### HALDEX INTERIM REPORT JANUARY - SEPTEMBER 2018 032018



During Q3, like in the earlier quarters of the year, Haldex increased its net sales in all geographic regions. The development in a number of product areas continued to be strong, including brake adjusters and disc brakes. Large investments in R&D and increased costs to meet high demand, and thus a constrained supply chain in North America, had a negative effect on earnings, but, despite this, the operating margin and the earnings per share were higher than the same period the previous year. Cash flow from operating activities also continued to improve.

- Net sales for Q3 totalled SEK 1,270 (1,081) m, equivalent to an increase of 17 per cent compared to the previous year. After currency adjustments, net sales increased by 9 per cent. Net sales for the first nine months of the year totalled SEK 3,894 (3,413) m, which is equivalent to a currency-adjusted increase of 13 per cent.
- Operating income totalled SEK 79 (48) m for Q3 and SEK 272 (116) m for the first nine months of the year, which is equivalent to an operating margin of 6.3 (4.5) per cent for Q3 and 7.0 (3.4) per cent for the first nine months of the year.
- The net income after tax for Q3 totalled SEK 58 (26) m and the earnings per share for Q3 totalled SEK 1.30 (0.59). The corresponding figures for the first nine months of the year are SEK 177 (65) m for net income after tax and SEK 3.95 (1.45) for earnings per share.
- Cash flow from operating activities totalled SEK 74 (27) m in Q3 and SEK 75 (85) m for the first nine months of the year.

Key figures	Jul-Sep 2018	Jul-Sep 2017	Change	Jan-Sep 2018	Jan-Sep 2017	Change
Net sales, SEK m	1,270	1,081	17%	3,894	3,413	14%
Operating income, SEK m	79	. 48	65%	272	116	134%
Operating income, excl. one-off items, SEK m	79	68	16%	272	226	20%
Operating margin, %	6.3	4.5	1.8	7.0	3.4	3.6
Operating margin, excl. one-off items, %	6.3	6.3	0.0	7.0	6.6	0.4
Return on capital employed,% <sup>1</sup>	12.5	4.2	8.3	12.5	4.2	8.3
Return on capital employed, excl. one-off items,% <sup>1</sup>	13.8	12.6	1.2	13.8	12.6	1.2
Net income, SEK m	58	26	121%	177	65	172%
Earnings per share, SEK	1.30	0.59	121%	3.95	1.45	172%
Cash flow, operating activities, SEK m	74	27	47	75	85	-10

<sup>1</sup> Rolling twelve months

Haldex AB (publ) is required to publish the above information under the EU Market Abuse Regulation. The information was submitted for publication by the Haldex media contact stated in the release on Thurdsday, October 25, 2018 at 7:20 CEST.



**Innovative Vehicle Solutions** 



### **Comments from the CEO**

Haldex's net sales and earnings performed well in Q3. Market conditions continued to improve, and we have had higher net sales and operating income in all quarters of the year than in equivalent quarters the previous year. However, the high demand creates challenges in the supply chain, which we have managed better and better during the year.

Haldex's market is going through a transformation. In the short term, we are facing a technology shift from drum brakes to disc brakes in North America and a sharp increase in demand for automatic brake adjusters due to a change in the legal requirements in China. In the long-term, changes are under way that will affect society as a whole as the market moves toward connected, electric and self-driving vehicles.

#### Open and scalable brake systems

The system architecture of a vehicle will change as self-driving vehicles develop. By developing the brake systems jointly with OEMs, we reshape the principles for the vehicle system architecture. We believe in open and scalable brake systems, where truck and trailer manufacturers have full access to data from the wheel ends. By also separating the software from the hardware, we can use the same software functionality regardless of whether the vehicle has a disc brake, drum brake, or electromechanical brake.

Haldex has been developing these principles for a long time, and at the IAA Commercial Vehicles trade show in Hannover in September we presented two products that offer the same result but are based on different technologies: Fast Acting Brake Valve (FABV), which is a high-performance valve that can be used in existing pneumatic brake systems, and the electromechanical disc brake, which is a disc break for fully electric brake systems. Few heavy vehicles have an electric brake system today, despite the increasing range of electric vehicles. This is because electric brake systems to date are allowed only in China; not in Europe and North America.

Both products offer a stopping distance that is 15 per cent shorter, compared to systems that are established today, but, more importantly for self-driving vehicles, they keep the vehicle in the intended path with a stability and predictability not available in any other technology available today. Haldex's investment in R&D rests on a stable foundation of technology for both today's brake systems and the brake systems of tomorrow. The technology shift facing the industry requires investments to remain competitive in the future, but it also requires another way of addressing the market and take on customers' challenges. Discussions about how Haldex best will handle these changes has started and our plans will be presented in the months to come.

#### Brake adjusters are growing rapidly in China

On 1 January 2018, a new law went into effect that requires automatic brake adjusters on new heavy vehicles in China. The Chinese market is showing negative growth in 2018, but, following the change in the law, Haldex has been growing in China. Compliance with the law is however still lagging, and the rate of introduction of automatic brake adjusters slowed somewhat. This is positive for Haldex since expansion that occurs too rapidly creates challenges in how to balance growth against expansion costs. In Q3, the new law in China resulted in brake



adjusters being one of Haldex's fastest growing products on a global scale. We have also strengthened our market position on the Chinese market.

#### Technology shift in North America

In North America, the technology shift continues from drum brakes to disc brakes. Knowledge about disc brakes in terms of maintenance and related costs is still being built up in different customer groups, and Haldex can influence this by actively working with the fleets to raise the level of knowledge. Another important target group is manufacturers of trucks and trailers, where Haldex's disc brake has already been an option at one of the USA's largest axle manufacturers. In Q3, Haldex's disc brake achieved standard position at one of the trailer manufacturers, which is a strategically important achievement, even if it will not result initially in high sales. The technology shift from drum brake to disc brake is expected to have a minor impact in 2018 and will primarily affect demand for disc brakes in coming years.

#### Cost control and cash flow

Cost control continues to be good. There have been noticeable increases in material prices throughout the entire year, and in Q3 the new tariffs entered into force as well. There is a delay between this type of cost increase and the price increase for the customer. Haldex will be impacted by a higher cost level for the rest of the year, which can first be transferred to the customers next year. Haldex plans to continue with the current investment level in R&D and production capacity.

Activities were initiated in Q1 to optimise the working capital and thus cash flow, which had an effect in Q2 and Q3. These activities are continuing, and the working capital is still not at a satisfactory level.

#### Outlook for 2018

The outlook for 2018 has not changed. We believe that net sales for 2018 will increase compared to 2017. Costs for a higher rate of investment in development projects and costs for expansion in North America and China will burden income. In Q4, the increase in material cost and tariffs will have a greater impact than in Q3. Haldex's assessment is that the operating margin in 2018 will be in line with or possibly slightly higher than the operating margin in 2017 excluding one-off items.

