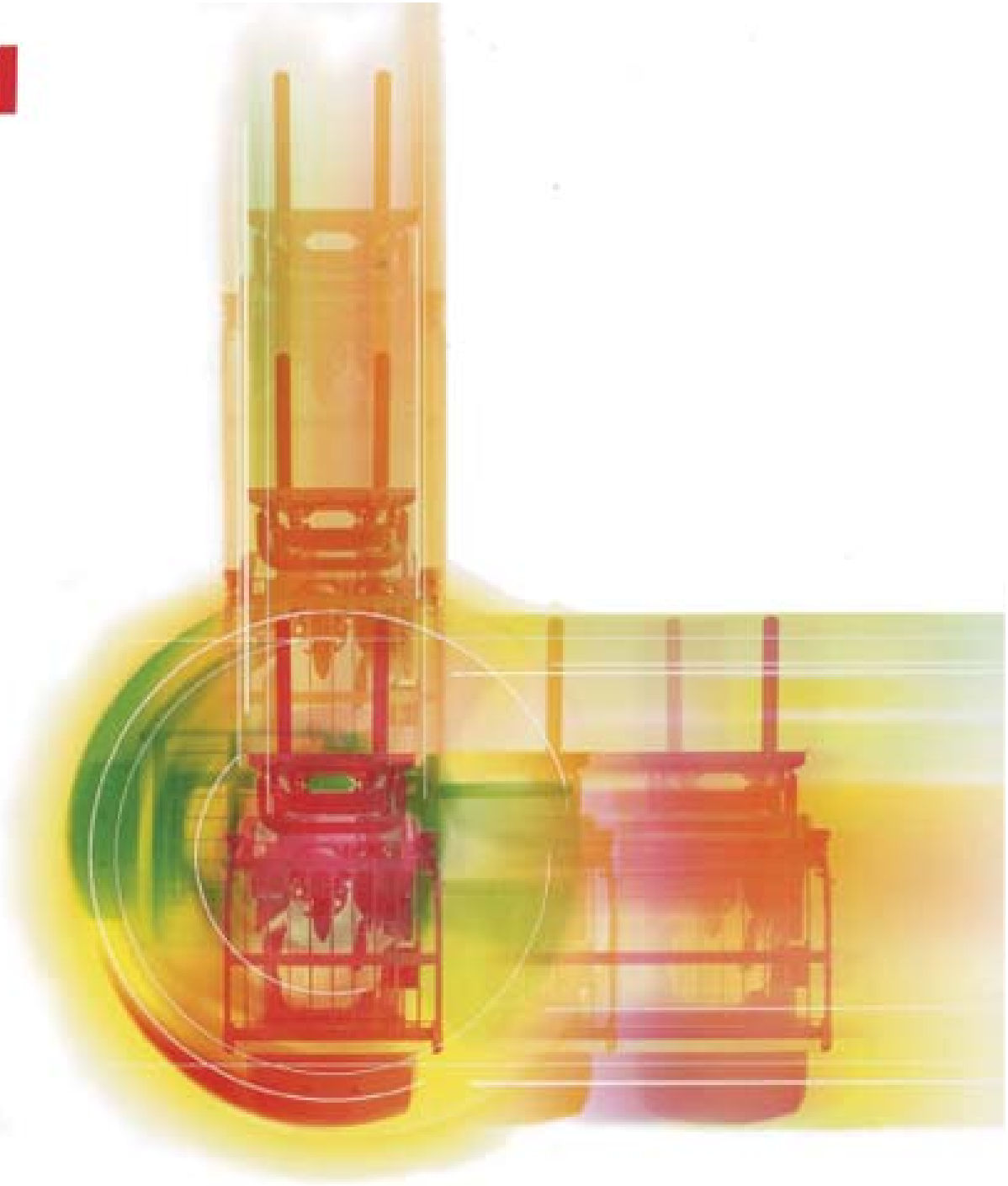
TCM



A breakthrough presentation transforms world standards.

ACROBA

TCM launched the production of Japan first forklift truck "F-6-108", having characteristics of net weight 3,200kg, max. load capacity 2,700kg and max. lift height 3m in March, 1949. TCM staff, with full of ambition and knowledge based on pioneering spirits created this truck, and thus they successfully opened the first page of mechanization of material handling equipment. This event was indeed attributable to their farsighted visions to regard material handling as a system as well as their sincere devotions to R & D, which foreknew the forthcoming new era of innovative logistics equipment.

