

SECTION B — PERFORMING OPERATIONS; TRANSPORTING

B65 CONVEYING; PACKING; STORING; HANDLING THIN OR FILAMENTARY MATERIAL

B65G TRANSPORT OR STORAGE DEVICES, e.g. CONVEYORS FOR LOADING OR TIPPING, SHOP CONVEYOR SYSTEMS OR PNEUMATIC TUBE CONVEYORS (packaging B65B; handling thin or filamentary materials, e.g. paper sheets or thread, B65H; cranes B66C; portable or mobile lifting or hauling appliances, e.g. hoists, B66D; devices for lifting or lowering goods for loading or unloading purposes, e.g. fork-lift trucks, B66F 9/00; emptying bottles, jars, cans, casks, barrels or similar containers, not otherwise provided for, B67C 9/00; delivering or transferring liquids B67D; filling or discharging vessels for liquefied, solidified or compressed gases F17C; pipe-line systems for fluids F17D)

Note(s) [2014.01]

This subclass does not cover road or railway vehicles, waterborne vessels or aircraft per se, or their adaptation for transport purposes. This subject matter is covered by classes B60-B64, for example in the following places:

- vehicles adapted for load transportation B60P;
- railway wagons adapted for load transportation B61D;
- hand carts B62B;
- superstructures for load-carrying vehicles B62D 33/00;
- loading or load-accommodating arrangements on ships or vessels B63B 25/00, B63B 27/00;
- equipment for handling freight in aircraft B64D 9/00.

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HANDLING AND STORAGE

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CONVEYORS, CHUTES

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Storing; Storage devices

1/00 Storing articles, individually or in orderly

arrangement, in warehouses or magazines (conveyor combinations in warehouses, magazines or workshops B65G 37/00; stacking of articles B65G 57/00; removing articles from stacks B65G 59/00; loading machines B65G 65/02) **[1, 2006.01]**

1/02 • Storage devices (furniture A47B; shop fittings A47F) **[1, 2006.01]**

1/04 • • mechanical **[1, 2006.01]**

- | | | |
|------|-------|---|
| 1/06 | • • • | with means for presenting articles for removal at predetermined position or level (B65G 1/12 takes precedence) [1, 3, 2006.01] |
| 1/07 | • • • | the upper article of a pile being always presented at the same predetermined level [3, 2006.01] |
| 1/08 | • • • | the articles being fed by gravity [1, 2006.01] |
| 1/10 | • • • | with relatively-movable racks to facilitate insertion or removal of articles [1, 2006.01] |
| 1/12 | • • • | with article supports or holders movable in a closed circuit to facilitate insertion or removal of articles [1, 2006.01] |

- 1/127 • • • the circuit being confined in a vertical plane [3, 2006.01]
- 1/133 • • • the circuit being confined in a horizontal plane [3, 2006.01]
- 1/137 • • • with arrangements or automatic control means for selecting which articles are to be removed [4, 2006.01]
- 1/14 • • Stack holders or separators [1, 2006.01]
- 1/16 • Special arrangements of articles in storage spaces [1, 2006.01]
- 1/18 • • Articles inclined so as to be mutually self-supporting [1, 2006.01]
- 1/20 • • Articles arranged in layers with spaces between articles [1, 2006.01]

3/00 Storing bulk material or loose, i.e. disorderly, articles (filling or emptying storage spaces or containers, spreading-out or piling-up bulk material or loose articles B65G 65/28, B65G 65/30, B65G 69/04) [1, 2006.01]

- 3/02 • in the open air (B65G 3/04 takes precedence) [1, 2006.01]
- 3/04 • in bunkers, hoppers or like large containers (such containers *per se* B65D 88/00) [1, 2006.01]

5/00 Storing fluids in natural or artificial cavities or chambers in the earth [1, 2006.01]

Devices assisting manual conveyance of articles over short distances, e.g. in storage depots, warehouses or factories

- 7/00 Devices for assisting manual moving or tilting heavy loads** (roller-ways B65G 13/00; for tilting and emptying barrels or casks B65G 65/24) [1, 2006.01]
- 7/02 • Devices adapted to be interposed between loads and the ground or floor, e.g. crowbars with means for assisting conveyance of loads [1, 2006.01]
- 7/04 • • Rollers [1, 2006.01]
- 7/06 • • using fluid at high pressure supplied from an independent source to provide a cushion between load and ground [1, 2006.01]
- 7/08 • • for tilting the loads [1, 2006.01]
- 7/10 • • for rolling cylindrical loads [1, 2006.01]
- 7/12 • Load-carriers, e.g. hooks, slings, harness, gloves, modified for load-carrying [1, 2006.01]
- 9/00 Apparatus for assisting manual handling having suspended load-carriers movable by hand or gravity** [1, 2006.01]

Chutes; Kinds or types of conveyors; Constructional features, details or auxiliary devices peculiar to conveyors of particular types [4]

- 11/00 Chutes** (used as storage devices B65G 1/02) [1, 2006.01]
- 11/02 • of straight form [1, 2006.01]
- 11/04 • for mail in buildings [1, 2006.01]
- 11/06 • of helical or spiral form [1, 2006.01]
- 11/08 • with discontinuous guiding surfaces, e.g. arranged in zig-zag or cascade formation [1, 2006.01]
- 11/10 • flexible [1, 2006.01]
- 11/12 • pivotable [1, 2006.01]
- 11/14 • extensible, e.g. telescopic [1, 2006.01]
- 11/16 • Interior surfaces; Linings [1, 2006.01]
- 11/18 • Supports or mountings [1, 2006.01]

- 11/20 • Auxiliary devices, e.g. for deflecting, controlling speed of, or agitating, articles or solids [1, 2006.01]

13/00 Roller-ways (storage devices comprising roller-ways B65G 1/02; endless-chain conveyors comprising load-supporting rollers B65G 17/00; rollers or arrangements thereof B65G 39/00) [1, 2006.01]

- 13/02 • having driven rollers [1, 2006.01]
- 13/04 • • all rollers driven [1, 2006.01]
- 13/06 • • Roller driving means [1, 3, 2006.01]
- 13/07 • • • having endless driving elements [1, 2006.01]
- 13/071 • • • with frictional engagement [1, 2006.01]
- 13/073 • • • comprising free-wheel gearing [1, 2006.01]
- 13/075 • Braking means [1, 3, 2006.01]
- 13/08 • of curved form; with branch-offs [1, 2006.01]
- 13/10 • • Switching arrangements [1, 2006.01]
- 13/11 • Roller frames [1, 2006.01]
- 13/12 • • adjustable [1, 2006.01]