Åke Bengtsson President & CEO

# Net sales for the Group

Net sales for Q3 totalled SEK 1,270 (1,081) m, which is equivalent to a 17 per cent increase in absolute terms compared with the same period the previous year. After currency adjustments, net sales increased by 9 per cent. Net sales for the first nine months of the year totalled SEK 3,894 (3,413) m, which is equivalent to a currency-adjusted increase of 13 per cent.

Just like in the first six months of the year, net sales grew in all regions in Q3. In terms of products, sales of disc brakes, actuators and brake adjusters increased the most.



### Net sales per product line

Net sales, SEK m	Jul-Sep 2018	Jul-Sep 2017	Change <sup>1</sup>	Jan-Sep 2018	Jan-Sep 2017	Change <sup>1</sup>
Foundation Brake	745	614	14%	2,317	1,931	19%
Air Controls	525	467	3%	1,577	1,482	4%
Total	1,270	1,081	9%	3,894	3,413	13%

<sup>1</sup> Currency adjusted

Haldex has two main product lines. Foundation Brake includes brake products for wheel ends such as disc brakes, brake adjusters for drum brakes and actuators. Air Controls includes products to improve brake systems' safety and driving qualities, such as treatment and dehumidifying of compressed air, valves, and ABS and EBS.

Net sales within Foundation Brake totalled SEK 745 (614) m in Q3. After currency adjustments, this is a 14 per cent increase compared to the same period the previous year. Net sales for the first nine months of the year totalled SEK 2,317 (1,931) m, which is equivalent to an increase of 19 per cent compared to the same period the previous year. In Q3, sales of disc brakes, actuators and brake adjusters continued to increase. These three product groups have had a positive sales trend for several quarters.

Net sales within Air Controls amounted to SEK 525 (467) m in Q3. After currency adjustments, this is an increase of 3 per cent compared to the same period the previous year. Net sales for the first nine months of the year totalled SEK 1,577 (1,482) m, which is equivalent to a currency-adjusted increase of 4 per cent. Within Air Controls, the air treatment products increased the most in Q3, while ABS decreased slightly. The previous decline in Reman (product remanufacturing) stabilised, and sales in the first nine months are higher than in the same period the previous year.



### Net sales per customer category

Net sales, SEK m	Jul-Sep 2018	Jul-Sep 2017	Change <sup>1</sup>	Jan-Sep 2018	Jan-Sep 2017	Change <sup>1</sup>
Truck (including buses)	317	247	20%	983	765	28%
Trailer	377	335	6%	1,243	1,091	12%
Aftermarket	576	499	7%	1,668	1,557	6%
Total	1,270	1,081	9%	3,894	3,413	13%

<sup>1</sup> Currency adjusted

Haldex operates in the market via three customer categories: Truck, Trailer and Aftermarket. Net sales within Truck totalled SEK 317 (247) m for Q3. After currency adjustments, this is a 20 per cent increase compared to the same period the previous year. Net sales for the first nine months of the year totalled SEK 983 (765) m, which is equivalent to a currency-adjusted increase of 28 per cent. Truck sales mainly increased in Asia and South America in Q3. Truck sales was impacted the most by the sales of brake adjusters and actuators.

Net sales within Trailer amounted to SEK 377 (335) m in Q3. After currency adjustments, this is a 6 per cent increase compared to the same period the previous year. Net sales for the first nine months of the year totalled SEK 1,243 (1,091) m, which is equivalent to a currency-adjusted increase of 12 per cent. Trailer sales increased in Q3 in all regions except North America. Disc brakes and brake adjusters are two products driving the growth within Trailer.

Net sales within Aftermarket totalled SEK 576 (499) m in Q3. After



currency adjustments, this is a 7 per cent increase compared to the same period the previous year. Net sales for the first nine months of the year totalled SEK 1,668 (1,557) m, which corresponds to a currency-adjusted increase in net sales of 6 per cent. Aftermarket sales increased in all geographic regions, except Asia, in Q3.

### **Industry production trends**

New heavy trucks and trailers is a good indicator for the market Haldex operates on. It is important to remember that Haldex is affected depending on how large the proportion of sales is in each category.

Produced units Industry forecast <sup>1</sup>	Jul-Sep 2018	Change <sup>2</sup>	Full year 2018	Change <sup>2</sup>	Importance for Haldex sales
Truck	,				
North America	87,360	23%	315,000	26%	Haldex' sales to Truck customers in North America is larger than Truck sales
Europe	121,632	6%	505,784	4%	in other regions. Changes in the produc-
China	212,806	-27%	983,281	-14%	tion trends in North America are thus
India	63,240	18%	284,107	36%	impacting Haldex' sales much more than changes in other regions. Changes
South America	18,253	14%	74,536	28%	in Europe and Asia have in turn slightly
All regions	503,291	-8%	2,162,708	0%	<ul> <li>higher impact than changes of produc- tion trends in South America.</li> </ul>
Trailer					
North America	86,950	5%	341,000	9%	Within Trailer, sales in Europe is more significant than sales in North America.
Europe	78,452	2%	322,847	2%	Other regions in Asia and South America
China	87,000	-42%	420,000	-29%	have lower sales and, as a result, a lower impact on Haldex' total net sales.
India	14,000	12%	57,000	32%	impact on maluex total het sales.
South America	14,900	49%	47,778	28%	
All regions	281,302	-16%	1,188,625	-9%	

<sup>1</sup> The production statistics comprise a forecast from external sources. Historical figures also pertain to estimated production and not to the actual industrial outcome. Unless otherwise stated, the information pertaining to trucks is based on statistics from JD Powers. Information pertaining to the trailer market in Europe is based on statistics from CLEAR, the information pertaining to trucks and trailers in North America is based on statistics from FTR and the trailer information from South America and Asia is based on local sources. <sup>2</sup> Change compared with same period previous year in percentage.

### Net sales per region

Net sales, SEK m	Jul-Sep 2018	Jul-Sep 2017	Change <sup>1</sup>	Jan-Sep 2018	Jan-Sep 2017	Change <sup>1</sup>	
Europe	440	377	10%	1,392	1,260	6%	
North America	628	552	3%	1,817	1,728	6%	
Asia & Middle East	158	115	27%	562	323	69%	
South America	44	37	32%	123	102	37%	
Total	1,270	1,081	9%	3,894	3,413	13%	

1 Currency adjusted

In Europe, Haldex has higher Trailer sales than Truck sales. Aftermarket accounts for a significant percentage of sales. In Europe, net sales totalled SEK 440 (377) m for Q3. After currency adjustments, this is a 10 per cent increase compared to the same period the previous year. Net sales for the first nine months of the year totalled SEK 1,392 (1,260) m, which is equivalent to a currency-adjusted increase of 6 per cent. In Europe, net sales in Q3 increased primarily in the disc brake and air treatment product areas.

