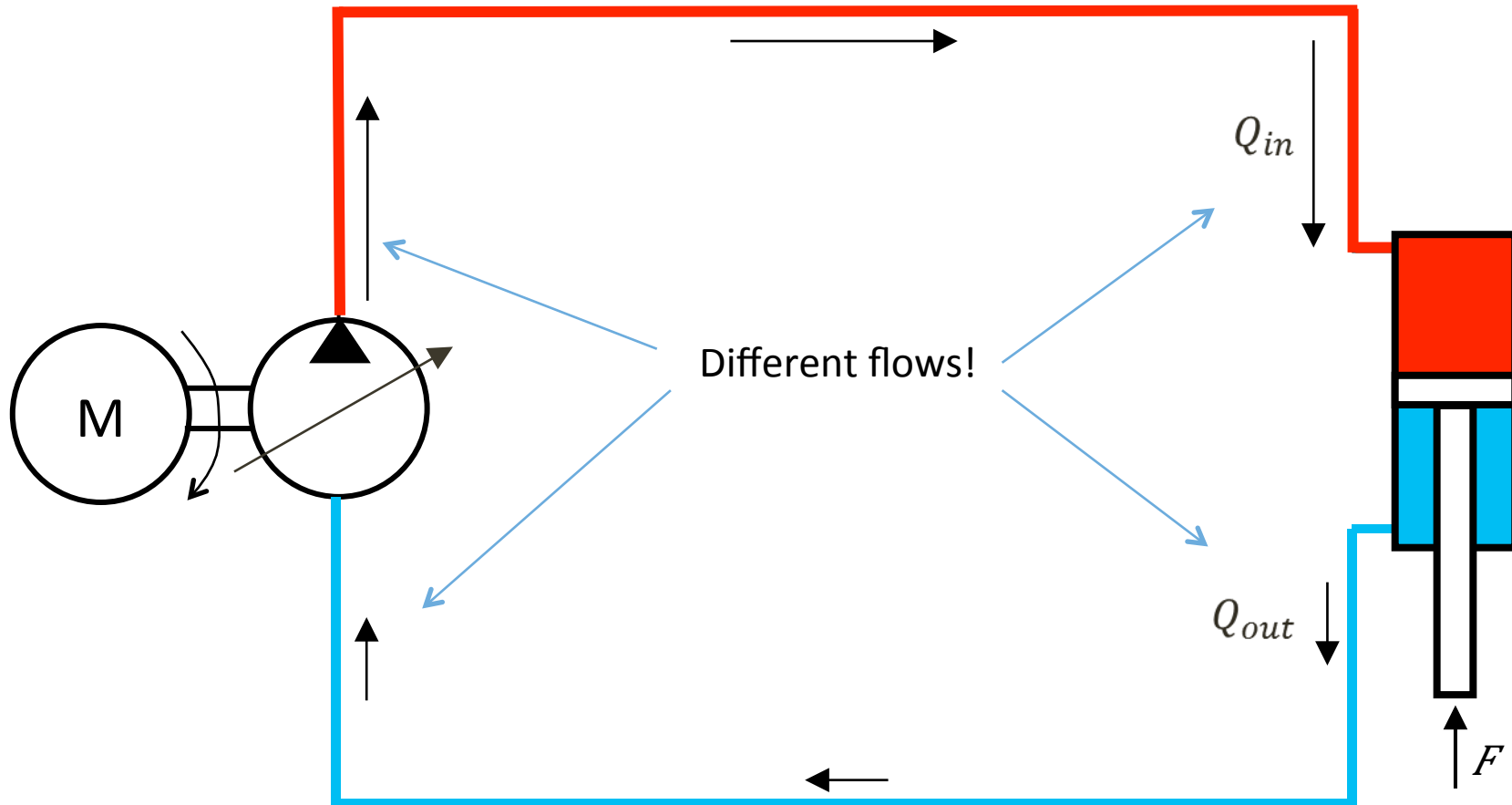
# Aeronautical application



Electrohydrostatic actuator

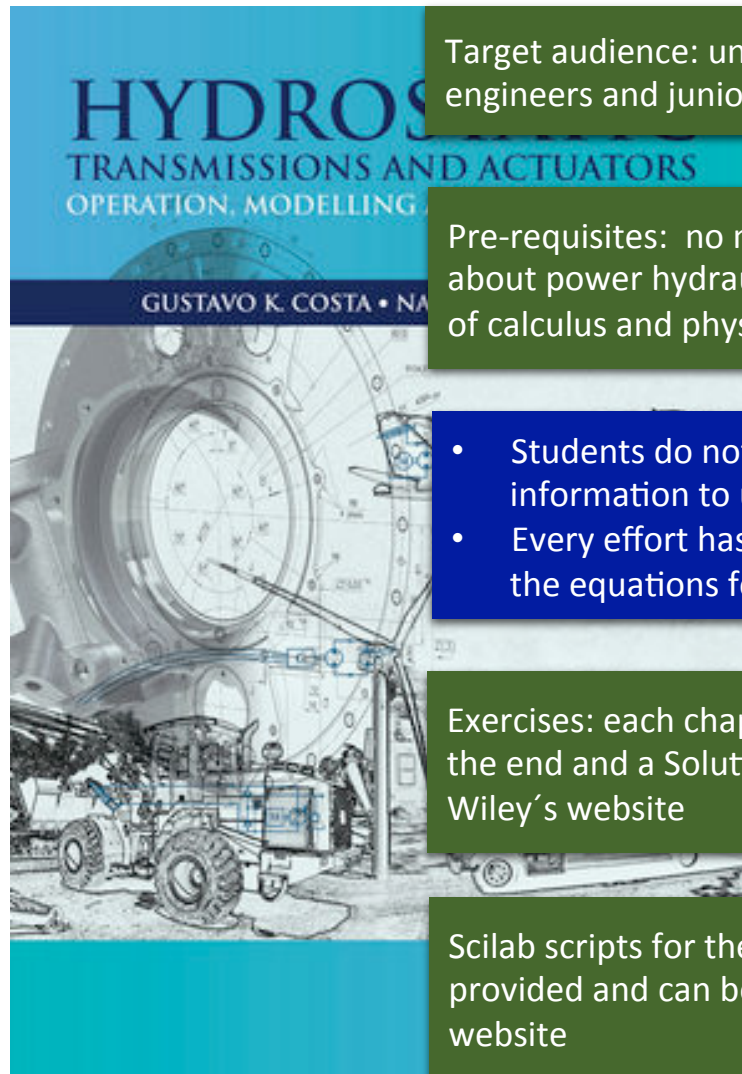


# The challenge of single-rod actuators





# A brief note about the book



Target audience: undergraduate students, practical engineers and junior graduate students

Pre-requisites: no more than a little knowledge about power hydraulics and a basic understanding of calculus and physics

- Students do not need to refer other sources of information to understand the text;
- Every effort has been made to derive most of the equations found in the text

Exercises: each chapter contains a list of exercises in the end and a Solution Manual is also provided at Wiley's website

Scilab scripts for the numerical problems are provided and can be downloaded from Wiley's website

# How the book has been divided

Chapter 1. Introduction to Power Transmission

Chapter 2. Fundamentals of Fluid Flows in  
Hydrostatic Transmissions

Chapter 3. Hydrostatic Pumps and Motors

Chapter 4. Basic Hydrostatic Transmission Design

Chapter 5. Dynamic Analysis of Hydrostatic  
Transmissions