15/00 Conveyors having endless load-conveying surfaces, i.e. belts and like continuous members, to which tractive effort is transmitted by means other than endless driving elements of similar configuration (having load-conveying surfaces formed by interconnected longitudinal links B65G 17/06) [1, 2006.01]

- 15/02 • for conveying in a circular arc [1, 2006.01]
- 15/04 • the load being carried on the lower run of the endless surface [1, 2006.01]
- 15/06 • with oppositely-moving parts of the endless surface located in the same plane and parallel to one another [1, 2006.01]
- 15/08 • the load-carrying surface being formed by a concave or tubular belt, e.g. a belt forming a trough [1, 2006.01]
- 15/10 • comprising two or more co-operating endless surfaces with parallel longitudinal axes, or a multiplicity of parallel elements, e.g. ropes defining an endless surface [1, 2006.01]
- 15/12 • • with two or more endless belts [1, 2006.01]
- 15/14 • • • the load being conveyed between the belts [1, 2006.01]
- 15/16 • • • between an auxiliary belt and a main belt [1, 2006.01]
- 15/18 • • • the belts being sealed at their edges [1, 2006.01]
- 15/20 • • • arranged side by side, e.g. for conveyance of flat articles in vertical position [1, 2006.01]
- 15/22 • comprising a series of co-operating units [1, 2006.01]
- 15/24 • • in tandem [1, 2006.01]
- 15/26 • • extensible, e.g. telescopic [1, 2006.01]
- 15/28 • Conveyors with a load-conveying surface formed by a single flat belt, not otherwise provided for [1, 2006.01]
- 15/30 • Belts or like endless load-carriers (co-operating with rails or the like B65G 21/22; with rollers B65G 39/20) [1, 2006.01]
- 15/32 • • made of rubber or plastics [1, 2006.01]
- 15/34 • • • with reinforcing layers, e.g. of fabric [1, 2006.01]
- 15/36 • • • the layers incorporating ropes, chains, or rolled steel sections [1, 2006.01]
- 15/38 • • • with flame-resistant layers, e.g. of asbestos, glass [1, 2006.01]
- 15/40 • • • troughed or tubular; formed with joints facilitating troughing [1, 2006.01]

- 15/42 • • • having ribs, ridges, or other surface projections [1, 2006.01]
- 15/44 • • • • for impelling the loads [1, 2006.01]
- 15/46 • • • formed with guides [1, 2006.01]
- 15/48 • • metallic [1, 2006.01]
- 15/50 • • Endless load-carriers consisting of a series of parallel ropes or belt strips [1, 2006.01]
- 15/52 • • • interconnected by transverse slats [1, 2006.01]
- 15/54 • • Endless load-carriers made of interwoven ropes or wires [1, 2006.01]
- 15/56 • • with edge-protecting or reinforcing means [1, 2006.01]
- 15/58 • • with means for holding or retaining the loads in fixed position, e.g. magnetic [1, 2006.01]
- 15/60 • Arrangements for supporting or guiding belts, e.g. by fluid jets [1, 2006.01]
- 15/62 • • Guides for sliding belts [1, 2006.01]
- 15/64 • • for automatically maintaining the position of the belts [1, 2006.01]

- 17/00 Conveyors having an endless traction element, e.g. a chain, transmitting movement to a continuous or substantially-continuous load-carrying surface or to a series of individual load-carriers; Endless-chain conveyors in which the chains form the load-carrying surface [1, 2006.01]**
- 17/02 • comprising a load-carrying belt attached to, or resting on, the traction element [1, 2006.01]
- 17/04 • • the belt having loops forming load-receiving pockets [1, 2006.01]
- 17/06 • having a load-carrying surface formed by a series of interconnected, e.g. longitudinal, links, plates, or platforms [1, 2006.01]
- 17/08 • • the surface being formed by the traction element [1, 2006.01]
- 17/10 • • the surface forming a longitudinal trough [1, 2006.01]
- 17/12 • comprising a series of individual load-carriers fixed, or normally fixed, relative to traction element [1, 2006.01]
- 17/14 • • with two spaced connections to traction element [1, 2006.01]
- 17/16 • comprising individual load-carriers which are pivotally mounted, e.g. for free-swinging movement (guides inverting or tilting load-carriers for emptying B65G 47/34) [1, 2006.01]
- 17/18 • • and move in contact with a guiding surface [1, 2006.01]
- 17/20 • comprising load-carriers suspended from overhead traction chains [1, 2006.01]
- 17/22 • with oppositely-moving parts of the conveyor located in a common plane [1, 2006.01]
- 17/24 • comprising a series of rollers which are moved over a supporting surface by the traction element to effect conveyance of loads or load-carriers [1, 2006.01]
- 17/26 • comprising a series of co-operating units, e.g. interconnected by pivots [1, 2006.01]
- 17/28 • • extensible, e.g. telescopic [1, 2006.01]
- 17/30 • Details; Auxiliary devices (belts B65G 15/30; framework B65G 21/00) [1, 2006.01]
- 17/32 • • Individual load-carriers [1, 2006.01]
- 17/34 • • • having flat surfaces, e.g. platforms, grids, forks [1, 2006.01]
- 17/36 • • • having concave surfaces, e.g. buckets [1, 2006.01]

- 17/38 • • Chains or like traction elements (drive chains F16G 13/00); Connections between traction elements and load-carriers [1, 2006.01]
- 17/40 • • • Chains acting as load-carriers [1, 2006.01]
- 17/42 • • • Attaching load-carriers to traction elements [1, 2006.01]
- 17/44 • • • • by means excluding relative movements [1, 2006.01]
- 17/46 • • Means for holding or retaining the loads in fixed position on the load-carriers, e.g. magnetic [1, 2006.01]
- 17/48 • • Controlling attitudes of load-carriers during movement (guides B65G 21/20; inverting or tilting load-carriers to discharge contents B65G 47/38) [1, 2006.01]