Half a century has

Japan first forklift truck "F-6-108"

Now, TCM has strided forward in realization of epoch making machine. Based on customer oriented ideas — in order to improve cargo storage and stacking efficiency, is it possible to create machine having features such as straight sideways movement and pivot turn? Based on these concepts, TCM first started to be engaged in R & D, and then they were gradually concreting new innovation. Now the time has come to debut the world first multi-functioned ACROBA. Sole stage of ACROBA performs the remarkable acrobatic show, quite superior to conventional machines. TCM is proudly presenting a breakthrough material-handling machine in the market.

changed "Forklift Trucks"

ACROBA

Years long R & D achieves remarkable features of World

World Industry First *1

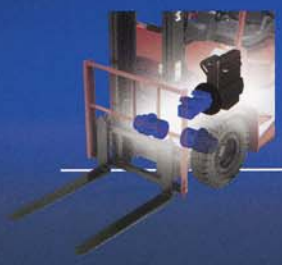
Straight sideways movement

World Industry First *2

Pivot turns

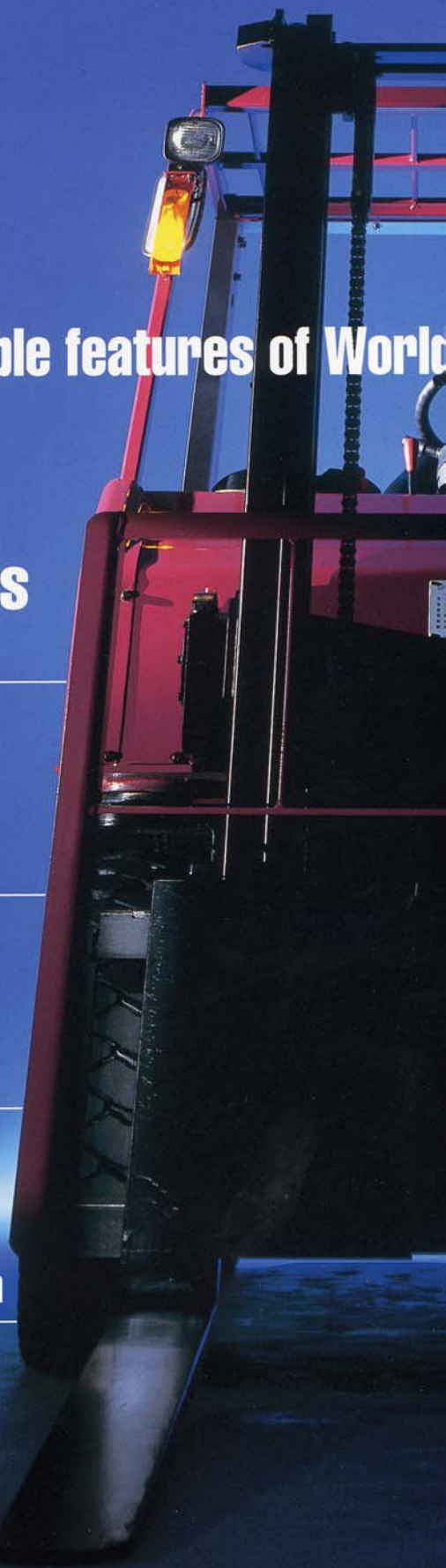
Japan Industry First *3

Swivel seat



World Industry First *4

2 x 2 HST
- Hydrostatic Drive System



*1 first among I/C counterbalanced forklift trucks.
*2 first among engine - powered forklift trucks.
*3 first among standard models of forklift trucks in Japan.
*4 first among all models of forklift trucks worldwide.
●All figures are based on comparison made between ACROBA-FA25 and TCM standard model-FD25.

Industry First —— Superb performances of "ACROBA"

Improvement of storage capacity by

10-30%

(In case of 1500m² warehouse)

100% utilization of corner dead spaces.

Improvement of necessary turning allowance by

11% **(conventional turns 4.27→3.81m)**

Realization of right angle stacking in a very limited aisle.