Chapter 6. Hydrostatic Actuators

Chapter 7. Dynamic Analysis of Hydrostatic  
Actuators

Chapter 8. Practical Applications

Appendixes

Appendix A lists the several ISO hydraulic symbols used in the book.

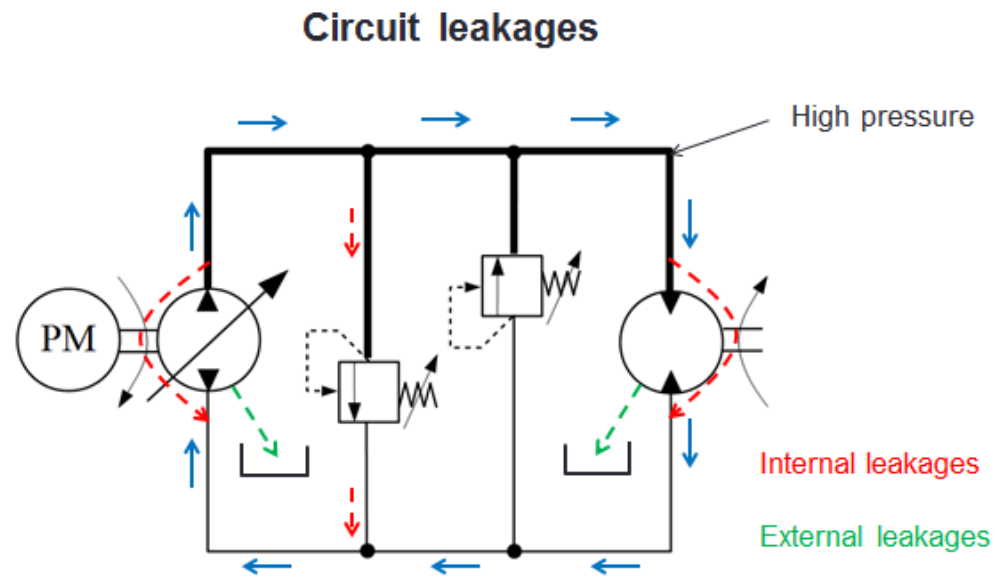
Appendix B contains the necessary mathematical tools for a complete understanding of the book.

Appendix C reviews the basics of Fluid Dynamics with a special emphasis on the Navier-Stokes equations, which are developed in detail.

- Chapter 1 : 55 slides
- Chapter 2 : 25 slides
- Chapter 3 : 61 slides
- Chapter 4 : 42 slides
- Chapter 5 : 31 slides
- Chapter 6 : 70 slides
- Chapter 7 : 35 slides
- Chapter 8 : 40 slides

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## Hydrostatic transmission circuit





☒ Read an Excerpt

## Hydrostatic Transmissions and Actuators: Operation, Modelling and Applications

Gustavo Costa, Nariman Sepehri

ISBN: 978-1-118-81879-4

440 pages  
September 2015

Hardcover

\$120.00

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### 8 matches for "hydrostatic"



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# Thank you very much!