In North America, the distribution between Truck and Trailer is more even than in Europe. Aftermarket accounts for a significant percentage of sales here as well. In North America, net sales totalled SEK 628 (552) m for Q3. After currency adjustments, this is a 3 per cent increase compared to the same period the previous year. Net sales for the first nine months of the year totalled SEK 1,817 (1,728) m, which is equivalent to a currency-adjusted increase of 6 per cent. In Q3, sales of brake adjusters continued to increase. Disc brake sales in North America continue to grow, albeit from low levels.

In Asia, with China and India as the primary markets, trucks without trailers are still the most common type of vehicle combination. This means that Haldex's sales are more focused on Truck than on Trailer. Aftermarket accounts for a smaller percentage of sales. In Asia and the Middle East, net sales totalled SEK 158 (115) m in Q3. After currency adjustments, this is a 27 per cent increase compared to the same period the previous year. Net sales for the first nine months of the year totalled SEK 562 (323) m, which is equivalent to a currency-adjusted increase of 69 per cent. The large increase is primarily



due to new legislation in China, which is driving demand for automatic brake adjusters. In China, disc brakes also contributed to the growth.

In South America, Truck sales are more significant than Trailer and Aftermarket sales. Net sales totalled SEK 44 (37) m in Q3, which is equivalent to a currency-adjusted increase of 32 per cent. Net sales for the first nine months of the year totalled SEK 123 (102) m, which is equivalent to a currency-adjusted increase of 37 per cent. The market conditions in Brazil, which is the most important market in South America, have begun to improve, albeit from low levels after several years of weak demand. Sales to all customer categories (Truck, Trailer and Aftermarket) increased in Q3.







# **Earnings**

Operating income totalled SEK 79 (48) m in Q3, which is equivalent to an operating margin of 6.3 (4.5) per cent. The corresponding figures for the first nine months of the year are operating income of SEK 272 (116) m and an operating margin of 7.0 (3.4) per cent. Operating income excluding one-off items for Q3 totalled SEK 79 (68) m, and the operating margin excluding one-off items totalled 6.3 (6.3) per cent. The improvement is primarily attributable to higher sales, but it was offset by higher R&D costs, a change in the sales mix and higher costs for a rapid production increase in China.

Financing items for the quarter totalled SEK -11 (2) m and for the first nine months of the year to SEK -26 (-4) m. The higher costs in the quarter are due to negative translation differences and higher interest rate expenses for pension liabilities. In Q1 of the previous year, there is also a positive translation effect of SEK 13 m.

The income before tax totalled SEK 68 (45) m for Q3 and SEK 241 (103) m for the first nine months of the year. Income after tax totalled SEK 58 (26) m for Q3 and SEK 177 (65) m for the first nine months of the year. This corresponded to earnings per share of SEK 1.30 (0.59) for Q3 and SEK 3.95 (1.45) for the first nine months of the year.

Currency fluctuations, including gains/losses from currency hedging and currency translation effects, had a positive impact on the Group's operating income of SEK 24 (-12) m in Q3 excluding one-off items. The currency effect in net financial items in Q3 totalled SEK -7 (2) m.





Earnings	Jul-Sep 2018	Jul-Sep 2017	Change	Jan-Sep 2018	Jan-Sep 2017	Change
Operating income, SEK m	79	48	65%	272	116	134%
Operating income, excl. one-off items, SEK m	79	68	16%	272	226	20%
Operating margin, %	6.3	4.5	1.8	7.0	3.4	3.6
Operating margin, excl. one-off items, %	6.3	6.3	0.0	7.0	6.6	0.4
Net income, SEK m	58	26	121%	177	65	172%
Earnings per share, SEK	1.30	0.59	121%	3.95	1.45	172%

# **Financial position**

As of September 30, consolidated net debt was SEK 816 (572) m, an increase of SEK 232 m compared to the end of the year. In Q3, net debt increased by SEK 8 m. This change in the quarter is primarily due to an increase in interest-bearing liabilities, as a result of increased working capital needs in terms of increased inventory levels.

Financial items totalled SEK -11 (2) m in Q3, including net interest income and expenses of SEK -2 (0) m. Shareholders' equity amounted to SEK 1,617 (1,361) m, resulting in an equity/asset ratio of 43 (44) per cent.

Haldex's primary sources of loan financing comprise:

- A bond loan of SEK 270 m maturing in January 2020.
- A syndicated credit facility in the amount of EUR 90 m, maturing in April 2021. EUR 19 m of this facility had been used at the end of the quarter.

### Pledged assets and contingent liabilities

There were no changes to the Group's pledged assets or contingent liabilities during the quarter. The Group has, from time to time, other warranty provisions and customer commitments for which a reliable estimate can not be made. See also the section "Significant risks and uncertainties".

Net debt and Net interest, SEK m	Sep 30 2018	Sep 30 2017	Change
Assets as part of the net debt:			
Cash and cash equivalents <sup>1</sup>	214	255	-16%
Liabilities as part of the net debt:			
Interest-bearing liabilities including derivative instruments	-572	-406	41%
Pension liabilities <sup>2</sup>	-458	-421	9%
Net debt in total	-816	-572	43%
Net of interest during the year	-12	-14	14%

<sup>1</sup> For a definition of cash and cash equivalents, see note 28 in the annual report.

<sup>2</sup> The change of pension liabilities are primarly related to variations in actuarial assumtions (changes in market interest rates).

# **Cash flow**

Cash flow from operating activities totalled SEK 74 (27) m in Q3 and SEK 75 (85) m for the first nine months of the year. Cash flow from operating activities during the quarter was negatively impacted by increased inventories to meet the high demand on the Chinese market and issues with deliveries in North America. Furthermore, the strong sales growth in the Chinese market during the first half of 2018 has led to an increase in the number of accounts receivable days outstanding. In China, local bank notes are common, which prolongs the time between billing and cash flow.



Cash flow

Investments, including capitalised development expenditure, totalled SEK -85 (-59) m in Q3, and cash flow after investments amounted to SEK -11 (-32) m. The total cash flow totalled SEK 3 (3) m in Q3 and SEK 18 (-21) m for the first nine months of the year.

Cash flow and cash equivalents, SEK m	Jul-Sep 2018	Jul-Sep 2017	Change	Jan-Sep 2018	Jan-Sep 2017	Change
Cash flow, operating activities	74	27	47	75	85	-10
Cash flow after investment activities	-11	-32	21	-180	-90	-90
Cash and cash equivalents (at end of period)	214	255	-41	214	255	-41

# Taxes

Tax expenses for Q3 totalled SEK 10 (19) m, which is equivalent to a tax rate of 15 (41) per cent. The low tax rate is positively impacted by adjustments from previous periods' tax cost of SEK 8 m. Adjusted for this effect, the underlying tax rate for the quarter amounts to 27 per cent.

Deferred tax assets for tax loss carry-forwards are recognised to the extent it is probable that they can be offset against taxable profit.

### Employees

At the end of the quarter, Haldex had 2,313 (2,149) employees, which is 90 less than at the end of Q2 and 137 more than at the end of the year. The greatest increase occurred in Asia due to the increase in production volumes.