- 19/00 Conveyors comprising an impeller or a series of impellers carried by an endless traction element and arranged to move articles or materials over a supporting surface or underlying material, e.g. endless scraper conveyors [1, 2006.01]**
- 19/02 • for articles, e.g. for containers [1, 2006.01]
- 19/04 • for moving bulk material in open troughs or channels [1, 2006.01]
- 19/06 • • the impellers being scrapers similar in size and shape to the cross-section of the trough or channel [1, 2006.01]
- 19/08 • • • and attached to a single belt, rope, or chain [1, 2006.01]
- 19/10 • • • and attached to a pair of belts, ropes, or chains [1, 2006.01]
- 19/12 • • the impellers being plates having an area substantially smaller than that of the trough or channel cross-section [1, 2006.01]
- 19/14 • for moving bulk material in closed conduits, e.g. tubes [1, 2006.01]
- 19/16 • • the impellers being elements having an area substantially smaller than that of the conduit cross-section [1, 2006.01]
- 19/18 • Details [1, 2006.01]
- 19/20 • • Traction chains, ropes, or cables [1, 2006.01]
- 19/22 • • Impellers, e.g. push-plates, scrapers; Guiding means therefor [1, 2006.01]
- 19/24 • • • Attachment of impellers to traction element [1, 2006.01]
- 19/26 • • • • pivotal [1, 2006.01]
- 19/28 • • Troughs, channels, or conduits [1, 2006.01]
- 19/30 • • • with supporting surface modified to facilitate movement of loads, e.g. friction-reducing devices [1, 2006.01]

- 21/00 Supporting or protective framework or housings for endless load-carriers or traction elements of belt or chain conveyors [1, 2006.01]**
- 21/02 • consisting essentially of struts, ties, or like structural elements [1, 2006.01]
- 21/04 • • the ties being formed by longitudinal cables or ropes [1, 2006.01]
- 21/06 • • constructed to facilitate rapid assembly or dismantling [1, 2006.01]
- 21/08 • Protective roofs or arch supports therefor [1, 2006.01]
- 21/10 • movable, or having interchangeable or relatively-movable parts; Devices for moving framework or parts thereof [1, 2006.01]
- 21/12 • • to allow adjustment of position of load-carrier or traction element as a whole [1, 2006.01]

- 21/14 • • to allow adjustment of length or configuration of load-carrier or traction element (tensioning arrangements for belt or chain B65G 23/44) [1, 2006.01]
- 21/16 • for conveyors having endless load-carriers movable in curved paths [1, 2006.01]
- 21/18 • • in three-dimensionally curved paths [1, 2006.01]
- 21/20 • Means incorporated in, or attached to, framework or housings for guiding load-carriers, traction elements or loads supported on moving surfaces (arrangements for supporting belts B65G 15/60; rollers or roller arrangements B65G 39/00) [1, 2006.01]
- 21/22 • • Rails or the like engaging sliding elements or rollers attached to load-carriers or traction elements [1, 2006.01]
- 23/00 Driving gear for endless conveyors; Belt- or chain-tensioning arrangements [1, 2006.01]**
- 23/02 • Belt- or chain-engaging elements [1, 2006.01]
- 23/04 • • Drums, rollers, or wheels [1, 2006.01]
- 23/06 • • • with projections engaging abutments on belts or chains, e.g. sprocket wheels [1, 2006.01]
- 23/08 • • • with self-contained driving mechanisms, e.g. motors and associated gearing [1, 2006.01]
- 23/10 • • • arranged intermediate the ends of the conveyors [1, 2006.01]
- 23/12 • • • Arrangements of co-operating drums or rollers to augment tractive effort applied to the belts [1, 2006.01]
- 23/14 • • Endless driving elements extending parallel to belt or chain [1, 2006.01]
- 23/16 • • • with dogs engaging abutments on belts or chains [1, 2006.01]
- 23/18 • • Suction or magnetic elements [1, 2006.01]
- 23/19 • • • Suction elements [3, 2006.01]
- 23/20 • • Screws [1, 2006.01]
- 23/22 • Arrangements or mountings of driving motors [1, 2006.01]
- 23/23 • • of electric linear motors [3, 2006.01]
- 23/24 • Gearing between driving motor and belt- or chain-engaging elements (contained in drums, rollers, or wheels B65G 23/08) [1, 2006.01]
- 23/26 • • Applications of clutches or brakes [1, 2006.01]
- 23/28 • • Arrangements for equalising the drive to several elements [1, 2006.01]
- 23/30 • • Variable-speed gearing [1, 2006.01]
- 23/32 • for effecting drive at two or more points spaced along the length of the conveyors [1, 2006.01]
- 23/34 • • comprising a single motor coupled to spaced driving elements [1, 2006.01]
- 23/36 • • comprising two or more driving motors each coupled to a separate driving element, e.g. at either end of the conveyors [1, 2006.01]
- 23/38 • for effecting intermittent movement of belts or chains [1, 2006.01]
- 23/40 • • Applications of pawl-and-ratchet mechanisms or Geneva wheels [1, 2006.01]
- 23/42 • • Reciprocating members engaging successive abutments on belts or chains [1, 2006.01]
- 23/44 • Belt- or chain-tensioning arrangements [1, 2006.01]
- 25/00 Conveyors comprising a cyclically-moving, e.g. reciprocating, carrier or impeller which is disengaged from the load during the return part of its movement (jigging B65G 27/00) [1, 2006.01]**
- 25/02 • the carrier or impeller having different forward and return paths of movement, e.g. walking-beam conveyors [1, 2006.01]
- 25/04 • the carrier or impeller having identical forward and return paths of movement, e.g. reciprocating conveyors [1, 2006.01]
- 25/06 • • having carriers, e.g. belts [1, 2006.01]
- 25/08 • • having impellers, e.g. pushers [1, 2006.01]
- 25/10 • • • with impeller pivotally mounted on a reciprocating bar [1, 2006.01]
- 25/12 • • • with impeller fixed to a reciprocating bar and the bar being rotated about its longitudinal axis on its return stroke [1, 2006.01]
- 27/00 Jigging conveyors [1, 2006.01]**
- 27/02 • comprising helical or spiral channels or conduits for elevation of materials [1, 2006.01]
- 27/04 • Load-carriers other than helical or spiral channels or conduits [1, 2006.01]
- 27/06 • • Joints connecting load-carrier sections [1, 2006.01]
- 27/08 • Supports or mountings for load-carriers, e.g. framework, bases, spring arrangements [1, 2006.01]
- 27/10 • Applications of devices for generating or transmitting jigging movements [1, 2006.01]
- 27/12 • • of shaking devices, i.e. devices for producing movements of low frequency and large amplitude [1, 2006.01]
- 27/14 • • • hydraulic [1, 2006.01]
- 27/16 • • of vibrators, i.e. devices for producing movements of high frequency and small amplitude [1, 2006.01]
- 27/18 • • • Mechanical devices [1, 2006.01]
- 27/20 • • • rotating unbalanced masses [1, 2006.01]
- 27/22 • • • Hydraulic or pneumatic devices [1, 2006.01]
- 27/24 • • • Electromagnetic devices [1, 2006.01]
- 27/26 • • • with elastic coupling between vibrator and load-carrier [1, 2006.01]
- 27/28 • • with provision for dynamic balancing [1, 2006.01]
- 27/30 • • • by means of an oppositely-moving mass, e.g. a second conveyor [1, 2006.01]
- 27/32 • • with means for controlling direction, frequency, or amplitude of vibration or shaking movement [1, 2006.01]
- 27/34 • comprising a series of co-operating units [1, 2006.01]
- 29/00 Rotary conveyors, e.g. rotating discs, arms, star-wheels or cones (mechanical projectors B65G 31/00; screw or rotary spiral conveyors B65G 33/00) [1, 2006.01]**
- 29/02 • for inclined or vertical transit [1, 2006.01]
- 31/00 Mechanical throwing machines for articles or solid materials [1, 2006.01]**
- 31/02 • comprising belts [1, 2006.01]
- 31/04 • comprising discs, drums, or like rotary impellers [1, 2006.01]
- 33/00 Screw or rotary spiral conveyors [1, 2006.01]**
- 33/02 • for articles [1, 2006.01]
- 33/04 • • conveyed between a single screw and guiding means [1, 2006.01]
- 33/06 • • conveyed and guided by parallel screws [1, 2006.01]
- 33/08 • for fluent solid materials [1, 2006.01]
- 33/10 • • with non-enclosed screws [1, 2006.01]

