

# SUPPLY AND SERVICE CONTRACT

## Statement of Work

Refurbish Westinghouse Escalator Modular 100 & 250 Link-Belt Speed Reducers

Modular 100 Speed Reducer - WMATA stock Number V38-30-0219

Modular 250 Speed Reducer - WMATA stock Number V38-30-0414

### 1.0 Scope of Work

The contractor shall provide all labor, materials and equipment required to refurbish Westinghouse Modular 100 (Link-Belt 5191D56G01) and Westinghouse Modular 250 (Link-Belt 7196D16H17) speed reducers. The refurbished speed reducers shall meet all ASME A17.1 code requirements. The definition of a refurbished speed reducer is replacement of all seals, shim-gasket(s), housing breather and all rotating elements, which includes bearings, shafting, and gearing and a re-qualified housing unit.

The contract shall be a multiple-year contract consisting of a one-year base period and two one-year options with each year subject to the availability of funds. Invoices shall be submitted on a monthly basis for refurbished units delivered to and accepted by WMATA.

### 2.0 General Requirements

The Contractor shall establish and maintain a record of each refurbished speed reducer.

The record shall consist of the serial number of the speed reducers, list of new components installed and certification that the speed reducer meets original performance specifications.

A report shall accompany each refurbished speed reducer returned to WMATA. In addition after each shipment, a report shall be provided to the Contracting Officer Technical Representative (COTR), electronically or in writing.

### 3.0 Specific Requirement for Remanufactured Services

In the course of the maintenance to be performed, all replacement parts must be the same, brand name or equal, to the original part with regard to form, fit, and function while exhibiting identical or superior performance characteristics of the original part, or subcomponent thereof, being replaced.

Each speed reducer will be completely disassembled, and cleaned externally and internally for examination. Existing gearing, shafting, bearings and seals will be removed and discarded unless a prior request is made by WMATA to return them. The housing bores will be inspected to the original dimension.

Each refurbished reducer shall have the following new components:

- all gearing
- all shafting, but see 3d below
- all bearings
- all seals, shims and gaskets
- all hardware
- housing breather
- housing unit (re-qualified)

The Contractor shall refurbish all speed reducers in accordance with the following guidelines:

- a. Inspect reducer to insure there is no damage to the housing which would make the reducer unusable.
- b. Drain all fluid from the reducer and discard in an environmentally approved manner.
- c. Remove output shaft from the hollow shaft.
- d. Inspect output shafts, working diameters and keyways to ensure they are within original specifications. Worn out shafts that do not meet this specification are to be discarded.
- e. Disassemble reducer by removing the 13 socket head cap screws and separating the housing into two halves.
- f. Remove and discard the input shaft with 16P/36T pinion gear.
- g. Remove and discard first countershaft with 16P/88T & 10P/23T gear assembly.
- h. Remove and discard second countershaft with 10P/70T & 6P/13T gear assembly.
- i. Remove the hollow shaft with 6P/62T and replace output gear assembly.
- j. Remove and discard all bearings and seals.
- k. Thoroughly clean and degrease housing halves. Pay special attention to all hidden areas where filing and other debris can collect.
- l. Inspect housings for any visible cracks and other signs of wear.
- m. Inspect all freeze out plugs for corrosion or any other damage, replace as necessary.
- n. Inspect all bearing bores to insure they are within the tolerance to maintain the ISO Standard H7 fit. If bearing bores are greater than the H7 fit tolerances, discard housing.

- o. Replace the existing SKF 6307-2Z and SKF 6310-2Z bearings with new SKF 6307-2Z and SKF 6310-2Z bearings on the new input shaft.
- p. Replace the two existing SKF 6210-2Z bearings with two new SKF 6210-2Z bearings on the new first countershaft shaft/gear assembly.
- q. Replace the two existing SKF 6310-21Z bearings with two new SKF 6310-21Z bearings on the new second countershaft shaft/gear assembly.
- r. Replace the two existing SKF 6022-2Z bearings with two new SKF 6022-2Z bearings on the hollow shaft/gear assembly.
- s. Install all shaft/gear assemblies into one half of the housing.
- t. Apply Dykem Blue layout fluid, or equivalent, to the pinion gear of each gear mesh set.
- u. Install new housing gasket made from material conforming to ASTM D1170-62 and install second half of housing. Torque 5/16-18 socket head cap screws to 415-460 in lbs.
- v. Manually rotate input shaft in both directions and check for binding. Gears should turn freely and quiet.
- w. Install all new seals into the housing halves.
- x. Mount reducer on test stand. Fill reducer to the required level with AGMA 6EP oil, Mobil gear 632, Shell Omala 320 or equivalent.
- y. 'Run in' reducer at least two hours in each direction. Check bearing for excessive heat or vibration.
- z. If reducer passes 'run in' test, dismount from test stand and drain oil. Check oil for metallic particles.
- aa. Clean and paint housing.
- bb. Make and install reducer rebuild tag with original serial number along with color coded date code. Color scheme to be determined by COTR.
- cc. Re-install output shaft if available.
- dd. Prepare reducer for shipment.

#### 4.0 First article inspection

Once the contract is awarded, the contractor will make arrangements to pick up one (1) sample speed reducer to be refurbished from the warehouse at 3500 Pennsy Drive, Landover MD, 20874. The contractor shall refurbish the speed reducer as an FAI and submit it to ELES engineering for their approval. The FAI is to be completed within 30 days once the speed reducer has been taken from the warehouse. Once approved, the contractor can resume the refurbishment contract for the quantity mentioned to meet the contract obligation.

5.00 Additional Requirements

- a. All speed reducers shall be picked up from and delivered to WMATA Office of Elevator and Escalator Services (Storeroom 320) at 3500 Pennsy Drive, Landover, MD 20784. WMATA reserves the right to name alternative delivery / pickup locations in the Washington, DC metropolitan area, without additional charge. Freight charges to be borne by the contractor.
- b. All work on speed reducers shall be completed and returned to WMATA within 30 business days, excluding WMATA recognized holidays and weekends, from time of pick-up of the speed reducers by contractor. WMATA understands that initial start-up lot may take longer than 30 days.
- c. All speed reducers shall be warranted to be free from defects in materials and workmanship for a period of no less than 12 months from date of acceptance at WMATA.
- d. Speed reducers shall meet or exceed original performance specifications and will be tested and inspected to original Link- Belt QA/QC standards.