# **Parent Company**

Haldex AB (publ), Corporate Registration Number 556010-1155, is a registered limited liability corporation with its registered office in Landskrona, Sweden. Haldex AB's shares are listed on Nasdaq Stockholm, Mid Cap. The Parent Company performs corporate office functions, including the corporate finance function. Net sales in the parent company amounted to SEK 20 (9) m in Q3. Income after tax totalled SEK 33 (21) m in Q3.

# Significant risks and uncertainties

Haldex is exposed to risks of a financial and operational nature. The Group has a process for risk identification and risk management that is described in Haldex's 2017 Annual Report and Corporate Governance Report on pages 30-33 and 71-79. As described in the Annual Report, the consolidated financial statements contain some assessments and assumptions about the future that are based on both historical experience and future expectations. Goodwill, development projects, taxes and pensions are the areas representing considerable risk of future adjustments to recognized values.

Warranty provisions and customer commitments have been identified as the areas where the uncertainty for future adjustments to estimated values is the highest. The management team continuously assesses the need to make provisions for individual events as well as the development in the general warranty commitments. These assessments include estimates of the probability of various scenarios, customer behaviour and costs associated with the measures. Haldex makes provisions for product-related customer commitments from previous years based on an assessment of the outstanding costs. Early termination of ongoing customer commitments, with the purpose of reducing risk and uncertainty, may result in a cost exceeding the committed amount at any given time. Best estimation of cost to fulfill the existing obligation is not specified as it is expected to have a negative impact on the company's negotiating position.

### Miscellaneous

### Forward-looking information

This report includes forward-looking information with statements concerning the future outlook for Haldex's operations. This information is based on the current expectations, estimates and forecasts of Haldex's management. Actual future outcomes may vary significantly from the forward-looking information presented in this report. This may be due to changes in assumptions concerning economic factors, markets and competition.

Q: 1/17 2/17 3/17 4/17 1/18 2/18 3/18

**Employees** 

#### Transactions with related parties

2500

2000

1500

1000

500

0

No transactions occurred between Haldex and its related parties.

#### Seasonal effects

Haldex does not have any significant seasonal variations. However, sales are affected by the production schedules of Haldex's customers, which results in lower sales during holiday periods and when customers are closed for public holidays, for example at the end of the year.

#### Acquisitions and disposals

There were no acquisitions or disposals in 2018.

#### Accounting principles

This interim report is presented in accordance with IAS 34 Interim Financial Reporting. The interim information on pages 1-20 form an integral part of this financial report. The consolidated financial statements were prepared in accordance with the International Financial Reporting Standards (IFRS) as adopted by the EU. The Parent Company's financial statements were prepared in accordance with the Swedish Financial Reporting Board's recommendation RFR 2 "Financial Reporting for Legal Entities" and the Swedish Annual Accounts Act (Årsredovisningslagen). The accounting policies are thus unchanged from those presented in the 2017 Annual Report on pages 39-43. Holdings in associated companies are reported in accordance with the equity method; the Group's share of the associated company's income is reported on a separate line in the income statement under financial items. Haldex's revenue refers primarily to goods and services that are transferred to the customer at a single point in time.

#### Changed estimates and judgements

Actuarial assumptions for the measurement of the pension liability are determined on an ongoing basis. In Q3 2018, this resulted in a change to the pension liability of SEK 10 (-18) m. The change to the pension liability is primarily related to lower discount rates than before in countries where the Group has large pension provisions. In Q2, the outstanding unutilised provisions for the product recall in 2014 of approximately SEK 11 m and approximately SEK 5 m in provisions for greater personnel costs in conjunction with the bid process were dissolved. At the same time, updated assessments were made of remaining product- and cus-

tomer-specific provisions, which resulted in an increase in these provisions of SEK 16 m. The items are reported net in the income statement.

#### Changed accounting principles for 2018

The implementation of IFRS 9 has not had an impact on Haldex's accounts, and IFRS 15 has had a very limited impact on the current classification in the income statement. Since the effects are immaterial, the transition to the opening balance for 2018 has not been affected. The transition entails only gross accounting of amounts previously reported net. The full-year effect in 2017 is negligible both for net sales and the operating margin since Haldex only reports the change as of 1 January 2018.

# **Annual General Meeting**

Haldex will hold its Annual General Meeting on 9 May 2019 at 4:00 p.m. at Haldex in Landskrona, Sweden. It is estimated that the annual report will be available on the company's website no later than three weeks before the meeting.

# Outlook for 2018

The official production forecasts provide insight into how the market is expected to perform. However, Haldex does not have an even distribution of income between the Truck and Trailer categories and does not necessarily share the view of the future espoused by the forecasters. Therefore, Haldex provides its own overall view of how the company sees each market performing. **North America** is expected to reach a higher level than the record year of 2015. It is difficult, though, to assess how quickly the shift to disc brakes will occur and how much of the market share Haldex will take when sales increase.

**Europe** is considered to be stable with slightly higher order intake in 2018.

**China** has a soft market according to the forecast institutes but is estimated to grow in the parts of the market that are relevant for Haldex. This is primarily due to greater demand for the brake adjuster, which will have lower margins than in other regions.

India is expected to return to growth in 2018.

**Brazil's** market is expected to grow, although from very low levels. items. Even though the second half of the year normally has lower sales than the first half, Haldex's new assessment is that the operating margin in 2018 will be in line with or even possibly slightly higher than the operating margin in 2017 excluding one-off items.

The outlook for 2018 has not changed. We believe that net sales for 2018 will increase compared to 2017. Costs for a higher rate of investment in development projects and costs for expansion in North America and China will burden income. In Q4, the increase in material cost and tariffs will have a greater impact than in Q3. Haldex's assessment is that the operating margin in 2018 will be in line with or possibly slightly higher than the operating margin in 2017 excluding one-off items.

> Landskrona, October 25, 2018 Board of directors

### Auditor's report

Haldex AB (publ) corp. reg. no. 556010-1155

#### Introduction

We have reviewed the condensed interim financial information (interim report) of Haldex AB (publ) as of 30 September 2018 and the nine-month period then ended. The board of directors and the CEO are responsible for the preparation and presentation of the interim financial information in accordance with IAS 34 and the Swedish Annual Accounts Act. Our responsibility is to express a conclusion on this interim report based on our review.

#### Scope of Review

We conducted our review in accordance with the International Standard on Review Engagements ISRE 2410, Review of Interim Report Performed by the Independent Auditor of the Entity. A review consists of making inquiries, primarily of persons responsible for financial and accounting matters, and applying analytical and other review procedures. A review is substantially less in scope than an audit conducted in accordance with International Standards on Auditing, ISA, and other generally accepted auditing standards in Sweden. The procedures performed in a review do not enable us to obtain assurance that we would become aware of all significant matters that might be identified in an audit. Accordingly, we do not express an audit opinion.