Improved rear visibility by

50%

Approx. 30-60% reduction of physical fatigue, when backward operation.

Number of drive system parts — amazing savings by

80%

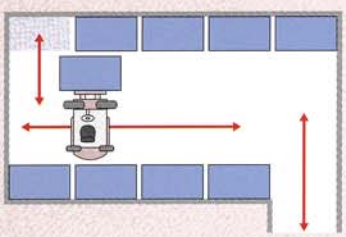
Improvement of operation environment by
lower noise as well as lesser vibration.

Straight sideways movement

World Industry First*1

Utilization of idle – dead spaces

Soft one-touch on operation lever changes normal runs to lateral drive mode in 3 seconds, and ACROBA is ready to park at the dead corner space, as well as to drive straight sideways. Further, able to stack cargoes in corner without any idle spaces-full utilization of former dead spaces.



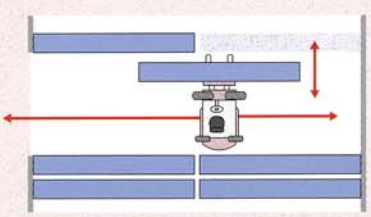
Full utilization of dead spaces

Total storage capacity increased by 10-30%

(in case of warehouse having storage space of 1500m²)

Able to transport long loads

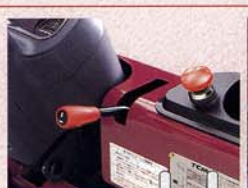
In an aisle having the just width of truck's length, ACROBA is able to carry longer loads than the width of aisle by sideways drive which increases transport efficiency substantially.



Able to carry longer load in a narrow aisle

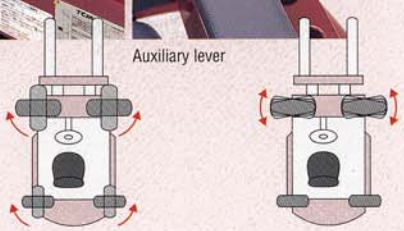
Able to perform stable steering when moving sideways

By auxiliary lever operations, ACROBA is able to maintain stable steering positions for much safer operations. ACROBA has warning signals and a warning buzzer during sideways travel.



Operation lever

Auxiliary lever



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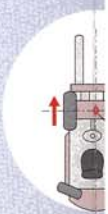
ACROBA



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Narrow

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[Pivot Turn]
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Turning o

11

(Conventi

*1 first among I/C counterbalanced forklift trucks. *2 first among engine - powered forklift trucks. *3 first among standard models of forklift trucks in Japan. *4 first among all models of forklift trucks worldwide.

A creates wider and new applications

t turns

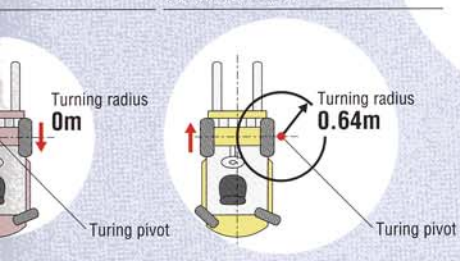
World Industry First*2

rning radius

igures subject to change by actual operations)

m stop position, the range of turning minimized due to the pivot positioned at of chassis, which contributes to make peration spaces available.

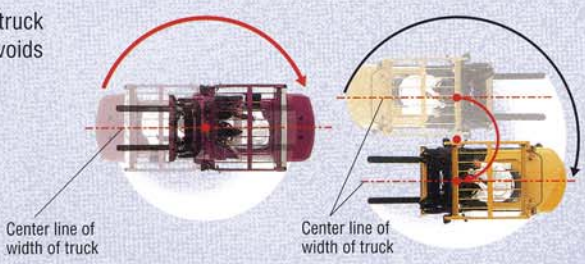
Conventional model



eeze nor slippage

ng U-turn from stop position, the truck othly on the center pivot, which avoids e or slippage

ACROBA Conventional model



aisle

igures subject to change by actual operations)

] is able to reduce the width of passage U-turn. (Conventional truck 4.27m→ ich realizes higher material handling effi- e limited spaces.