- 33/12 • • with screws formed by straight tubes or drums having internal threads, or by spiral or helical tubes [1, 2006.01]
- 33/14 • • comprising a screw or screws enclosed in a tubular housing [1, 2006.01]
- 33/16 • • • with flexible screws operating in flexible tubes [1, 2006.01]
- 33/18 • • • with multiple screws in parallel arrangements [1, 2006.01]
- 33/20 • • • the housing being rotatable relative to the screw [1, 2006.01]
- 33/22 • • • with means for retarding material flow at the delivery end of the housing [1, 2006.01]
- 33/24 • Details [1, 2006.01]
- 33/26 • • Screws [1, 2006.01]
- 33/30 • • • with a discontinuous helical surface [1, 2006.01]
- 33/32 • • Adaptations of bearings or couplings for supporting or connecting screws (B65G 33/16 takes precedence) [1, 2006.01]
- 33/34 • • Applications of driving gear [1, 2006.01]
- 33/36 • • • for rotating housing and screw at different speeds [1, 2006.01]
- 33/38 • • • for effecting simultaneous rotation and reciprocation of screw [1, 2006.01]

- 35/00 Mechanical conveyors not otherwise provided for [1, 2006.01]**
- 35/02 • comprising an endless traction element, e.g. a belt, arranged to roll cylindrical articles over a supporting surface [1, 2006.01]
- 35/04 • comprising a flexible load-carrier, e.g. a belt, which is wound-up at one end and paid-out at the other (reciprocating belt conveyors B65G 25/06) [1, 2006.01]
- 35/06 • comprising a load-carrier moving along a path, e.g. a closed path, and adapted to be engaged by any one of a series of traction elements spaced along the path (effecting drive at two or more points spaced along the length of an endless conveyor B65G 23/32) [1, 2006.01]
- 35/08 • comprising trains of unconnected load-carriers, e.g. belt sections, movable in a path, e.g. a closed path, adapted to contact each other and to be propelled by means arranged to engage each load-carrier in turn [1, 2006.01]

- 37/00 Combinations of mechanical conveyors of the same kind, or of different kinds, of interest apart from their application in particular machines or use in particular manufacturing processes (series of co-operating belt conveyor units B65G 15/22; series of co-operating chain conveyor units B65G 17/26; sequence control of combined conveyors B65G 43/10) [1, 2006.01]**
- 37/02 • Flow sheets for conveyor combinations in warehouses, magazines or workshops [1, 2006.01]

- Common features or details of, or auxiliary devices applicable to, conveyors of different kinds or types; Feeding or discharging devices incorporated in, or operatively associated with, conveyors**

- 39/00 Rollers, e.g. drive rollers, or arrangements thereof incorporated in roller-ways or other types of mechanical conveyors (driving gear for rollers of roller-ways B65G 13/06) [1, 2006.01]**
- 39/02 • Adaptations of individual rollers and supports therefor [1, 2006.01]
- 39/04 • • the rollers comprising a number of roller-forming elements mounted on a single axle [1, 2006.01]
- 39/06 • • the roller sleeves being shock-absorbing, e.g. formed by helically-wound wires [1, 2006.01]
- 39/07 • • Other adaptations of sleeves [1, 2006.01]
- 39/071 • • • for aligning belts or sheets [1, 2006.01]
- 39/073 • • • for cleaning belts [1, 2006.01]
- 39/08 • • the rollers being magnetic [1, 2006.01]
- 39/09 • • Arrangements of bearing or sealing means [1, 2006.01]
- 39/10 • Arrangements of rollers (on a single axle B65G 39/04) [1, 2006.01]
- 39/12 • • mounted on framework [1, 2006.01]
- 39/14 • • • Spring-supported sets, e.g. permitting troughing of a load-carrying belt [1, 2006.01]
- 39/16 • • • for aligning belts or chains [1, 2006.01]
- 39/18 • • • for guiding loads [1, 2006.01]
- 39/20 • • attached to moving belts or chains [1, 2006.01]

- 41/00 Supporting frames or bases for conveyors as a whole, e.g. transportable conveyor frames [1, 2006.01]**
- 41/02 • Frames mounted on wheels for movement on rail tracks [1, 2006.01]