#### Conclusion

Based on our review, nothing has come to our attention that causes us to believe that the interim report is not prepared, in all material respects, in accordance with IAS 34 and the Swedish Annual Accounts Act, regarding the Group, and with the Swedish Annual Accounts Act, regarding the Parent Company.

Landskrona, October 25, 2018 Öhrlings PricewaterhouseCoopers AB

Bror Frid Authorized Public Accountant, Auditor in charge Carl Fogelberg Authorized Public Accountant

### **Consolidated income statement**

SEK m	Jul-Sep 2018	Jul-Sep 2017	Jan-Sep 2018	Jan-Sep 2017	Full year 2017
Net sales	1,270	1,081	3,894	3,413	4,462
Cost of goods sold	-934	-786	-2,875	-2,463	-3,237
Gross income	336	295	1,019	950	1,225
Gross margin	26.5%	27.3%	26.2%	27.8%	27.5%
Selling, admin, and product development costs	-260	-229	-757	-737	-955
Other operating income and expenses	3	-18	10	-97	-121
Operating income <sup>1</sup>	79	48	272	116	149
Financial income and expenses	-11	2	-26	-4	-8
Share of result from joint venture	0	-5	-5	-9	-12
Income before tax	68	45	241	103	129
Тах	-10	-19	-64	-38	-50
Net income	58	26	177	65	79
attributable to non-controlling interests	1	1	2	3	5
Earnings per share, before and after dilution, SEK	1.30	0.59	3.95	1.45	1.67
Average No. of shares, thousands	44,204	44,204	44,204	44,204	44,204

### Operating income, by nature of expenses

SEK m	Jul-Sep 2018	Jul-Sep 2017	Jan-Sep 2018	Jan-Sep 2017	Full year 2017
Net sales	1,270	1,081	3,894	3,413	4,462
Direct material costs	-711	-592	-2,187	-1,849	-2,425
Personnel costs	-264	-230	-801	-731	-973
Depreciation and amortization	-36	-33	-102	-100	-132
Other operating income and expenses	-180	-178	-532	-617	-783
Operating income <sup>1</sup>	79	48	272	116	149

### 1) One-off items included in the operating income

SEK m	Jul-Sep 2018	Jul-Sep 2017	Jan-Sep 2018	Jan-Sep 2017	Full year 2017
Operating income, including one-off items	79	48	272	116	149
Restructuring costs	-	-7	-	-8	-18
Product related warranty	-	-	-5	-56	-56
Costs related to the bidding process	-	-12	5	-46	-69
Operating income, excluding one-off items	79	68	272	226	292

### Consolidated statement of comprehensive income

SEK m	Jul-Sep 2018	Jul-Sep 2017	Jan-Sep 2018201	Jan-Sep 17 2017	Full year
Net income	58	26	177	65	79
Other comprehensive income/loss					
Items not to be reclassified to the income statement:					
Remeasurement of pension obligation, after tax	10	18	4	-6	-12
Total	10	18	4	-6	-12
Items that may be reclassified subsequently to the income statemen	t:				
Currency translation differences	-31	-22	65	-70	-42
Changes in financial instruments at fair value, after tax	1	0	2	-2	-2
Total	-30	-22	67	-72	-44
Total other comprehensive income/loss	-20	-4	71	-78	-56
Total comprehensive income	38	22	248	-13	23
attributable to non-controlling interests	1	1	2	2	5

### Consolidated statement of financial position

SEK m	Sep 30 2018	Sep 30 2017	Dec 31 2017
Goodwill	419	392	398
Other intangible assets	206	132	151
Tangible assets	706	538	586
Financial assets	24	44	41
Deferred tax assets	171	153	173
Total non-current assets	1,526	1,259	1,349
Inventories	748	587	585
Current recievables	1,219	979	924
Derivative instruments	26	40	26
Cash and cash equivalents	214	255	194
Total current assets	2,207	1,861	1,729
Total assets	3,733	3,120	3,078
Equity	1,617	1,361	1,395
Pension and similar obligations	458	421	443
Deferred tax liabilities	20	23	26
Non-current interest-bearing liabilities	471	270	271
Other non-current liabilities	25	35	35
Total non-current liabilities	974	749	775
Derivative instruments	54	23	31
Current interest-bearing liabilities	63	155	61
Current liabilities	1,025	832	816
Total current liabilities	1,142	1010	908
Total equity and liabilities	3,733	3,120	3,078

Haldex AB, Corporate Registration Number 556010-1155, info@haldex.com, www.haldex.com

### Statement of changes in equity

SEK m	Jan-Sep 2018	Jan-Sep 2017	Full year 2017
Opening balance	1,395	1,374	1,374
Net income	177	65	79
Other comprehensive income/loss	71	-78	-56
Total comprehensive income	248	-13	23
Transactions with shareholders:			
Dividend to Haldex' shareholders	-24	-	
Dividend to non-controlling interests	-2	-1	-2
Value of employee services/incentive programs	0	0	0
Total transactions with shareholders	-26	-1	-2
Closing balance	1,617	1,360	1,395
attributable to non-controlling interests	24	23	25

### Consolidated statement of cash flow

SEK m	Jul-Sep 2018	Jul-Sep 2017	Jan-Sep 2018	Jan-Sep 2017	Full year 2017
Operating income	79	48	272	116	149
Reversal of non-cash items	36	44	102	137	181
Interest paid	-4	-5	-21	-14	-23
Tax paid	0	-12	-59	-30	-45
Cash flow from operating activities before change	111	75	294	209	262
in working capital					
Change in working capital	-37	-48	-219	-124	-89
Cash flow from operating activities	74	27	75	85	173
Investments, incl. capitalized R&D expenses	-85	-59	-255	-175	-231
Cash flow from investment activities	-85	-59	-255	-175	-231
Dividend to Haldex' shareholders	-	-	-24	-	-
Dividend to non-controlling interests	-2	-1	-2	-1	-2
Change of interest-bearing liabilities	16	36	224	70	-33
Cash flow from financing activities	14	35	198	69	-35
Net cash flow	3	3	18	-21	-93
Cash and cash equivalents, opening balance	216	261	194	297	297
Currency translation diff. in cash and cash equivalents	-5	-9	2	-21	-10
Cash and cash equivalents, closing balance	214	255	214	255	194

### **Key figures**

	Jan-Sep 2018	Jan-Sep 2017	Full year 2017
Operating margin, excl. one-off items, %	7.0	6.6	6.5
Operating margin, %	7.0	3.4	3.3
Cash flow, operating activities, SEK m	75	85	173
Cash flow after investment activities, SEK m	-180	-90	-58
Return on capital employed, % <sup>1</sup>	12.5	4.2	6.8
Return on capital employed, excl. one-off items, % <sup>1</sup>	13.8	12.6	13.3
Investments (excl. capitalized R&D expenses), SEK m	214	175	218
R&D, %	3.9	3.9	4
Number of employees	2,313	2,149	2,176
Return on shareholders' equity, % <sup>1</sup>	12.7	4.7	5.4
Interest coverage ratio	11.7	9.9	9.1
Equity ratio, %	43	44	45
Net debt/equity ratio, %	50	42	42
Share data:			
Earnings per share, before dilution, SEK	3.95	1.45	1.67
Earnings per share, after dilution, SEK	3.95	1.45	1.67
Equity per share, SEK	36.57	30.30	30.98
Cash flow, operating activities, SEK	1.67	1.92	3.91
Share price, SEK	87.20	100.75	87.25
Average No. of shares, thousands	44,216	44,216	44,216
Total No. of shares at end of period, thousands	44,216	44,216	44,216
of which is treasury shares, thousands	12	72	12