■ U-turn comparison

ACROBA Conventional model

ACROBA performs incredible moves in very narrow aisle

n the spot

% reduction in necessary width of aisle
ional Truck 4.27m→ACROBA 3.81m)

ACROBA in sid

• All figures are based on comparison made between ACROBA-FA25 and TCM standard model-FD25.

for Forklift Truck operations

ways drive mode

Swivel seat

Jap
Indu
F

Much more comfortab

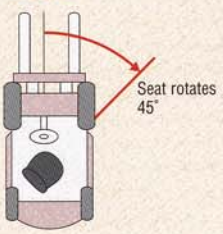
For less muscular strain, the AC
designed with an operator's seat
This enables the operator to use t
erator and reduces the need fo
twist his body while driving backw

■ Postures of drivers at backwards dri

ACROBA TCM conventi

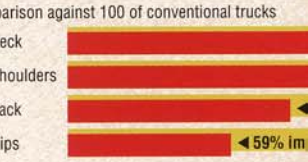
Comfortable rear views

With a 45 degree rotatable seat, ACROBA offers comfortable rear views.



■ Muscular stress loads when visual b
(Figs b

Comparison against 100 of conventional trucks



Muscular stress improvement ratio (%) = EP in conventional seat − Electric potential (EP) in c

Reduced operator fatigue

A swivel seat and second accelerator pedal allow the operator to drive backward comfortably and thereby reduce operator fatigue.

■ Consecutive operation time

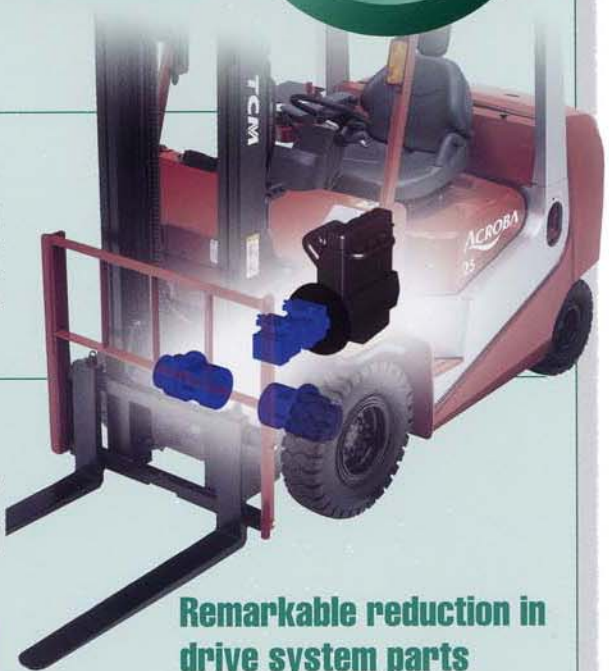
Fatigue Reduction when backward operation

approx. 30-

To improve total operation efficiency in the very limited spaces for the material handling industry — The main objective of ACROBA.
Indeed, ACROBA realizes the world industry first sideways movement as well as pivot turns.
These innovations will completely transform the conventional usage of forklift trucks,
with a vastly wider, more efficient field of application, and moreover,
ACROBA will contribute to provide much more safety and comfort for the working environment.

2 x 2 HST
- Hydrostatic Drive System

World Industry First*4

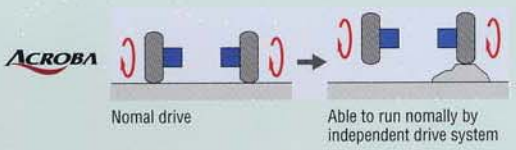


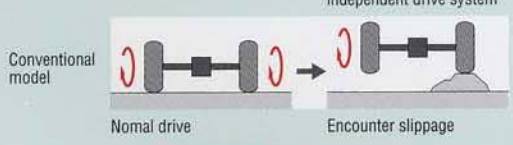
Realization of much more free and flexible operations

Left and Right independent drive system controlled by micro-computer are able to drive straight sideways as well as pivot turns which contribute remarkably to improve operation efficiency in narrower spaces.

Easier start and normal runs on rugged and unimproved roads

ACROBA realizes much easier start and runs by adopting this drive system on rugged conditions where conventional drive system cause unexpected and unstable performances.





Drive at rugged condition

Remarkable reduction in drive system parts by 80%

Realization of lesser vibration and lower noise:

This innovative drive system having power unit and drive unit independently, equipped improves substantially the operation environment with remarkable lesser vibration as well as lower noise. Furthermore, total parts required are reduced down to 100 pieces from conventional 550, which consequently contributes to keep superb maintenance of the machine.