- 43/00 Control devices, e.g. for safety, warning or fault-correcting [1, 2006.01]**
- 43/02 • detecting dangerous physical condition of load-carriers, e.g. for interrupting the drive in the event of overheating [1, 2006.01]
- 43/04 • detecting slip between driving element and load-carrier, e.g. for interrupting the drive [1, 2006.01]
- 43/06 • interrupting the drive in case of driving-element breakage; Braking or stopping loose load-carriers [1, 2006.01]
- 43/08 • Control devices operated by article or material being fed, conveyed, or discharged [1, 2006.01]
- 43/10 • Sequence control of conveyors operating in combination [1, 2006.01]

- 45/00 Lubricating, cleaning, or clearing devices [1, 2006.01]**
- 45/02 • Lubricating devices [1, 2006.01]
- 45/04 • • for rollers [5, 2006.01]
- 45/06 • • • forming belt troughing structure [5, 2006.01]
- 45/08 • • for chains [5, 2006.01]
- 45/10 • Cleaning devices (adaptations of roller sleeves for cleaning belts B65G 39/073) [5, 2006.01]
- 45/12 • • comprising scrapers [5, 2006.01]
- 45/14 • • • Moving scrapers [5, 2006.01]
- 45/16 • • • with scraper biasing means [5, 2006.01]
- 45/18 • • comprising brushes [5, 2006.01]
- 45/20 • • comprising screws [5, 2006.01]
- 45/22 • • comprising fluid applying means [5, 2006.01]
- 45/24 • • comprising plural diverse cleaning devices [5, 2006.01]
- 45/26 • • for gathering residue after cleaning [5, 2006.01]

- 47/00 Article or material-handling devices associated with conveyors; Methods employing such devices [1, 2006.01]**
- 47/02 • Devices for feeding articles or materials to conveyors [1, 2006.01]
- 47/04 • • for feeding articles [1, 2006.01]

- 47/06 • • • from a single group of articles arranged in orderly pattern, e.g. workpieces in magazines (de-stacking devices B65G 59/00) **[1, 2006.01]**
- 47/08 • • • spacing or grouping the articles during feeding (during transit by conveyor B65G 47/28) **[1, 2006.01]**
- 47/10 • • • from several groups of articles **[1, 2006.01]**
- 47/12 • • • from disorderly-arranged article piles or from loose assemblages of articles **[1, 2006.01]**
- 47/14 • • • • arranging or orientating the articles by mechanical or pneumatic means during feeding (during transit by conveyor B65G 47/24, B65G 47/26) **[1, 2006.01]**
- 47/16 • • for feeding materials in bulk **[1, 2006.01]**
- 47/18 • • • Arrangements or applications of hoppers or chutes **[1, 2006.01]**
- 47/19 • • • • having means for controlling material flow, e.g. to prevent overloading **[1, 2006.01]**
- 47/20 • • • • the hoppers or chutes being movable **[1, 2006.01]**
- 47/22 • Devices influencing the relative position or the attitude of articles during transit by conveyors (during feeding B65G 47/14) **[1, 2006.01]**
- 47/24 • • orientating the articles **[1, 2006.01]**
- 47/244 • • • by turning them about an axis substantially perpendicular to the conveying plane **[5, 2006.01]**
- 47/248 • • • by turning over or inverting them (B65G 47/244 takes precedence) **[5, 2006.01]**
- 47/252 • • • • about an axis substantially perpendicular to the conveying direction **[5, 2006.01]**
- 47/256 • • • removing incorrectly orientated articles **[5, 2006.01]**
- 47/26 • • arranging the articles, e.g. varying spacing between individual articles **[1, 2006.01]**
- 47/28 • • • during transit by a single conveyor **[1, 2006.01]**
- 47/29 • • • • by temporarily stopping movement **[1, 2006.01]**
- 47/30 • • • during transit by a series of conveyors **[1, 2006.01]**
- 47/31 • • • • by varying the relative speeds of the conveyors forming the series **[1, 2006.01]**
- 47/32 • • • • Applications of transfer devices **[1, 2006.01]**
- 47/34 • Devices for discharging articles or materials from conveyors (B65G 47/256 takes precedence) **[1, 2006.01]**
- 47/36 • • by detaching suspended articles **[1, 2006.01]**
- 47/38 • • by dumping, tripping, or releasing load-carriers **[1, 2006.01]**
- 47/40 • • • by tilting conveyor buckets **[1, 2006.01]**
- 47/42 • • operated by article or material being conveyed and discharged **[1, 2006.01]**
- 47/44 • • Arrangements or applications of hoppers or chutes **[1, 2006.01]**
- 47/46 • • with distribution, e.g. automatically, to desired points (in tube mail systems B65G 51/36) **[1, 2006.01]**
- 47/48 • • • according to bodily destination marks on either articles or load-carriers **[1, 2006.01]**
- 47/49 • • • without bodily contact between article or load-carrier and automatic control device **[1, 2006.01]**
- 47/50 • • • according to destination signals stored in separate systems **[1, 2006.01]**
- 47/51 • • • according to unprogrammed signals, e.g. influenced by supply situation at destination **[1, 2006.01]**
- 47/52 • Devices for transferring articles or materials between conveyors, i.e. discharging or feeding devices (loading or unloading by means not incorporated in, or not operatively associated with, conveyors B65G 65/00; transfer of workpieces during metal rolling B21B 41/00) **[1, 2006.01]**
- 47/53 • • between conveyors which cross one another **[3, 2006.01]**
- 47/54 • • • at least one of which is a roller-way **[1, 3, 2006.01]**
- 47/56 • • to or from inclined or vertical conveyor sections **[1, 2006.01]**
- 47/57 • • • for articles **[1, 2006.01]**
- 47/58 • • • for materials in bulk **[1, 2006.01]**
- 47/60 • • to or from conveyors of the suspended, e.g. trolley, type **[1, 2006.01]**
- 47/61 • • • for articles **[1, 2006.01]**
- 47/62 • • • for materials in bulk **[1, 2006.01]**
- 47/64 • • Switching conveyors **[1, 2006.01]**
- 47/66 • • Fixed platforms or combs, e.g. bridges between conveyors **[1, 2006.01]**
- 47/68 • • adapted to receive articles arriving in one layer from one conveyor and to transfer them in individual layers to more than one conveyor, or vice versa, e.g. combining the flows of articles conveyed by more than one conveyor **[1, 2006.01]**
- 47/69 • • • the articles being accumulated temporarily **[1, 2006.01]**
- 47/70 • • • with precedence controls among incoming article flows **[1, 2006.01]**
- 47/71 • • • the articles being discharged to several conveyors **[1, 2006.01]**
- 47/72 • • transferring materials in bulk from one conveyor to several conveyors or vice versa **[1, 2006.01]**
- 47/74 • Feeding, transfer, or discharging devices of particular kinds or types **[1, 2006.01]**
- 47/76 • • Fixed or adjustable ploughs or transverse scrapers **[1, 2006.01]**
- 47/78 • • Troughs having discharge openings and closures **[1, 2006.01]**
- 47/80 • • Turntables carrying articles or materials to be transferred, e.g. combined with ploughs or scrapers **[1, 2006.01]**
- 47/82 • • Rotary or reciprocating members for direct action on articles or materials, e.g. pushers, rakes, shovels **[1, 2006.01]**
- 47/84 • • Star-shaped wheels or devices having endless travelling belts or chains, the wheels or devices being equipped with article-engaging elements **[1, 2006.01]**
- 47/86 • • • the article-engaging elements being grippers **[1, 2006.01]**
- 47/88 • • Separating or stopping elements, e.g. fingers (attached to star-shaped wheels B65G 47/84) **[1, 2006.01]**
- 47/90 • • Devices for picking-up and depositing articles or materials **[1, 2006.01]**
- 47/91 • • • incorporating pneumatic, e.g. suction, grippers **[1, 2006.01]**
- 47/92 • • • incorporating electrostatic or magnetic grippers **[1, 2006.01]**
- 47/94 • • Devices for flexing or tilting travelling structures; Throw-off carriages **[1, 2006.01]**
- 47/95 • • • adapted for longitudinal delivery **[1, 2006.01]**
- 47/96 • • • Devices for tilting links or platforms **[1, 2006.01]**