<sup>1</sup> Rolling twelve months



### Earnings per share



Cash flow operating activities



### Parent company's income statement

SEK m	Jul-Sep 2018	Jul-Sep 2017	Jan-Sep 2018	Jan-Sep 2017	Full year 2017	
Net sales	20	9	70	72	102	
Administrative costs	-13	-17	-45	-104	-114	
Operating income	7	-8	25	-32	-12	
Dividend from Group companies	22	21	47	21	22	
Impairment shares in subsidiaries	-	-	-	-	-40	
Financial income and expenses	6	8	35	1	56	
Income after financial items	35	21	107	-10	26	
Group contribution	-	-	-	-	-50	
Income before tax	35	21	107	-10	-24	
Тах	-2	0	-16	0	-3	
Net income	33	21	91	-10	-27	

### Parent company's statement of comprehensive income

SEK m	Jul-Sep 2018	Jul-Sep 2017	Jan-Sep 2018	Jan-Sep 2017	Full year 2017
Net income	33	21	91	-10	-27
Other comprehensive income	-	-	-	-	-
Total comprehensive income	33	21	91	-10	-27

### Parent company's statement of financial position

SEK m	Sep 20		Sep 30 2017		Dec 31 2017
Non-current assets	2	,878	2,752	•	2,782
Current assets		551	419		1,016
Total assets	3	,429	3,171		3,798
Shareholders' equity	1	,272	1,222		1,205
Provisions		52	49		55
Interest-bearing liabilities, external		470	270		270
Other liabilities	1	,635	1,630		2,268
Total equity and liabilities	3	,429	3,171		3,798

### Financial instruments by category - Group

SEK m	Sep	Sep 30, 2018		), 2017	Dec 31, 2017		
	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	
Forward exchange contracts - cash flow hedges	2	2	1	4	1	5	
Forward exchange contracts- at fair value							
through profit or loss	1	1	1	3	1	2	
Currency swaps - at fair value through profit or loss	23	51	38	16	24	24	
Financial assests available for sale		-	-	-	-	-	
Total	26	54	40	23	26	31	

Financial instruments categorized as financial assets available for sale are recognized at fair value in the statement of financial position according to Tier 1 in the fair value hierarchy, i.e. to a price quoted in an active market. Other financial instruments are recognized at fair value in the statement of financial position according to Tier 2 in the fair value hierarchy, meaning that the fair value is determinable, directly or indirectly, from observable market data. No transit has taken place between the different Tier levels during the year. Haldex multicurrency revolving credit facility and bond loan are subject to a variable interest term of 1-6 months, thus the fair values correspond to the carrying amounts. In regard of other financial assets and liabilities such as accounts receivables, other current receivables, cash and cash equivalents and debt to suppliers, the fair values are considered to correspond to the carrying amounts.

### **Quarterly data**

SEK m, if not otherwise stated		2018		2017			017		)16
SER III, II HOU OUIEI WISE Stated	Q3	Q2	Q1	Q4	Q3	Q2	Q1	Q4	Q3
ncome statement:									
Net sales	1,270	1,372	1,252	1,049	1,081	1,184	1,148	1,054	1,076
Cost of goods sold	-934	-1014	-927	-774	-786	-853	-824	-774	-768
Gross income	336	358	325	275	295	331	324	280	308
Selling, admin. and product development costs	-260	-260	-237	-218	-229	-257	-251	-253	-217
Other operating income and expenses	3	5	2	-24	-18	-43	-36	-52	-23
Operating income	79	103	90	33	48	31	37	-25	68
Operating income, excl. one-off items	79	103	90	66	68	78	81	-25	8
inancial income and expenses	-11	-12	-8	-7	-3	-17	7	-27	-12
ncome before tax	68	91	82	26	45	14	44	-52	5
Tax	-10	-30	-24	-12	-19	-4	-15	-4	-1
Net income/loss	58	61	58	14	26	10	29	-56	37
Statement of financial position:									
Non-current assets	1,526	1,497	1,436	1,349	1,259	1,274	1,291	1,306	1,19
Current assets	2,207	2,272	2,095	1,729	1,861	1,881	1,813	1,751	1,70
Total assets	3,733	3,769	3,531	3,078	3,120	3,155	3,104	3,057	2,90
quity	1,617	1,581	1,502	1,395	1,361	1,339	1,386	1,374	1,37
Non-current liabilities	974	975	884	775	749	797	774	757	78
Current liabilities	1,142	1,213	1,145	908	1,010	1,019	944	926	74
otal equity and liabilities	3,733	3,769	3,531	3,078	3,120	3,155	3,104	3,057	2,90
Statement of cash flow:									
Cash flow from operating activities before change									
in working capital	111	96	87	53	75	85	49	-29	6
Cash flow from operating activities	74	65	-64	58	27	52	21	88	6
Cash flow from investment activities	-85	-89	-81	-51	-59	-57	-49	-81	-5(
Cash flow from financing activities	14	42	142	-79	35	2	7	11	(
let cash flow	3	18	-3	-72	3	-3	-21	18	1
Key figures:									
Operating margin, %	6.3	7.5	7.2	3.1	4.5	2.6	3.2	-2.4	6.3
Operating margin, excl. one-off items, %	6.3	7.5	7.2	6.3	6.3	6.6	7.0	4.6	7.4
arnings per share, before and after dilution, SEK	1.30	1.37	1.30	0.25	0.59	0.22	0.64	-1.27	0.8
quity per share, SEK	36.57	35.76	33.97	30.98	30.3	29.83	30.85	30.63	31.0
Cash flow, operating activities, per share, SEK	1.67	1.47	-0.14	1.02	0.62	0.88	0.43	1.99	1.4
hare price, SEK	87.20	89.00	85.40	87.25	100.75	106.00	119.25	116.50	120.0
eturn on capital employed, %1	12.5	11.7	9.0	6.8	4.2	4.6	7.7	9.7	14.
Return on capital employed excl.									
one-off items, % <sup>1</sup>	13.8	14.0	13.5	13.3	12.6	12.2	13.8	13.8	14.8
Return on equity, %	3.7	3.9	4.0	0.8	2.1	0.7	2.1	-4.7	2.
quity ratio, %	43	42	43	45	44	42	45	45	4
Jet debt/equity ratio, %	50	51	50	42	42	38	39	36	3
xternal investments	74	74	66	43	59	69	47	81	5
&D, %	3.9	3.9	3.7	4.5	3.7	3.4	4	3.6	3.4
	5.5	2.5	2,315	2,176	2.,	2,150		5.0	2,05

