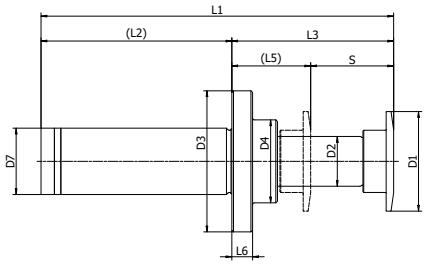
CERTUS HYDRAULIC BUFFER

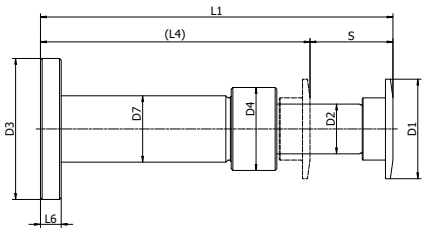
INQUIRY FORM

Company: **Name:**

Project: **Date:**



FRONT FLANGE



BACK FLANGE

1) DESIRED BUFFER SIZE (size x stroke): _____mm

2) FASTENING TYPE ☐ front flange ☐ back flange

3) CASE OF APPLICATION – horizontally moving mass

☐ a) mass without propelling force (motor switched off)
☐ b) mass with propelling force (motor runs)
sum of motor power per crane side:_____kW
breakdown torque factor:_____Nm

4) OPERATING MODE
☐ as an emergency stop device
☐ starting in creep speed _____n/day
☐ start-up during operation _____n/day

5) APPLICATION AREA
☐ outdoor use
☐ use in closed rooms

6) ENVIRONMENTAL TEMPERATURES

From _____°C to _____°C

7) ENVIRONMENTAL CONDITIONS

☐ normal ☐ dry ☐ humid
☐ oily ☐ dusty ☐ aggressive

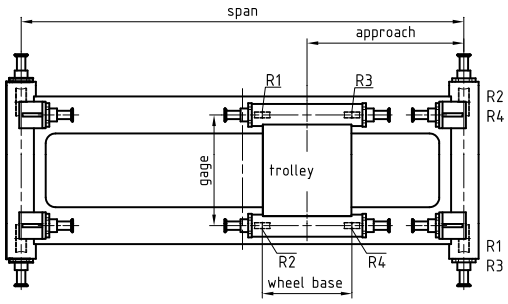
DEFINITIONS AND CALCULATIONS

R1...Rn	[kg]	wheel load resulting from dead weight and permanently attached loads
M_{pu}	[kg]	mass acting on a buffer
v	[m/s]	max. driving speed
E_{pu}	[Nm]	energy acting on a buffer
F_{pu}	[kN]	buffer force

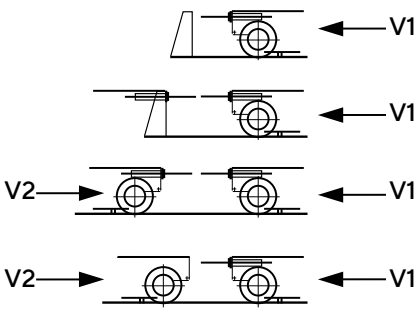
8) DETERMINE THE MASSES ACTING ON THE BUFFER M_{PU}

For cranes: m_{pu} = R1+R2+R3+R4+...Rn [1)]

For trolley: m_{pu} = max. from (R1+R3) or (R2+R4)



9) IMPACT CONDITIONS



10) DESIGN DATA

Crane span: _____mm Smallest trolley clearance: _____ mm

Lifting load: _____kg Crap weight: _____kg

Crane weight: _____kg Crap speed.: _____m/min

Crane speed.: _____m/min ☐ fixed reeved load
☐ oscillating load

11) LIMIT VALUES (CRANE STATICS OR ON-SITE)

☐ max. permissible buffer end force: _____kN

☐ max. permissible buffer stroke: _____mm

☐ max. permissible delay: _____m/s2

12) DESIGN DATA (if known)

Impact mass per buffer m_{pu} _____ [kg]

Impact speed v _____ [m/s]

Propelling force F_v _____ [N]

[1)] For cranes with more than 4 wheels/side

CERTUS HYDRAULIKPUFFER

INQUIRY FORM

1. **Buffer size and buffer stroke:**
The specifications for buffer size and buffer stroke can be determined in advance, but are usually specified by the construction. These specifications are always checked subsequently in accordance with the technical design.

2. **Mounting type:**
It is necessary to select the mounting or installation type using the base or front flange. The difference is shown in the illustrations above.

3. **Calculation of energy absorption:**
In order to calculate the energy to be absorbed by the buffer, it is essential to specify whether only the inertia of the moving mass or additional forces must be absorbed by drives that are still running when the buffer is hit.
If there is no system for emergency shutdown of the drives before the buffer impact, the motor data of the drives must be specified and taken into account in the calculation.
The rated motor power and the motor tilting moment can be found on the motor rating plates.

4. **Operating mode:**
It must be specified how the buffers are to be used in operation. If they are used exclusively as an emergency stop device, the frequency of a buffer impact is very low. However, buffers can also be intentionally hit during operation. If, for example, the buffers are approached at creep speed to achieve a maximum approach dimension, the dynamic load is reduced due to the low speed. In this case, the buffer only generates the restoring forces generated by the gas pressure and can be pushed in easily and with low feed force. In exceptional cases (not in crane operation), hydraulic buffers are also approached at nominal speed during operation. In this case, the service life of the buffer is drastically reduced. This must be taken into account, particularly in the context of warranty periods.

5. **Environmental conditions:**
The installation environment of the buffer, whether outdoors or indoors, has a significant influence on corrosion and weathering protection.

6. **Environmental temperatures:**
Environmental temperatures have a significant influence on the viscosity of the hydraulic oil in the buffer and therefore also on the buffer force. The standard application range of our buffers with HLP 45 is between -30 °C and 100 °C. Special oils are used for temperatures outside this range and heat-resistant paints are used for higher temperatures.

7. **Influence of ambient conditions on service life:**
The ambient conditions have an influence on the service life of the buffer seals and must be taken into account in the context of warranty periods.

8. **Determination of the occurring loads:**
In order to adapt the buffer precisely to the requirements, the loads occurring during a buffer impact must be determined.These result from the total mass mpu of the system in motion. The simplest way to determine the total weight of the system (trolley, crane or both) is to add up the individual maximum wheel loads.

9. **Consideration of additional buffer systems:**
In order to be able to consider further impact compensation by additional buffer systems, the impact conditions must be assigned to a case. In the case of several systems on the same rail (case 3 or 4), the inertia of the second system must be calculated in the same way as that of the system under consideration.

10. **Information on the calculation of energy absorption:**
This information is required to calculate the energy to be absorbed by the buffer based on the impact mass and impact speed and to design the throttle tube accordingly. This data can be found in the crane master data sheet or in the crane statics (if available).

11. **Maximum permissible buffer end force, buffer stroke and deceleration:**
The maximum permissible buffer end force is the force that can act on the system without deforming or damaging it. The maximum permissible buffer stroke is usually limited by the geometry of the system. The maximum permissible deceleration is the maximum deceleration of the system without the system itself being damaged by its mass inertia or the maximum permissible deceleration being determined by other regulations, such as when the operating personnel travel in a crane cabin.

12. **Acquisition of further data:**
This data should only be entered if it is known. Otherwise, they are determined using the data entered under points **3)** and **10)** in the internal calculation.