49/00 Conveying systems characterised by their application for specified purposes not otherwise provided for [1, 2006.01]

- 49/02 • for conveying workpieces through baths of liquid [1, 2006.01]
- 49/04 • • the workpieces being immersed and withdrawn by movement in a vertical direction [1, 2006.01]
- 49/05 • for fragile or damageable materials or articles [4, 2006.01]
- 49/06 • • for fragile sheets, e.g. glass [1, 4, 2006.01]
- 49/07 • • for semiconductor wafers [5, 2006.01]
- 49/08 • • for ceramic mouldings [4, 2006.01]

Non-mechanical conveying through pipes or tubes; Floating in troughs

51/00 Conveying articles through pipes or tubes by fluid flow or pressure; Conveying articles over a flat surface, e.g. the base of a trough, by jets located in the surface [1, 2006.01]

- 51/01 • Hydraulic transport of articles (B65G 51/04 takes precedence) [6, 2006.01]
- 51/02 • Directly conveying the articles, e.g. slips, sheets, stockings, containers or workpieces, by flowing gases [1, 2006.01]
- 51/03 • • over a flat surface or in troughs [4, 2006.01]
- 51/04 • Conveying the articles in carriers having a cross-section approximating that of the pipe or tube; Tube mail systems [1, 2006.01]
- 51/06 • • Despatch carriers for tube mail [1, 2006.01]
- 51/08 • • Controlling or conditioning the operating medium [1, 2006.01]
- 51/10 • • • at section junctions of pneumatic systems [1, 2006.01]
- 51/12 • • • • Pneumatic gates [1, 2006.01]
- 51/14 • • • • Pneumatic sluices [1, 2006.01]
- 51/16 • • • varying, e.g. starting or stopping, gas pressure or flow [1, 2006.01]
- 51/18 • • Adaptations of pipes or tubes; Pipe or tube joints [1, 2006.01]
- 51/20 • • Braking arrangements [1, 2006.01]
- 51/22 • • Arrangements for stopping the carriers en route in order to control carrier sequence; Blocking or separating devices [1, 2006.01]
- 51/24 • • Switches [1, 2006.01]
- 51/26 • • Stations [1, 2006.01]
- 51/28 • • • for despatch [1, 2006.01]
- 51/30 • • • for delivery [1, 2006.01]
- 51/32 • • • for despatch, delivery, and transit [1, 2006.01]
- 51/34 • • Two-way operation [1, 2006.01]
- 51/36 • • Other devices for indicating or controlling movements of carriers, e.g. for supervising individual tube sections, for counting carriers, for reporting jams or other operating difficulties [1, 2006.01]
- 51/38 • • • Contact devices on interior of tubes for detecting passage of carriers [1, 2006.01]
- 51/40 • • • Automatically distributing the carriers to desired stations [1, 2006.01]
- 51/42 • • • • according to indications on carriers [1, 2006.01]
- 51/44 • • • • without mechanical contact between carriers and controllers [1, 2006.01]
- 51/46 • • • • according to separate signal systems [1, 2006.01]

53/00 Conveying materials in bulk through troughs, pipes or tubes by floating the materials or by flow of gas, liquid or foam [1, 2006.01]

- 53/02 • Floating material troughs [1, 2006.01]
- 53/04 • Conveying materials in bulk pneumatically through pipes or tubes; Air slides [1, 2006.01]
- 53/06 • • Gas pressure systems operating without fluidisation of the materials [1, 2006.01]
- 53/08 • • • with mechanical injection of the materials, e.g. by screw [1, 2006.01]
- 53/10 • • • with pneumatic injection of the materials by the propelling gas [1, 2006.01]
- 53/12 • • • • the gas flow acting directly on the materials in a reservoir [1, 2006.01]
- 53/14 • • • • the gas flow inducing feed of the materials by suction effect [1, 2006.01]
- 53/16 • • Gas pressure systems operating with fluidisation of the materials [1, 2006.01]
- 53/18 • • • through a porous wall [1, 2006.01]
- 53/20 • • • • of an air slide, e.g. a trough [1, 2006.01]
- 53/22 • • • • the systems comprising a reservoir, e.g. a bunker [1, 2006.01]
- 53/24 • • Gas suction systems [1, 2006.01]
- 53/26 • • • operating with fluidisation of the materials [1, 2006.01]
- 53/28 • • Systems utilising a combination of gas pressure and suction (inducing feed of the materials by suction in gas pressure systems B65G 53/14) [1, 2006.01]
- 53/30 • Conveying materials in bulk through pipes or tubes by liquid pressure [1, 2006.01]
- 53/32 • Conveying concrete, e.g. for distributing same at building sites (mixing concrete on or by conveyors B28C 5/34) [1, 2006.01]
- 53/34 • Details [1, 2006.01]
- 53/36 • • Arrangements of containers [1, 2006.01]
- 53/38 • • Modification of material containing walls to facilitate fluidisation [1, 2006.01]
- 53/40 • • Feeding or discharging devices [1, 2006.01]
- 53/42 • • • Nozzles [1, 2006.01]
- 53/44 • • • Endless conveyors [1, 2006.01]
- 53/46 • • • Gates or sluices, e.g. rotary wheels [1, 2006.01]
- 53/48 • • • Screws or like rotary conveyors [1, 2006.01]
- 53/50 • • • Pneumatic devices (incorporated in nozzles B65G 53/42) [1, 2006.01]
- 53/52 • • Adaptations of pipes or tubes [1, 2006.01]
- 53/54 • • • Flexible pipes or tubes [1, 2006.01]
- 53/56 • • • Switches [1, 2006.01]
- 53/58 • • Devices for accelerating or decelerating flow of the materials; Use of pressure generators (controlling pressure of propelling gas B65G 53/66) [1, 2006.01]
- 53/60 • • Devices for separating the materials from propellant gas [1, 2006.01]
- 53/62 • • • using liquid [1, 2006.01]
- 53/64 • • • in discrete amounts [1, 2006.01]
- 53/66 • • Use of indicator or control devices, e.g. for controlling gas pressure, for controlling proportions of material and gas, for indicating or preventing jamming of material [1, 2006.01]