### 5 year in summary

SEK m, if not otherwise stated	2017	2016	2015	2014	2013
Income statement:					
Net sales	4,462	4,374	4,777	4,380	3,920
Cost of goods sold	-3,237	-3,155	-3,418	-3,142	-2,827
Gross income	1,225	1,219	1,359	1,238	1,093
Selling, admin. and product development costs	-955	-950	-942	-857	-839
Other operating income and expenses	-121	-65	-92	-148	-101
Operating income	149	204	325	233	153
Operating income, excl. one-off items	292	291	444	408	281
Financial income and expenses	-20	-39	-54	-28	-43
Income before tax	129	165	271	205	110
Тах	-50	-74	-80	-98	-72
Net income	79	91	191	107	38
Statement of financial position:					
Non-current assets	1,349	1,306	1,177	1,148	1,047
Current assets	1,729	1,751	1,678	1,788	1,439
Total assets	3,078	3,057	2,855	2,936	2,486
Equity	1,395	1,374	1,407	1,278	1,152
Non-current liabilities	775	757	692	718	728
Current liabilities	908	926	756	940	606
Total equity and liabilities	3,078	3,057	2,855	2,936	2,486
Statement of cash flow:					
Cash flow from operating activities before change					
in working capital	262	238	349	356	249
Cash flow from operating activities	173	256	220	435	282
Cash flow from investment activities	-231	-222	-174	-151	-71
Cash flow from financing activities	-35	-52	-179	-216	-230
Net cash flow	-93	-18	-133	68	-19
Key figures:					
Operating margin, %	3.3	4.7	6.8	5.3	3.9
Operating margin, excl. one-off items, %	6.5	6.6	9.3	9.3	7.2
Earnings per share, before and after dilution, SEK	1.67	2.00	4.28	2.32	0.80
Equity per share, SEK	30.98	30.63	31.46	28.48	26.06
Cash flow, operating activities, per share, SEK	2.94	5.8	4.99	9.84	6.38
Dividend, SEK	0.55	0.00	2.00	3.00	2.00
Share price, SEK	87.25	116.50	79.50	101.75	60.00
Return on capital employed, % <sup>1</sup>	07.25	110.50	15.50	101.75	00.00
Return on capital employed excl.	6.8	9.7	15.9	12.2	7.8
one-off items, % <sup>1</sup>					
Return on equity, %	13.3	13.8	21.7	21.4	14.6
Equity ratio, %	5.4	6.5	14.1	8.7	3.1
Net debt/equity ratio, %	45	45	49	44	46
External investments	42	36	24	21	33
R&D, %	218	222	174	147	94
	4.0	3.5	3.6	3.4	3.5
Number of employees <i>Rolling twelve months</i>	2,176	2,045	2,140	2,235	2,135

### Haldex in short

Haldex develops, manufactures and distributes products for brake and suspension systems for commercial vehicles. Our customers include manufacturers of heavy trucks, buses and trailers, and axle manufacturers for these types of vehicles as well as workshops serving the aftermarket. Other applications as agriculture and special vehicles are also served. The product portfolio comprises all of the main components and sub-systems included in a complete brake or suspension system. Haldex has a global presence in terms of sales, research, development, technical service and production. Manufacturing takes place in Sweden, Germany, Hungary, China, India, Brazil, Mexico and the USA.

Haldex is listed on the Nasdaq Stockholm Mid Cap list. The main owners are ZF (20%), and Knorr-Bremse (10-15%, unconfirmed owner share).

#### Vision

A world of safer vehicles.

#### Mission

We develop and provide reliable and innovative brake solutions that improve safety, vehicle dynamics and environmental sustainability in the global, commercial vehicle industry.

#### **Business model**

Our business model is based on strong sales to the OEMs that then serves as a volume

### Financial definitions and glossary

#### FINANCIAL DEFINITIONS

Following the European Securities and Markets Authority's new guidelines for alternative key figures, the list of financial definitions have been expanded. The purpose of the added terms is to create an enhanced understanding and promote the usefulness of the financial information and provide the reader with a more nuanced and deeper picture of the business. No new key figures has been added in the period relative to the previous quarter. If the base for the calculations of alternative key figures are not stated in the report, please refer to the appendix for additional information.

**Return on equity**<sup>1</sup>: The proportion of net income for the year attributable to owners of the parent Company as a percentage of the proportion of average equity attributable to owners of the parent Company.

Return on capital employed<sup>1</sup>: Operating income plus interest income as a percentage of average capital employed.

**Gross margin:** Gross profit i.e net sales minus cost of goods sold, divided by net sales. **Equity per share**<sup>1</sup>: Total equity attributable to the owners of the parent Company, divided by the average No of shares.

**One-off items**<sup>1</sup>: Income statement items, which are of non-recurring nature in normal operations. One-off items may for example include restructuring costs, impairment and product related warranties related to a specific customer obligations. The purpose of specifying this is to demonstrate the underlying business performance. For numerical data, see page 10 and the appendix.

**R&D**, %<sup>1</sup>: Research and development cost excluding depreciations and capitalized expenditure, divided by net sales.

**Cash flow per share:** Cash flow from operating activities divided by the average number of shares.

**Net debt':** Cash and cash equivalents plus interest-bearing receivables minus interestbearing liabilities and provisions. For numerical data, see page 7 and the appendix.

**Net debt/equity ratio1:** Interest-bearing liabilities and provisions minus cash and cash equivalents and interest-bearing receivables divided by equity including non-control-ling interests.

Earnings per share1: Proportion of net income for the year attributable to the owners

engine; an increased installed base of Haldex products on trucks, busses and trailers results in a great potential for aftermarket sales of service and spare parts.

#### Strategy

Haldex will offer a world-class, focused product range for OEM customers. Products within the portfolio should have market leading potential with features standing out among the competition. For the aftermarket, the product offering, service level, pricing and channel distribution will be adapted over the vehicles lifecycle, with the ambition to offer support during the vehicle's main lifetime. Products within the Foundation Brake product family will continue to serve as the base complemented with selected product investments in the Air Controls product family.

#### **Financial targets**

- Organically grow faster than the market (weighted segment volume).
- Sustainable operating margin of 10% or above.
- Net debt/equity ratio less than 1.
- 1/3 of the yearly net income over a business cycle in dividend

#### Value drivers

- Number of heavy vehicles being produced.
- Development of a competitive product offering.

of the parent Company divided by weighted average number of shares.

**Net of interest**<sup>1</sup>: The economical difference in absolute terms between the reported interest income for financial assets and interest expense on interest-bearing liabilities and provisions.

**Interest coverage ratio**<sup>1</sup>: Operating income excluding one-off items plus interest income divided by interest expenses.