	Start on wet surface ground (Required time to drive 5m when wet only for one wheel)	Lesser Vibration (at steering)	Lower Noise (at ear)	Number of Parts on Drive system
ACROBA	4.1sec.	0.5G	81dB	100
Conventional TCM model	6.4sec.	1.5G	85.5dB	550

"ACROBA" records many World Industry First performances, and furthermore it reduces substantially physical fatigue caused by long time consecutive operation, and it provides with superb operation maneuverability and much safer operation environment as well.

Safer Design

- When the engine stalls, "**lift lock system**" automatically locks the lift to avoid any trouble instantly.
- Multiple safe devices, such as **balance monitoring indicator**, **warning lights** and **buzzers** at lateral drive.


Balance monitoring indicator

Sidestep warning lights

- **Safer seat equipped with side restraint support** protects operator's stable posture at tilt operations.


Safer seat with side restraint support

Driver friendly design

- **Easier lift operations by compact finger-tip control lever** for lifting and lowering forks, as well as comfortable **armrest attached to the seat.**


Finger-tip control lever


Armrest attached to the seat

- **One integrated switch** both for turning signals and lights is able to operate in similar feelings and conditions as passenger cars.


Integrated lights switch

- **Compartments** for mobile phone and documents holders are conveniently attached to the seat.


documents holder


mobile-phone holder


pen-stand


attached paper binder


small compartment


bottle holder

ACROBA 15 • Max. load : 1.5t

ACROBA 20 • Max. load : 2.0t

ACROBA 25 • Max. load : 2.5t

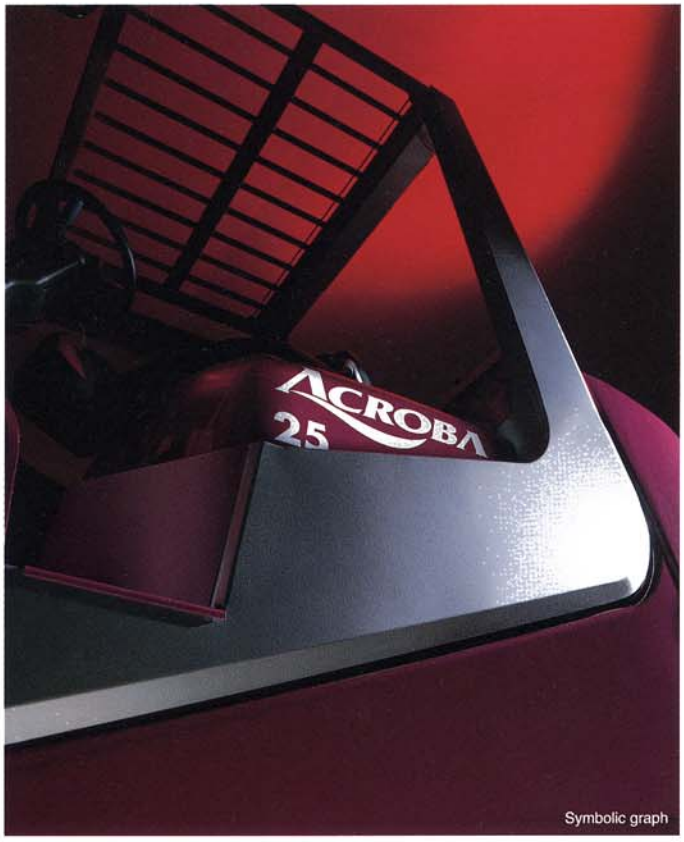
ACROBA 30 • Max. load : 3.0t

ACROBA 35 • Max. load : 3.5t

ACROBA 40 • Max. load : 4.0t

ACROBA



Symbolic graph

ISO 9001 Certification
(TCM Shiga plant)

ISO 14001 Certification
(TCM Shiga plant)

TCM CORPORATION

Registered Head office 15-10, kyomachibori, 1-chome Nishi-ku, Osaka, 550-0003, Japan
Business Headquarters 15-5, Nishi-shimbashi 1-chome, Minato-ku, Tokyo, 105-0003, Japan
Home Page **http://www.acroba.net**

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