54/00 Non-mechanical conveyors not otherwise provided for [3, 2006.01]

- 54/02 • electrostatic, electric, or magnetic [3, 2006.01]

Stacking or de-stacking; Loading or unloading**Note(s)**

In groups B65G 57/00-B65G 61/00, the following term is used with the meaning indicated:

- "stacking" means disposing articles individually or in layers one above each other.

- 57/00 Stacking of articles** (B65G 60/00 takes precedence; feeding, piling or stacking sheets B65H) [1, 2006.01]
- 57/02 • by adding to the top of the stack [1, 2006.01]
- 57/03 • • from above [1, 2006.01]
- 57/04 • • • by suction or magnetic devices [1, 2006.01]
- 57/06 • • • Gates for releasing articles [1, 2006.01]
- 57/08 • • articles being tilted or inverted prior to depositing [1, 2006.01]
- 57/081 • • • alternate articles being inverted [1, 2006.01]
- 57/09 • • from alongside [1, 2006.01]
- 57/10 • • • by devices, e.g. reciprocating, acting directly on articles for horizontal transport to the top of stack [1, 2006.01]
- 57/11 • • the articles being stacked by direct action of the feeding conveyor [1, 2006.01]
- 57/112 • • • the conveyor being adjustable in height [1, 2006.01]
- 57/14 • • • the articles being transferred from carriers moving in an endless path adjacent to the stacks [1, 2006.01]
- 57/16 • • Stacking of articles of particular shape [1, 2006.01]
- 57/18 • • • elongated, e.g. sticks, rods, bars [1, 2006.01]
- 57/20 • • • three-dimensional, e.g. cubiform, cylindrical [1, 2006.01]
- 57/22 • • • • in layers, each of predetermined arrangement [1, 2006.01]
- 57/24 • • • • • the layers being transferred as a whole, e.g. on pallets [1, 2006.01]
- 57/26 • • • • • the arrangement providing for spaces between the articles [1, 2006.01]
- 57/28 • by assembling the articles and tilting the assembled articles to a stacked position [1, 2006.01]
- 57/30 • by adding to the bottom of the stack [1, 2006.01]
- 57/32 • characterised by stacking during transit [1, 2006.01]
- 59/00 De-stacking of articles** (B65G 60/00 takes precedence) [1, 2006.01]
- 59/02 • De-stacking from the top of the stack [1, 2006.01]
- 59/04 • • by suction or magnetic devices [1, 2006.01]
- 59/06 • De-stacking from the bottom of the stack [1, 2006.01]
- 59/08 • De-stacking after preliminary tilting of the stack [1, 2006.01]
- 59/10 • De-stacking nested articles [1, 2006.01]
- 59/12 • characterised by de-stacking during transit [1, 2006.01]
- 60/00 Simultaneously or alternatively stacking and de-stacking of articles** [1, 2006.01]
- 61/00 Use of pick-up or transfer devices or of manipulators for stacking or de-stacking articles not otherwise provided for** [1, 2006.01]

63/00 Transferring or trans-shipping at storage areas, railway yards or harbours; Marshalling yard installations [1, 2006.01]

- 63/02 • with essentially-horizontal transit otherwise than by bridge [1, 2006.01]
- 63/04 • with essentially-horizontal transit by bridges equipped with conveyors [1, 2006.01]
- 63/06 • with essentially-vertical transit [1, 2006.01]

65/00 Loading or unloading (of vehicles B65G 67/00) [1, 2006.01]

- 65/02 • Loading or unloading machines comprising essentially a conveyor for moving the loads associated with a device for picking-up the loads [1, 2006.01]
- 65/04 • • with pick-up shovels (construction of shovels E02F) [1, 2006.01]
- 65/06 • • with endless scraping or elevating pick-up conveyors [1, 2006.01]
- 65/08 • • with reciprocating pick-up conveyors [1, 2006.01]
- 65/10 • • • Raking or scraping devices [1, 2006.01]
- 65/12 • • • • operations at positions off-set from the conveyor centreline [1, 2006.01]
- 65/14 • • with jiggling pick-up conveyors, e.g. duck-bills [1, 2006.01]
- 65/16 • • with rotary pick-up conveyors [1, 2006.01]
- 65/18 • • • Discs [1, 2006.01]
- 65/20 • • • Paddle wheels [1, 2006.01]
- 65/22 • • • Screws [1, 2006.01]
- 65/23 • Devices for tilting and emptying of containers [3, 2006.01]
- 65/24 • • for manual tilting of barrels or casks [1, 3, 2006.01]
- 65/28 • Piling or unpling loose materials in bulk, e.g. coal, manure, timber, not otherwise provided for (by soil-shifting or like equipment E02F) [1, 2006.01]
- 65/30 • Methods or devices for filling or emptying bunkers, hoppers, tanks, or like containers, of interest apart from their use in particular chemical or physical processes or their application in particular machines, e.g. not covered by a single other subclass (devices for tilting and emptying containers B65G 65/23; such containers having means facilitating filling or emptying B65D 88/54) [1, 3, 2006.01]

Note(s) [5]

Methods or devices for filling bunkers, hoppers, or containers are only classified in group B65G 65/30 if they are of general application apart from their use in particular processes or their application in particular machines or if they are not covered by a single other subclass.