**Operating margin:** Operating income as a percentage of net sales for the year.

**Operating income:**<sup>1</sup> Operating income before financial items and tax. For numerical data, see page 10 and the appendix.

**Operating income excluding one-off items:** Operating income before financial items and tax, adjusted for one-off items. For numerical data, see page 10.

**Equity ratio:** Equity including non-controlling interests as a percentage of total assets. **Capital employed<sup>1</sup>:** Total assets less non-interest bearing liabilities and non-interest bearing provisions.

**Currency adjusted information**<sup>1</sup>: Financial figures converted to the same exchange rate as in the comparative period. The aim is to show how the business has developed without the impact of currency fluctuations.

#### GLOSSARY

**Air Controls:** Haldex' product line for products to improve brake systems' safety and driving qualities, such as treatment and dehumidifying of compressed air, valves and ABS & EBS.

Aftermarket: Spare parts sold to, and training and services provided to the workshops that repair and service vehicles.

**Foundation Brake:** Haldex' product line for brake products for wheel ends such as disc brakes, brake adjusters for drum brakes and brake cylinders.

**OEM:** Original equipment manufacturer.

Truck: Heavy trucks and busses.

Trailer: Trailers attached to a semi-tractor (truck).

<sup>1</sup>Additional financial information is presented in an appendix.

### Haldex' product range

The Foundation Brake product line includes brake products for wheel ends such as disc brakes, brake adjusters and actuators. Air Controls comprises products to improve brake systems' safety and driving qualities, such as treatment of compressed air, valves and ABS and EBS.

A selection of our products in each product group:

### FOUNDATION BRAKE



BRAKE ADJUSTERS are the central part of a drum brake and automatically control the distance between the brake lining and the brake drum.



DISC BRAKES have higher braking performance. As opposed to brake adjusters, which are a part of a drum brake, Haldex manufactures complete air disc brakes.



ACTUATORS and brake chambers are available for both drum brakes and disc brakes. Haldex offers several versions both with and without parking brakes.

### **AIR CONTROLS**



EBS controls the braking system electronically. The system ensures that the brake power is always optimal for all brakes on a trailer including stability control.



The SEPARATOR Consep separates dirt, water and oil before compressed air is passed on to the air dryer, which reduces the need for maintenance in the air system.



PARKING BRAKE CONTROL for trailers ensures that the trailer can be manouvered and safely parked.



RAISING AND LOWERING of vehicles with the help of the vehicles suspension system. A simple handle allows the driver to raise or lower the vehicle to the correct height at the loading bay.



ABS, in combination with the ITCM modul, results in added intelligence which enables some functions found in EBS, such as stability control and lift axle control valve.



The LIFT AXLE CONTROL ensures that the lift axle of a trailer is automatically raised and lowered to adapt to the load situation.

# Haldex' open, scalable brake solutions for autonomous and electrical commercial vehicles

With the development of autonomous driving, the vehicle system architecture is about to be re-written. Today, the driver does the integration of propulsion, braking and steering. To reach full autonomy, the sub-systems need to control accurately and communicate back, for the system to be able to analyze the data and make correct decisions. System integration is thus the key for autonomous driving to become successful.

"System integration requires open communication. Today, only selected data of the wheel end performance is shared in the system, even though most of a vehicle's behavior is determined by the wheel end performance. Haldex wants to change that. We fully



believe in open systems where the OEM gets full access to the data from the wheel end.", says Andreas Jähnke, SVP R&D at Haldex. "By developing the brake systems jointly with OEMs, we re-shape the principles for the vehicle system architecture. We know that new and old technology will live side by side for many years. By separating the software from the hardware, you can use the same software functionality to execute different mechanical tasks, hence you can have a vehicle structure which can run both pneumatic and electromechanical brakes. We also want to move away from the principle of the EBS being a black box that is the central hub for the intelligence in the brake system. To build a scalable system with maximum control and predictability, more technology and intelligence should be placed at the wheel end."

One of the new products from Haldex that is based on this concept is the Fast Acting Brake Valve (FABV). It's a high-performance valve, placed at the wheel end together with an ECU, that acts ten times as fast as conventional modular based systems. The result is 15% less stopping distance, but also the ability to control the lateral and longitudinal friction levels on each wheel. With the FABV the vehicle runs in the path it intended to, with a stability and predictability you don't' see with other technology that is available today. Andreas Jähnke comments: "When replacing the driver, you need redundancy on different levels. We are not unique to provide steering by braking, but our wheel end accuracy with the FABV is unique."

Another product in development that also provides 15% improvement of the stopping distance, compared to air disc brakes, is the Electromechanical disc brake from Haldex. It's currently being tested on electric buses with positive results. The benefit of the electromechanical brake is not only its improved performance compared to today's air disc brakes, but the energy gains you get when you can replace the pneumatic brake system with a full electrical brake system.

Today's electrical heavy vehicles still has a pneumatic brake system installed. It needs about 2.5 times more energy than an electrical brake system. It's requires a compressor and other brake system parts you can remove from an electronic brake system. Åke Bengtsson, President & CEO for Haldex comments: "With our patent on electromechanical disc brakes and on-going vehicle tests, we are confident that we are a world leader on electromechanical brakes for heavy vehicles."



Haldex AB, Corporate Registration Number 556010-1155, info@haldex.com, www.haldex.com

This document is essentially a translation of Swedish language original thereof. In the event of any discrepancies between this translation and the original Swedish document the latter shall be deemed correct.

### Haldex share

Jul-Sep 2018

Change in share price	-2% 87.20 SEK
Share price (Sep 30) Market capital (Sep 30)	3,856 MSEK
	-,
Highest share price	94.60 SEK
Lowest share price	83.90 SEK
	46.004
Average No. of traded shares/day	16,984
Total No. of shares (Sep 30)	44,215,970



# Press and analyst meeting

Media and analysts are invited to a telephone conference at which the report will be presented with comments by Åke Bengtsson, President and CEO and Andreas Ekberg, acting CFO. The presentation will also be webcasted live and you can participate with questions by telephone.

Date & Time: Thursday, October 25 at 11.00 CEST

The press conference is broadcasted at: https://tv.streamfabriken.com/haldex-q3-2018 To join the telephone conference: SE: +46 8 566 42 691 UK: +44 203 008 98 01 US: +1 855 831 59 47

The webcast will also be available afterwards and you can download the Interim report and the presentation from Haldex website: http://www.haldex.com/financialreports

#### **Financial calendar 2019**

Annual Statement Interim report, Jan-Mar Annual general meeting Interim report, Apr-Jun Interim report, Jul-Sep February 14 April 25 May 9 July 18 October 24

#### Contacts

Catharina Paulcén, SVP Corporate Communications Phone: +46 418 47 61 57 E-mail: catharina.paulcen@haldex.com

Åke Bengtsson, President & CEO Phone: +46 418 47 60 00

Andreas Ekberg, acting CFO Phone: +46 418 47 60 00



A WORLD OF SAFER VEHICLES