- 65/32 • • Filling devices [1, 2006.01]
- 65/34 • • Emptying devices (conveyor construction B65G 15/00-B65G 35/00; devices similar to vehicle tipplers B65G 67/48) [1, 2006.01]
- 65/36 • • • Devices for emptying from the top [1, 2006.01]
- 65/38 • • • • Mechanical devices [1, 2006.01]
- 65/40 • • • Devices for emptying otherwise than from the top [1, 2006.01]
- 65/42 • • • • using belt or chain conveyors [1, 2006.01]
- 65/44 • • • • using reciprocating conveyors, e.g. jiggling conveyors [1, 2006.01]
- 65/46 • • • • using screw conveyors [1, 2006.01]
- 65/48 • • • • using other rotating means, e.g. rotating pressure sluices in pneumatic systems [1, 2006.01]

- 67/00 Loading or unloading vehicles** (by means incorporated in the vehicles B60-B64, e.g. B60P 1/00, B61D 9/00, B63B 27/00, B64D 9/00; ground or aircraft-carrier-deck installations for aircraft B64F 1/32) **[1, 2006.01]**
- 67/02 • Loading or unloading land vehicles **[1, 2006.01]**
 - 67/04 • • Loading land vehicles **[1, 2006.01]**
 - 67/06 • • • Feeding articles or materials from bunkers or funnels **[1, 2006.01]**
 - 67/08 • • • using endless conveyors **[1, 2006.01]**
 - 67/10 • • • using conveyors covering the whole length of vehicle trains **[1, 2006.01]**
 - 67/12 • • • Loading elongated articles, e.g. rails, logs **[1, 2006.01]**
 - 67/14 • • • Loading hardened bricks, briquettes, or the like **[1, 2006.01]**
 - 67/16 • • • Loading coke-oven products (discharging coke ovens C10B 33/00) **[1, 2006.01]**
 - 67/18 • • • Refuelling locomotives with solid fuels **[1, 2006.01]**
 - 67/20 • • • Loading covered vehicles **[1, 2006.01]**
 - 67/22 • • • Loading moving vehicles **[1, 2006.01]**
 - 67/24 • • Unloading land vehicles **[1, 2006.01]**
 - 67/26 • • • using rakes or scrapers **[1, 2006.01]**
 - 67/28 • • • • External transverse blades attached to endless conveyors **[1, 2006.01]**
 - 67/30 • • • using transportable tipping apparatus **[1, 2006.01]**
 - 67/32 • • • using fixed tipping installations **[1, 2006.01]**
 - 67/34 • • • • Apparatus for tipping wagons or mine cars (inverting wagons B65G 67/48) **[1, 2006.01]**
 - 67/36 • • • • • endwise **[1, 2006.01]**
 - 67/38 • • • • • comprising a turntable **[1, 2006.01]**
 - 67/40 • • • • • toward one end only **[1, 2006.01]**
 - 67/42 • • • • • sideways **[1, 2006.01]**
 - 67/44 • • • • • by passing the vehicles over a stretch of transversely-inclined rails **[1, 2006.01]**
 - 67/46 • • • • • Apparatus for lifting and tilting **[1, 2006.01]**
 - 67/48 • • • • Vehicle tipplers **[1, 2006.01]**
 - 67/50 • • • • Rotary vehicle tipplers, i.e. rotating through 360° **[1, 2006.01]**
 - 67/52 • • • • • having several decks **[1, 2006.01]**
 - 67/54 • • • • • Vehicle-locking means **[1, 2006.01]**
 - 67/56 • • • • • Vehicle and tippler interlocking controls **[1, 2006.01]**
 - 67/60 • Loading or unloading ships (arrangement of ship-based loading or unloading equipment for cargo or passengers B63B 27/00) **[3, 2006.01]**
 - 67/62 • • using devices influenced by the tide or by the movements of the ship, e.g. devices on pontoons **[3, 2006.01]**
- 69/00 Auxiliary measures taken, or devices used, in connection with loading or unloading** (by means incorporated in, or operatively associated with, conveyors B65G 47/00; preventing fire A62C 3/00; in vehicles, see the relevant subclasses, e.g. B60P 1/58, B61D 7/32, B62D 33/00, B63B 25/00, B64D 9/00) **[1, 2006.01]**
- 69/02 • Filling storage spaces as completely as possible, e.g. application of vibrators **[1, 2006.01]**
 - 69/04 • Spreading-out the materials conveyed over the whole surface to be loaded; Trimming heaps of loose materials **[1, 2006.01]**
 - 69/06 • Fluidising **[1, 2006.01]**
 - 69/08 • Devices for emptying storage spaces as completely as possible (devices preventing the formation of bridges in large containers B65D 88/64) **[1, 2006.01]**
 - 69/10 • Obtaining an average product from stored bulk material **[1, 2006.01]**
 - 69/12 • Sieving bulk materials during loading or unloading **[1, 2006.01]**
 - 69/14 • Pulverising loaded or unloaded materials **[1, 2006.01]**
 - 69/16 • Preventing pulverisation, deformation, breakage, or other mechanical damage to the goods or materials **[1, 2006.01]**
 - 69/18 • Preventing escape of dust **[1, 2006.01]**
 - 69/20 • Auxiliary treatments, e.g. aerating, heating, humidifying, de-aerating, cooling, de-watering, or drying, during loading or unloading; Loading or unloading in a fluid medium other than air **[1, 2006.01]**
 - 69/22 • Horizontal loading or unloading platforms (as road or railway equipment B61B 1/00, E01F 1/00) **[1, 2006.01]**
 - 69/24 • • having platform-level adjusting means **[1, 2006.01]**
 - 69/26 • • Rotatable platforms **[1, 2006.01]**
 - 69/28 • Loading ramps; Loading docks (as road or railway equipment B61B 1/00, E01F 1/00) **[1, 2006.01]**
 - 69/30 • • Non-permanently installed loading ramps, e.g. transportable **[2006.01]**
 - 69/32 • • Shelters, surrounds or sealing arrangements for loading docks **[2006.01]**
 - 69/34 • • Accessories, e.g. vehicle restrainers, wheel blockers, positioners or bumpers **[2006.01]**